



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 48 (ARB/04/2019) & BULLETIN NO. : 01 (BOB/04/2019)

TIME OF ISSUE: 0930 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
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SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
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D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
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CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
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CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Extremely Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over Southeast & adjoining eastcentral Bay of Bengal and North Andaman Sea.

(A) Extremely Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Extremely severe cyclonic storm MAHA (Pronounced as M'maha)** over westcentral & adjoining eastcentral Arabian Sea moved north-northwestwards with a speed of 06 kmph during past 06 hours, and lay centered at 0530 hrs IST of 05th November, 2019 over westcentral and adjoining eastcentral Arabian Sea near latitude 19.6°N and longitude 63.6°E, about 670 km west-southwest of Porbandar (Gujarat), 720 km west-southwest of Veraval (Gujarat) and 770 km west-southwest of Diu. It is very likely to maintain intensity and move slowly northwards during next 03 hours. Thereafter, it is very likely to move rapidly east-northeastwards with gradual weakening. It is very likely to cross Gujarat coast between Diu and Porbandar as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph by early hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/0530	19.6/63.6	165-175 gusting to 195	Extremely Severe Cyclonic Storm
05.11.19/1130	19.9/64.0	145-155 gusting to 170	Very Severe Cyclonic Storm
05.11.19/1730	20.0/64.7	125-135 gusting to 150	Very Severe Cyclonic Storm
05.11.19/2330	20.1/65.6	105-115 gusting to 125	Severe Cyclonic Storm
06.11.19/0530	20.2/66.5	95-105 gusting to 115	Severe Cyclonic Storm
06.11.19/1730	20.5/68.5	80-90 gusting to 100	Cyclonic Storm
07.11.19/0530	21.0/70.6	60-70 gusting to 80	Cyclonic Storm
07.11.19/1730	21.6/72.6	40-50 gusting to 60	Depression
08.11.19/0530	22.0/74.1	30-40 gusting to 50	Well Marked Low Pressure Area

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) during 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot** districts, 50-60 kmph gusting to 70 kmph over Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening for next 12 hours. It will decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning, it is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening along & off Palghar & Thane districts for next 12 hours.
- **Arabian Sea:** Gale wind speed reaching 175-185 kmph gusting to 205 kmph is prevailing over westcentral & adjoining eastcentral Arabian Sea around the system centre. It is very likely to persist for next 06 hours and decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast on 06th November.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till 05th November and will be very high on 6th November. Sea condition will be high over westcentral Arabian Sea from 5th November evening and improve thereafter. It will be very high to high over north Arabian Sea during 5th and 6th November.

(iv) Storm surge

- Storm surge of 1 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar** District and 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand, Ahmedabad, Porbandar** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 6th November.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November and over eastcentral & adjoining northeast Arabian Sea till 06th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) and Daman, Diu, Dadra & Nagar Haveli:

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Damage to thatched houses/ huts. Thatched roof tops may blow off. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot) and Daman, Diu, Dadra & Nagar Haveli:

- Total suspension of fishing operations till 6th November.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Movement in motor boats unsafe.

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Well Marked Low Pressure Area over north Andaman Sea moved west-northwestwards , concentrated into a Depression and lay centred at 0530 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.1°N and Long. 91.5°E, about 150 km west-northwest of Maya Bandar (Andaman Islands), about 950 km south-southeast of Paradip (Odisha), 1020 km south-southeast of Sagar islands (West Bengal) and 1000 km south-southwest of Khepupara (Bangla Desh) . it is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards Odisha – west Bengal coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/0530	13.1/91.5	40-50 gusting to 60	Depression
05.11.19/1730	13.2/91.2	50-60 gusting to 70	Deep Depression
06.11.19/0530	13.5/91.0	60-70 gusting to 80	Cyclonic Storm
06.11.19/1730	13.6/90.8	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	14.3/90.6	80-90 gusting to 100	Cyclonic Storm
07.11.19/1730	15.4/90.1	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	16.1/89.3	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1730	16.8/88.6	115-125 gusting to 135	Severe Cyclonic Storm
09.11.19/0530	17.4/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1730	18.1/87.7	120-130 gusting to 145	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60 – 70 km ph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & west Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 1130 hrs IST of 05th November, 2019.

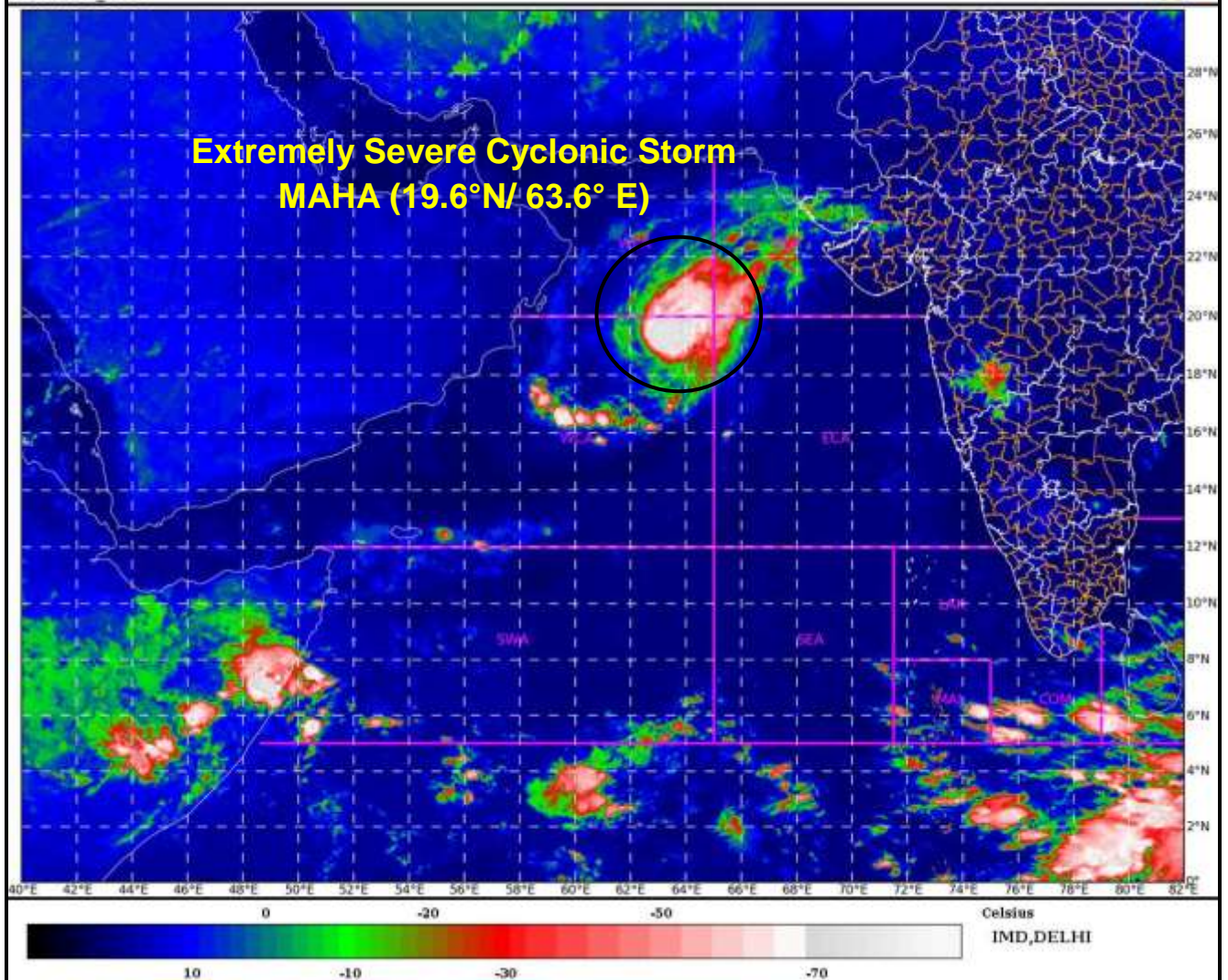
(Ananda Kumar Das)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram.

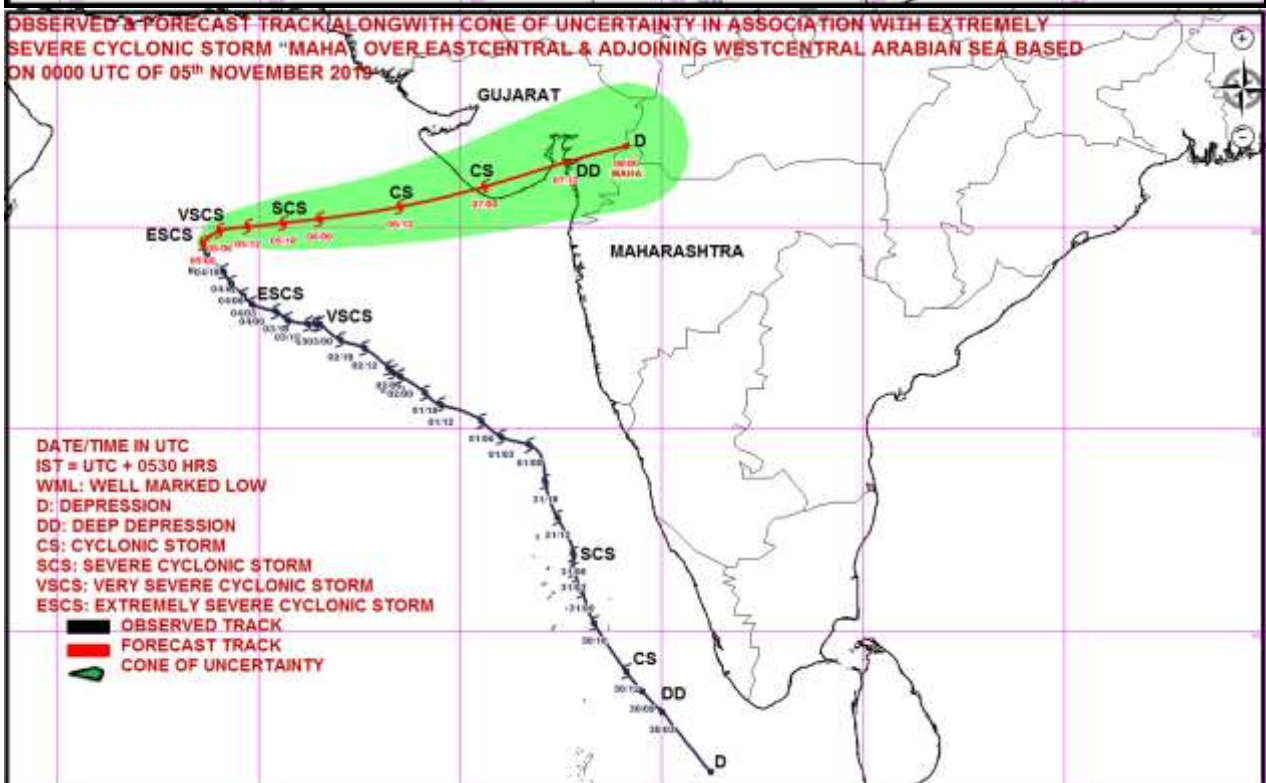
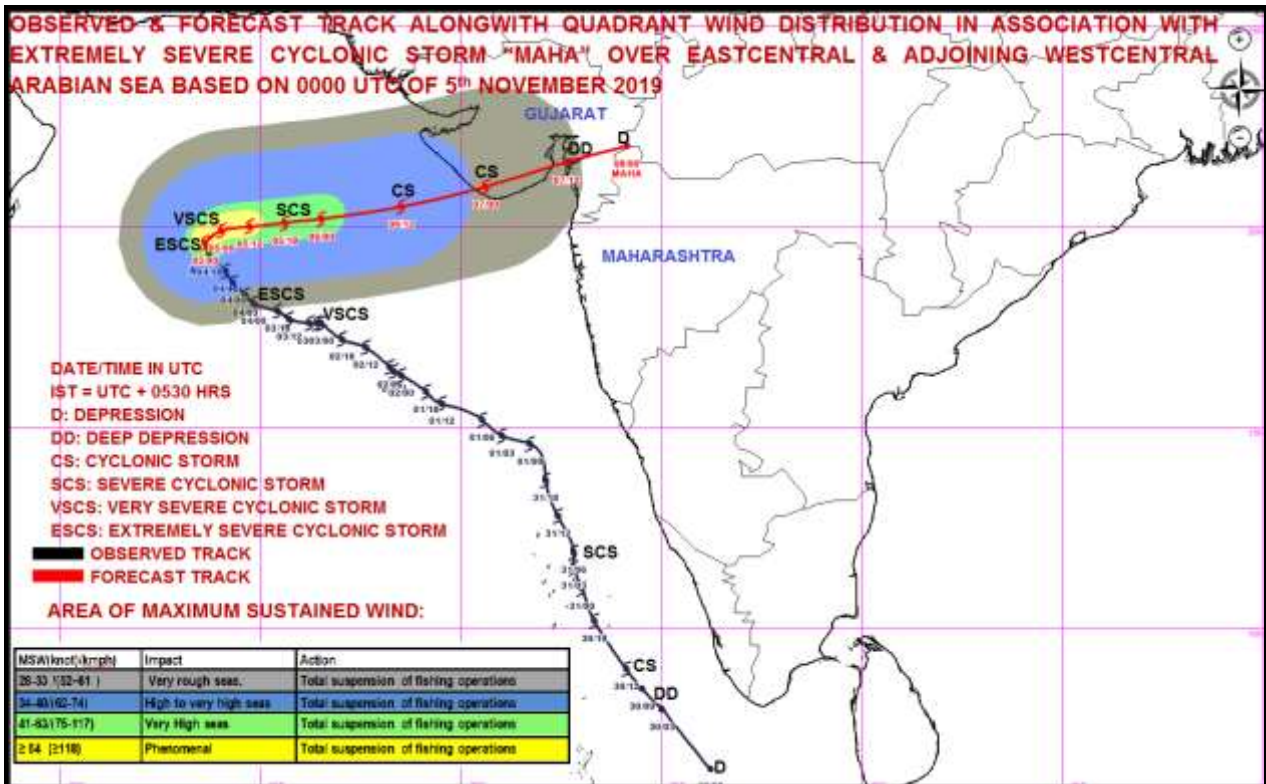
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG
IMG_TIR1_TEMP 10.8 um
ARABIAN_SEA

05-11-2019(0300 to 0327) GMT
05-11-2019(0830 to 0857) IST



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

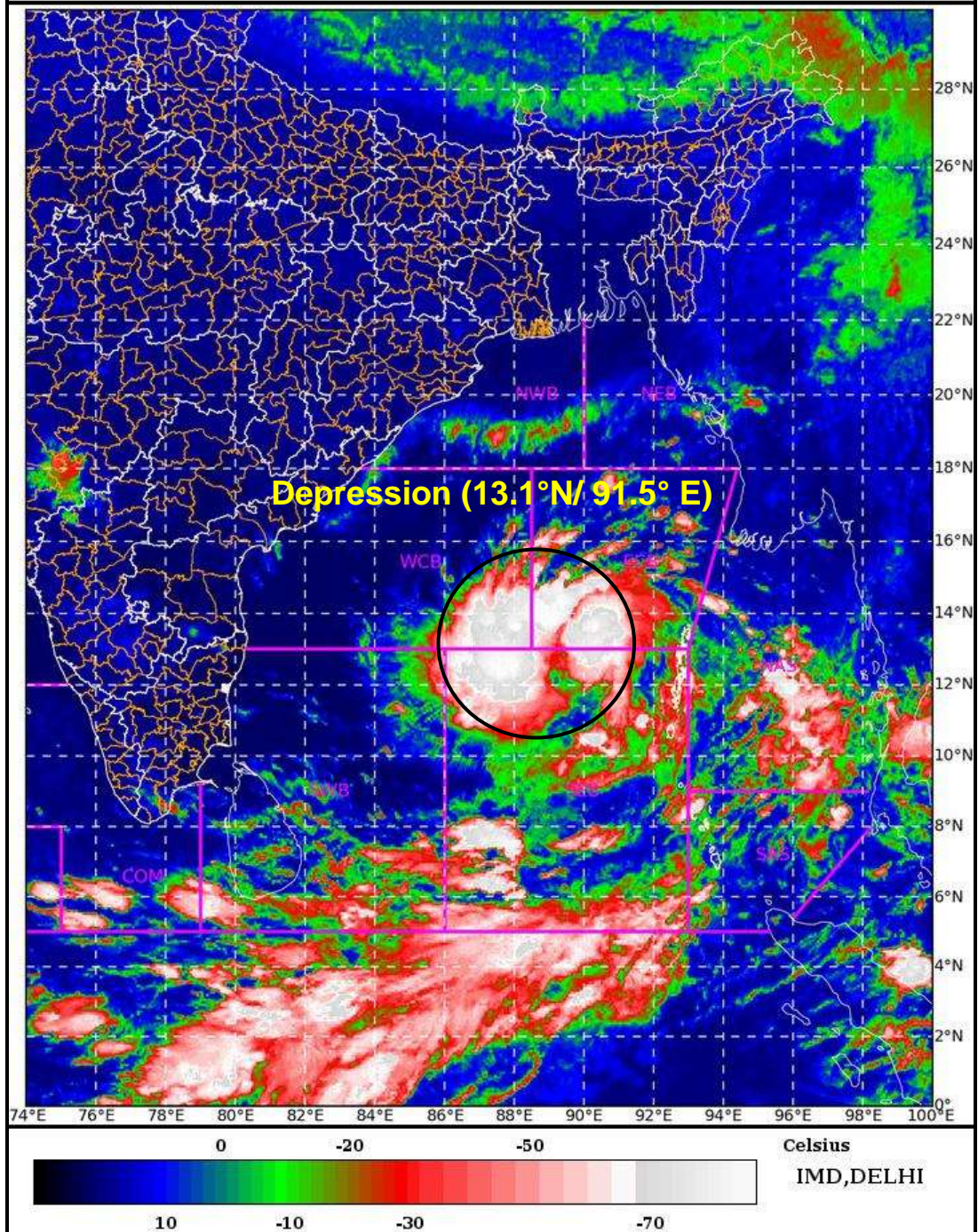
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05-11-2019/(0300 to 0327) GMT

IMG_TIR1_TEMP 10.8 um

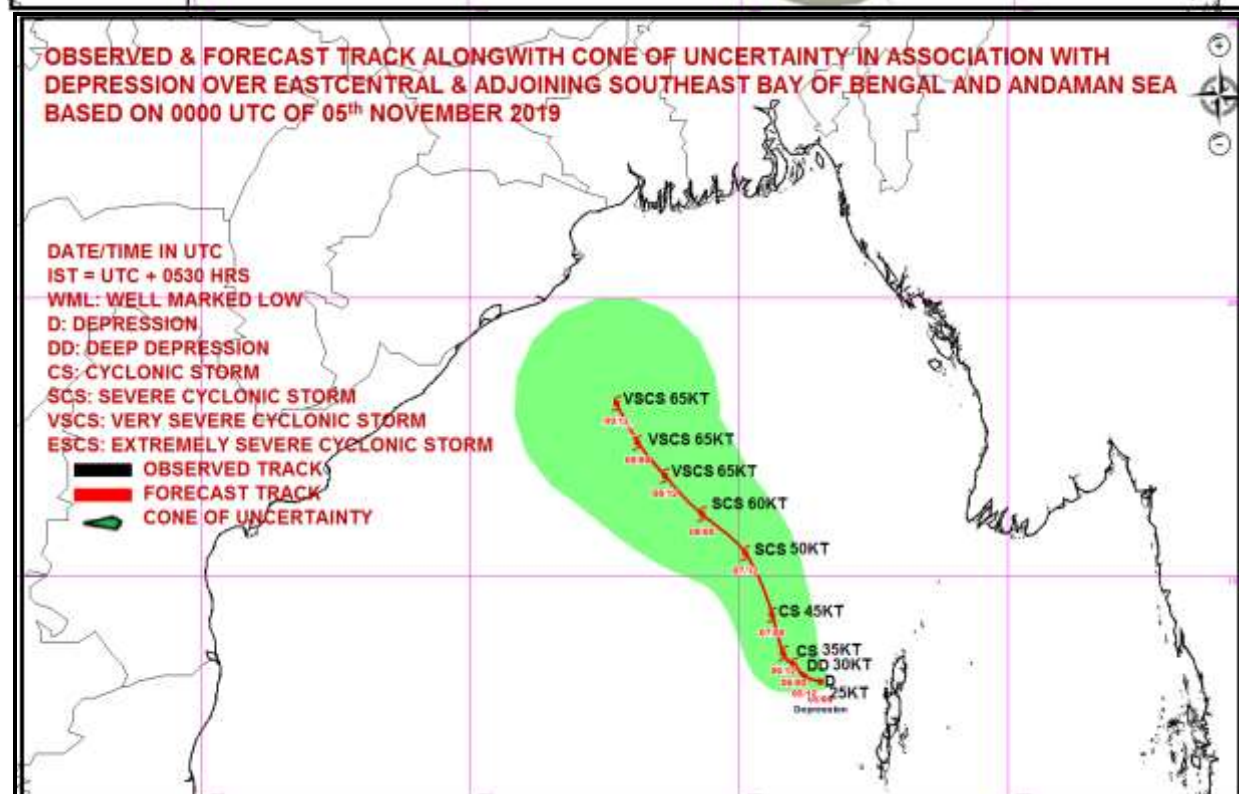
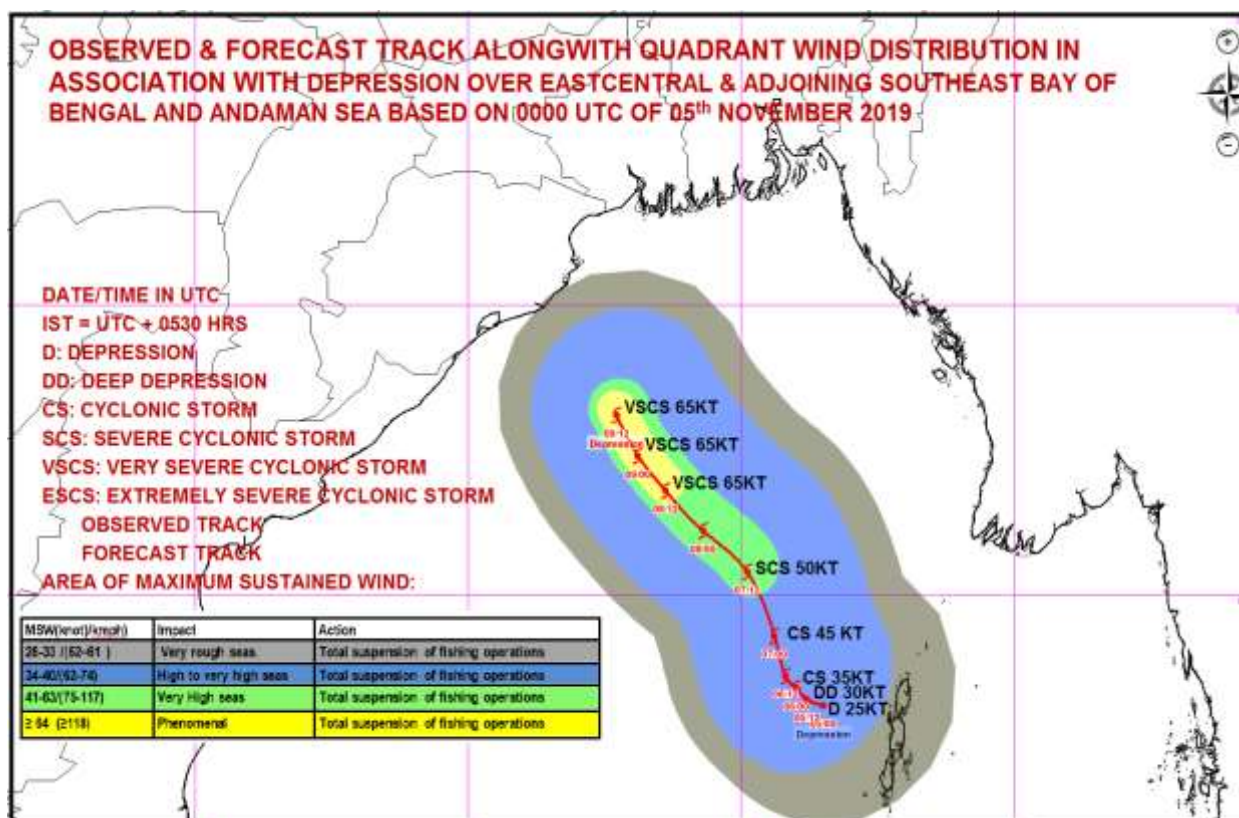
05-11-2019/(0830 to 0857) IST

L1C Mercator



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 49 (ARB/04/2019) & BULLETIN NO. : 02 (BOB/04/2019)

TIME OF ISSUE: 1500 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
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CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Extremely severe cyclonic storm MAHA (Pronounced as M'maha)** over westcentral & adjoining eastcentral Arabian Sea moved northwards with a speed of 04 kmph during past 06 hours, weakened into a **Very Severe Cyclonic Storm** and lay centered at 0830 hrs IST of 05th November, 2019 over westcentral and adjoining eastcentral Arabian Sea near latitude 19.7°N and longitude 63.6°E, about 660 km west-southwest of Porbandar (Gujarat), 720 km west-southwest of Veraval (Gujarat) and 770 km west-southwest of Diu. It is very likely to move rapidly east-northeastwards with gradual weakening. It is very likely to cross Gujarat coast between Diu and Porbandar as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph by early hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/0830	19.7/63.6	155-165 gusting to 180	Very Severe Cyclonic Storm
05.11.19/1130	19.9/64.0	145-155 gusting to 170	Very Severe Cyclonic Storm
05.11.19/1730	20.0/64.7	125-135 gusting to 150	Very Severe Cyclonic Storm
05.11.19/2330	20.1/65.6	105-115 gusting to 125	Severe Cyclonic Storm
06.11.19/0530	20.2/66.5	95-105 gusting to 115	Severe Cyclonic Storm
06.11.19/1730	20.5/68.5	80-90 gusting to 100	Cyclonic Storm
07.11.19/0530	21.0/70.6	60-70 gusting to 80	Cyclonic Storm
07.11.19/1730	21.6/72.6	40-50 gusting to 60	Depression
08.11.19/0530	22.0/74.1	30-40 gusting to 50	Well Marked Low Pressure Area

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot** districts, 50-60 kmph gusting to 70 kmph over Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening for next 12 hours. It will decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning, it is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening along & off Palghar & Thane districts for subsequent 12 hours.
- **Arabian Sea:** Gale wind speed reaching 155-165 kmph gusting to 180 kmph is prevailing over westcentral & adjoining eastcentral Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 6th November morning and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast on 06th November.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till 05th November and will be very high on 6th November. Sea condition will be high over westcentral Arabian Sea from 5th November evening and improve thereafter. It will be very high to high over north Arabian Sea during 5th and 6th November.

(iv) Storm surge

- Storm surge of 1 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar** District and 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand, Ahmedabad, Porbandar** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 6th November.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November and over eastcentral & adjoining northeast Arabian Sea till 06th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vi) Damage Expected over coastal districts of Gujarat (Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot) and Daman, Diu, Dadra & Nagar Haveli:

- Damage to thatched houses/ huts. Thatched roof tops may blow off. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot) and Daman, Diu, Dadra & Nagar Haveli:

- Total suspension of fishing operations till 6th November.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Movement in motor boats unsafe.

BULLETIN NO. : 02 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved westwards with a speed of 14kmph and lay centred at 1130 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.1°N and Long. 90.7°E, about 200 km west-northwest of Maya Bandar (Andaman Islands), about 920 km south-southeast of Paradip (Odisha), 1000 km south-southeast of Sagar islands (West Bengal) and 990 km south-southwest of Khepupara (Bangla Desh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal& adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/0830	13.1/91.0	40-50 gusting to 60	Depression
05.11.19/1730	13.2/90.7	50-60 gusting to 70	Deep Depression
06.11.19/0530	13.4/90.5	60-70 gusting to 80	Cyclonic Storm
06.11.19/1730	13.6/90.4	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	14.3/90.2	80-90 gusting to 100	Cyclonic Storm
07.11.19/1730	15.4/90.0	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	16.1/89.3	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1730	16.8/88.6	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	17.4/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1730	18.1/87.9	120-130 gusting to 145	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & west Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

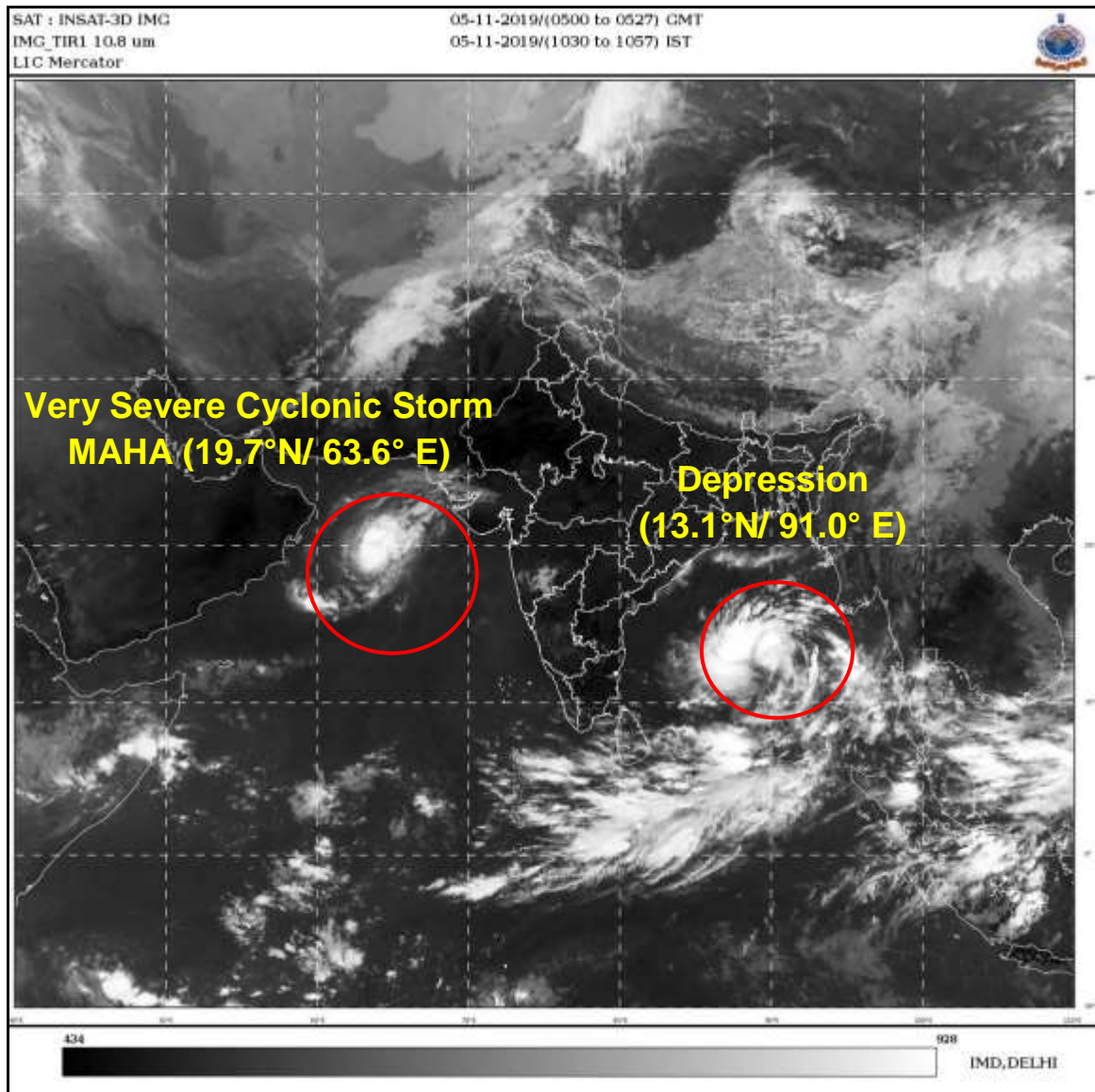
(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 1430 hrs IST of 05th November, 2019.

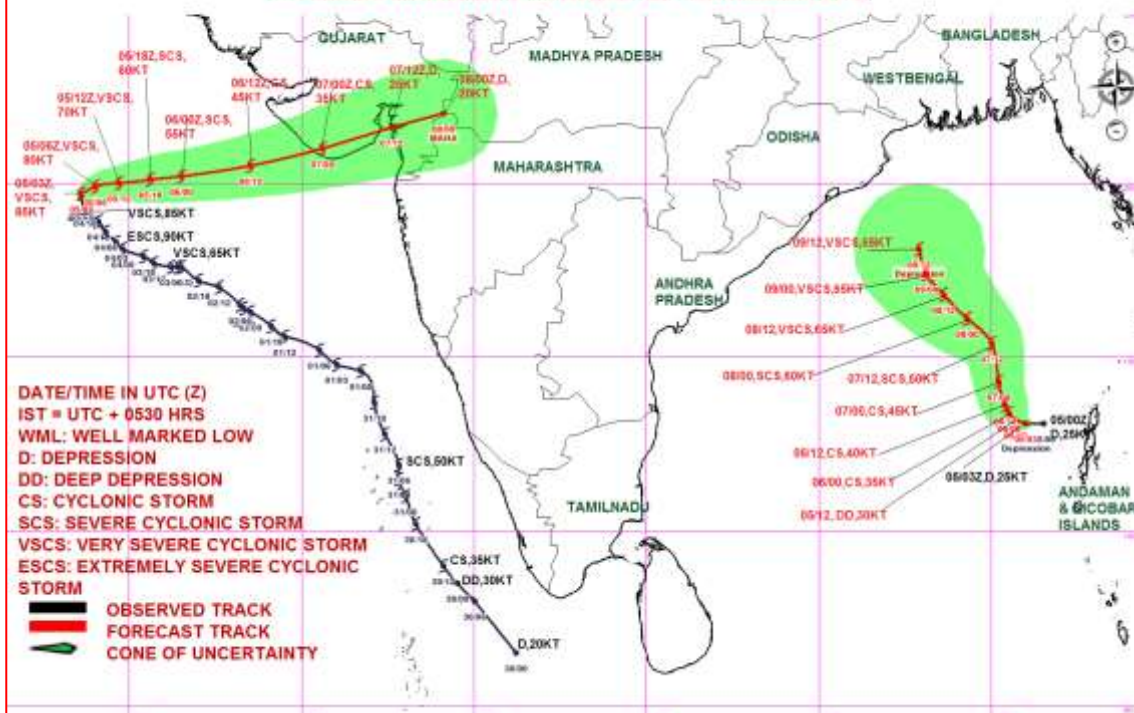
(Sunitha Devi S)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

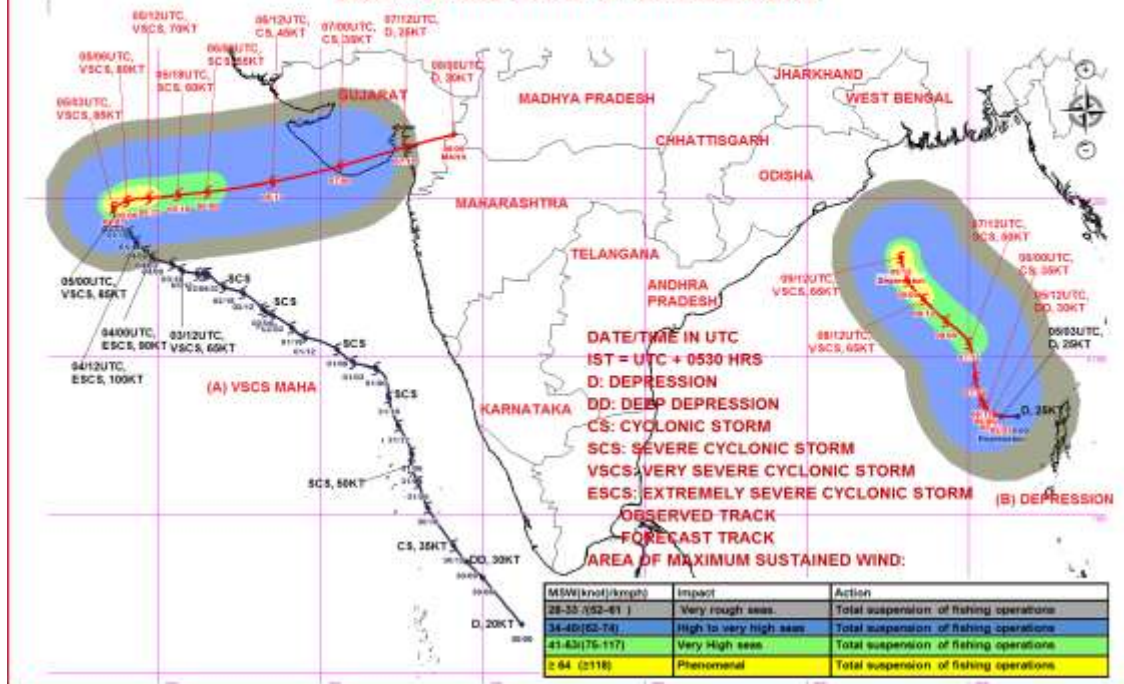


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER WESTCENTRAL & ADJOINING EASTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA BASED ON 0300 UTC OF 05th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER WESTCENTRAL & ADJOINING EASTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA BASED ON 0300 UTC OF 5th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 50 (ARB/04/2019) & BULLETIN NO. : 03 (BOB/04/2019)

TIME OF ISSUE: 1500 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 50 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very severe cyclonic storm MAHA (Pronounced as M'maha)** over westcentral & adjoining eastcentral Arabian Sea moved north-northeastwards with a speed of 04 kmph during past 06 hours and lay centered at 1130 hrs IST of 05th November, 2019 over westcentral and adjoining eastcentral Arabian Sea near latitude 19.8°N and longitude 63.7°E, about 650 km west-southwest of Porbandar (Gujarat), 700 km west-southwest of Veraval (Gujarat) and 760 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around morning hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1130	19.8/63.7	145-155 gusting to 170	Very Severe Cyclonic Storm
05.11.19/1730	19.9/64.3	125-135 gusting to 150	Very Severe Cyclonic Storm
05.11.19/2330	19.9/65.2	105-115 gusting to 125	Severe Cyclonic Storm
06.11.19/0530	19.9/66.1	95-105 gusting to 115	Severe Cyclonic Storm
06.11.19/1130	19.9/67.25	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	20.2/69.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	20.9/71.06	60-70 gusting to 80	Cyclonic Storm
07.11.19/2330	21.4/72.1	50-60 gusting to 70	Deep Depression
08.11.19/1130	21.9/73.2	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 145-155 kmph gusting to 170 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till 05th November and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November night and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 03 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved westwards with a speed of 14kmph and lay centred at 1130 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.1°N and Long. 90.7°E, about 240 km west-northwest of Maya Bandar (Andaman Islands), about 900 km south-southeast of Paradip (Odisha), 990 km south-southeast of Sagar islands (West Bengal) and 980 km south-southwest of Khepupara (Bangla Desh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1130	13.1/90.7	50-60 gusting to 70	Depression
05.11.19/2330	13.2/90.4	60-70 gusting to 80	Deep Depression
06.11.19/1130	13.3/90.1	65-75 gusting to 85	Cyclonic Storm
06.11.19/2330	13.8/90.1	75-85 gusting to 95	Cyclonic Storm
07.11.19/1130	14.8/89.9	90-100 gusting to 110	Severe Cyclonic Storm
07.11.19/2330	15.9/89.2	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1130	17.2/88.8	120-130 gusting to 145	Very Severe Cyclonic Storm
08.11.19/2330	18.3/88.5	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1130	19.0/88.4	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/2330	19.6/88.5	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & west Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

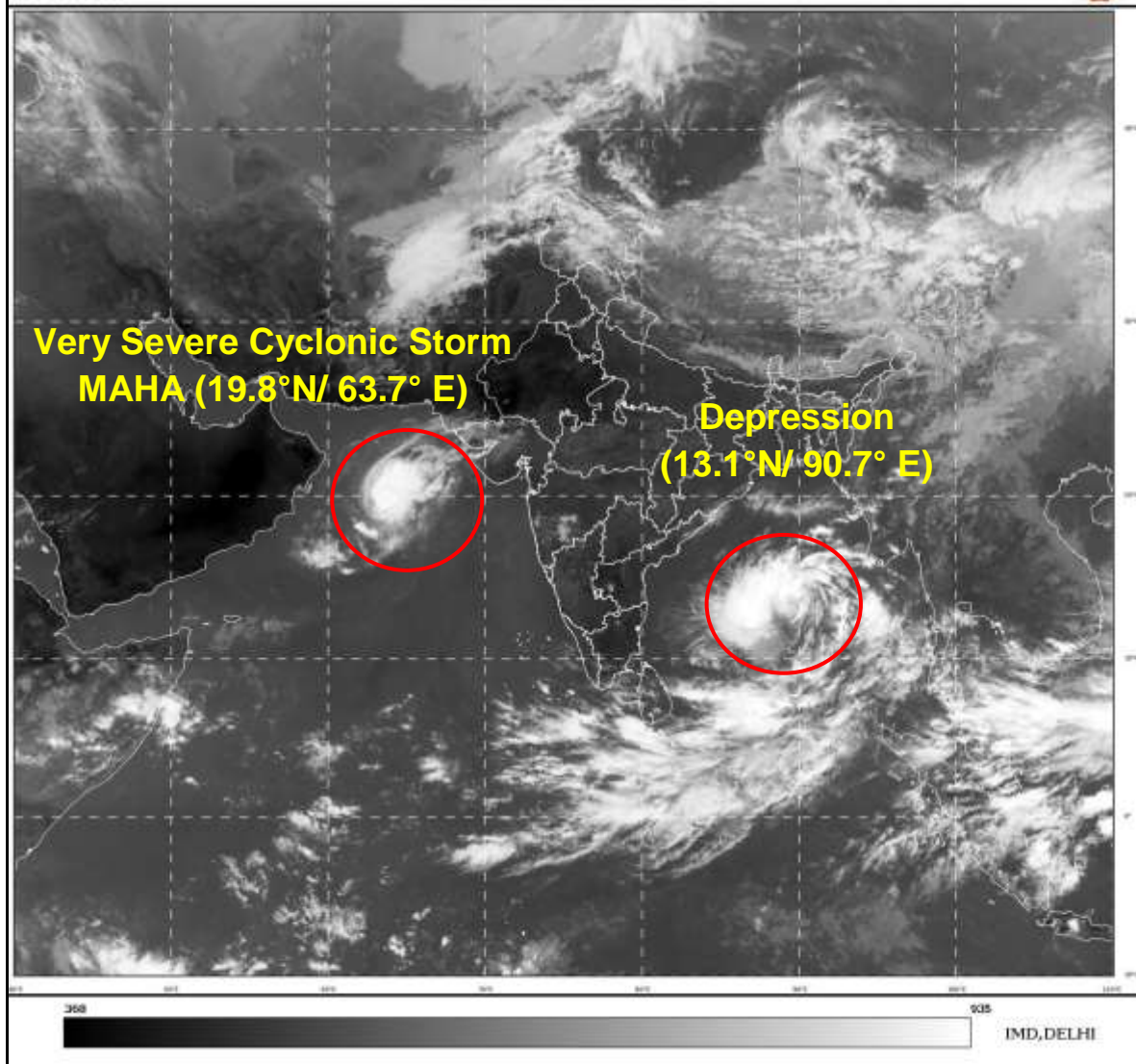
The next bulletin will be issued at 1730 hrs IST of 05th November, 2019.

(RK JENAMANI)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

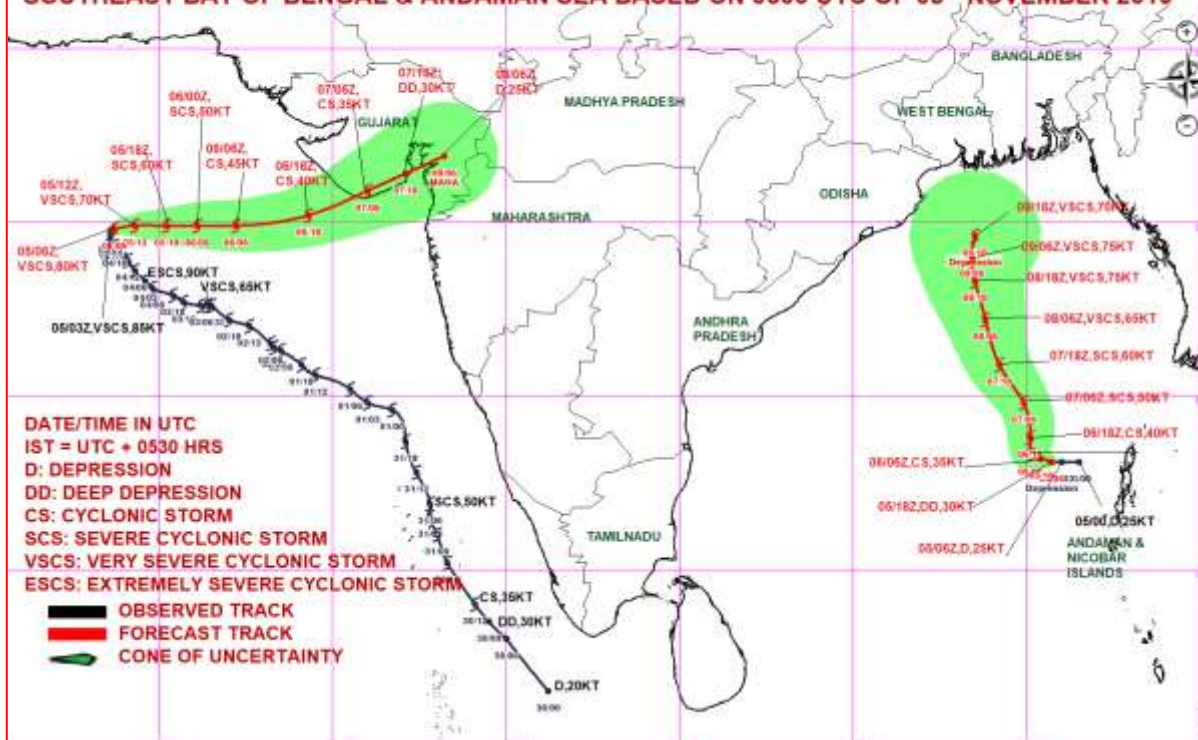
SAT : INSAT-3D IMG
IMG_TIR1 10.8 um
LIC Mercator

05-11-2019/(0730 to 0757) GMT
05-11-2019/(1300 to 1327) IST

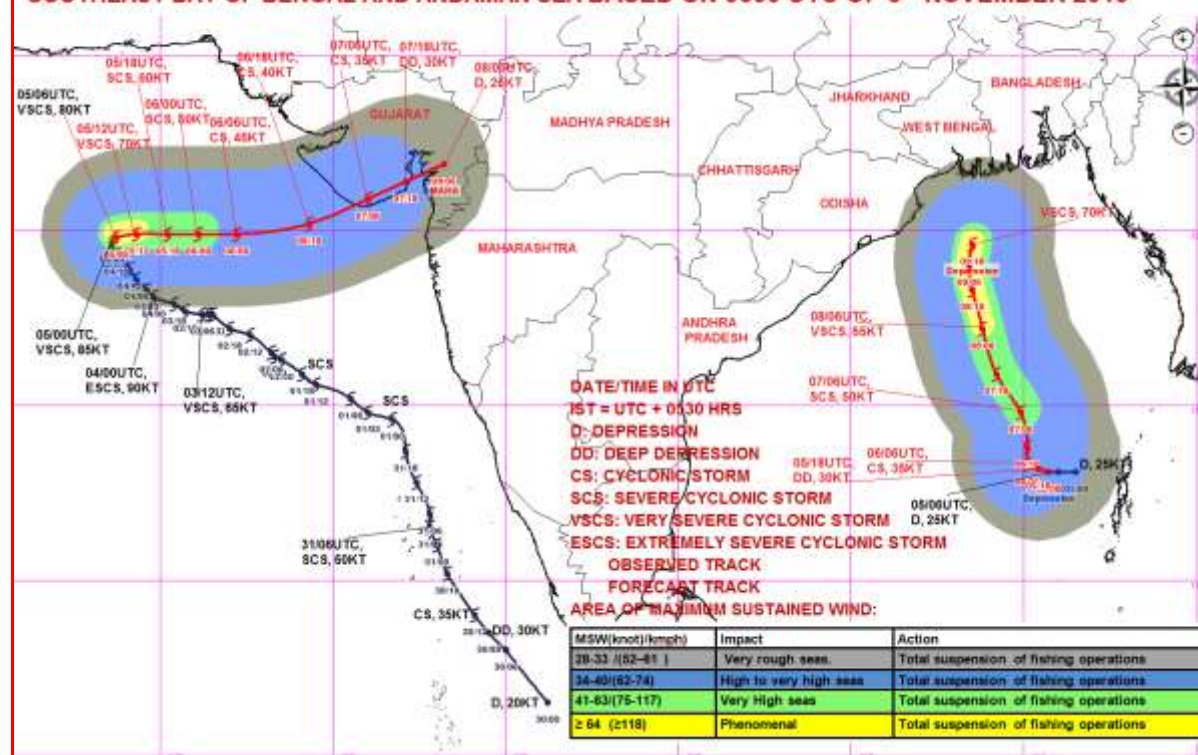


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER WESTCENTRAL & ADJOINING EASTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL & ANDAMAN SEA BASED ON 0600 UTC OF 05th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING WESTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA BASED ON 0600 UTC OF 5th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 51 (ARB/04/2019) & BULLETIN NO. : 04 (BOB/04/2019)

TIME OF ISSUE: 1700 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 51 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over westcentral and adjoining eastcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very severe cyclonic storm MAHA (Pronounced as M'maha)** over westcentral & adjoining eastcentral Arabian Sea moved east-northeastwards with a speed of 04 kmph during past 06 hours and lay centered at 1430 hrs IST of 05th November, 2019 over westcentral and adjoining eastcentral Arabian Sea near latitude 19.8°N and longitude 63.8°E, about 640 km west-southwest of Porbandar (Gujarat), 690 km west-southwest of Veraval (Gujarat) and 750 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around morning hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1430	19.8/63.8	145-155 gusting to 170	Very Severe Cyclonic Storm
05.11.19/1730	19.9/64.3	125-135 gusting to 150	Very Severe Cyclonic Storm
05.11.19/2330	19.9/65.2	105-115 gusting to 125	Severe Cyclonic Storm
06.11.19/0530	19.9/66.1	95-105 gusting to 115	Severe Cyclonic Storm
06.11.19/1130	19.9/67.25	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	20.2/69.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	20.9/71.06	60-70 gusting to 80	Cyclonic Storm
07.11.19/2330	21.4/72.1	50-60 gusting to 70	Deep Depression
08.11.19/1130	21.9/73.2	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 145-155 kmph gusting to 170 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till the night of 05th November and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November night and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 04 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved westwards with a speed of 11kmph and lay centred at 1430 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.1°N and Long. 90.4°E, about 270 km west-northwest of Maya Bandar (Andaman Islands), about 890 km south-southeast of Paradip (Odisha), 980 km south-southeast of Sagar islands (West Bengal) and 990 km south-southwest of Khepupara (Bangla Desh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1430	13.1/90.4	50-60 gusting to 70	Depression
05.11.19/2330	13.2/90.2	60-70 gusting to 80	Deep Depression
06.11.19/1130	13.3/90.1	65-75 gusting to 85	Cyclonic Storm
06.11.19/2330	13.8/90.1	75-85 gusting to 95	Cyclonic Storm
07.11.19/1130	14.8/89.9	90-100 gusting to 110	Severe Cyclonic Storm
07.11.19/2330	15.9/89.2	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1130	17.2/88.8	120-130 gusting to 145	Very Severe Cyclonic Storm
08.11.19/2330	18.3/88.5	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1130	19.0/88.4	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/2330	19.6/88.5	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & west Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

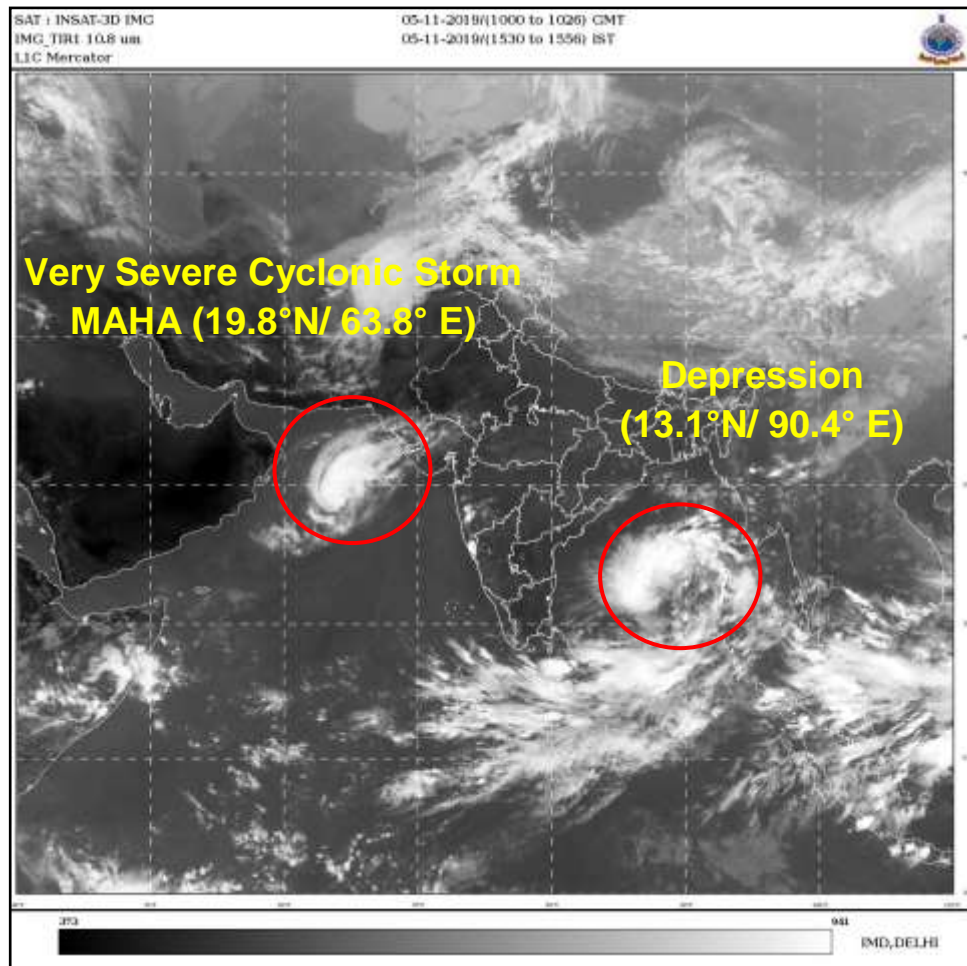
(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 2030 hrs IST of 05th November, 2019.

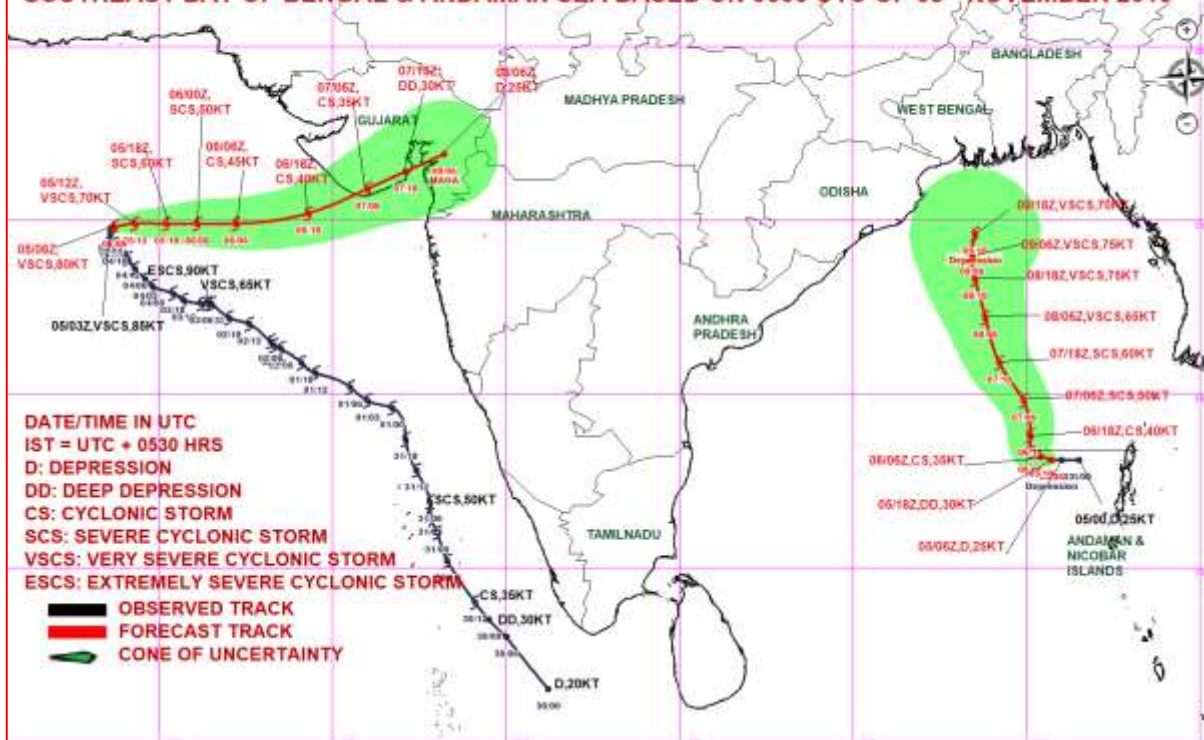
(RK JENAMANI)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

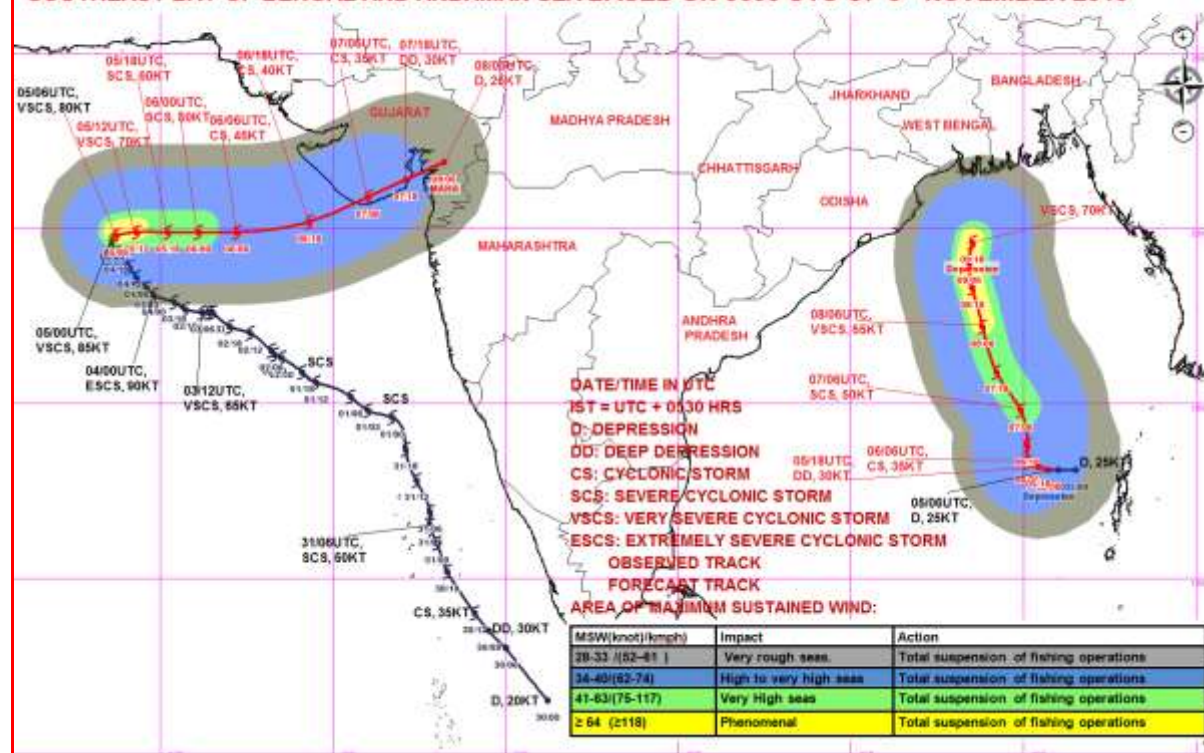


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER WESTCENTRAL & ADJOINING EASTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL & ANDAMAN SEA BASED ON 0600 UTC OF 05th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) VERY SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING WESTCENTRAL ARABIAN SEA AND (B) DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL AND ANDAMAN SEA BASED ON 0600 UTC OF 5th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 52 (ARB/04/2019) & BULLETIN NO. : 05 (BOB/04/2019)

TIME OF ISSUE: 2030 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 52 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very severe cyclonic storm MAHA (Pronounced as M'maha)** over westcentral & adjoining eastcentral Arabian Sea moved eastwards with a speed of 07 kmph during past 06 hours and lay centered at 1730 hrs IST of 05th November, 2019 over eastcentral & adjoining westcentral Arabian Sea near latitude 19.8°N and longitude 64.1°E, about 610 km west-southwest of Porbandar (Gujarat), 660 km west-southwest of Veraval (Gujarat) and 710 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around morning hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1730	19.8/64.1	125-135 gusting to 150	Very Severe Cyclonic Storm
05.11.19/2330	19.8/65.2	120-130 gusting to 140	Very Severe Cyclonic Storm
06.11.19/0530	19.9/66.1	100-120 gusting to 130	Severe Cyclonic Storm
06.11.19/1130	20.0/67.2	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	20.2/68.5	80-90 gusting to 100	Cyclonic Storm
07.11.19/0530	20.6/70.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	21.1/71.6	50-60 gusting to 70	Deep Depression
08.11.19/0530	21.6/72.6	40-50 gusting to 60	Depression
08.11.19/1730	22.1/73.6	20-30 gusting to 40	Well Marked Low Pressure Area

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat , Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 145-155 kmph gusting to 170 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon .
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till the night of 05th November and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm Surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November night and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 05 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved west-northwestwards with a speed of 11kmph and lay centred at 1730 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.2°N and Long. 90.1°E, about 300 km west-northwest of Maya Bandar (Andaman Islands), about 870 km south-southeast of Paradip (Odisha), 960 km south-southeast of Sagar Islands (West Bengal) and 970 km nearly south of Khepupara (Bangladesh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/1730	13.2/90.1	45-55 gusting to 65	Depression
06.11.19/0530	13.3/90.0	55-65 gusting to 75	Deep Depression
06.11.19/1730	13.5/90.0	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	14.3/89.9	70-80 gusting to 90	Severe Cyclonic Storm
07.11.19/1730	15.4/89.5	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	16.6/89.0	110-120 gusting to 130	Severe Cyclonic Storm
08.11.19/1730	17.8/88.6	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	18.6/88.3	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/1730	19.3/88.2	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/0530	19.8/88.3	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

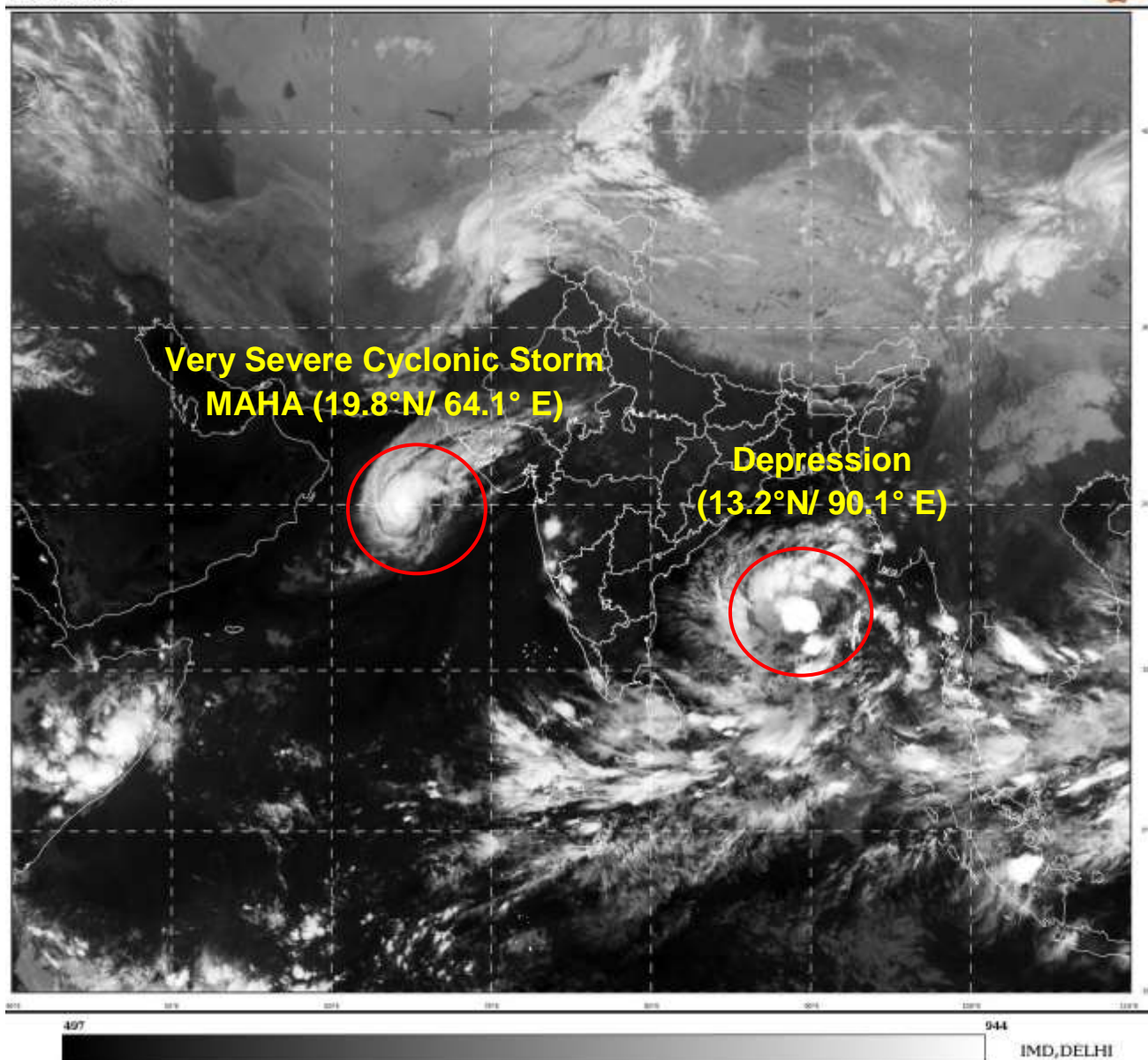
The next bulletin will be issued at 2330 hrs IST of 05th November, 2019.

(Naresh Kumar)
Scientist-E, RSMC, New Delhi

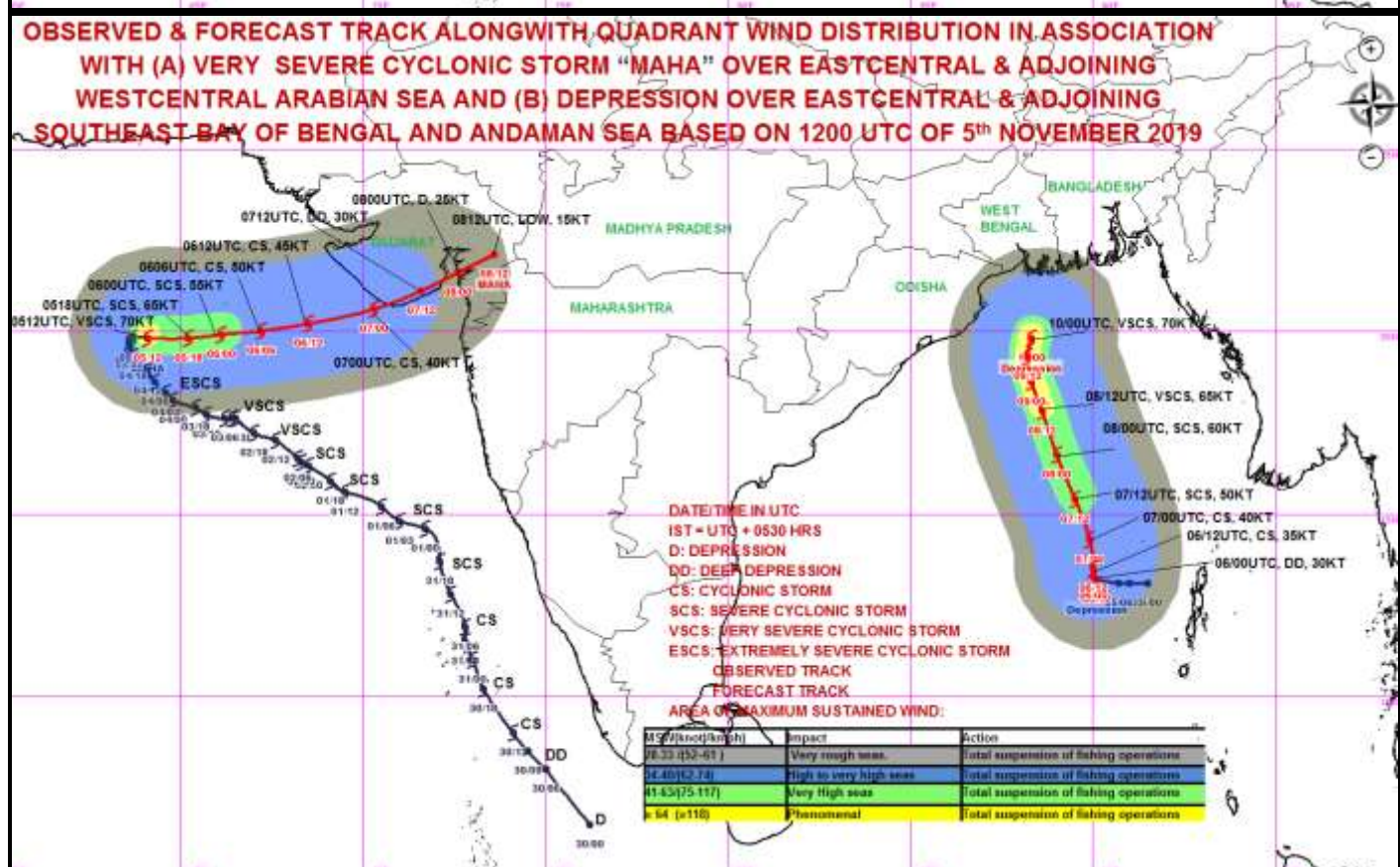
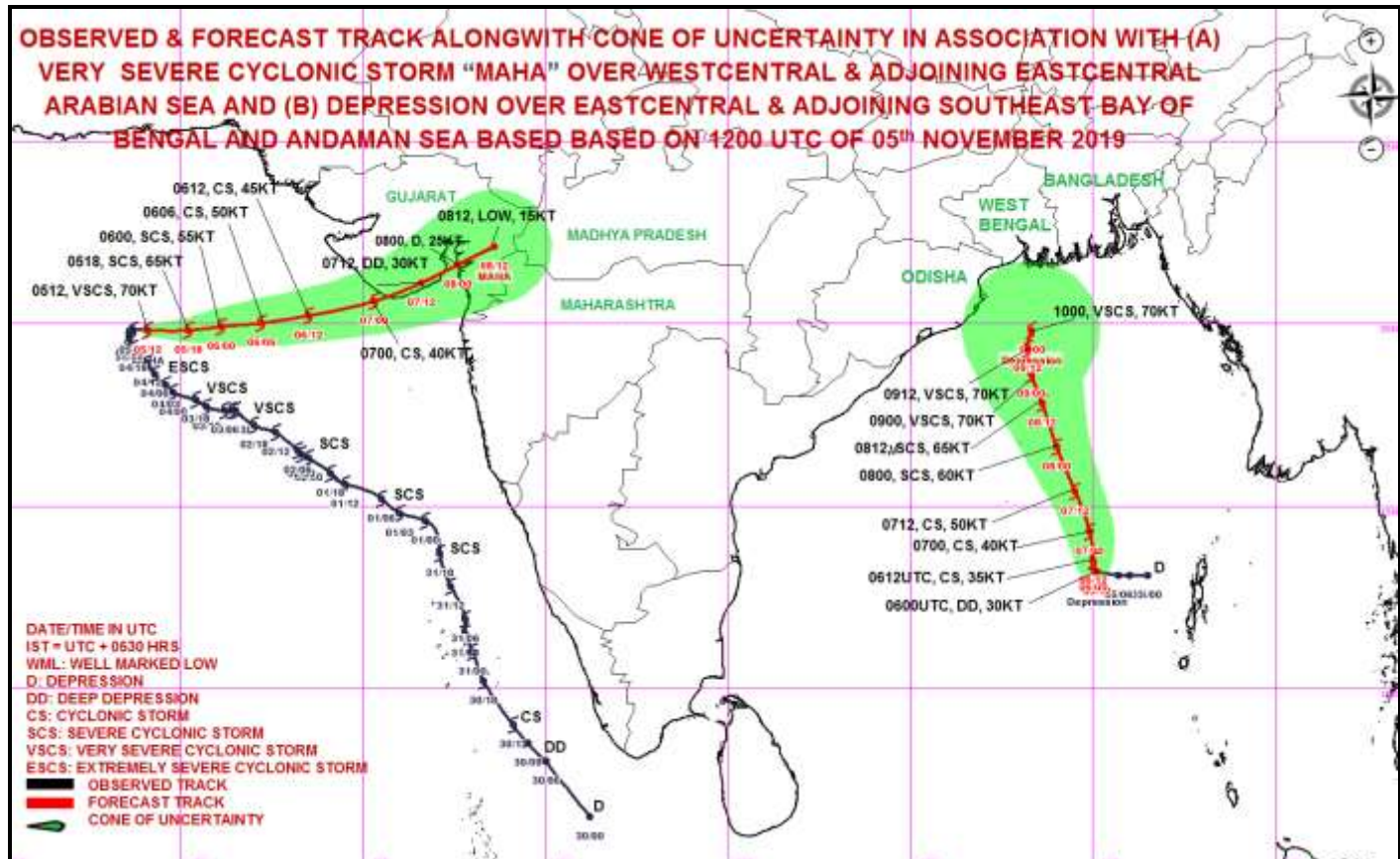
Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG
IMG_TIR1 10.8 um
LIC Mercator

05-11-2019/(1430 to 1456) GMT
05-11-2019/(2000 to 2026) IST



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 53 (ARB/04/2019) & BULLETIN NO. : 06 (BOB/04/2019)

TIME OF ISSUE: 2300 HOURS IST

DATED: 05.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 53 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very severe cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining westcentral Arabian Sea moved eastwards with a speed of 08 kmph during past 06 hours and lay centered at 2030 hrs IST of 05th November, 2019 over eastcentral & adjoining westcentral Arabian Sea near latitude 19.8°N and longitude 64.3°E, about 590 km west-southwest of Porbandar (Gujarat), 640 km west-southwest of Veraval (Gujarat) and 710 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around morning hours of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/2030	19.8/64.3	120-130 gusting to 140	Very Severe Cyclonic Storm
05.11.19/2330	19.8/64.7	120-130 gusting to 140	Very Severe Cyclonic Storm
06.11.19/0530	19.9/65.8	100-120 gusting to 130	Severe Cyclonic Storm
06.11.19/1130	20.0/66.9	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	20.2/68.5	80-90 gusting to 100	Cyclonic Storm
07.11.19/0530	20.6/70.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	21.1/71.6	50-60 gusting to 70	Deep Depression
08.11.19/0530	21.6/72.6	40-50 gusting to 60	Depression
08.11.19/1730	22.1/73.6	20-30 gusting to 40	Well Marked Low Pressure Area

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 120-130 kmph gusting to 140 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till the night of 05th November and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm Surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till 5th November night and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast from 5th to 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 06 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved west-northwestwards with a speed of 11kmph and lay centred at 2030 hrs IST of today, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.3°N and Long. 89.8°E, about 340 km west-northwest of Maya Bandar (Andaman Islands), about 840 km south-southeast of Paradip (Odisha), 950 km south-southeast of Sagar Islands (West Bengal) and 960 km nearly south of Khepupara (Bangladesh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/2030	13.3/89.8	45-55 gusting to 65	Depression
06.11.19/0530	13.3/89.8	55-65 gusting to 75	Deep Depression
06.11.19/1730	13.5/89.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	14.3/89.7	70-80 gusting to 90	Severe Cyclonic Storm
07.11.19/1730	15.4/89.3	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	16.6/88.8	110-120 gusting to 130	Severe Cyclonic Storm
08.11.19/1730	17.8/88.4	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	18.6/88.1	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/1730	19.3/88.0	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/0530	19.8/88.3	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during 5th and 6th Nov, 2019.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 45-55 kmph gusting to 65 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely to over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

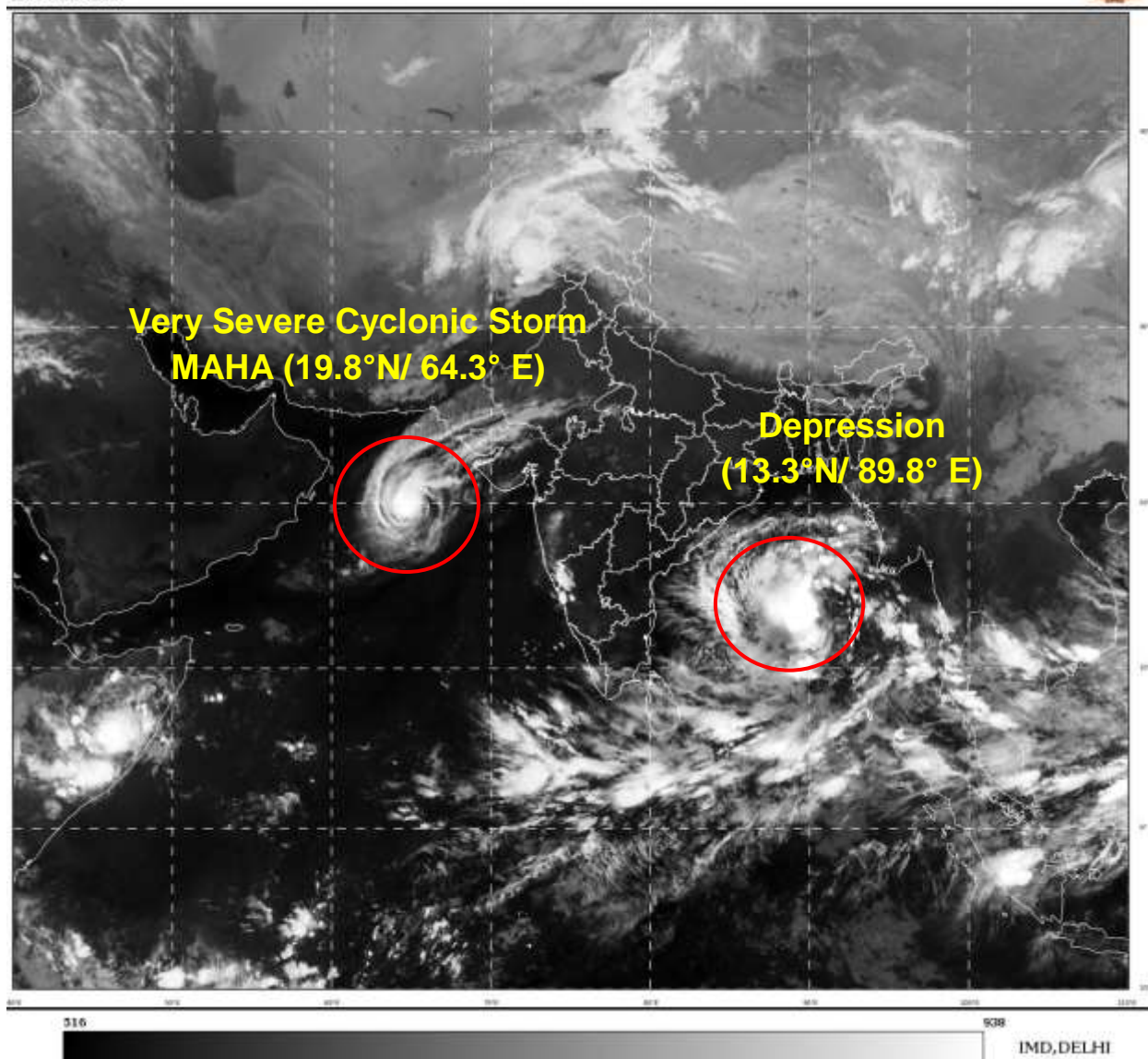
(v) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 0230 hrs IST of 06th November, 2019.

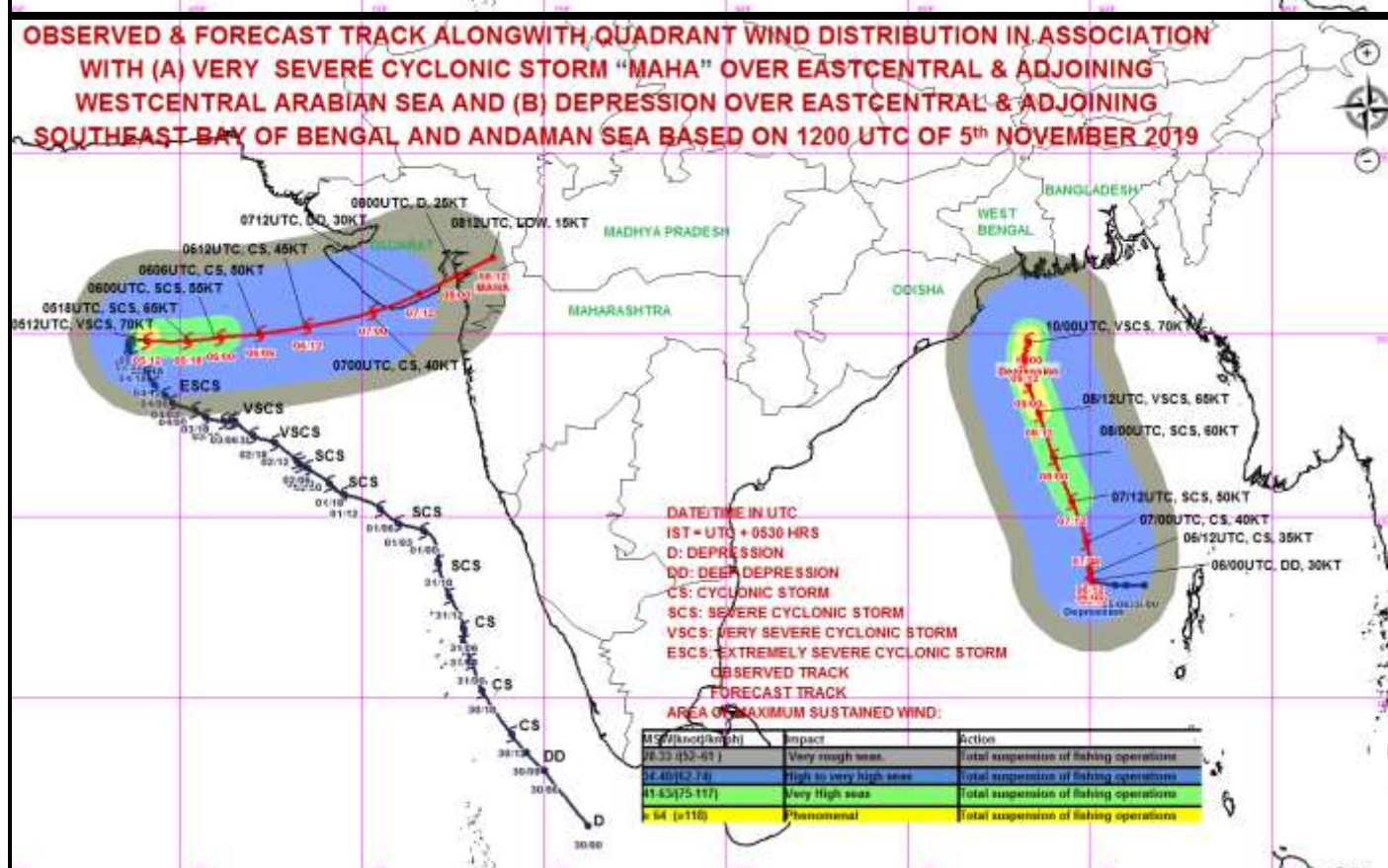
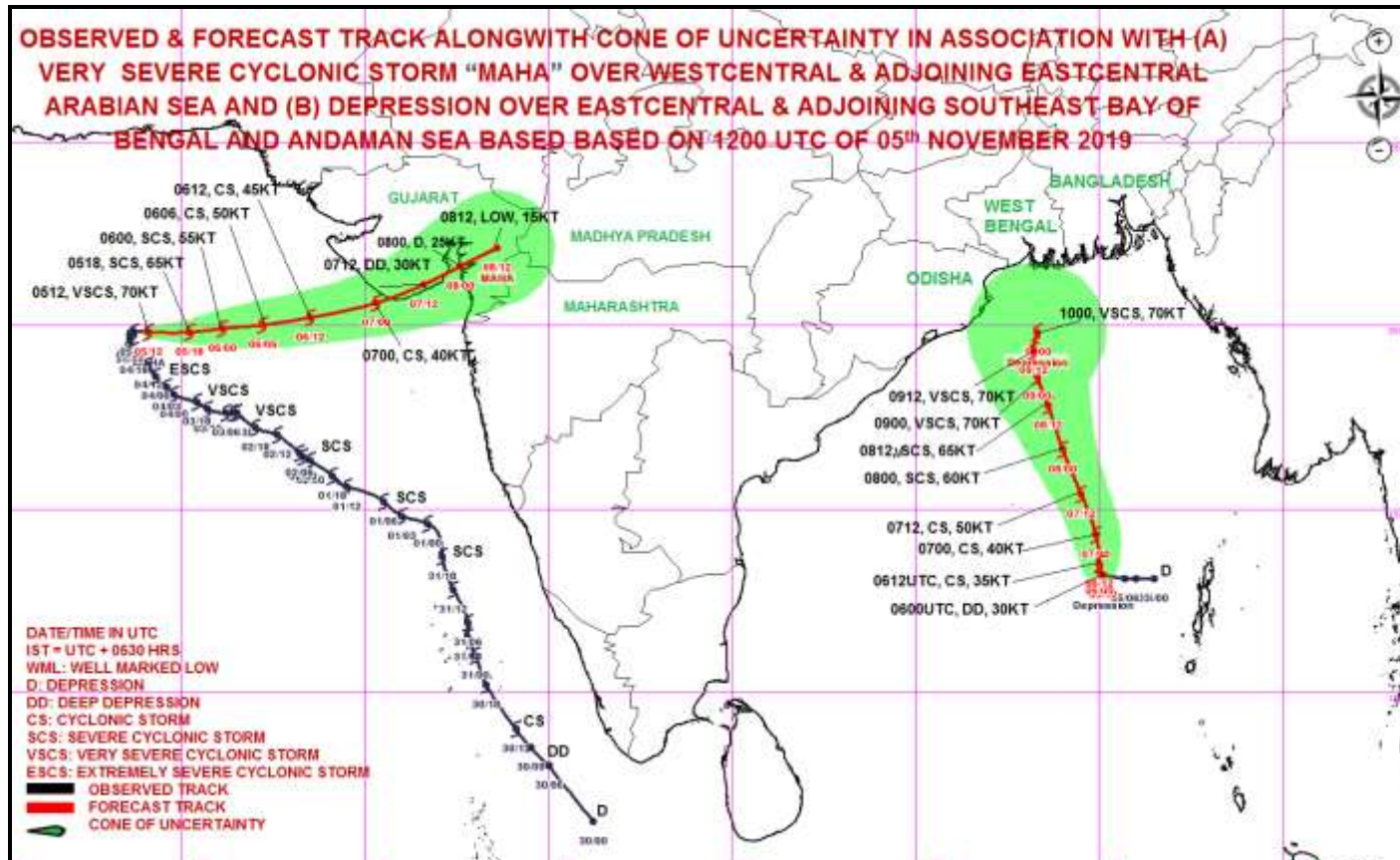
(R K Jenamani)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 54 (ARB/04/2019) & BULLETIN NO. : 07 (BOB/04/2019)

TIME OF ISSUE: 0230 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
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D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
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ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 54 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining westcentral Arabian Sea moved eastwards with a speed of 14 kmph during past 06 hours and lay centered at 2330 hrs IST of yesterday, the 05th November, 2019 over eastcentral & adjoining westcentral Arabian Sea near latitude 19.8°N and longitude 64.9°E, about 540 km west-southwest of Porbandar (Gujarat), 580 km west-southwest of Veraval (Gujarat) and 630 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around noon of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/2330	19.8/64.9	120-130 gusting to 140	Very Severe Cyclonic Storm
06.11.19/0530	19.8/65.8	100-120 gusting to 130	Severe Cyclonic Storm
06.11.19/1130	19.8/65.8	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	19.9/68.0	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	20.2/69.1	80-90 gusting to 100	Cyclonic Storm
07.11.19/1130	20.6/70.6	70-80 gusting to 90	Cyclonic Storm
07.11.19/2330	21.0/71.7	50-60 gusting to 70	Deep Depression
08.11.19/1130	21.0/71.7	40-50 gusting to 60	Deep Depression
08.11.19/2330	22.1/73.6	20-30 gusting to 40	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 120-130 kmph gusting to 140 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till next 06 hours and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm Surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till next 06 hours and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 07 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved west-northwestwards with a speed of 06 kmph and lay centred at 2330 hrs IST of yesterday, the 5th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.3°N and Long. 89.8°E, about 340 km west-northwest of Maya Bandar (Andaman Islands), about 840 km south-southeast of Paradip (Odisha), 950 km south-southeast of Sagar Islands (West Bengal) and 960 km nearly south of Khepupara (Bangladesh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
05.11.19/2330	13.3/89.8	45-55 gusting to 65	Depression
06.11.19/1130	13.8/89.3	55-65 gusting to 75	Deep Depression
06.11.19/2330	14.9/88.9	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	16.0/88.6	70-80 gusting to 90	Severe Cyclonic Storm
07.11.19/2330	17.3/88.4	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/1130	17.9/88.2	110-120 gusting to 130	Severe Cyclonic Storm
08.11.19/2330	18.9/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	19.3/88.0	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/2330	19.8/88.0	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/1130	19.8/88.3	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during next 36 hours.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 45-55 kmph gusting to 65 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

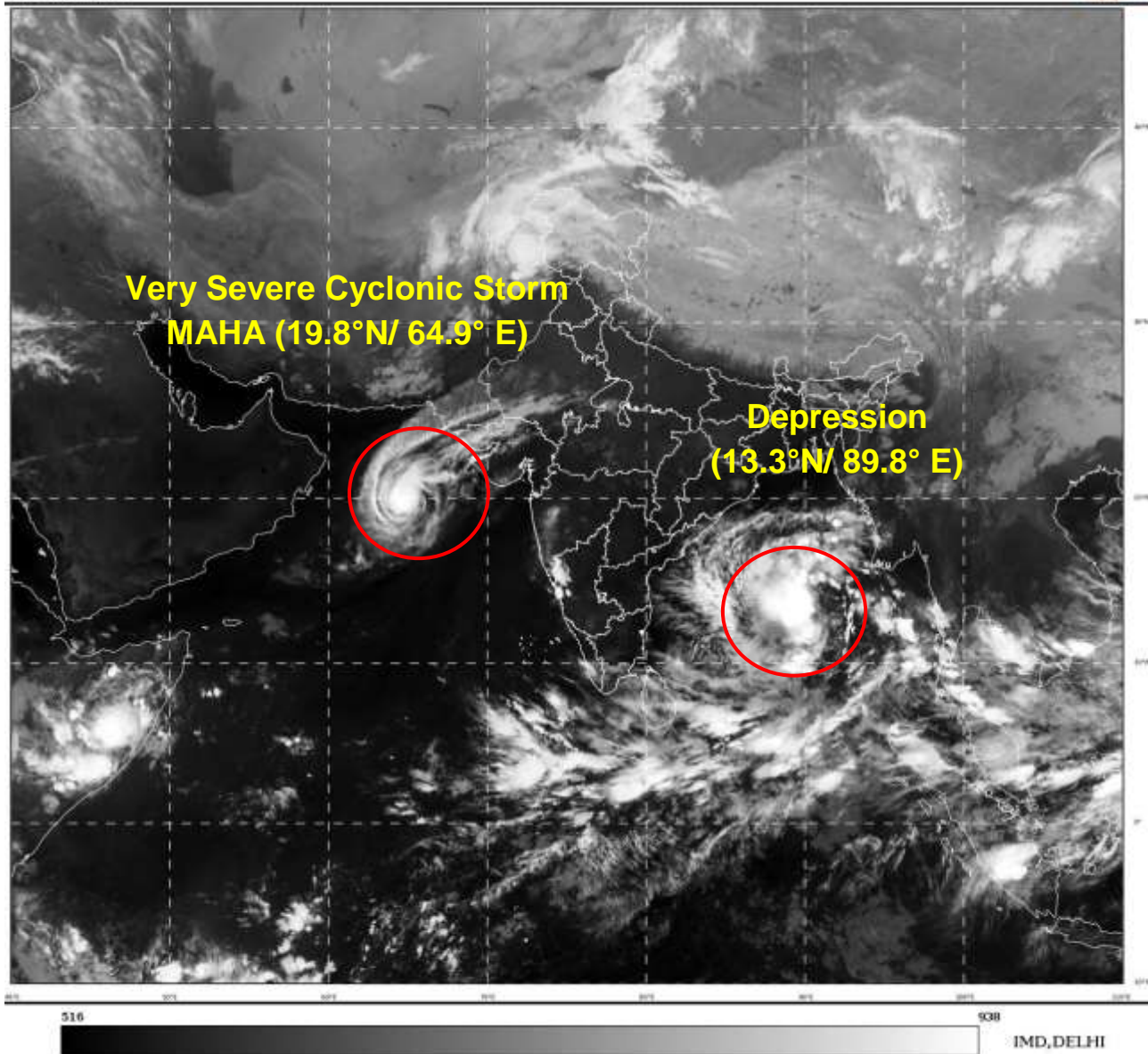
(iv) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

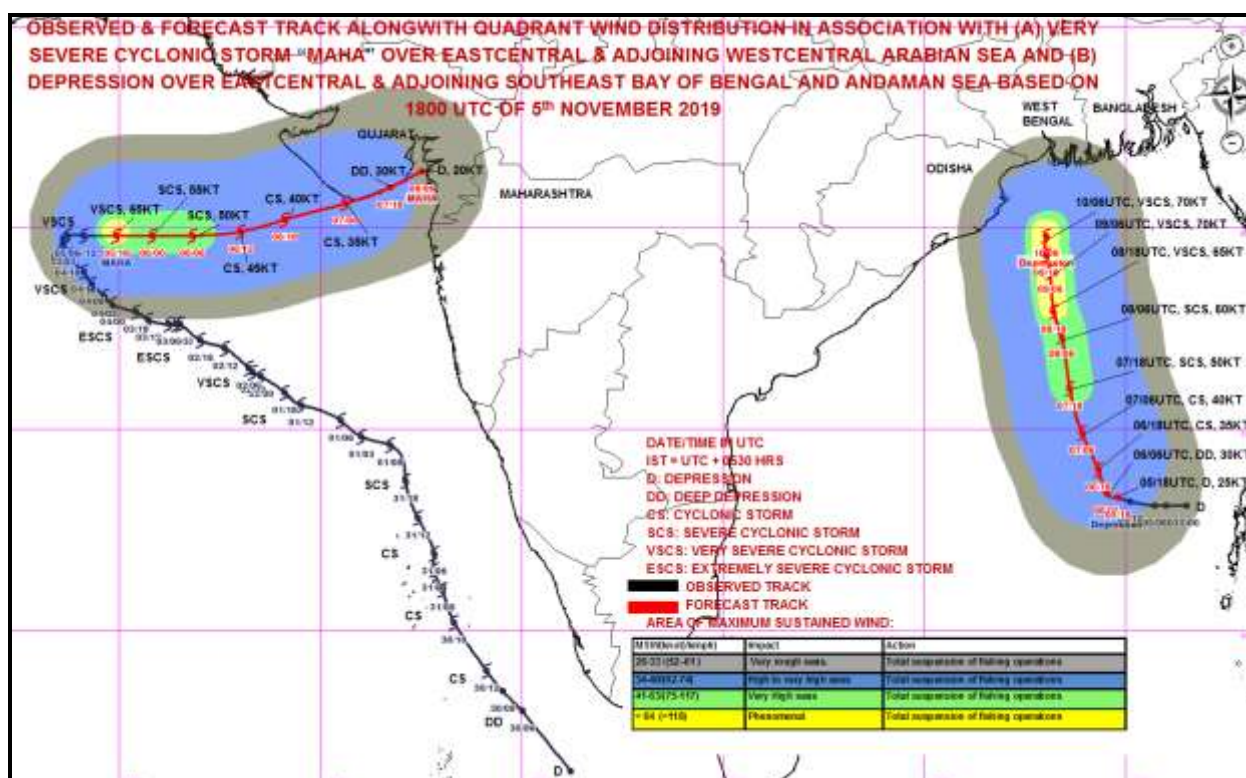
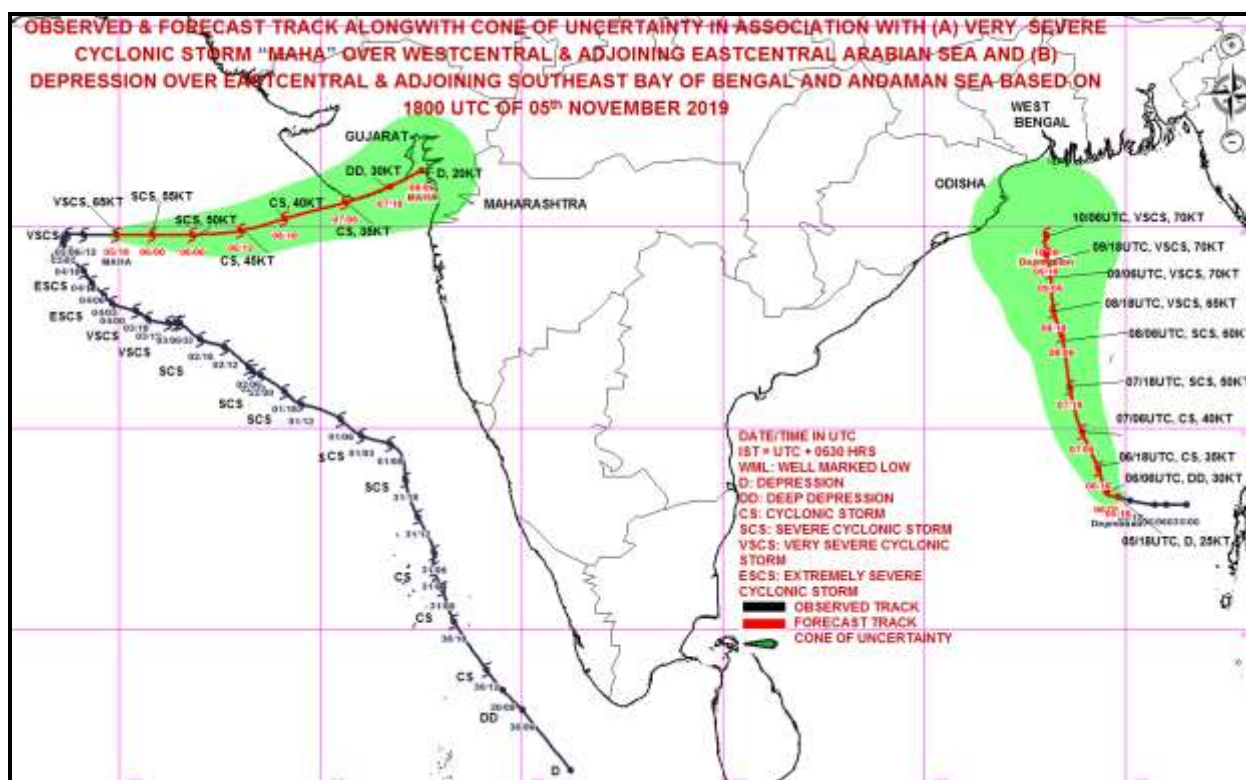
The next bulletin will be issued at 0530 hrs IST of 06th November, 2019.

(R K Jenamani)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 55 (ARB/04/2019) & BULLETIN NO. : 08 (BOB/04/2019)

TIME OF ISSUE: 0530 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

BULLETIN NO. : 55 (ARB/04/2019)

(A) Very Severe Cyclonic storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining westcentral Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining westcentral Arabian Sea moved eastwards with a speed of 21 kmph during past 06 hours and lay centered at 0230 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining westcentral Arabian Sea near latitude 19.8°N and longitude 65.5°E, about 480 km west-southwest of Porbandar (Gujarat), 520 km west-southwest of Veraval (Gujarat) and 570 km west-southwest of Diu. It is very likely to move east-northeastwards with rapid weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around noon of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0230	19.8/65.5	120-130 gusting to 140	Very Severe Cyclonic Storm
06.11.19/0530	19.8/65.8	100-120 gusting to 130	Severe Cyclonic Storm
06.11.19/1130	19.8/65.8	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	19.9/68.0	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	20.2/69.1	80-90 gusting to 100	Cyclonic Storm
07.11.19/1130	20.6/70.6	70-80 gusting to 90	Cyclonic Storm
07.11.19/2330	21.0/71.7	50-60 gusting to 70	Deep Depression
08.11.19/1130	21.0/71.7	40-50 gusting to 60	Deep Depression
08.11.19/2330	22.1/73.6	20-30 gusting to 40	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at a few places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November morning. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 6th November evening to 7th forenoon and decrease thereafter.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th morning. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 6th November evening to 7th November forenoon along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 120-130 kmph gusting to 140 kmph is prevailing over westcentral & adjoining eastcentral and northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November morning and becoming high from 6th evening till 7th forenoon.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November morning to 7th forenoon.
- **Arabian Sea:** Sea condition will be phenomenal over westcentral and adjoining eastcentral and northwest Arabian Sea till next 06 hours and will be very high on 6th November over eastcentral and adjoining northeast Arabian Sea. It will be very high to high over northeast adjoining eastcentral Arabian Sea from 5th to 7th November morning.

(iv) Storm Surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November forenoon.
- The fishermen are advised not to venture into westcentral Arabian Sea till next 06 hours and over eastcentral & adjoining northeast Arabian Sea till 07th November forenoon.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 7th November evening.
- The fishermen out at Sea are advised to return to the coast.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea Water inundation over low laying areas after erosion of broken embankments
- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 08 (BOB/04/2019)

(B) Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved west-northwestwards with a speed of 06 kmph and lay centred at 0230 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea, near Lat.13.4°N and Long. 89.5°E, about 370 km west-northwest of Maya Bandar (Andaman Islands), about 820 km south-southeast of Paradip (Odisha), 930 km south-southeast of Sagar Islands (West Bengal) and 960 km nearly south of Khepupara (Bangladesh) . It is very likely to intensify into a Deep Depression during next 12 hours and into a Cyclonic Storm during the subsequent 24 hours. It is very likely to move west-northwestwards initially and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0230	13.4/89.5	45-55 gusting to 65	Depression
06.11.19/1130	13.8/89.3	55-65 gusting to 75	Deep Depression
06.11.19/2330	14.9/88.9	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	16.0/88.6	70-80 gusting to 90	Severe Cyclonic Storm
07.11.19/2330	17.3/88.4	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/1130	17.9/88.2	110-120 gusting to 130	Severe Cyclonic Storm
08.11.19/2330	18.9/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	19.3/88.0	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/2330	19.8/88.0	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/1130	19.8/88.3	130-140 gusting to 155	Very Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **Andaman and Nicobar Islands** during next 36 hours.
- **Odisha:** Light to moderate rainfall at most places very likely to commence over **coastal districts of Odisha** from 9th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely to commence over **coastal districts of West Bengal** from 9th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Squally wind speed reaching 45-55 kmph gusting to 65 kmph is prevailing over Andaman Islands, north Andaman Sea and Adjoining areas southeast & eastcentral Bay of Bengal. It is likely to increase becoming 60–70 kmph gusting to 80 kmph by 6th November morning and decrease gradually thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph very likely over east central Bay of Bengal around the system centre for next 12 hours and will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further over central parts of Bay of Bengal, becoming 120-130 kmph gusting to 145 kmph by 8th November evening.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be rough to very rough over north Andaman Sea and Adjoining areas southeast and eastcentral Bay of Bengal during next 36-hours.
- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November morning and become very high to phenomenal during 7th November evening to 8th November evening.
- Sea condition will be very High to Phenomenal over eastcentral & adjoining westcentral Bay of Bengal on 8th November and over westcentral and adjoining northwest Bay of Bengal and along and off Odisha – west Bengal coasts from 8th November evening. Then rough to very rough over north Bay of Bengal during 8th to 9th November morning and very High to Phenomenal on 10th November morning.

(iv) Fishermen Warning

- Total suspension of fishing operations over north Andaman Sea during next 36 hours and over Adjoining areas southeast and eastcentral Bay of Bengal till 6th November.
- The fishermen are advised not to venture into eastcentral Bay of Bengal during 6th – 7th November, over east central and adjoining westcentral Bay of Bengal on 7th & 9th November and over north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

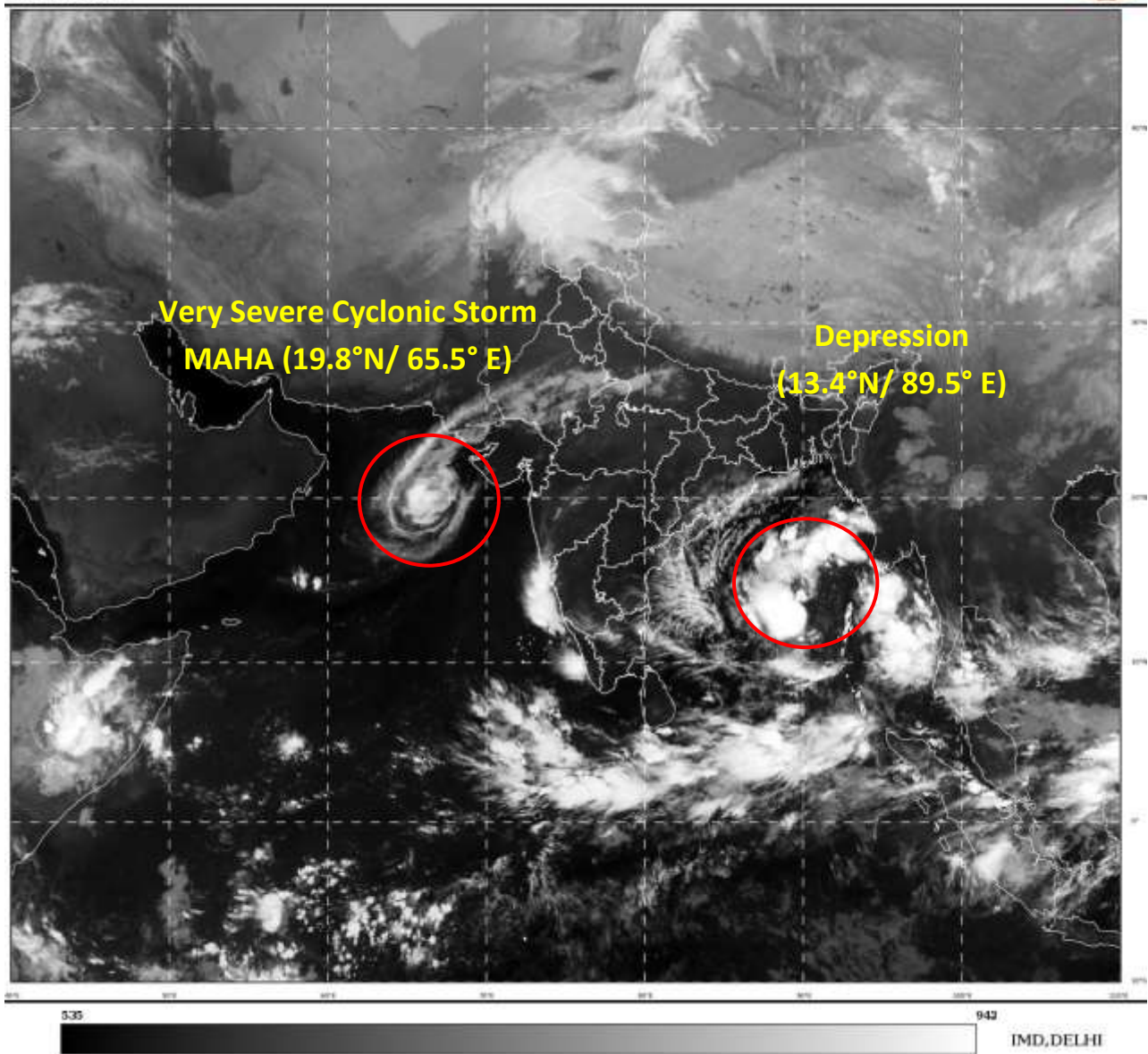
The next bulletin will be issued at 0830 hrs IST of 06th November, 2019.

(R K Jenamani)
Scientist-F, RSMC, New Delhi

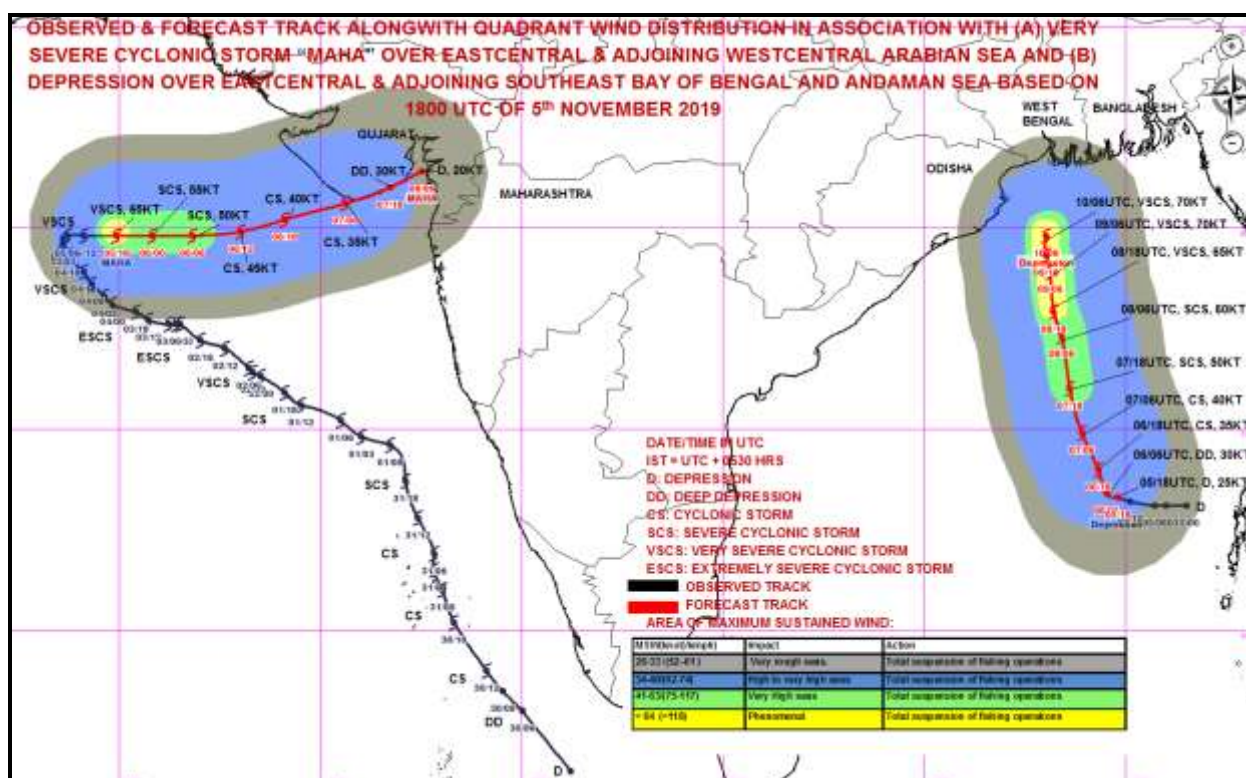
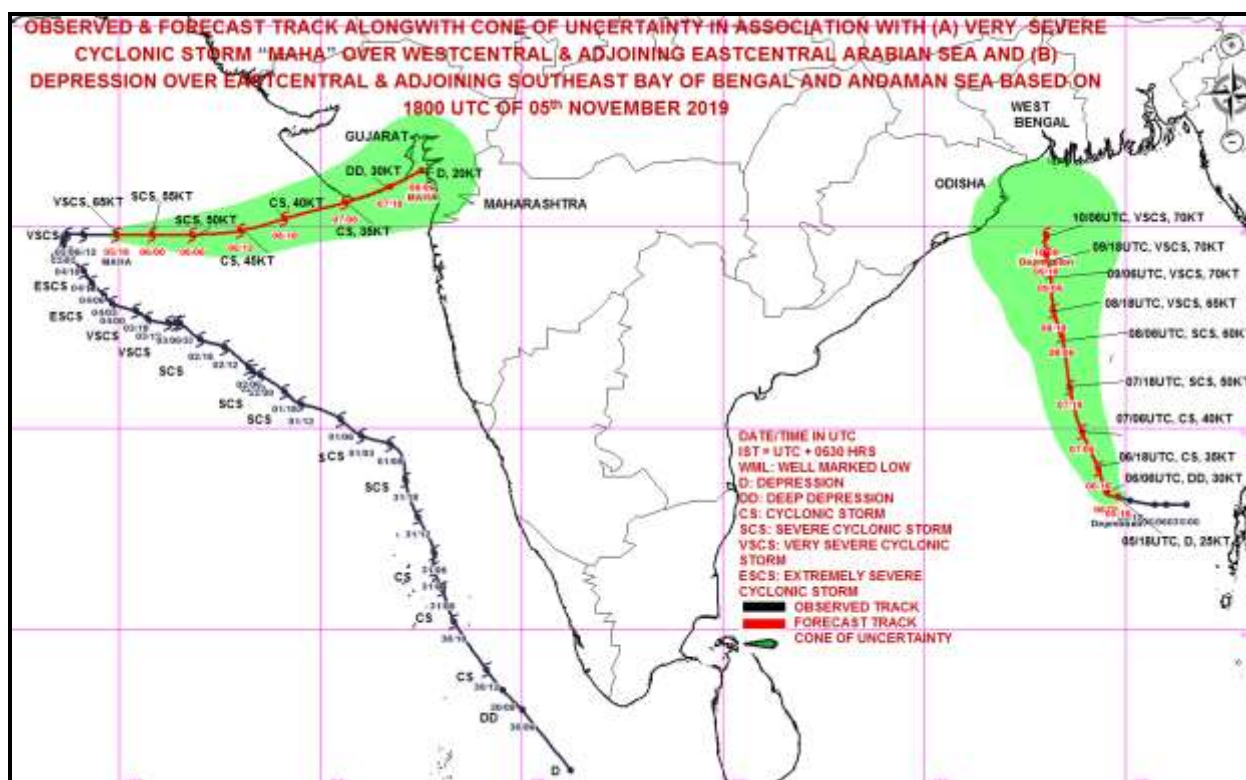
Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG
IMG_TIR1 10.8 um
LIC Mercator

05-11-2019/(2230 to 2256) GMT
06-11-2019/(0400 to 0426) IST



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 56 (ARB/04/2019) & BULLETIN NO. : 09 (BOB/04/2019)

TIME OF ISSUE: 0830 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE
(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 56 (ARB/04/2019)

(A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea: CYCLONE ALERT FOR GUJARAT COAST: YELLOW MESSAGE

The **Very Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining westcentral Arabian Sea moved eastwards with a speed of 15 kmph during past 06 hours, weakened into a **Severe Cyclonic Storm** and lay centered at 0530 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 65.8°E, about 450 km west-southwest of Porbandar (Gujarat), 490 km west-southwest of Veraval (Gujarat) and 540 km west-southwest of Diu. It is very likely to move east-northeastwards with further weakening. It is very likely to cross Gujarat coast around Diu as a Cyclonic Storm with a maximum sustained wind speed of 70-80 Kmph gusting to 90 Kmph around noon of 7th November, 2019.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0530	19.8/65.8	110-120 gusting to 130	Severe Cyclonic Storm
06.11.19/1130	19.8/67.0	100-110 gusting to 120	Severe Cyclonic Storm
06.11.19/1730	19.9/68.2	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/2330	20.1/69.3	80-90 gusting to 100	Cyclonic Storm
07.11.19/0530	20.5/70.4	80-90 gusting to 100	Cyclonic Storm
07.11.19/1730	20.9/71.6	60-70 gusting to 80	Cyclonic Storm
08.11.19/0530	21.2/72.7	50-60 gusting to 70	Deep Depression
08.11.19/1730	21.5/73.8	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, Rajkot**) on 6th & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Vadodara** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on 6th & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat, Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from 6th November afternoon. It is very likely to increase gradually becoming 70-80 Kmph gusting to 90 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli** districts and 60-70 kmph gusting to 80 kmph over **Bhavnagar, Bharuch, Anand, Ahmedabad, Botad, Porbandar**, districts, 50-60 kmph gusting to 70 kmph over Rajkot, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from 6th evening. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 110-120 kmph gusting to 135 kmph is prevailing over eastcentral and adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 70-80 kmph gusting 90 kmph on 7th November morning over northeast and adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November afternoon and becoming high from 7th November morning for the subsequent 12 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November evening for the subsequent 24 hours.
- **Arabian Sea:** Sea condition will be phenomenal over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be high thereafter for subsequent 24 hours. It will be very rough to very rough over westcentral and adjoining northwest Arabian Sea during next 12 hours.

(iv) Storm Surge

- Storm surge of about 0.5 – 1.0 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts around the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations till 7th November.
- The fishermen are advised not to venture into westcentral and adjoining northwest Arabian Sea during next 12 hours and over eastcentral & adjoining northeast Arabian Sea till 07th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 7th November.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Damage to thatched houses/ huts.
- Sea Water inundation over low laying areas after erosion of broken embankments

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Partial damage to power and communication lines due to breaking of tree branches.
- Major damage to Kutcha and some damage to Pucca roads.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees.
- Damage to coastal crops.

(vii) Action Suggested for Gujarat coast (Junagadh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Total suspension of fishing operations till 6th November.
- Movement in motor boats unsafe.

BULLETIN NO. : 09 (BOB/04/2019)

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

The Depression over eastcentral & adjoining southeast Bay of Bengal and North Andaman Sea moved west-northwestwards with a speed of 09 kmph, intensified into a **Deep Depression** and lay centred at 0530 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.4°N and Long. 89.3°E, about 390 km west-northwest of Maya Bandar (Andaman Islands), about 810 km south-southeast of Paradip (Odisha), 920 km south-southeast of Sagar Islands (West Bengal) and 960 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 24 hours. It is very likely to move west-northwestwards for some more time and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0530	13.4/89.3	50-60 gusting to 70	Deep Depression
06.11.19/1130	13.6/88.9	50-60 gusting to 70	Deep Depression
06.11.19/1730	14.0/88.6	60-70 gusting to 80	Cyclonic Storm
06.11.19/2330	14.6/88.4	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	15.3/88.2	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	16.6/88.0	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	17.6/87.9	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/1730	18.4/87.9	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/0530	19.1/87.9	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/1730	19.6/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	19.8/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/1730	20.0/88.2	110-120 gusting to 135	Severe Cyclonic Storm
11.11.19/0530	20.2/88.3	100-110 gusting to 120	Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 24 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central and adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 70-80 kmph gusting to 90 kmph by 7th November morning. It will gradually increase further becoming 120-130 kmph gusting to 145 kmph over northwest and adjoining central Bay of Bengal by 9th November evening.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central and adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 24 hours.

(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea and adjoining southeast Bay of Bengal during next 24 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral and adjoining northwest Bay of Bengal during 8th – 10th November.
- Fishermen are advised not to venture into north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

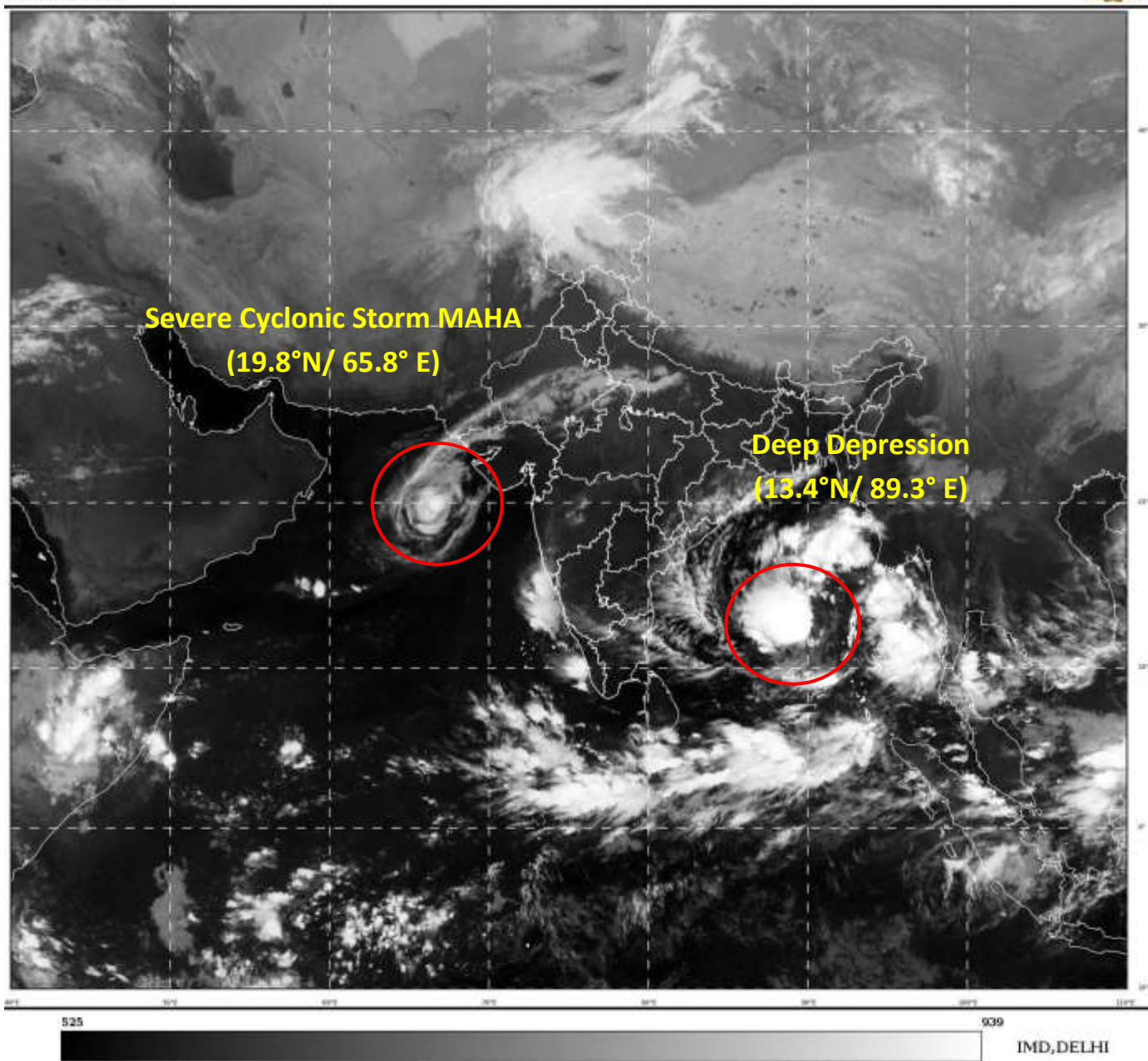
The next bulletin will be issued at 1130 hrs IST of 06th November, 2019.

**(Sunitha Devi.S)
Scientist-F, RSMC, New Delhi**

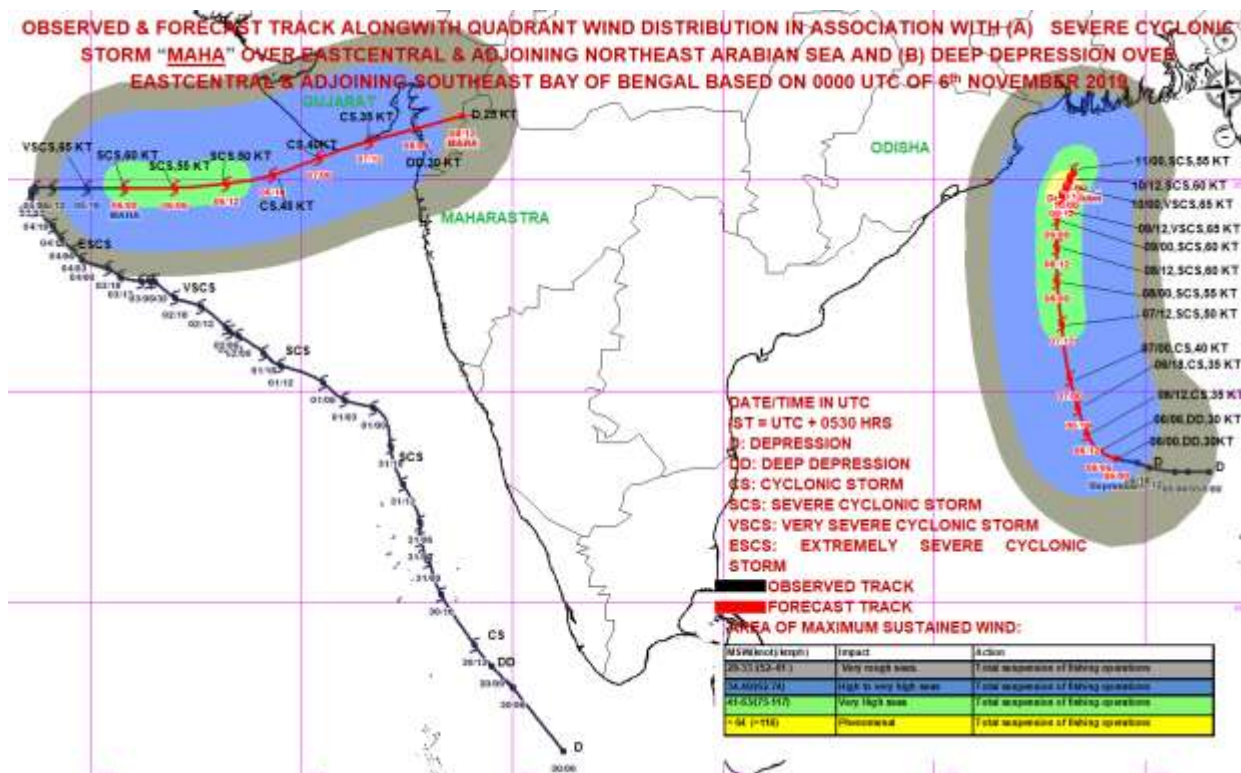
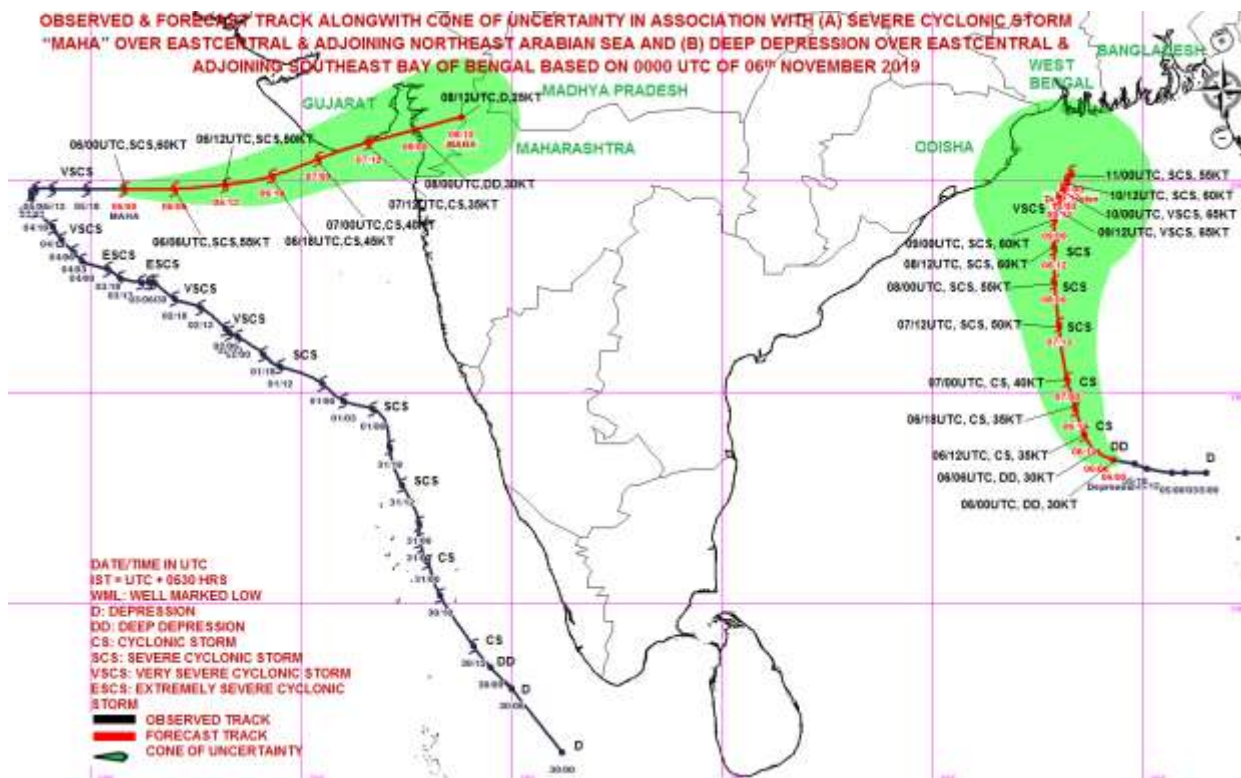
Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG
IMG_TIR1 10.8 um
LIC Mercator

06-11-2019/(0000 to 0026) GMT
06-11-2019/(0530 to 0556) IST



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO. : 57 (ARB/04/2019) & BULLETIN NO. : 10 (BOB/04/2019)

TIME OF ISSUE: 1210 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 57 (ARB/04/2019)

(A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The **Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea continued to move eastwards with a speed of 14 kmph during past 06 hours and lay centered at 0830 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 66.3°E, about 400 km west-southwest of Porbandar (Gujarat), 440 km west-southwest of Veraval (Gujarat) and 490 km west-southwest of Diu. It is very likely to move nearly eastwards, weaken into a Cyclonic Storm by today, the 6th November evening. Thereafter it is likely to move east-northeastwards, weaken further into a Deep Depression by early morning of tomorrow, the 7th November over northeast and adjoining eastcentral Arabian Sea. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it would further weaken into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0830	19.8/66.3	100-110 gusting to 125	Severe Cyclonic Storm
06.11.19/1130	19.7/67.0	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	19.7/68.2	75-85 gusting to 95	Cyclonic Storm
06.11.19/2330	19.9/69.3	65-75 gusting to 85	Cyclonic Storm
07.11.19/0530	20.1/69.7	55-65 gusting to 75	Deep Depression
07.11.19/1730	20.3/71.6	40-50 gusting to 60	Depression
08.11.19/0530	20.6/72.6	25-35 gusting to 45	Well Marked Low

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar, and Rajkot**) on today, the 6th November & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at most places with isolated heavy falls very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on today, the 6th November & northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat : Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from today, the 6th November afternoon. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from today, the 6th evening. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 100-110 kmph gusting to 125 kmph is prevailing over eastcentral and adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 55-65 kmph gusting 75 kmph on 7th November morning over northeast and adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November afternoon for subsequent 24 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November evening for the subsequent 24 hours.
- **Arabian Sea:** Sea condition will be phenomenal over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be high thereafter for subsequent 12 hours. It will be very rough to very rough over westcentral and adjoining northwest Arabian Sea during next 6 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into westcentral and adjoining northwest Arabian Sea during next 12 hours and over eastcentral & adjoining northeast Arabian Sea till 08th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Minor damage to loose / unsecured structures.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Some breaches in Kutcha road due to flooding.
- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

BULLETIN NO. : 10 (BOB/04/2019)

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal westwards with a speed of 04 kmph, and lay centred at 0830 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.4°N and Long. 89.3°E, about 390 km west-northwest of Maya Bandar (Andaman Islands), about 810 km south-southeast of Paradip (Odisha), 920 km south-southeast of Sagar Islands (West Bengal) and 960 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 24 hours. It is very likely to move west-northwestwards for some more time and then north-northwestwards, towards West Bengal & adjoining north Odisha and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/0830	13.4/89.3	50-60 gusting to 70	Deep Depression
06.11.19/1130	13.5/88.9	50-60 gusting to 70	Deep Depression
06.11.19/1730	13.8/88.6	60-70 gusting to 80	Cyclonic Storm
06.11.19/2330	14.6/88.4	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	15.3/88.2	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	16.6/88.0	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	17.6/87.9	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/1730	18.4/87.9	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/0530	19.1/87.9	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/1730	19.6/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	19.8/88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/1730	20.0/88.2	110-120 gusting to 135	Severe Cyclonic Storm
11.11.19/0530	20.2/88.3	100-110 gusting to 120	Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 24 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central and adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 70-80 kmph gusting to 90 kmph by 7th November morning. It will gradually increase further becoming 120-130 kmph gusting to 145 kmph over northwest and adjoining central Bay of Bengal by 9th November evening.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central and adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 24 hours.

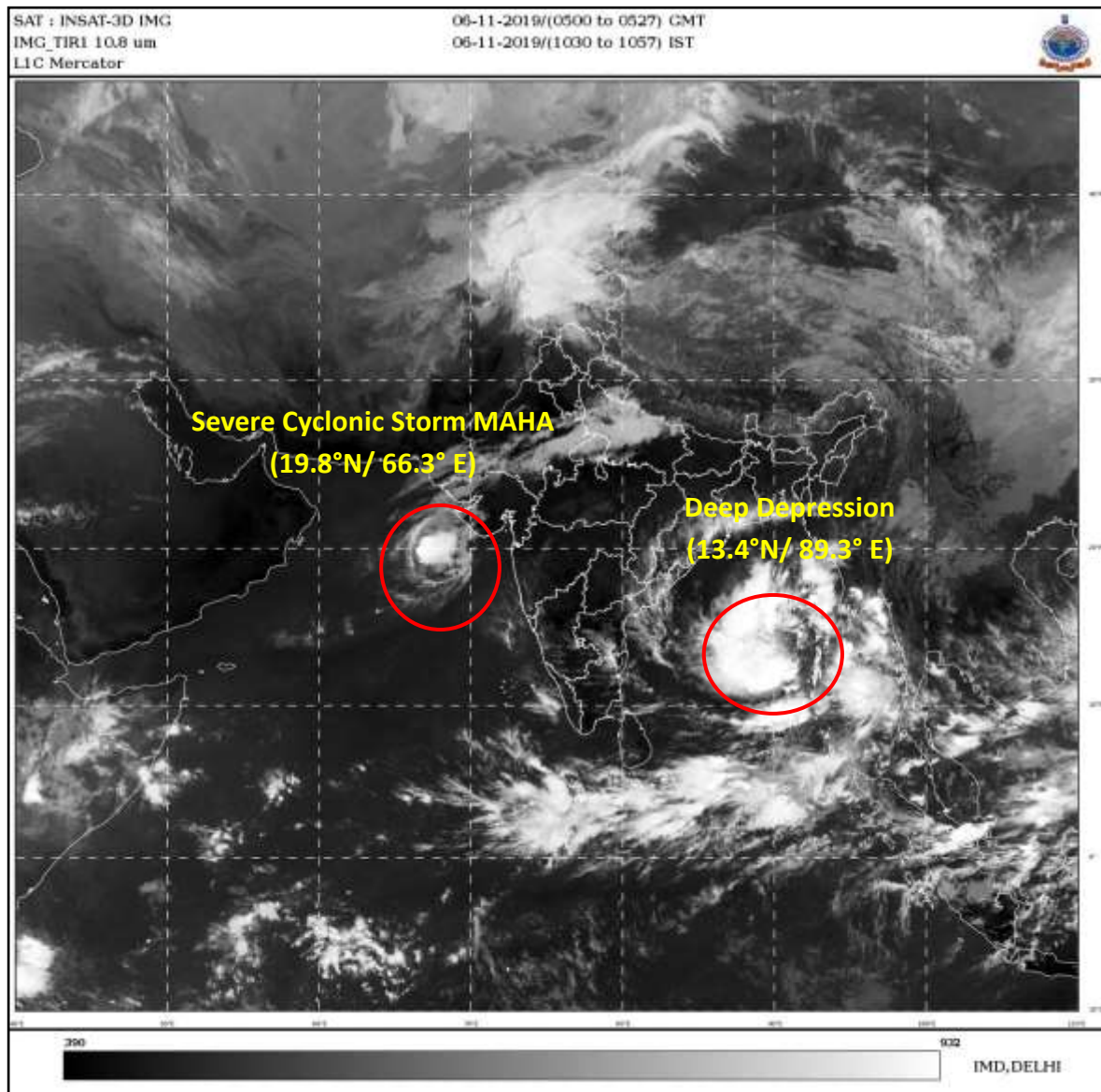
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea and adjoining southeast Bay of Bengal during next 24 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral and adjoining northwest Bay of Bengal during 8th – 10th November.
- Fishermen are advised not to venture into north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 1430 hrs IST of 06th November, 2019.

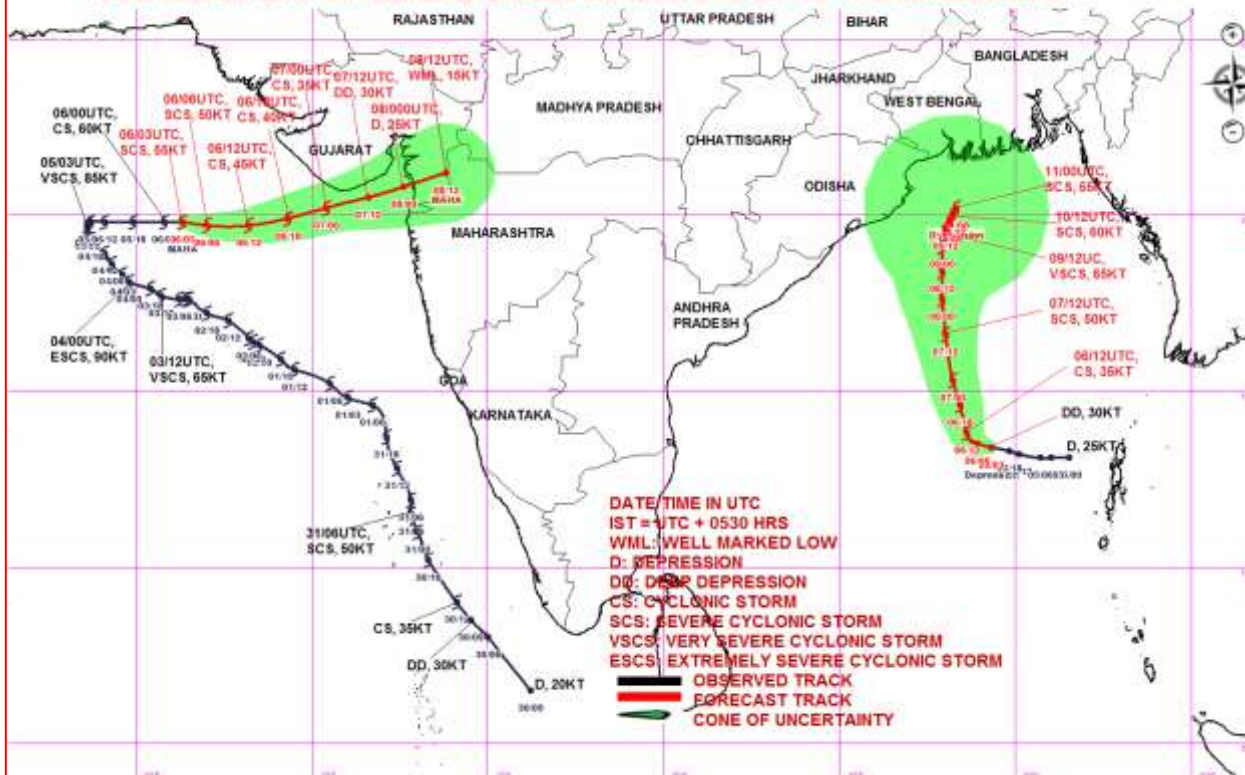
**(Sunitha Devi. S)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

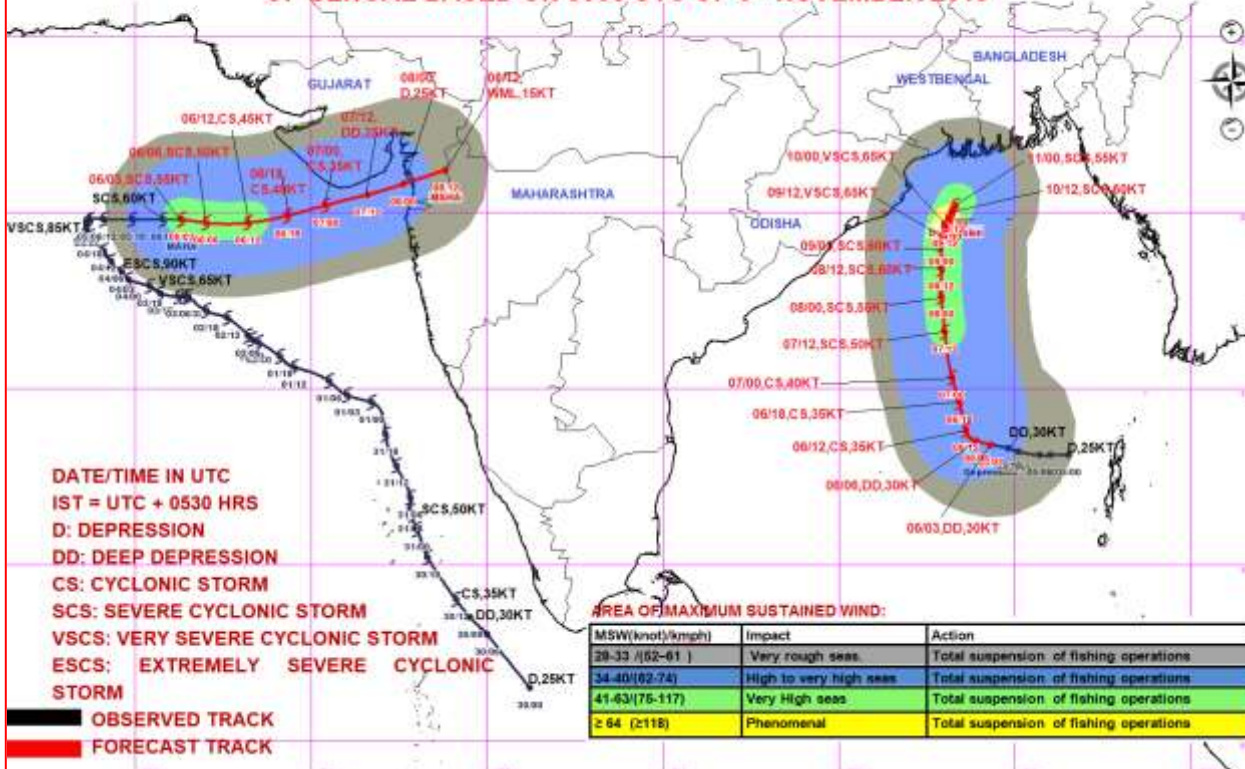


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL BASED ON 0300 UTC OF 06th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY OF BENGAL BASED ON 0300 UTC OF 6th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 58 (ARB/04/2019) & BULLETIN NO.: 11 (BOB/04/2019)

TIME OF ISSUE: 1500 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea
(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 58 (ARB/04/2019)

(A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The **Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved east-northeastwards with a speed of 12 kmph during past 06 hours and lay centered at 1130 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.7°N and longitude 66.5°E, about 390 km west-southwest of Porbandar (Gujarat), 420 km west-southwest of Veraval (Gujarat) and 470 km west-southwest of Diu. It is very likely to move nearly eastwards, weaken into a Cyclonic Storm by today, the 6th November evening. Thereafter it is likely to move east-northeastwards, weaken further into a Deep Depression by morning of tomorrow, the 7th November over northeast and adjoining eastcentral Arabian Sea. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it would further weaken into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1130	19.7/66.5	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	19.7/68.0	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	19.9/69.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	20.2/70.4	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	20.4/71.2	55-65 gusting to 75	Deep Depression
07.11.19/2330	20.6/72.1	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar, and Rajkot**) on today, the 6th November & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at a few places very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on today, the 6th November and at many places over northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat : Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from today, the 6th November afternoon. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from today, the 6th evening. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 90-100 kmph gusting to 115 kmph is prevailing over eastcentral and adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast and adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November afternoon for subsequent 24 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November evening for the subsequent 24 hours.
- **Arabian Sea:** Sea condition will be phenomenal over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be high thereafter for subsequent 12 hours. It will be very rough to very rough over westcentral and adjoining northwest Arabian Sea during next 6 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into westcentral and adjoining northwest Arabian Sea during next 12 hours and over eastcentral & adjoining northeast Arabian Sea till 08th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road due to flooding.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

BULLETIN NO. : 11 (BOB/04/2019)

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal remained practically stationary and lay centred at 1130 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.4°N and Long. 89.3°E, about 390 km west-northwest of Maya Bandar (Andaman Islands), about 810 km south-southeast of Paradip (Odisha), 920 km south-southeast of Sagar Islands (West Bengal) and 960 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 24 hours and into a Severe Cyclonic Storm during the subsequent 24 hours. It is very likely to move northwestwards for some time and then north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1130	13.4/89.3	50-60 gusting to 70	Deep Depression
06.11.19/1730	13.7/88.9	60-70 gusting to 80	Cyclonic Storm
06.11.19/2330	14.2/88.6	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	14.7/88.3	80-90 gusting to 100	Cyclonic Storm
07.11.19/1130	15.2/88.1	90-100 gusting to 110	Severe Cyclonic Storm
07.11.19/2330	16.7/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
08.11.19/1130	17.5/87.9	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/2330	18.6/87.9	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1130	18.6/87.9	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	20.4/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/1130	20.8/88.1	115-125 gusting to 140	Very Severe Cyclonic Storm
10.11.19/2330	21.1/88.3	105-115 gusting to 125	Severe Cyclonic Storm
11.11.19/1130	21.2/88.5	95-105 gusting to 115	Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 24 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central and adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further becoming 130-140 kmph gusting to 145 kmph over northwest and adjoining central Bay of Bengal by 8th November forenoon.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central and adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 24 hours.

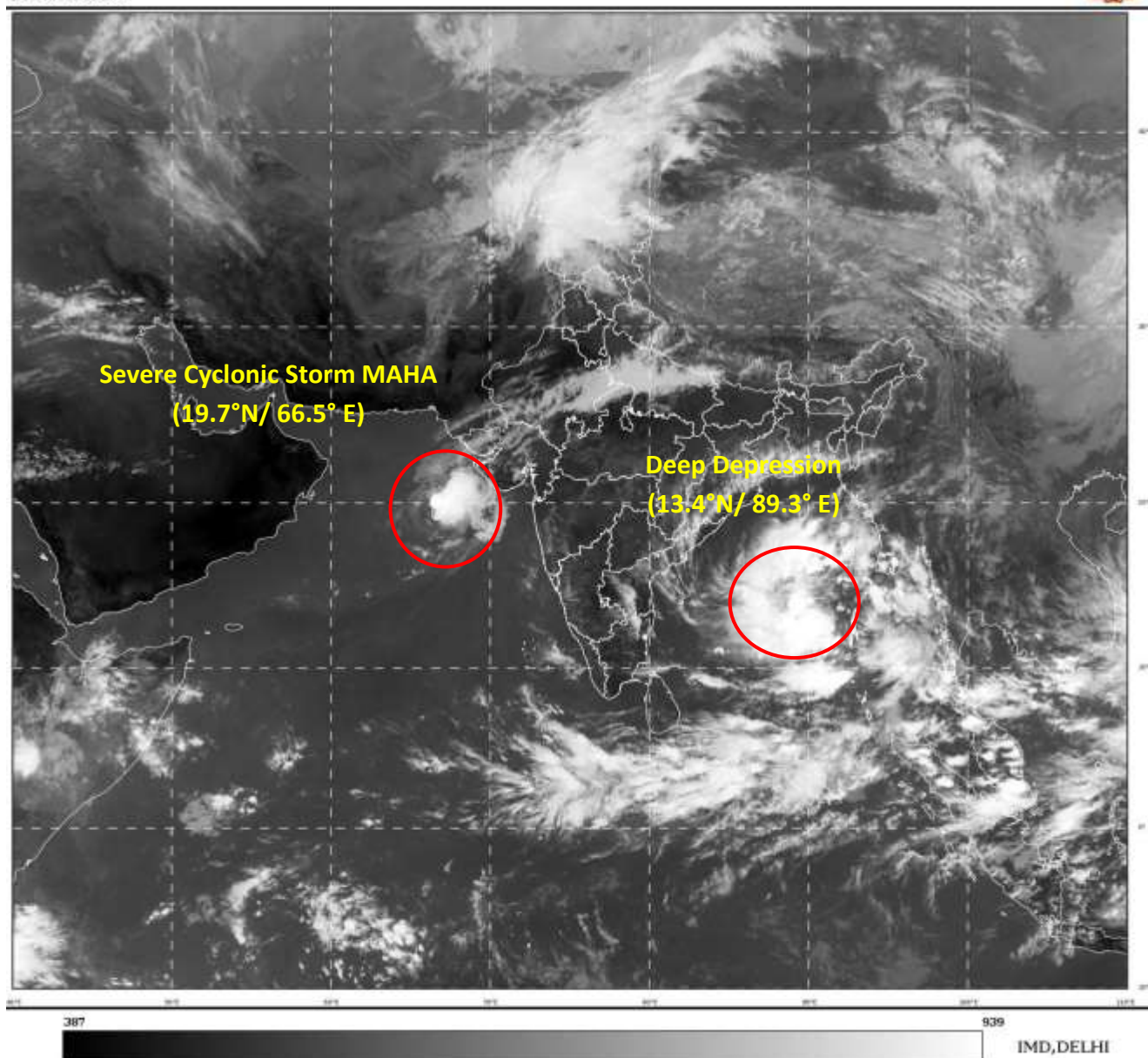
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea and adjoining southeast Bay of Bengal during next 24 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral and adjoining northwest Bay of Bengal during 8th – 10th November.
- Fishermen are advised not to venture into north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 1730 hrs IST of 06th November, 2019.

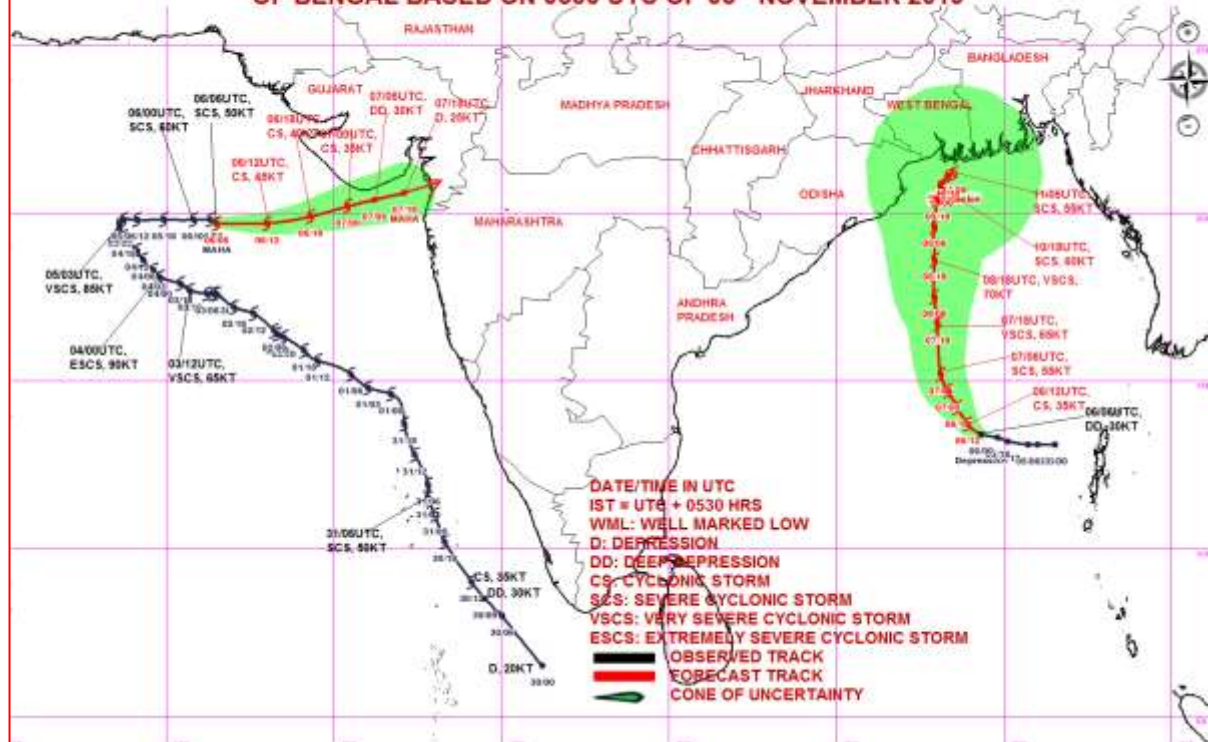
**(Sunitha Devi. S)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

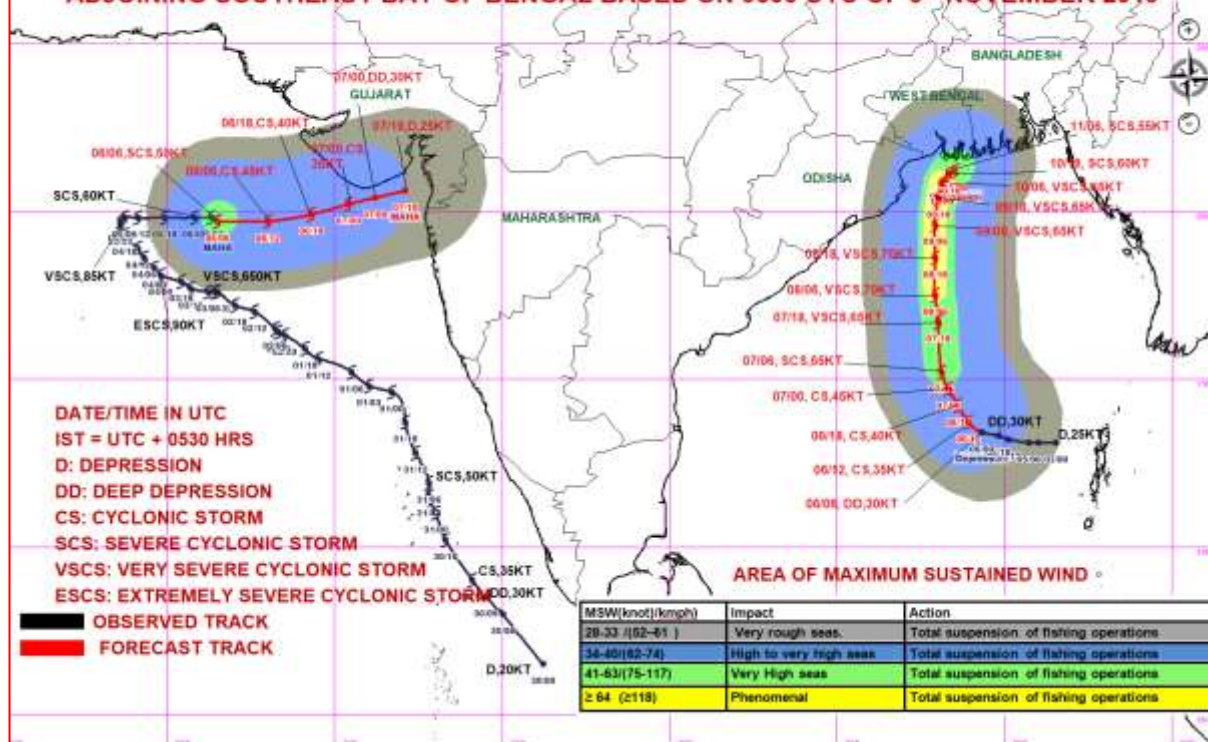


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

**OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH
(A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING NORTHEAST
ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY
OF BENGAL BASED ON 0600 UTC OF 06th NOVEMBER 2019**



**OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN
ASSOCIATION WITH (A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL &
ADJOINING NORTHEAST ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL &
ADJOINING SOUTHEAST BAY OF BENGAL BASED ON 06th NOVEMBER 2019**



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 59 (ARB/04/2019) & BULLETIN NO.: 12 (BOB/04/2019)

TIME OF ISSUE: 1715 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea
(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 59 (ARB/04/2019)

(A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The **Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved nearly eastwards with a speed of 14 kmph during past 06 hours and lay centered at 1430 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.6°N and longitude 67.1°E, about 350 km west-southwest of Porbandar (Gujarat), 370 km west-southwest of Veraval (Gujarat) and 420 km west-southwest of Diu. It is very likely to move nearly eastwards, weaken into a Cyclonic Storm during next 12 hours. Thereafter it is likely to move east-northeastwards, weaken further into a Deep Depression by morning of tomorrow, the 7th November over northeast and adjoining eastcentral Arabian Sea. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it would further weaken into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1430	19.6/67.1	90-100 gusting to 110	Severe Cyclonic Storm
06.11.19/1730	19.7/68.0	85-95 gusting to 105	Cyclonic Storm
06.11.19/2330	19.9/69.3	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	20.2/70.4	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	20.4/71.2	55-65 gusting to 75	Deep Depression
07.11.19/2330	20.6/72.1	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar, and Rajkot**) on today, the 6th November & isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** on 7th November, 2019.
- **Maharashtra:** Light to moderate rainfall at a few places very likely over Madhya Maharashtra and north Konkan (Palghar & Thane districts) on today, the 6th November and at many places over northern most districts of Madhya Maharashtra on 7th November, 2019.

(ii) Wind warning

- **Gujarat : Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to commence over northeast Arabian Sea along & off Gujarat coast from today, evening. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast from today, the 6th evening. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 90-100 kmph gusting to 115 kmph is prevailing over eastcentral and adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast and adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast from 6th November evening for subsequent 24 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast from 06th November evening for the subsequent 24 hours.
- **Arabian Sea:** Sea condition will be phenomenal over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be high thereafter for subsequent 12 hours. It will be very rough to very rough over westcentral and adjoining northwest Arabian Sea during next 6 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into westcentral and adjoining northwest Arabian Sea during next 06 hours and over eastcentral & adjoining northeast Arabian Sea till 08th November.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November.

(vi) Damage Expected over coastal districts of Gujarat (**Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar**) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road due to flooding.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

BULLETIN NO. : 12 (BOB/04/2019)

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal remained practically stationary and lay centred at 1430 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.4°N and Long. 89.3°E, about 390 km west-northwest of Maya Bandar (Andaman Islands), about 810 km south-southeast of Paradip (Odisha), 920 km south-southeast of Sagar Islands (West Bengal) and 960 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 12 hours and into a Severe Cyclonic Storm during the subsequent 24 hours. It is very likely to move northwestwards for some time and then north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1430	13.4/89.3	50-60 gusting to 70	Deep Depression
06.11.19/1730	13.7/88.9	60-70 gusting to 80	Cyclonic Storm
06.11.19/2330	14.2/88.6	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	14.7/88.3	80-90 gusting to 100	Cyclonic Storm
07.11.19/1130	15.2/88.1	90-100 gusting to 110	Severe Cyclonic Storm
07.11.19/2330	16.7/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
08.11.19/1130	17.5/87.9	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/2330	18.6/87.9	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1130	18.6/87.9	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	20.4/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/1130	20.8/88.1	115-125 gusting to 140	Very Severe Cyclonic Storm
10.11.19/2330	21.1/88.3	105-115 gusting to 125	Severe Cyclonic Storm
11.11.19/1130	21.2/88.5	95-105 gusting to 115	Severe Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 24 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central and adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 80-90 kmph gusting to 100 kmph by 7th November morning. It will gradually increase further becoming 130-140 kmph gusting to 145 kmph over northwest and adjoining central Bay of Bengal by 8th November forenoon.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

- Sea condition will be very rough to High over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central and adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 24 hours.

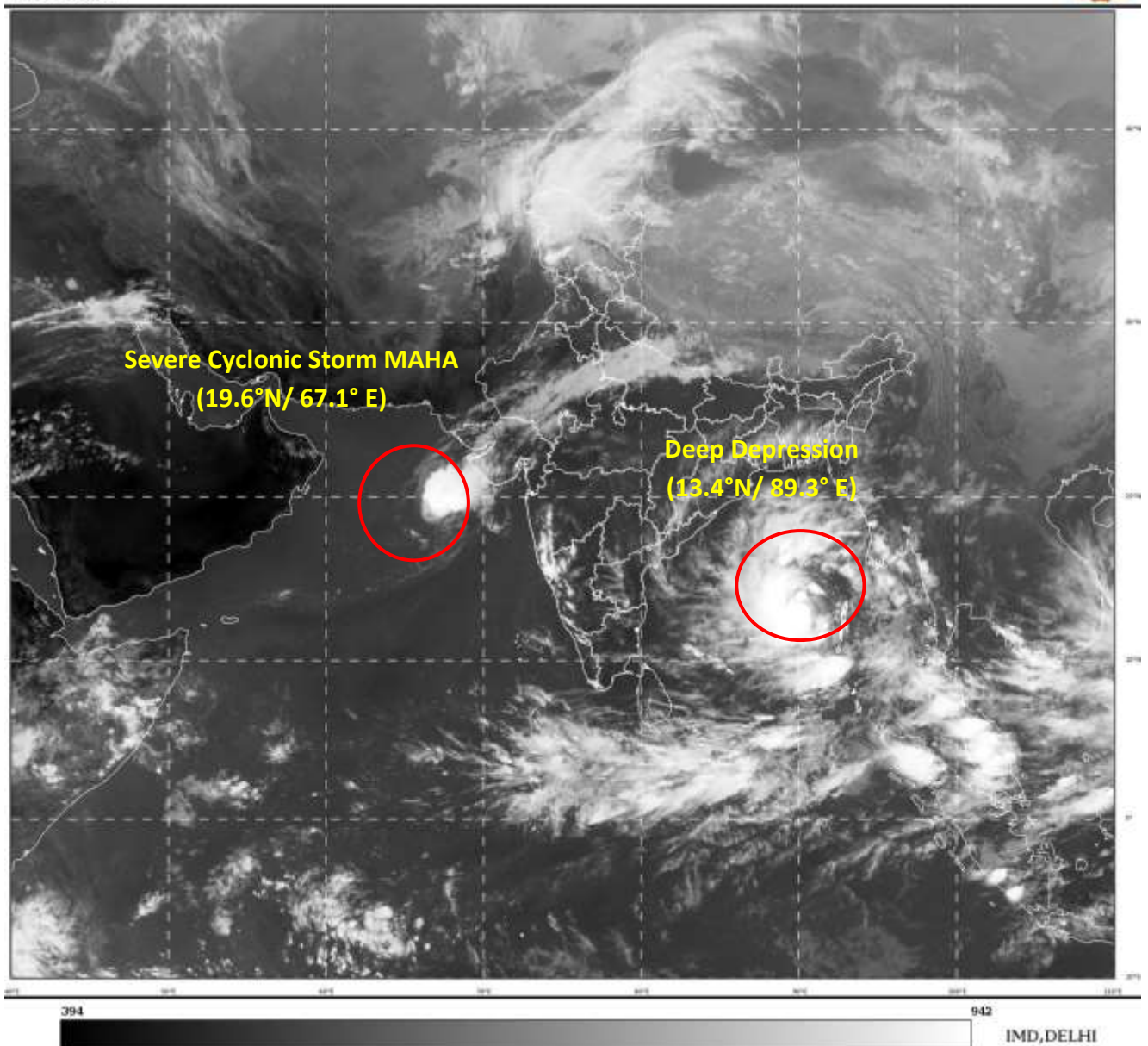
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea and adjoining southeast Bay of Bengal during next 24 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral and adjoining northwest Bay of Bengal during 8th – 10th November.
- Fishermen are advised not to venture into north Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

The next bulletin will be issued at 2030 hrs IST of 06th November, 2019.

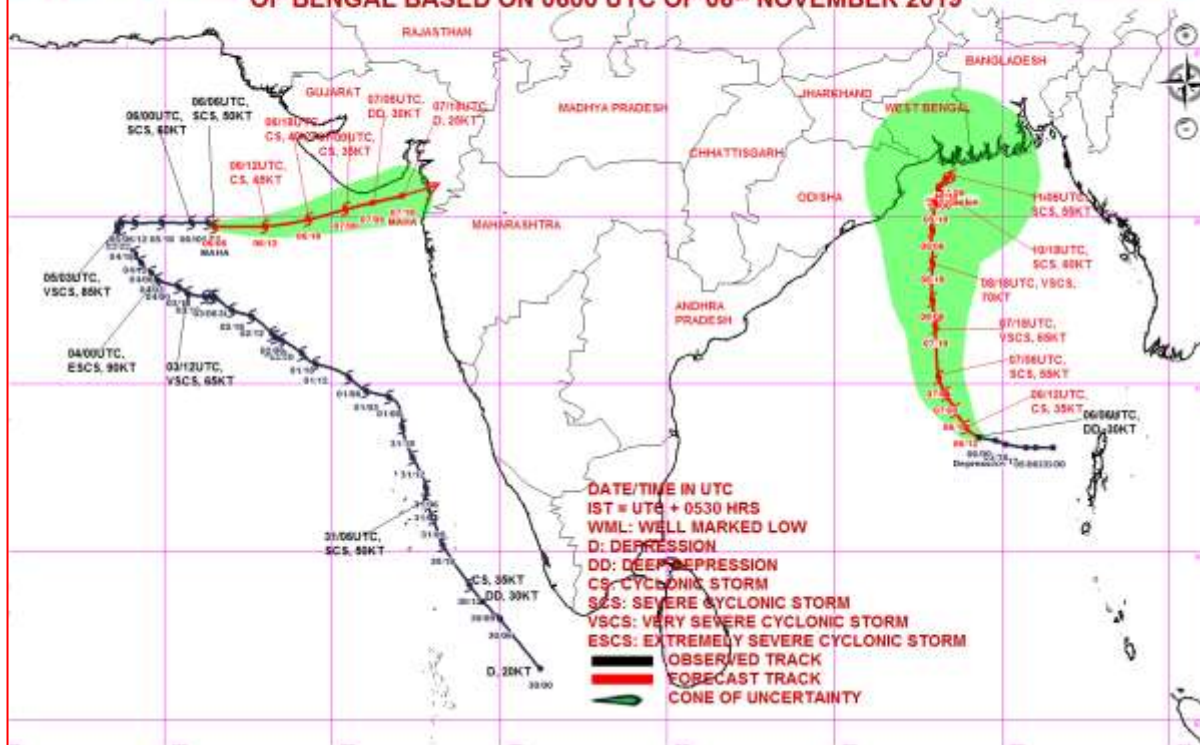
**(Sunitha Devi. S)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

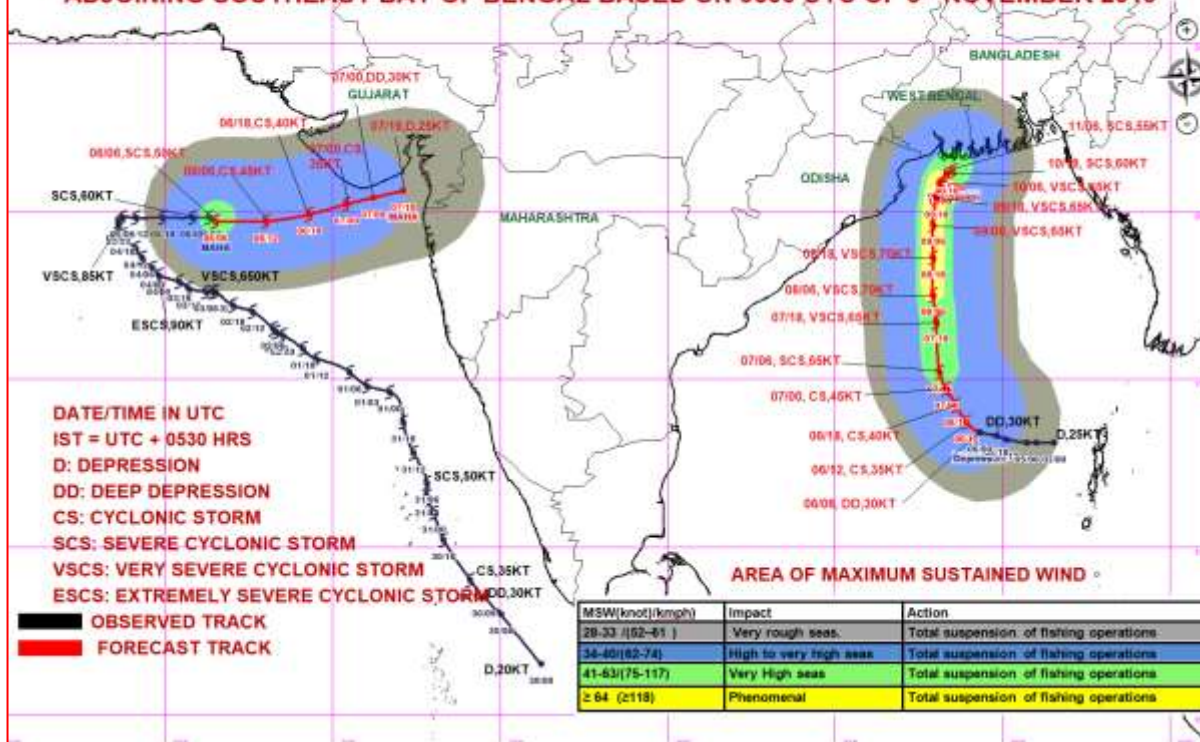


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

**OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH
(A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL & ADJOINING NORTHEAST
ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL & ADJOINING SOUTHEAST BAY
OF BENGAL BASED ON 0600 UTC OF 06th NOVEMBER 2019**



**OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN
ASSOCIATION WITH (A) SEVERE CYCLONIC STORM "MAHA" OVER EASTCENTRAL &
ADJOINING NORTHEAST ARABIAN SEA AND (B) DEEP DEPRESSION OVER EASTCENTRAL &
ADJOINING SOUTHEAST BAY OF BENGAL BASED ON 06th NOVEMBER 2019**



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 60 (ARB/04/2019) & BULLETIN NO.: 13 (BOB/04/2019)

TIME OF ISSUE: 2145 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
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CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) weakened into a Cyclonic Storm over eastcentral & adjoining northeast Arabian Sea
(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 60 (ARB/04/2019)

(A) Severe Cyclonic Storm 'MAHA' (Pronounced as M'maha) weakened into a Cyclonic Storm over eastcentral & adjoining northeast Arabian Sea

The **Severe Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved eastwards with a speed of 21 kmph during past 06 hours, weakened into a Cyclonic Storm and lay centered at 1730 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.7°N and longitude 67.7°E, about 300 km southwest of Porbandar (Gujarat), 310 km west-southwest of Veraval (Gujarat) and 350 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken further into a Deep Depression by morning of tomorrow, the 7th November over northeast & adjoining eastcentral Arabian Sea. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it is very likely to weaken further into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1730	19.7/67.7	80-90 gusting to 100	Cyclonic Storm
06.11.19/2330	19.8/68.8	70-80 gusting to 90	Cyclonic Storm
07.11.19/0530	19.9/69.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	20.0/70.4	55-65 gusting to 75	Deep Depression
07.11.19/1730	20.2/71.2	45-55 gusting to 65	Depression
08.11.19/0530	20.4/72.2	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar and Rajkot**) during next 24 hours and isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** during subsequent 12 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Madhya Maharashtra (Palghar & Thane districts) during next 36 hours.

(ii) Wind warning

- **Gujarat : Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off Gujarat coast. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 80-90 kmph gusting to 100 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 36 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 36 hours.
- **Arabian Sea:** Sea condition will be high over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be very rough thereafter for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea till 08th November morning.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November morning.

(vi) Damage Expected over coastal districts of Gujarat (Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road.
- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal moved slightly northwards with a speed of 02 kmph during past 06 hours and lay centred at 1730 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.5°N and Long. 89.3°E, about 400 km west-northwest of Maya Bandar (Andaman Islands), about 810 km south-southeast of Paradip (Odisha), 920 km south-southeast of Sagar Islands (West Bengal) and 950 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 12 hours and into a Severe Cyclonic Storm during the subsequent 24 hours. It is very likely to move northwestwards for some time and then north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/1730	13.5/89.3	50-60 gusting to 80	Deep Depression
06.11.19/2330	13.8/88.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	14.3/88.4	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	15.2/88.1	80-90 gusting to 100	Cyclonic Storm
07.11.19/1730	16.0/88.0	90-100 gusting to 110	Severe Cyclonic Storm
08.11.19/0530	17.4/87.9	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/1730	18.8/87.9	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	20.0/87.9	130-140 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1730	20.6/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	20.9/88.1	115-125 gusting to 140	Very Severe Cyclonic Storm
10.11.19/1730	21.1/88.2	110-120 gusting to 130	Severe Cyclonic Storm
11.11.19/0530	21.2/88.4	105-115 gusting to 125	Severe Cyclonic Storm
11.11.19/1730	21.2/88.6	100-110 gusting to 120	Severe Cyclonic Storm

Warnings:**(i) Rainfall:**

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 12 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central & adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 70-80 kmph gusting to 90 kmph by 7th November morning. It will gradually increase further becoming 130-140 kmph gusting to 145 kmph over northwest & adjoining westcentral Bay of Bengal by 9th November morning.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

(iii) Sea condition

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Sea condition will be very rough to high over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central & adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 12 hours.

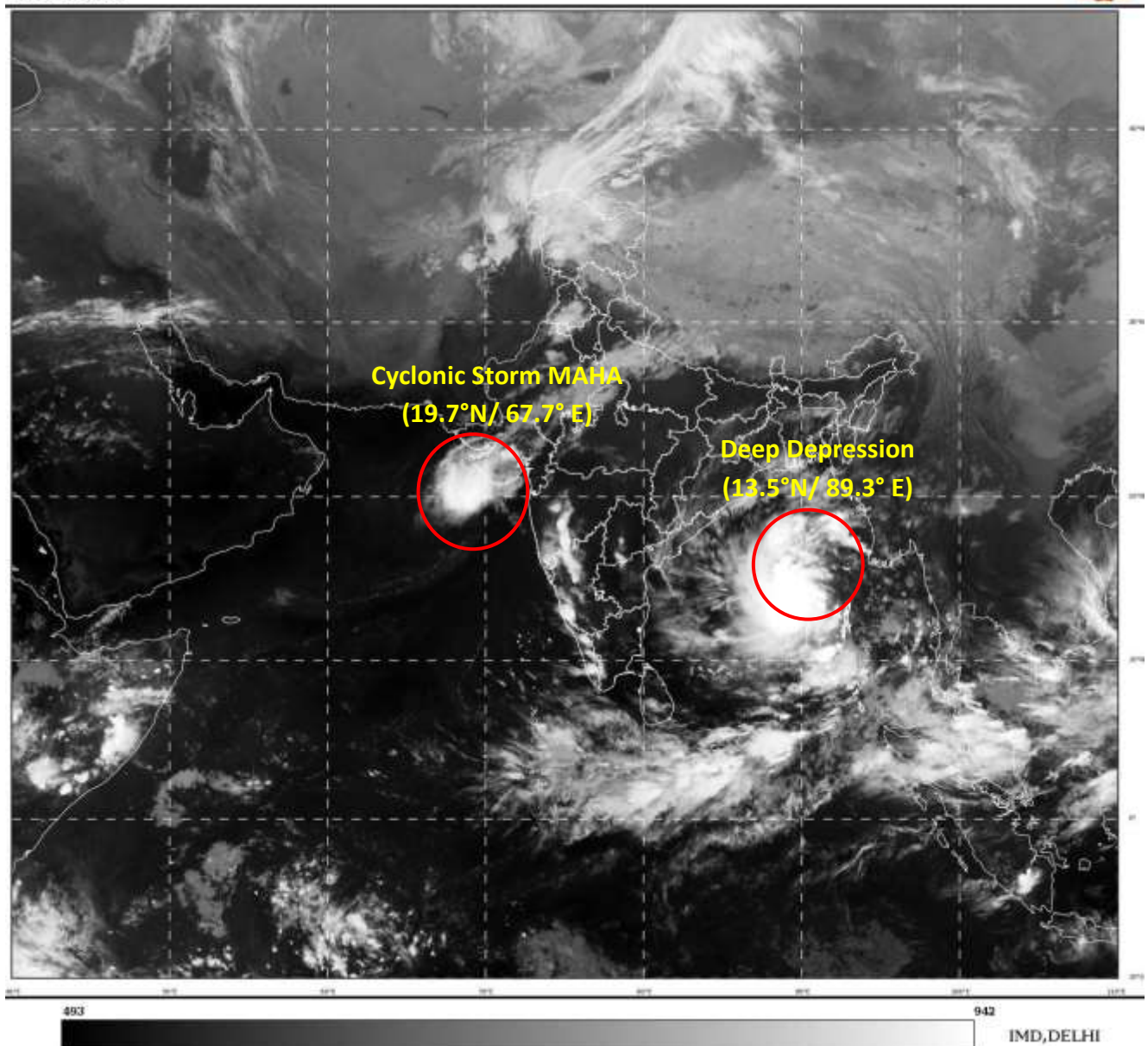
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea & adjoining southeast Bay of Bengal during next 12 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining north Bay of Bengal during 8th – 11th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

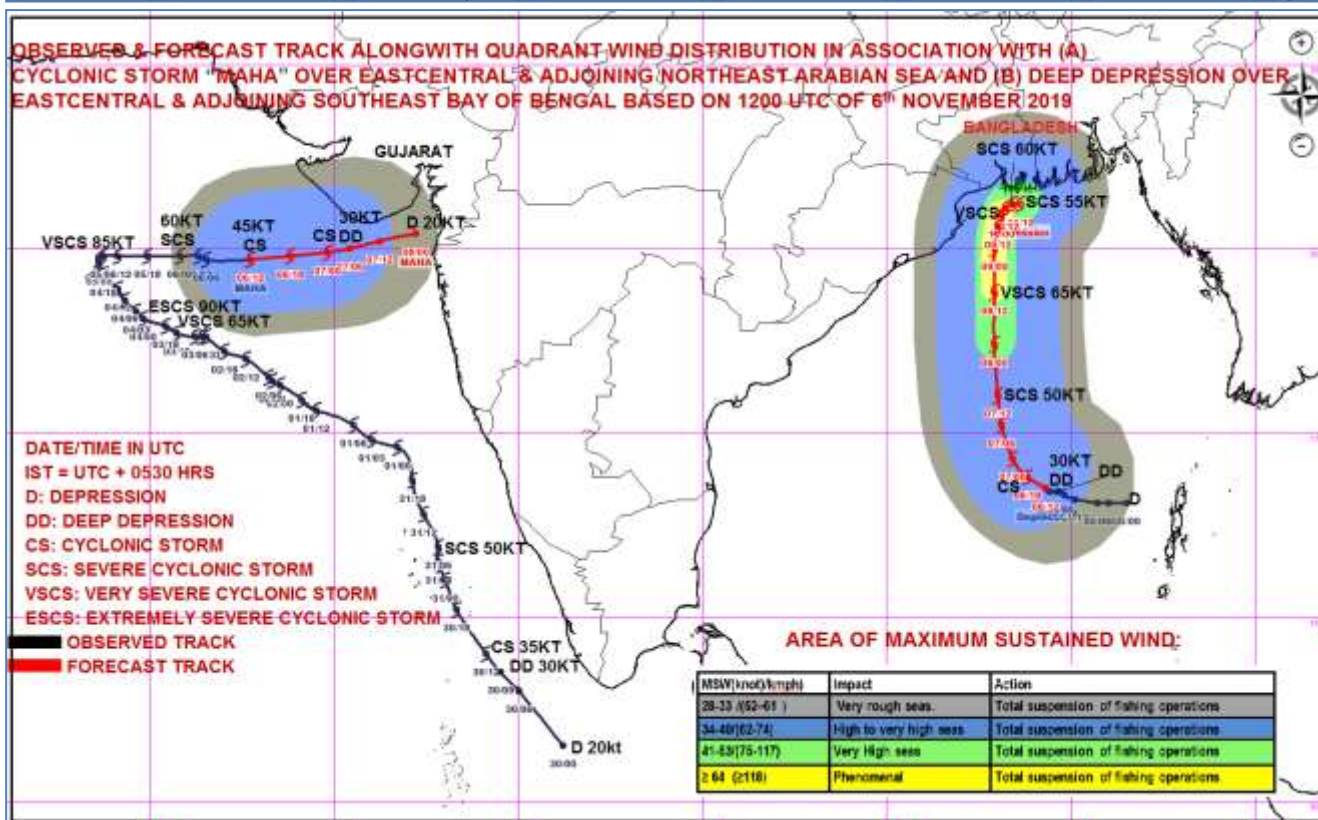
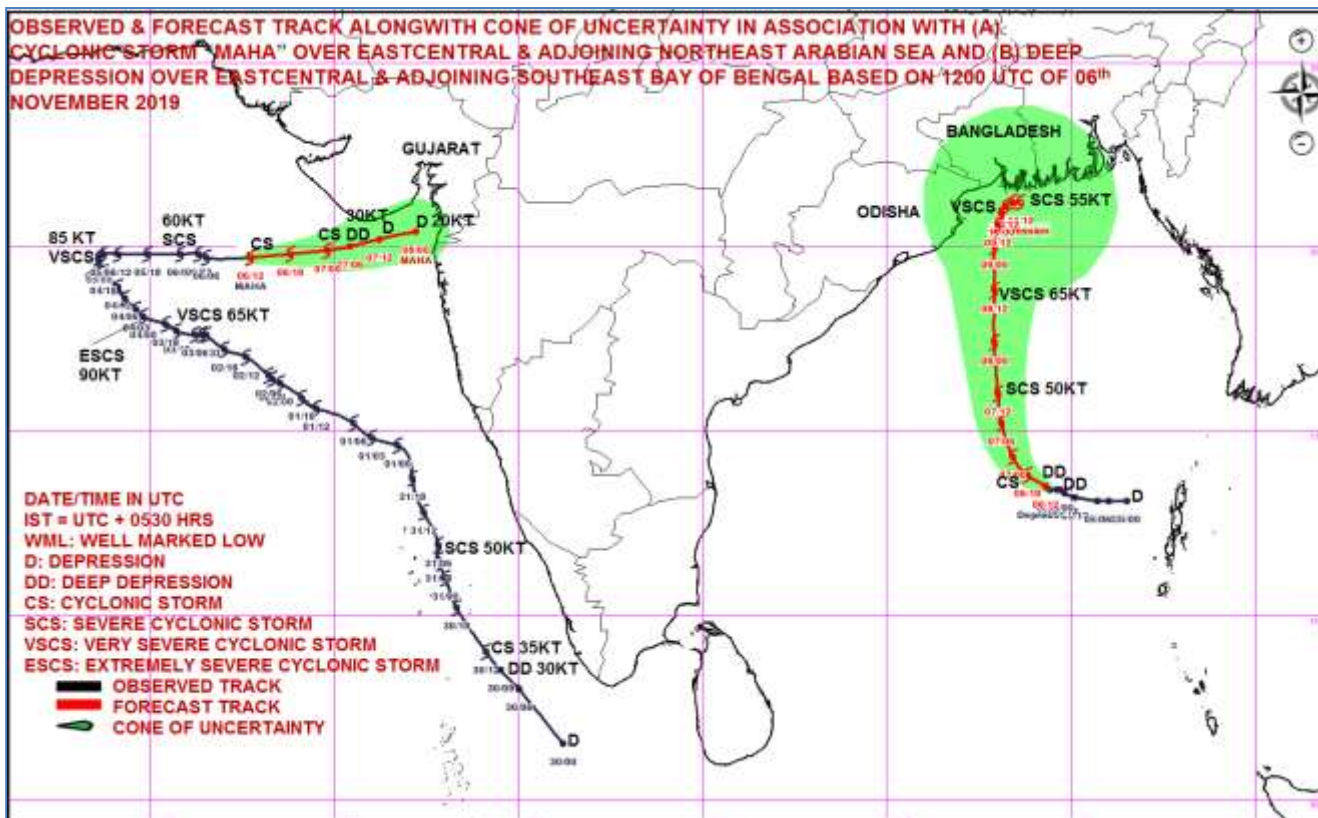
The next bulletin will be issued at 2330 hrs IST of 06th November, 2019.

(Naresh Kumar)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 61 (ARB/04/2019) & BULLETIN NO.: 14 (BOB/04/2019)

TIME OF ISSUE: 2245 HOURS IST

DATED: 06.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 61 (ARB/04/2019)

(A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The **Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved east-northeastwards with a speed of 21 kmph during past 06 hours, and lay centered at 2030 hrs IST of today, the 06th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 68.3°E, about 250 km southwest of Porbandar (Gujarat), 250 km west-southwest of Veraval (Gujarat) and 290 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken further into a Deep Depression by morning of tomorrow, the 7th November over northeast & adjoining eastcentral Arabian Sea. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it is very likely to weaken further into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/2030	19.8/68.3	70-80 gusting to 90	Cyclonic Storm
06.11.19/2330	19.8/68.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	19.9/69.8	55-65 gusting to 75	Deep Depression
07.11.19/1130	20.0/70.4	50-60 gusting to 70	Deep Depression
07.11.19/1730	20.2/71.2	45-55 gusting to 65	Depression
08.11.19/0530	20.4/72.2	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar and Rajkot**) during next 24 hours and isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** during subsequent 12 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Madhya Maharashtra (Palghar & Thane districts) during next 36 hours.

(ii) Wind warning

- **Gujarat : Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off Gujarat coast. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 80-90 kmph gusting to 100 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 36 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 36 hours.
- **Arabian Sea:** Sea condition will be high over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be very rough thereafter for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea till 08th November morning.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November morning.

(vi) Damage Expected over coastal districts of Gujarat (Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road.
- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

BULLETIN NO. : 14 (BOB/04/2019)**(B) Deep Depression over eastcentral & adjoining southeast Bay of Bengal.**

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal moved slightly northwards with a speed of 05 kmph during past 06 hours and lay centred at 2030 hrs IST of today, the 6th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.7°N and Long. 89.3°E, about 400 km west-northwest of Maya Bandar (Andaman Islands), about 780 km south-southeast of Paradip (Odisha), 940 km south-southeast of Sagar Islands (West Bengal) and 920 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Cyclonic Storm during next 06 hours and into a Severe Cyclonic Storm during the subsequent 24 hours. It is very likely to move northwestwards for some time and then north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/2330	13.8/89.3	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	14.4/89.1	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	15.2/88.8	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.9/88.5	75-85 gusting to 95	Cyclonic Storm
07.11.19/2330	16.4/88.3	85-95 gusting to 105	Severe Cyclonic Storm
08.11.19/1130	17.8/88.0	95-105 gusting to 115	Severe Cyclonic Storm
08.11.19/2330	19.1/87.9	105-115 gusting to 125	Severe Cyclonic Storm
09.11.19/1130	20.0/88.0	115-125 gusting to 140	Very Severe Cyclonic Storm
09.11.19/2330	20.6/88.1	105-115 gusting to 125	Severe Cyclonic Storm
10.11.19/1130	21.9/88.3	95-105 gusting to 115	Severe Cyclonic Storm
10.11.19/2330	21.1/88.6	85-95 gusting to 105	Severe Cyclonic Storm
11.11.19/1130	21.2/88.8	75-85 gusting to 95	Cyclonic Storm
11.11.19/2330	21.3/89.2	70-80 gusting to 90	Cyclonic Storm

Warnings:**(i) Rainfall:**

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 12 hours.
- **Bay of Bengal:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over east central & adjoining southeast Bay of Bengal around the system centre. It will become gale wind speed reaching 70-80 kmph gusting to 90 kmph by 7th November morning. It will gradually increase further becoming 130-140 kmph gusting to 145 kmph over northwest & adjoining westcentral Bay of Bengal by 9th November morning.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iii) Sea condition

- Sea condition will be very rough to high over eastcentral Bay of Bengal till 7th November evening and become very high to phenomenal thereafter over central & adjoining northwest Bay of Bengal.
- Sea condition will be rough over north Andaman Sea during next 12 hours.

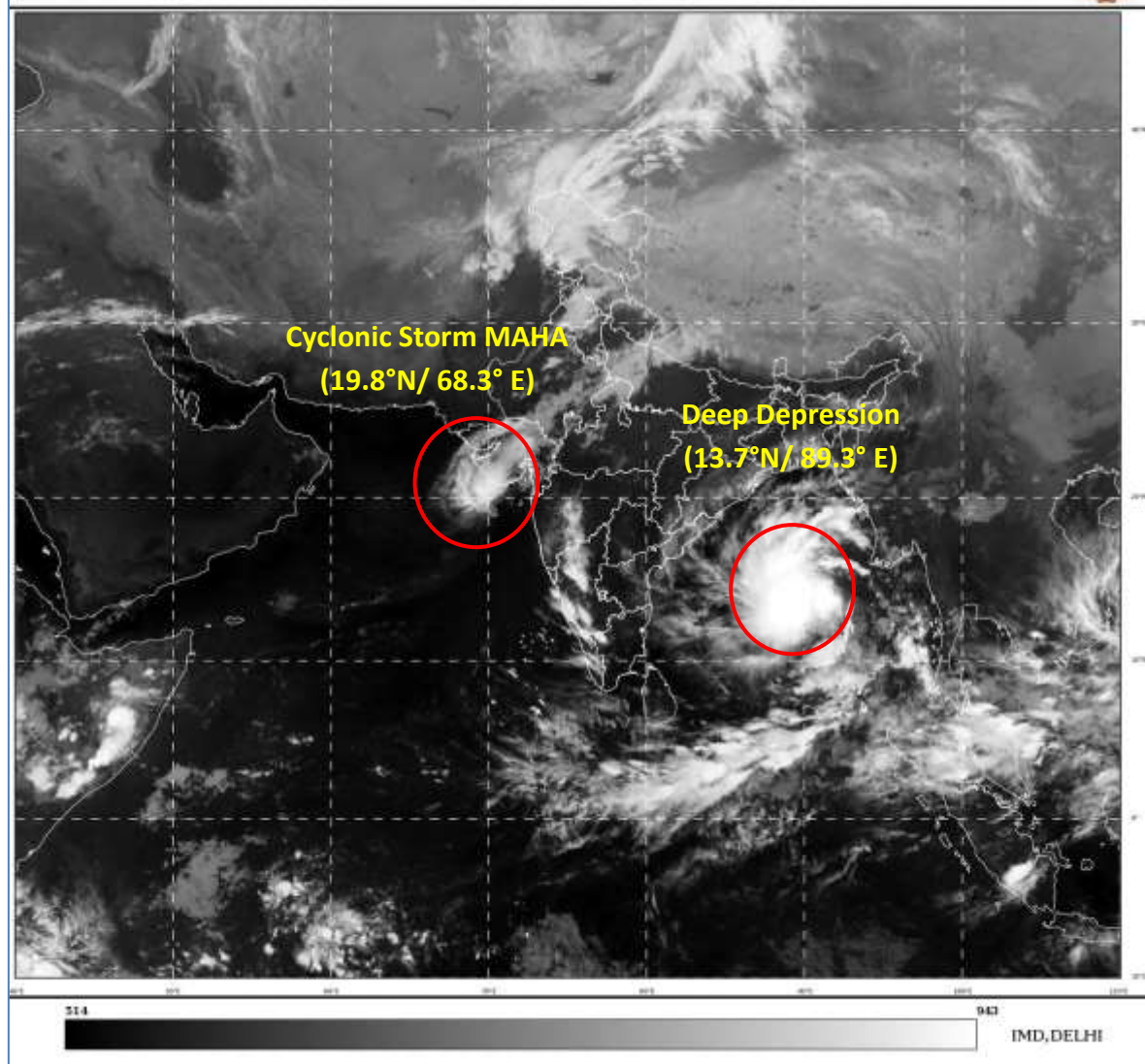
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea & adjoining southeast Bay of Bengal during next 12 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining north Bay of Bengal during 8th – 11th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

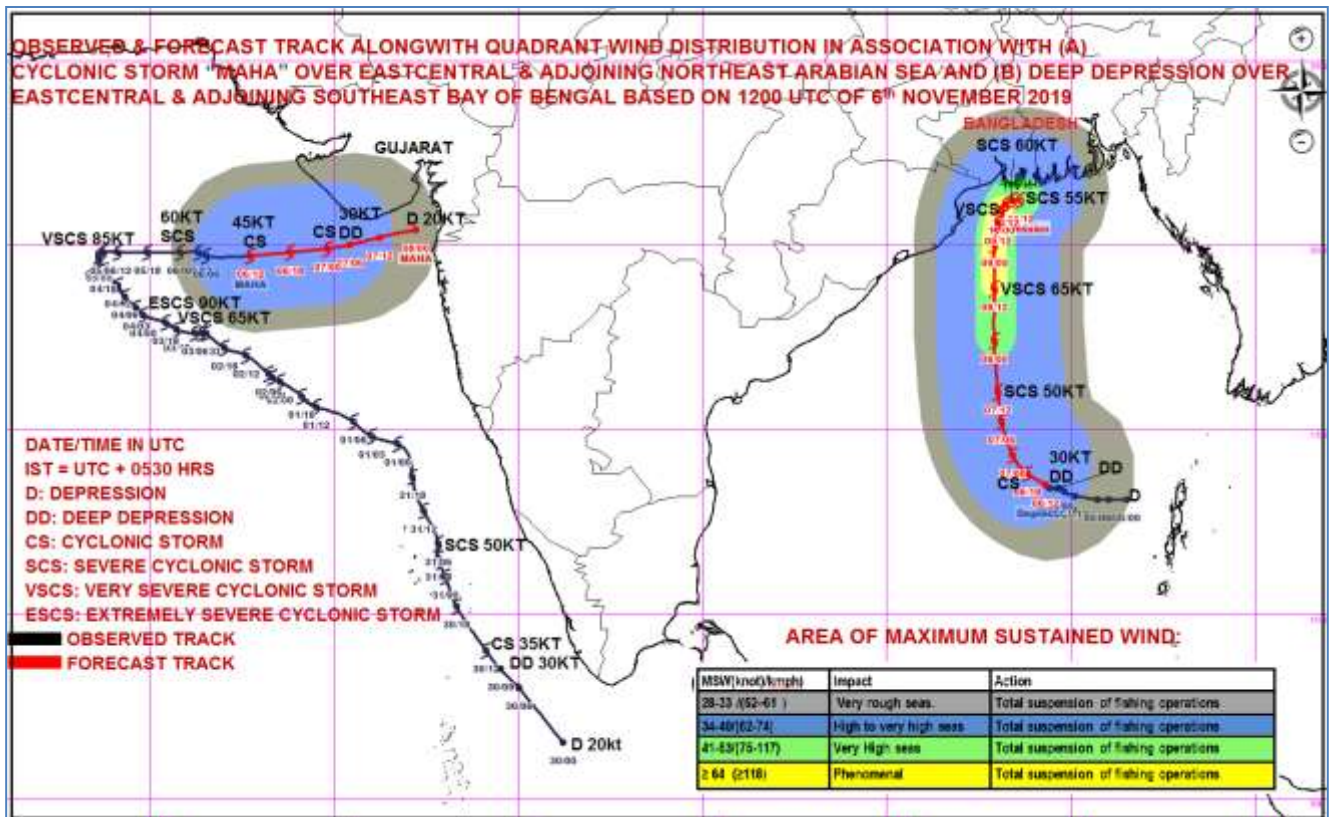
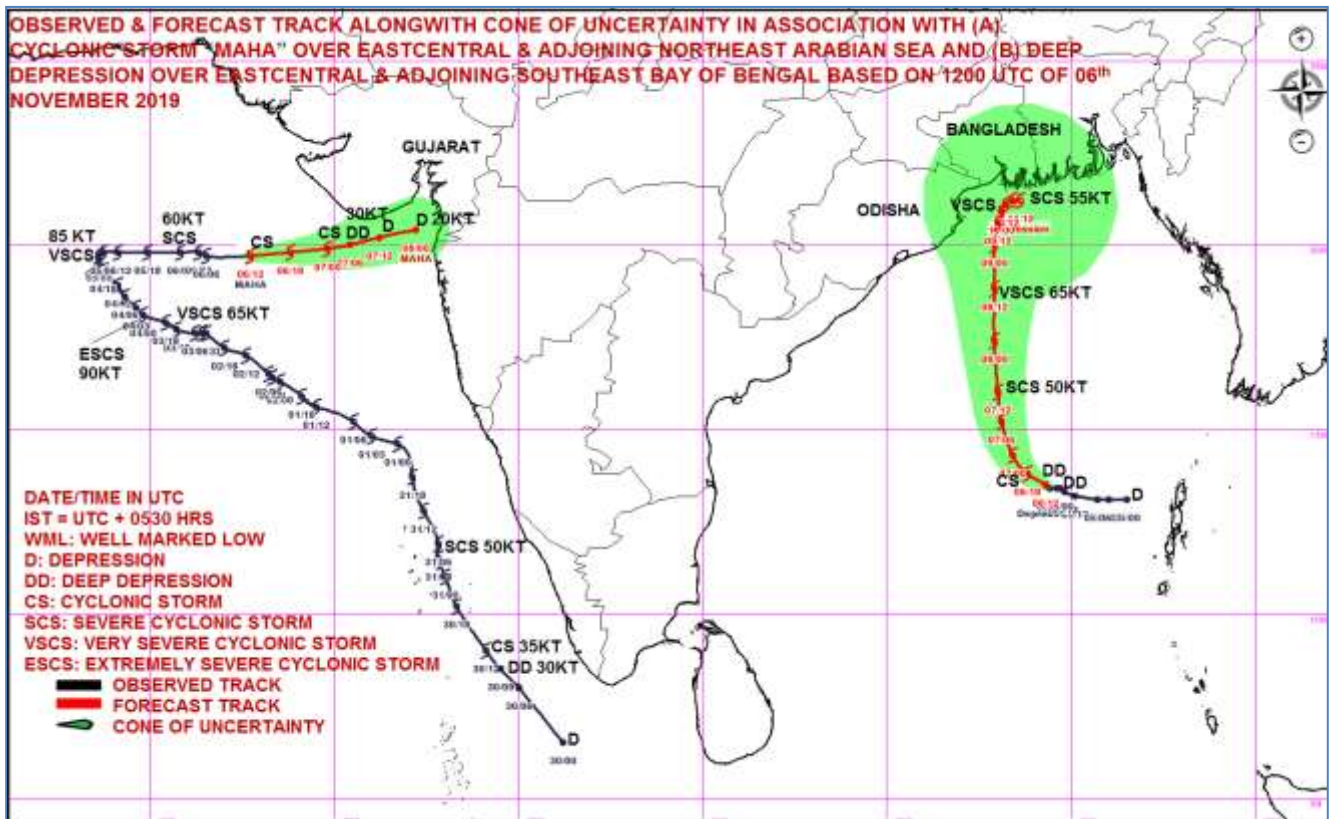
The next bulletin will be issued at 0230 hrs IST of 07th November, 2019.

**(D.R. Pattanaik)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 62 (ARB/04/2019) & BULLETIN NO.: 15 (BOB/04/2019)

TIME OF ISSUE: 0300 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 62 (ARB/04/2019)

(A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The Cyclonic storm MAHA (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea moved east-northeastwards with a speed of 17 kmph during past 06 hours, weakened into a Deep Depression and lay centered at 0530 hrs IST of today, the 07th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 69.4°E, about 240 km south-southwest of Porbandar (Gujarat), 230 km west-southwest of Veraval (Gujarat) and 280 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken into a Deep Depression over northeast & adjoining eastcentral Arabian Sea during next 12 hours. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it is very likely to weaken further into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/2330	19.8/68.4	65-75 gusting to 85	Cyclonic Storm
07.11.19/0530	19.9/69.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	20.0/70.4	50-60 gusting to 70	Deep Depression
07.11.19/1730	20.2/71.2	40-50 gusting to 60	Depression
07.11.19/2330	20.3/71.6	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar and Rajkot**) during next 24 hours and isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** during subsequent 12 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 36 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off Gujarat coast. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 65-75 kmph gusting to 85 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 36 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 36 hours.
- **Arabian Sea:** Sea condition will be high over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be very rough thereafter for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea till 08th November morning.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November morning.

(vi) Damage Expected over coastal districts of Gujarat (Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road.
- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

BULLETIN NO. : 15 (BOB/04/2019)**(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral & adjoining southeast Bay of Bengal.**

The Deep Depression over eastcentral & adjoining southeast Bay of Bengal moved northwards with a speed of 05 kmph during past 06 hours, intensified into a **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** and lay centred at 2330 hrs IST of today, the 7th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.13.8°N and Long. 89.3°E, about 400 km west-northwest of Maya Bandar (Andaman Islands), about 770 km south-southeast of Paradip (Odisha), 850 km south-southeast of Sagar Islands (West Bengal) and 910 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 24 hours and into a Very Severe Cyclonic Storm during the subsequent 36 hours. It is very likely to move north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
06.11.19/2330	13.8/89.3	60-70 gusting to 80	Cyclonic Storm
07.11.19/0530	14.4/89.1	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	15.2/88.8	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.9/88.5	75-85 gusting to 95	Cyclonic Storm
07.11.19/2330	16.4/88.3	85-95 gusting to 105	Severe Cyclonic Storm
08.11.19/1130	17.8/88.0	95-105 gusting to 115	Severe Cyclonic Storm
08.11.19/2330	19.1/87.9	105-115 gusting to 125	Severe Cyclonic Storm
09.11.19/1130	20.0/88.0	115-125 gusting to 140	Very Severe Cyclonic Storm
09.11.19/2330	20.6/88.1	105-115 gusting to 125	Severe Cyclonic Storm
10.11.19/1130	21.9/88.3	95-105 gusting to 115	Severe Cyclonic Storm
10.11.19/2330	21.1/88.6	85-95 gusting to 105	Severe Cyclonic Storm
11.11.19/1130	21.2/88.8	75-85 gusting to 95	Cyclonic Storm
11.11.19/2330	21.3/89.2	70-80 gusting to 90	Cyclonic Storm

Warnings:**(i) Rainfall:**

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 12 hours.
- **Bay of Bengal:** Gale wind speed reaching 60-70 kmph gusting to 80 kmph is prevailing over east central & adjoining southeast Bay of Bengal around the system centre. It is very likely to increase gradually and becoming 85-95 kmph gusting to 105 kmph by 7th November mid-night. It will increase further becoming 115-125 kmph gusting to 140 kmph over northwest & adjoining westcentral & northeast Bay of Bengal by 9th November mid-night for subsequent 12 hours.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iii) Sea condition

- Sea condition will be high over eastcentral & adjoining southeast Bay of Bengal during next 24 hours and become very high from 7th November mid-night for subsequent 24 hours over central & adjoining northwest Bay of Bengal and phenomenal over northwest & adjoining westcentral & northeast Bay of Bengal by 9th November mid-night for subsequent 12 hours.
- Sea condition will be rough over north Andaman Sea during next 12 hours.

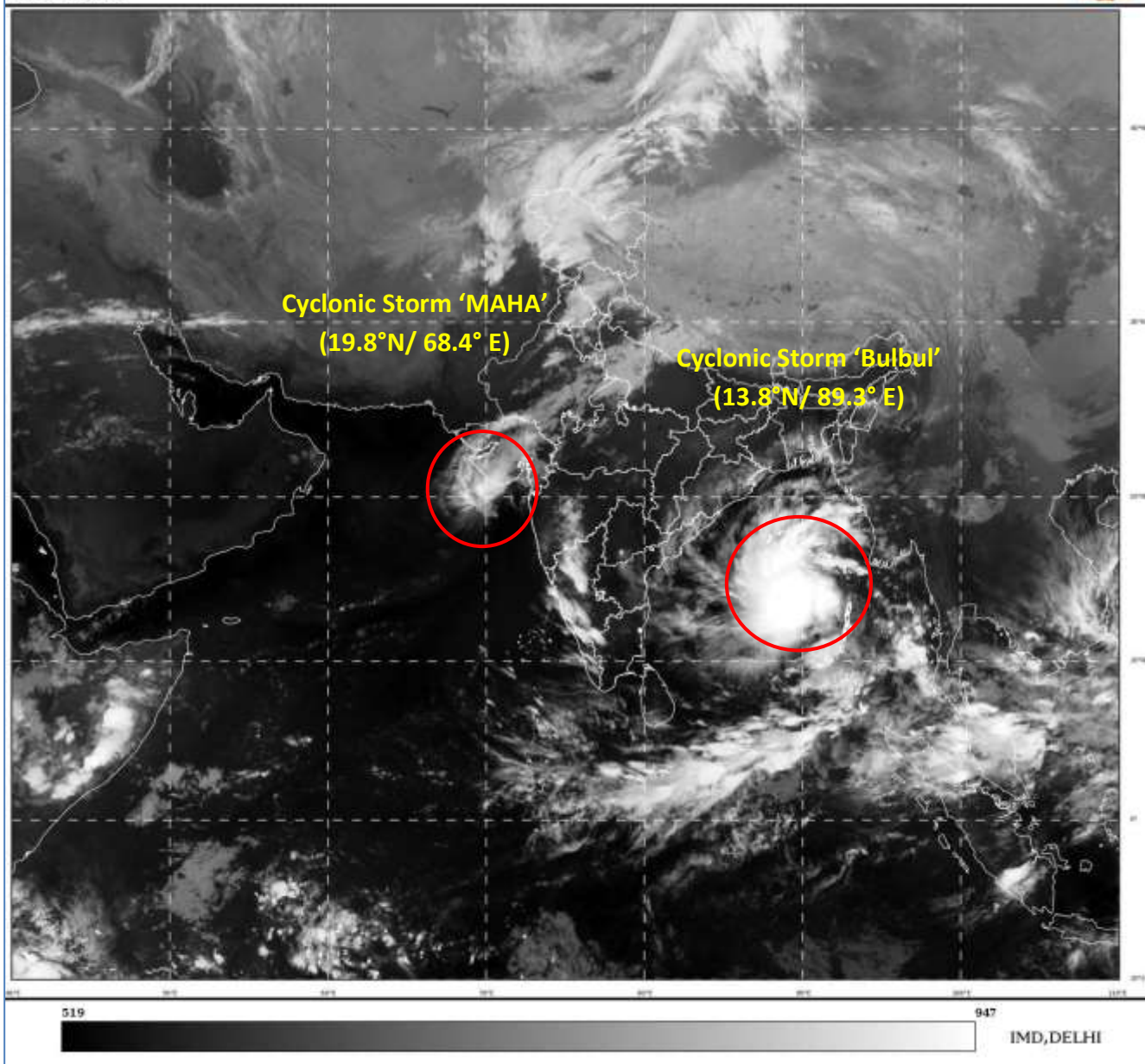
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea & adjoining southeast Bay of Bengal during next 12 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining north Bay of Bengal during 8th – 11th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

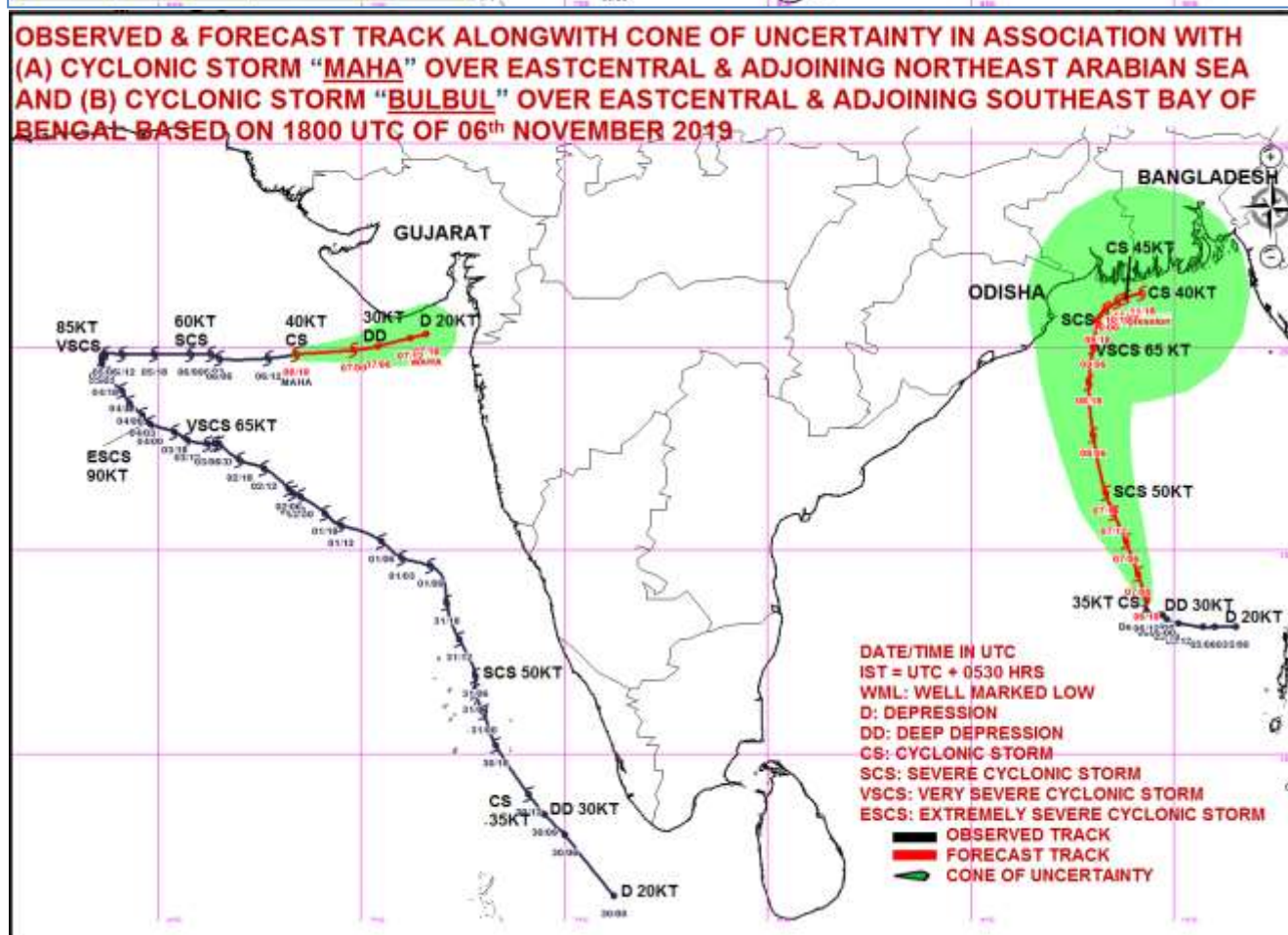
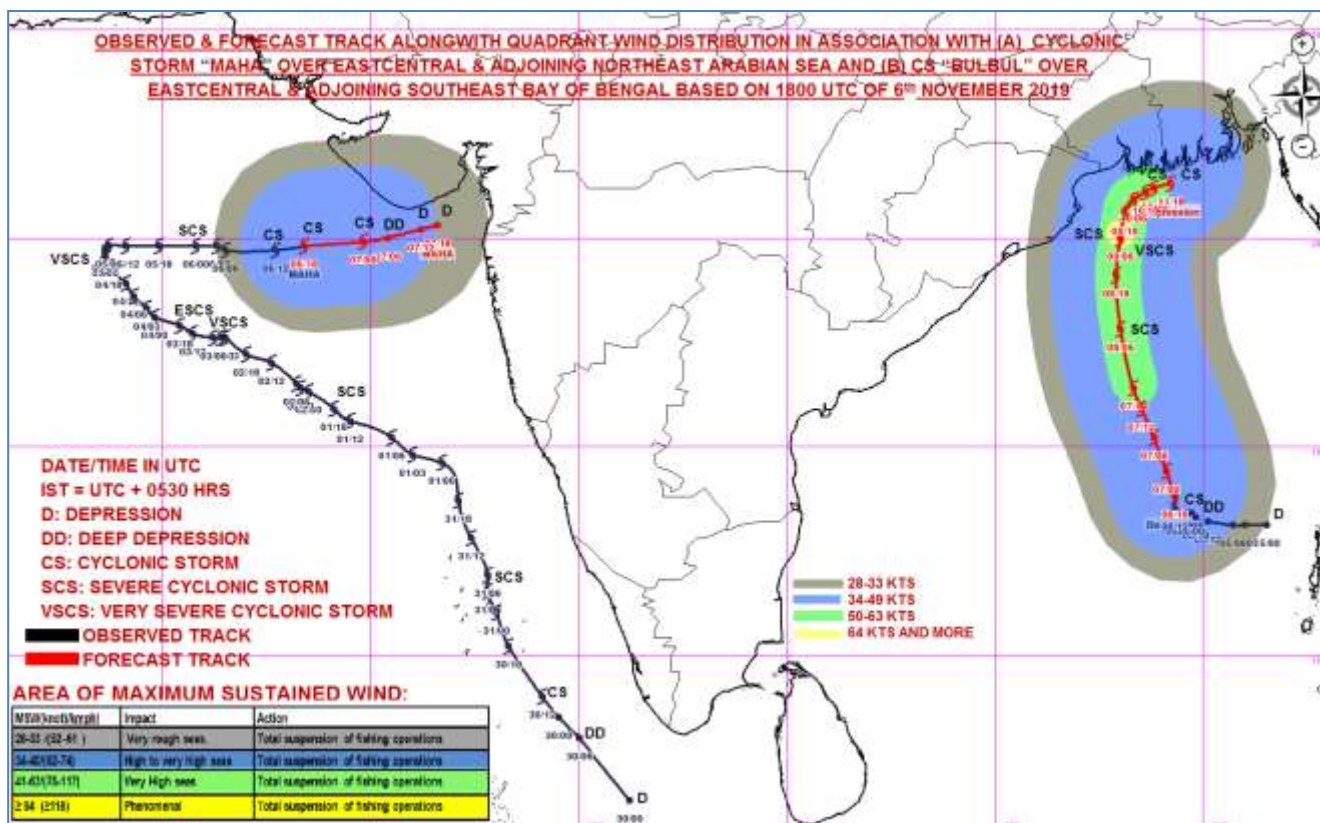
The next bulletin will be issued at 0530 hrs IST of 07th November, 2019.

**(D.R. Pattanaik)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 63 (ARB/04/2019) & BULLETIN NO.: 16 (BOB/04/2019)

TIME OF ISSUE: 0545 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral & adjoining southeast Bay of Bengal.

BULLETIN NO. : 63 (ARB/04/2019)

(A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) over eastcentral & adjoining northeast Arabian Sea

The **Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved eastwards with a speed of 10 kmph during past 06 hours, and lay centered at 0230 hrs IST of today, the 07th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 68.9°E, about 220 km south-southwest of Porbandar (Gujarat), 190 km west-southwest of Veraval (Gujarat) and 230 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken into a Deep Depression over northeast & adjoining eastcentral Arabian Sea during next 12 hours. It is very likely to skirt Saurashtra coast and lie centered about 40 kilometers south of Diu around noon of 7th November as a deep depression. Continuing to move east-northeastwards, it is very likely to weaken further into a depression by tomorrow evening.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
07.11.19/0230	19.8/68.9	65-75 gusting to 85	Cyclonic Storm
07.11.19/0530	19.9/69.8	60-70 gusting to 80	Cyclonic Storm
07.11.19/1130	20.0/70.4	50-60 gusting to 70	Deep Depression
07.11.19/1730	20.2/71.2	40-50 gusting to 60	Depression
07.11.19/2330	20.3/71.6	35-45 gusting to 55	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall at many places with heavy to very heavy falls at isolated places very likely over Saurashtra and Gujarat region (**Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Porbandar and Rajkot**) during next 24 hours and isolated heavy to very heavy falls over **Bhavnagar, Surat, Bharuch, Anand, Ahmedabad and Vadodara** and heavy rainfall at isolated places over **Botad and Ahmedabad** during subsequent 12 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 36 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off Gujarat coast. It is very likely to increase gradually becoming 55-65 Kmph gusting to 75 Kmph along & off **Junagarh, Gir Somnath, Diu, Amreli Bhavnagar, Bharuch, Anand, Ahmedabad, and Botad** districts, 40-50 kmph gusting to 60 kmph over districts **Porbandar, Rajkot, Navsari, Valsad, Daman and Dadra & Nagar Haveli** from 7th November morning for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off Maharashtra coast. It is very likely to increase becoming 50-60 Kmph gusting to 70 Kmph from 7th November morning for the next 12 hours along & off Palghar & Thane districts.
- **Arabian Sea:** Gale wind speed reaching 65-75 kmph gusting to 85 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 60-70 kmph gusting 80 kmph on 7th November morning over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 36 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 36 hours.
- **Arabian Sea:** Sea condition will be high over eastcentral and adjoining northeast Arabian Sea during next 12 hours and will be very rough thereafter for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter above Astronomical tide is likely to inundate low lying areas of **Bhavnagar, Junagarh, Gir Somnath, Amreli, Surat, Bharuch, Anand and Ahmedabad** Districts from morning to forenoon of 7th November.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea till 08th November morning.
- The fishermen are advised not to venture into Sea along & off Gujarat coast and adjoining north Maharashtra coast till 8th November morning.

(vi) Damage Expected over coastal districts of Gujarat (Junagarh, Gir Somnath, Amreli, Bhavnagar, Surat, Bharuch, Anand, Ahmedabad, Botad, Porbandar) and Daman, Diu:

- Minor damage to loose / unsecured structures.
- Some breaches in Kutcha road.
- Minor damage to Banana trees and near coastal agriculture due to salt spray. Damage to ripe paddy crops.
- Minor damage to Kutcha embankments.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

BULLETIN NO. : 16 (BOB/04/2019)

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral & adjoining southeast Bay of Bengal.

The **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over eastcentral & adjoining southeast Bay of Bengal moved northwards with a speed of 06 kmph during past 06 hours and lay centred at 0230 hrs IST of today, the 7th November 2019, over eastcentral & adjoining southeast Bay of Bengal, near Lat.14.0°N and Long. 89.3°E, about 400 km west-northwest of Maya Bandar (Andaman Islands), about 750 km south-southeast of Paradip (Odisha), 860 km south-southeast of Sagar Islands (West Bengal) and 890 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 24 hours and into a Very Severe Cyclonic Storm during the subsequent 36 hours. It is very likely to move north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
07.11.19/0230	14.0/89.3	65-75 gusting to 85	Cyclonic Storm
07.11.19/0530	14.4/89.1	70-80 gusting to 90	Cyclonic Storm
07.11.19/1130	15.2/88.8	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.9/88.5	75-85 gusting to 95	Cyclonic Storm
07.11.19/2330	16.4/88.3	85-95 gusting to 105	Severe Cyclonic Storm
08.11.19/1130	17.8/88.0	95-105 gusting to 115	Severe Cyclonic Storm
08.11.19/2330	19.1/87.9	105-115 gusting to 125	Severe Cyclonic Storm
09.11.19/1130	20.0/88.0	115-125 gusting to 140	Very Severe Cyclonic Storm
09.11.19/2330	20.6/88.1	105-115 gusting to 125	Severe Cyclonic Storm
10.11.19/1130	21.9/88.3	95-105 gusting to 115	Severe Cyclonic Storm
10.11.19/2330	21.1/88.6	85-95 gusting to 105	Severe Cyclonic Storm
11.11.19/1130	21.2/88.8	75-85 gusting to 95	Cyclonic Storm
11.11.19/2330	21.3/89.2	70-80 gusting to 90	Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** from 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Andaman and Nicobar Islands:** Strong wind speed reaching 35-45 kmph gusting to 55 kmph is likely to prevail over Andaman Islands, north Andaman Sea during next 12 hours.
- **Bay of Bengal:** Gale wind speed reaching 65-75 kmph gusting to 85 kmph is prevailing over east central & adjoining southeast Bay of Bengal around the system centre. It is very likely to increase gradually and becoming 85-95 kmph gusting to 105 kmph by 7th November mid-night. It will increase further becoming 115-125 kmph gusting to 140 kmph over northwest & adjoining westcentral & northeast Bay of Bengal by 9th November mid-night for subsequent 12 hours.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase thereafter.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iii) Sea condition

- Sea condition will be high over eastcentral & adjoining southeast Bay of Bengal during next 24 hours and become very high from 7th November mid-night for subsequent 24 hours over central & adjoining northwest Bay of Bengal and phenomenal over northwest & adjoining westcentral & northeast Bay of Bengal by 9th November mid-night for subsequent 12 hours.
- Sea condition will be rough over north Andaman Sea during next 12 hours.

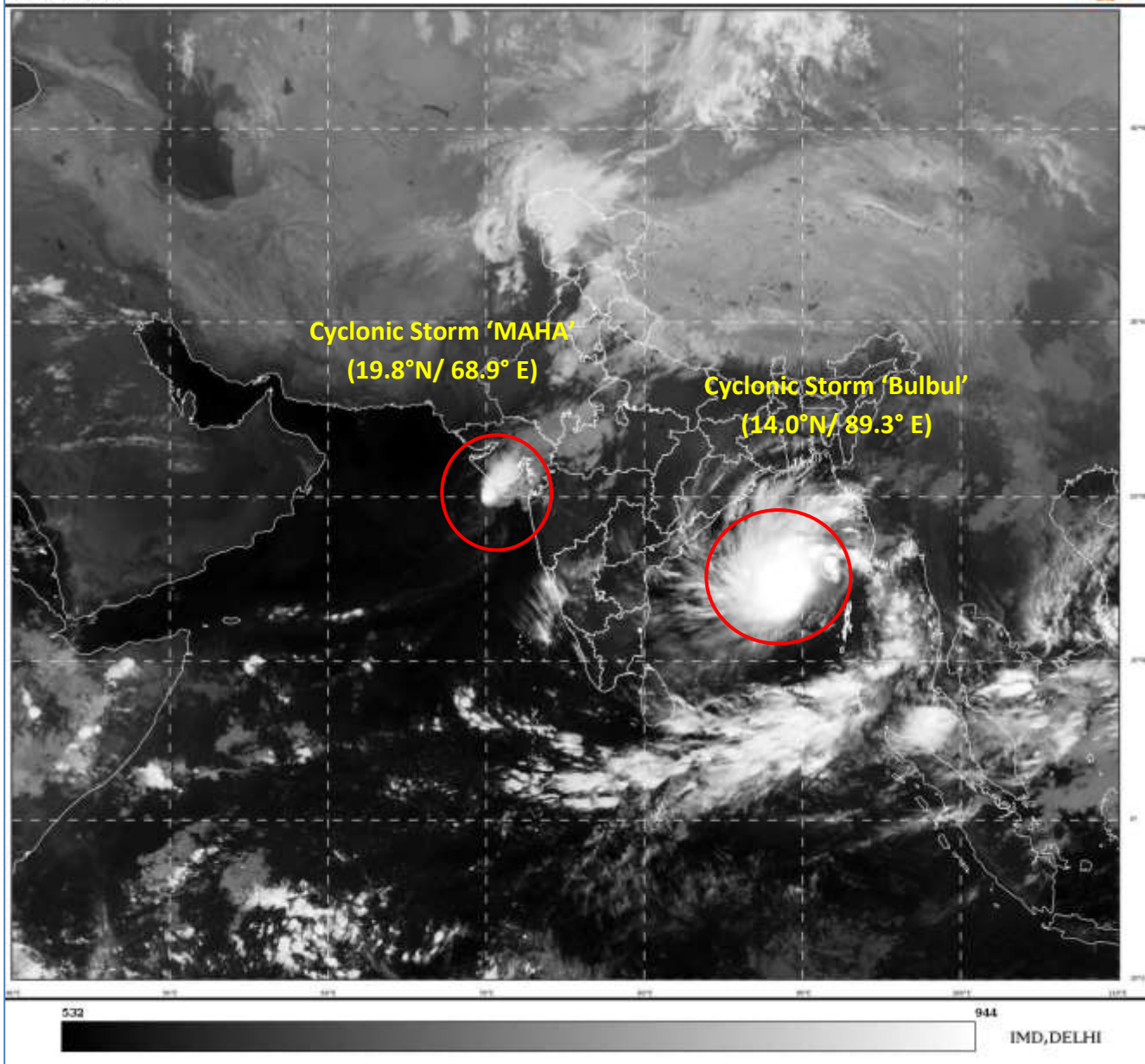
(iv) Fishermen Warning

- Fishermen are advised not to venture into north Andaman Sea & adjoining southeast Bay of Bengal during next 12 hours.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining north Bay of Bengal during 8th – 11th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

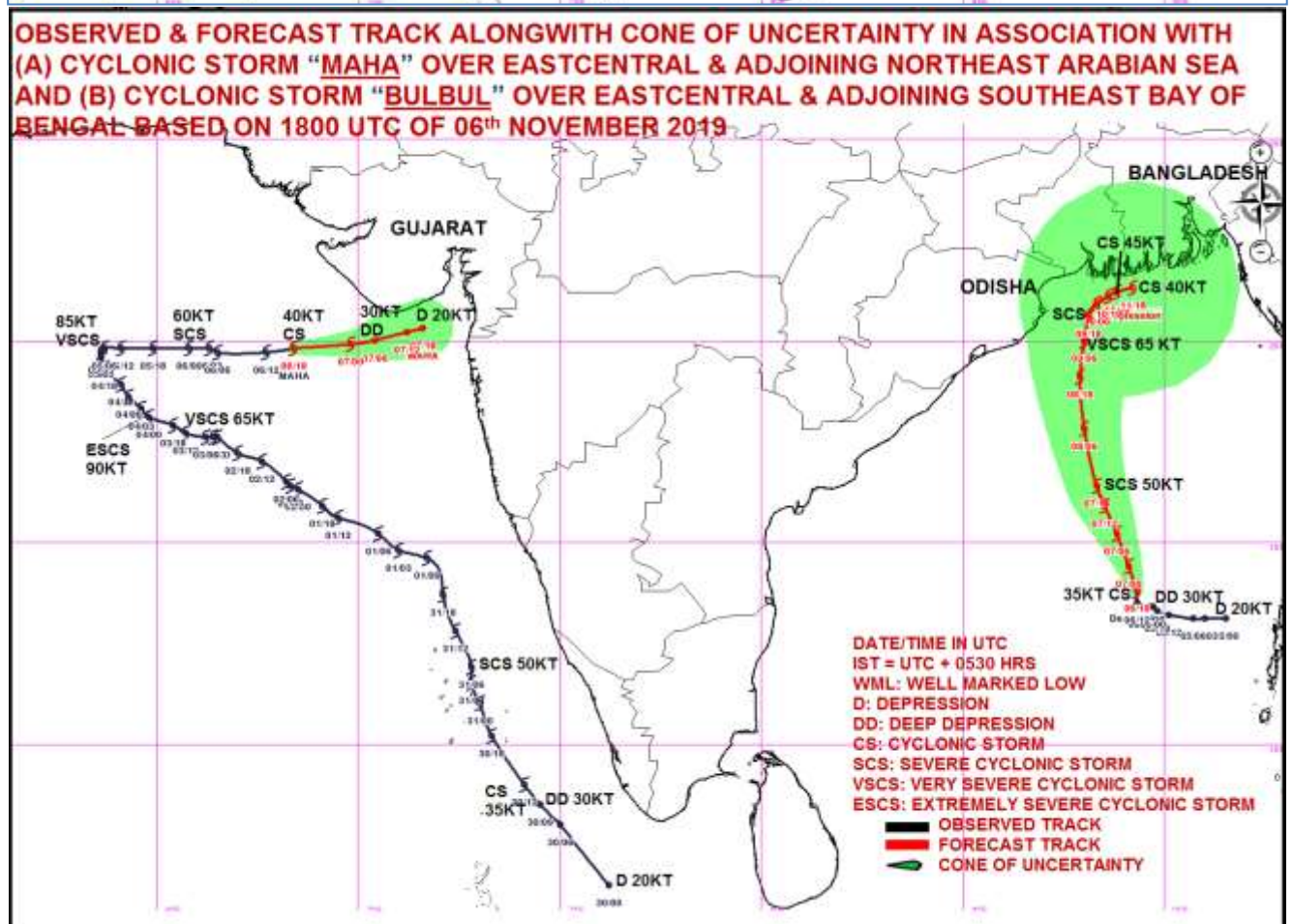
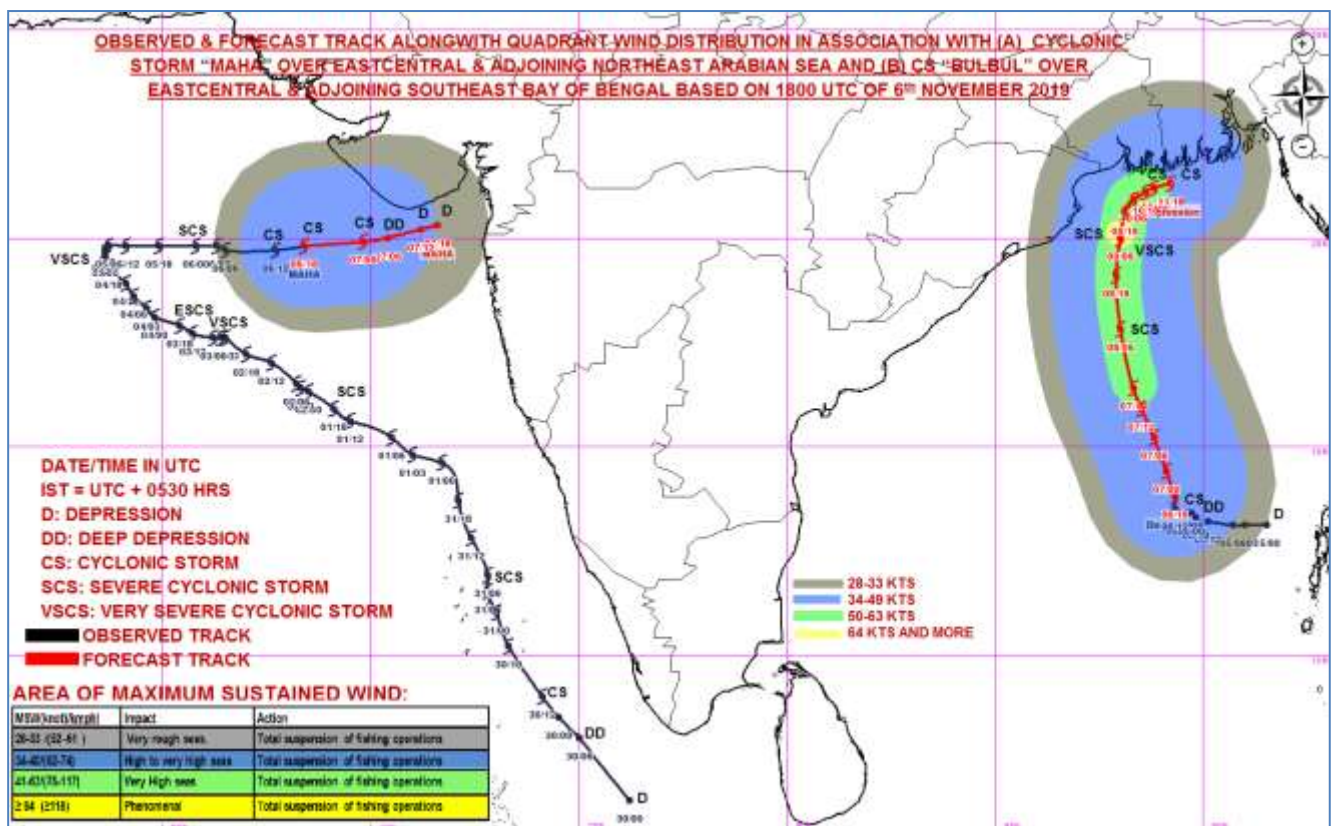
The next bulletin will be issued at 0830 hrs IST of 07th November, 2019.

**(D.R. Pattanaik)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 64 (ARB/04/2019) & BULLETIN NO.: 17 (BOB/04/2019)

TIME OF ISSUE: 0900 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: (A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) weakened into a Deep Depression over eastcentral & adjoining northeast Arabian Sea

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral Bay of Bengal.

BULLETIN NO. : 64 (ARB/04/2019)

A) Cyclonic Storm 'MAHA' (Pronounced as M'maha) weakened into a Deep Depression over eastcentral & adjoining northeast Arabian Sea

The **Cyclonic storm MAHA (Pronounced as M'maha)** over eastcentral & adjoining northeast Arabian Sea moved eastwards with a speed of 17 kmph during past 06 hours, weakened into a Deep Depression and lay centered at 0530 hrs IST of today, the 07th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 19.8°N and longitude 69.4°E, about 200 km south-southwest of Porbandar (Gujarat), 150 km west-southwest of Veraval (Gujarat) and 180 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken into a Depression over northeast & adjoining eastcentral Arabian Sea off south Gujarat coast during next 12 hours.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
07.11.19/0530	19.8/69.4	55-65 gusting to 75	Deep Depression
07.11.19/1130	19.9/70.2	50-60 gusting to 70	Deep Depression
07.11.19/1730	20.1/71.0	45-55 gusting to 65	Depression
07.11.19/2330	20.2/71.5	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall very likely at many places over south Gujarat state with heavy falls at isolated places over **Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar** during next 24 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 24 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over northeast Arabian Sea along & off **Junagarh, Gir Somnath, Diu, Amreli, Bhavnagar, Bharuch, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli** districts. It is very likely to become 45-55 Kmph gusting to 65 Kmph over these areas from 7th November evening for the subsequent 12 hours.
- **Maharashtra:** Squally wind speed reaching 45-55 kmph gusting to 60 kmph likely along & off north Maharashtra coast (along & off Palghar & Thane districts) from 7th November evening for subsequent 24 hours.
- **Arabian Sea:** Gale wind speed reaching 55-65 kmph gusting to 75 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 45-55 kmph gusting 65 kmph from 7th November evening over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 24 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 24 hours.
- **Arabian Sea:** Sea condition will be rough to very rough over eastcentral and adjoining northeast Arabian Sea during next 24 hours.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea along & off south Gujarat coast and adjoining north Maharashtra coast during next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

BULLETIN NO. : 17 (BOB/04/2019)

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral & adjoining southeast Bay of Bengal.

The **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over eastcentral & adjoining southeast Bay of Bengal moved northwards with a speed of 07 kmph during past 06 hours and lay centred at 0530 hrs IST of today, the 7th November 2019, over eastcentral Bay of Bengal, near Lat.14.2°N and Long. 89.3°E about 730 km south-southeast of Paradip (Odisha), 830 km south-southeast of Sagar Islands (West Bengal) and 830 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 24 hours. It is very likely to move north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position (Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
07.11.19/0530	14.2/89.3	65-75 gusting to 85	Cyclonic Storm
07.11.19/1130	15.0/89.0	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.7/88.6	80-90 gusting to 100	Cyclonic Storm
07.11.19/2330	16.2/88.4	80-90 gusting to 100	Cyclonic Storm
08.11.19/0530	16.9/88.2	85-95 gusting to 105	Severe Cyclonic Storm
08.11.19/1730	18.3/88.0	95-105 gusting to 115	Severe Cyclonic Storm
09.11.19/0530	19.4/87.9	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1730	20.1/88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	21.8/88.4	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/1730	21.0/88.7	100-110 gusting to 120	Severe Cyclonic Storm
11.11.19/0530	21.1/89.2	90-100 gusting to 110	Severe Cyclonic Storm
11.11.19/1730	21.1/89.5	75-85 gusting to 95	Cyclonic Storm
12.11.19/0530	21.1/89.8	60-70 gusting to 80	Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:** Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** on 9th & 10th Nov. 2019.
- **West Bengal:** Light to moderate rainfall at most places with heavy falls at isolated places very likely over **coastal districts of West Bengal** on 10th & 11th Nov. 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 65-75 kmph gusting to 85 kmph is prevailing over east central & adjoining southeast Bay of Bengal around the system centre. It is very likely to increase gradually and becoming 85-95 kmph gusting to 105 kmph by 8th November morning. It will increase further becoming 120-130 kmph gusting to 145 kmph over north Bay of Bengal by 9th November morning for subsequent 12 hours.
- **Odisha & West Bengal coasts:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over northwest Bay of Bengal off Odisha – West Bengal coasts from 8th November evening and gradually increase and becoming 55-65 kmph gusting to 65 kmph from 9th Nov. morning.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iii) Sea condition

- Sea condition will be high over eastcentral Bay of Bengal during next 24 hours and become very high from 8th November morning for subsequent 24 hours over central & adjoining northwest Bay of Bengal and very high to phenomenal over North Bay of Bengal by 9th November morning for subsequent 12 hours.
- Sea condition will be rough over north Andaman Sea during next 12 hours.

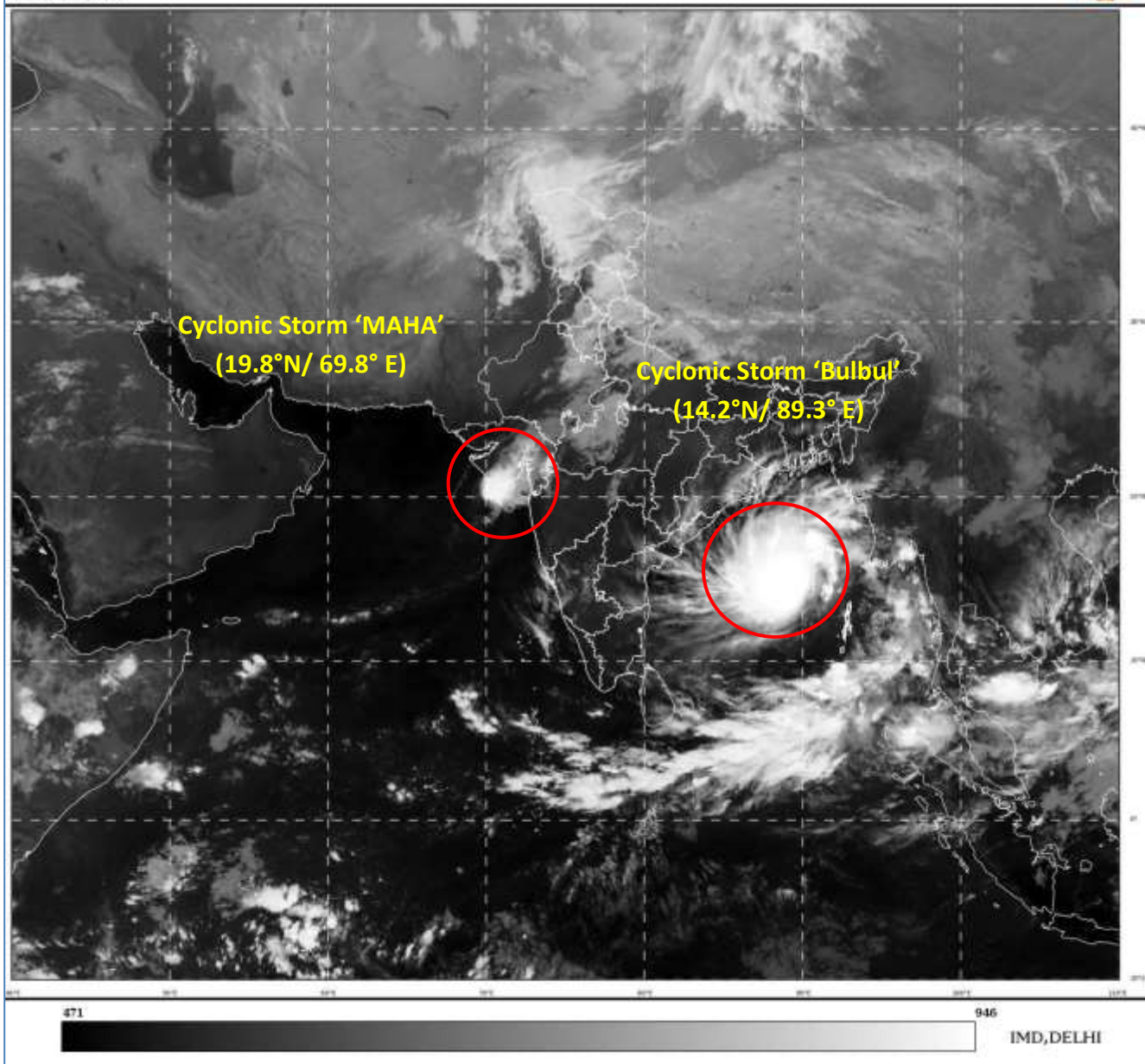
(iv) Fishermen Warning

- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

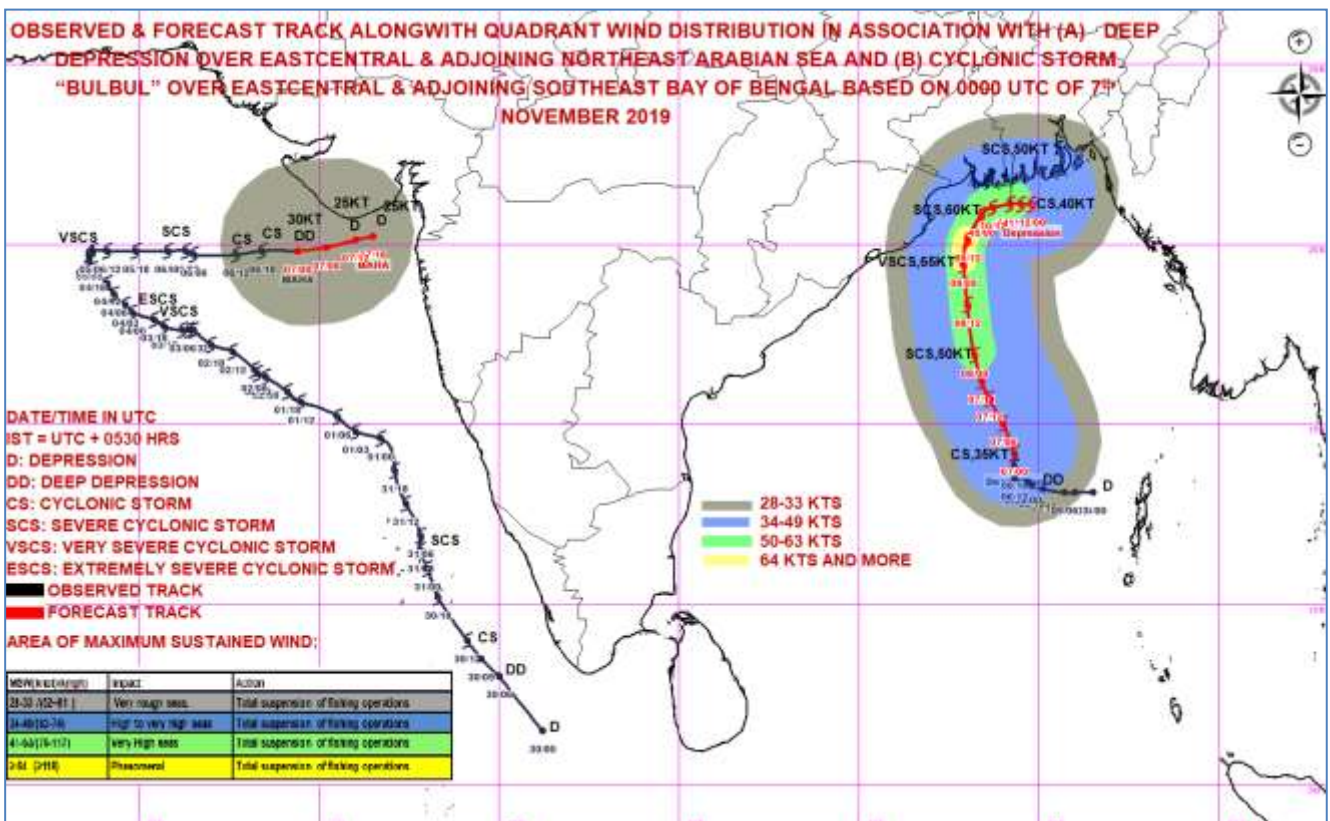
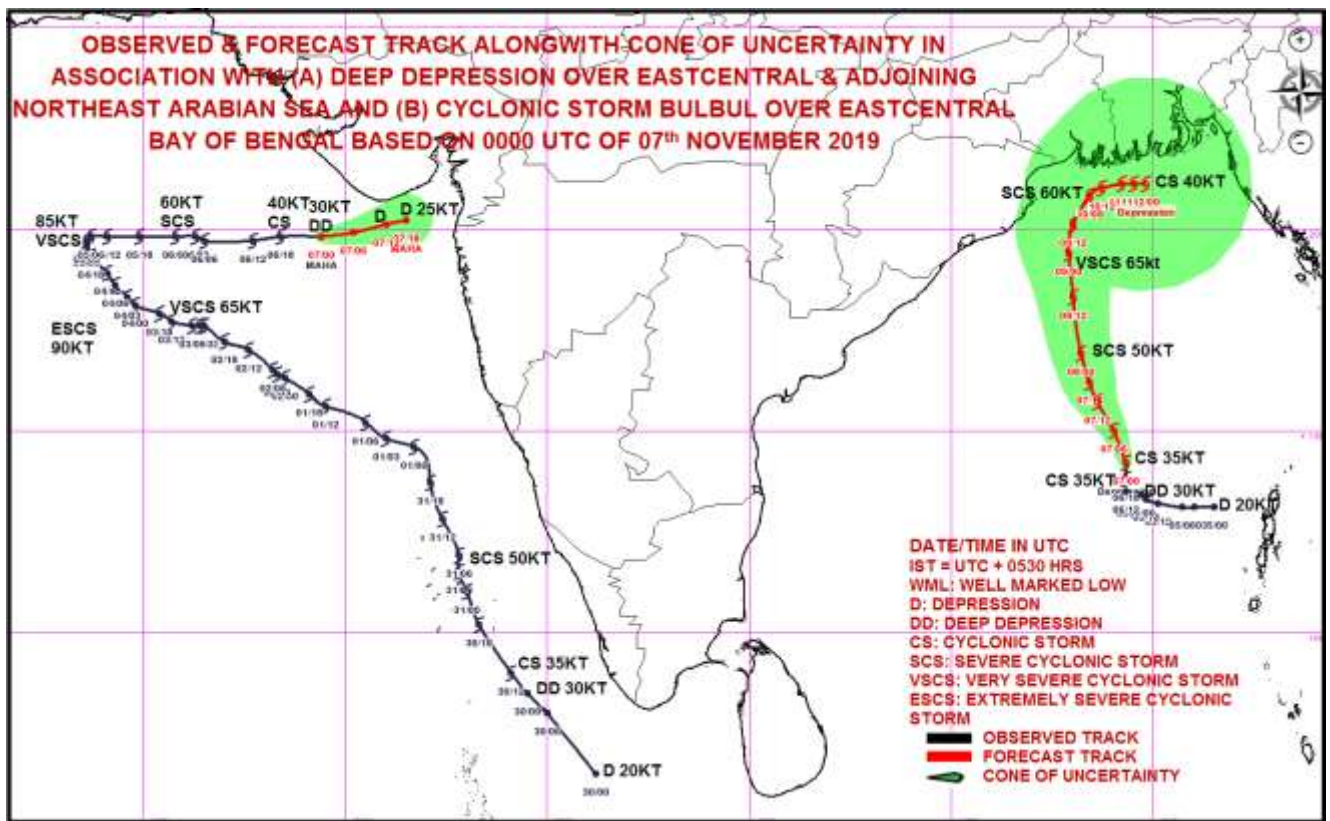
The next bulletin will be issued at 1130 hrs IST of 07th November, 2019.

**(D.R. Pattanaik)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 65 (ARB/04/2019) & BULLETIN NO.: 18 (BOB/04/2019)

TIME OF ISSUE: 1200 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

**Sub:(A) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral Bay of Bengal: CYCLONE
ALERT FOR WEST BENGAL COAST: YELLOW MESSAGE**

(B) Deep Depression over eastcentral & adjoining northeast Arabian Sea

BULLETIN NO. : 18 (BOB/04/2019)

(B) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral Bay of Bengal.

The **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over eastcentral Bay of Bengal continued to move north-northwestwards with a speed of 15 kmph during past 06 hours and lay centred at 1130 hrs IST of today, the 7th November 2019, over eastcentral Bay of Bengal, near Lat.15.0°N and Long. 89.2°E about 680 km south-southeast of Paradip (Odisha), 780 km south-southeast of Sagar Islands (West Bengal) and 810 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 24 hours. It is very likely to move north-northwestwards towards West Bengal and Bangladesh coasts.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
07.11.19/0830	14.7	89.3	65-75 gusting to 85	Cyclonic Storm
07.11.19/1130	15.0	89.2	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.7	88.8	80-90 gusting to 100	Cyclonic Storm
07.11.19/2330	16.2	88.4	80-90 gusting to 100	Cyclonic Storm
08.11.19/0530	16.9	88.2	85-95 gusting to 105	Severe Cyclonic Storm
08.11.19/1730	18.3	88.0	95-105 gusting to 115	Severe Cyclonic Storm
09.11.19/0530	19.4	87.9	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1730	20.1	88.0	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	21.8	88.4	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/1730	21.0	88.7	100-110 gusting to 120	Severe Cyclonic Storm
11.11.19/0530	21.1	89.2	90-100 gusting to 110	Severe Cyclonic Storm
11.11.19/1730	21.1	89.5	75-85 gusting to 95	Cyclonic Storm
12.11.19/0530	21.1	89.8	60-70 gusting to 80	Cyclonic Storm

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:**
 - (i) Light to moderate rainfall at many places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Puri, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over in the remaining districts on 8th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.
- **West Bengal:**
 - (i) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with extremely heavy falls at isolated places North and South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, Hooghly on 9th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with isolated heavy to very heavy falls at isolated places North and South 24 Parganas, isolated heavy falls over East Medinipur, Howrah, Hooghly and Nadiya districts on 9th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 65-75 kmph gusting to 85 kmph is prevailing over east central Bay of Bengal around the system centre. It is very likely to increase gradually and become 85-95 kmph gusting to 105 kmph by 8th November morning. It will increase further becoming 120-130 kmph gusting to 145 kmph over north Bay of Bengal by 9th November morning for subsequent 12 hours.
- **Odisha coast:** Strong wind speed reaching 35 – 45 kmph gusting to 55 kmph becoming squally 45-55 gusting to 65 by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely towards evening of 9th November over Jagatsinghpur, Balasore and Bhadrak districts. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50kmph gusting to 60 kmph on 8th and 9th November.
- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night and gradually increase and

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

becoming 55-65 kmph gusting to 75 kmph from 9th November evening. It is likely to increase to gale wind speed becoming 70-80 kmph gusting to 90 kmph by 10th morning.

(iii) Sea condition

- Sea condition will be high over eastcentral Bay of Bengal during next 24 hours and become very high from 8th November morning for subsequent 24 hours over central & adjoining northwest Bay of Bengal and very high to phenomenal over North Bay of Bengal by 9th November morning for subsequent 12 hours.
- Sea condition will be rough to very rough along and off Odisha coast from 8th onwards becoming very high on 9th and 10th November.

(iv) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

BULLETIN NO. : 65 (ARB/04/2019)

B) Deep Depression over eastcentral & adjoining northeast Arabian Sea

The **Deep Depression** over eastcentral & adjoining northeast Arabian Sea moved nearly eastwards with a speed of 19 kmph during past 06 hours, and lay centered at 0830 hrs IST of today, the 07th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 20.0°N and longitude 70.0°E, about 100 km south-southwest of Veraval (Gujarat) and 120 km west-southwest of Diu. It is very likely to move east-northeastwards, weaken into a Depression over northeast & adjoining eastcentral Arabian Sea off south Gujarat coast during next 12 hours.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
07.11.19/0530	20.0	70.0	55-65 gusting to 75	Deep Depression
07.11.19/1130	20.0	70.3	50-60 gusting to 70	Deep Depression
07.11.19/1730	20.1	71.0	45-55 gusting to 65	Depression
07.11.19/2330	20.2	71.7	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall very likely at many places over south Gujarat state with heavy falls at isolated places over **Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar** during next 24 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 24 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over northeast Arabian Sea along & off **Junagarh, Gir Somnath, Diu, Amreli, Bhavnagar, Bharuch, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli**

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

districts. It is very likely to become 45-55 Kmph gusting to 65 Kmph over these areas from today, the 7th November evening for the subsequent 12 hours.

- **Maharashtra:** Squally wind speed reaching 45-55 kmph gusting to 60 kmph likely along & off north Maharashtra coast (along & off Palghar & Thane districts) from today, the 7th November evening for subsequent 24 hours.
- **Arabian Sea:** Gale wind speed reaching 55-65 kmph gusting to 75 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre. It is very likely to decrease gradually and become 45-55 kmph gusting 65 kmph from today, the 7th November evening over northeast & adjoining eastcentral Arabian Sea and further decrease thereafter.

(iii) Sea condition

- **Gujarat Coast:** Sea condition will be rough to very rough along & off Gujarat coast during next 24 hours.
- **Maharashtra Coast:** Sea condition will be rough to very rough along & off north Maharashtra coast during next 24 hours.
- **Arabian Sea:** Sea condition will be rough to very rough over eastcentral and adjoining northeast Arabian Sea during next 24 hours.

(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea along & off south Gujarat coast and adjoining north Maharashtra coast during next 24 hours.

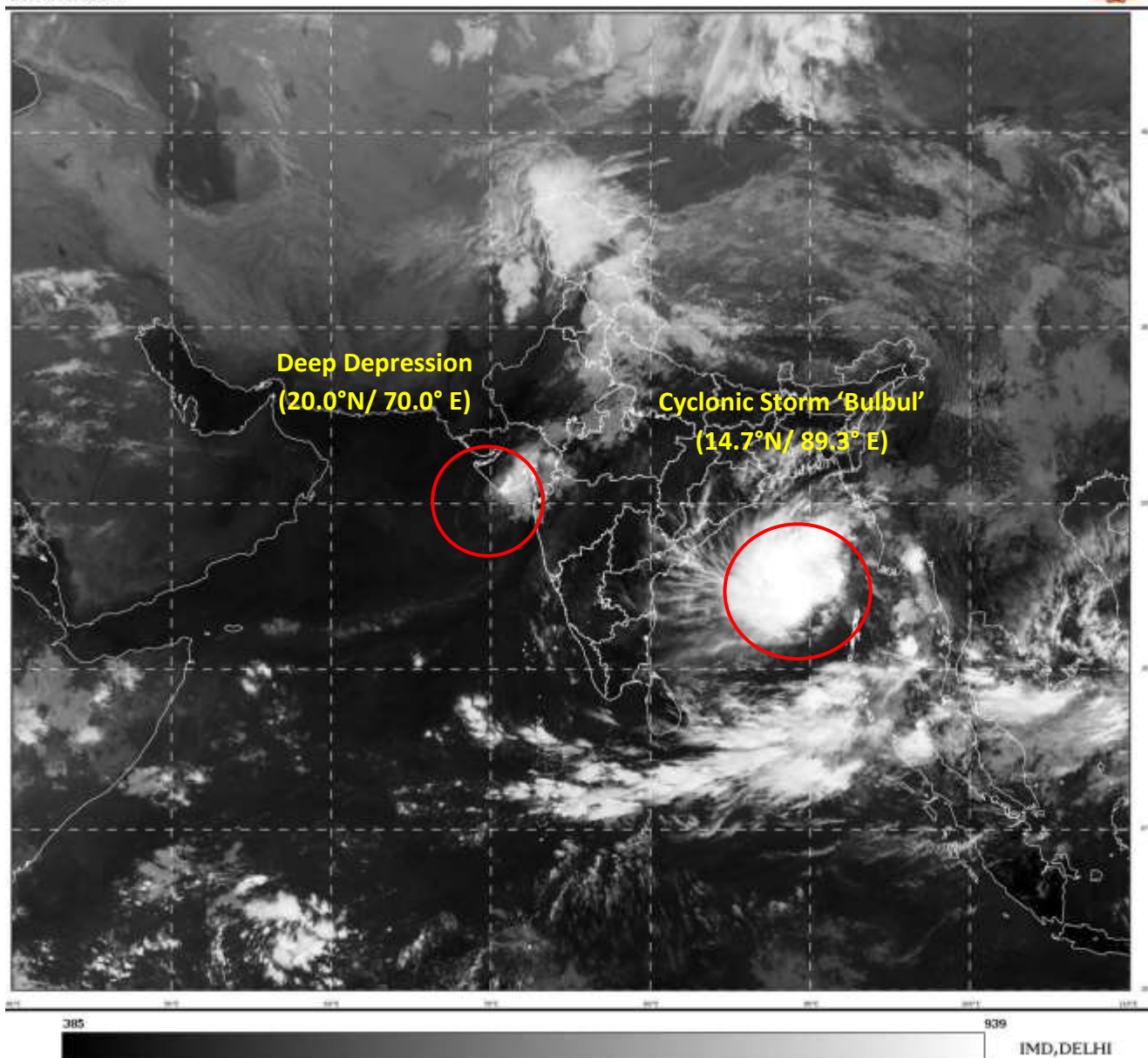
The next bulletin will be issued at 1430 hrs IST of 07th November, 2019.

(Sunitha Devi S)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

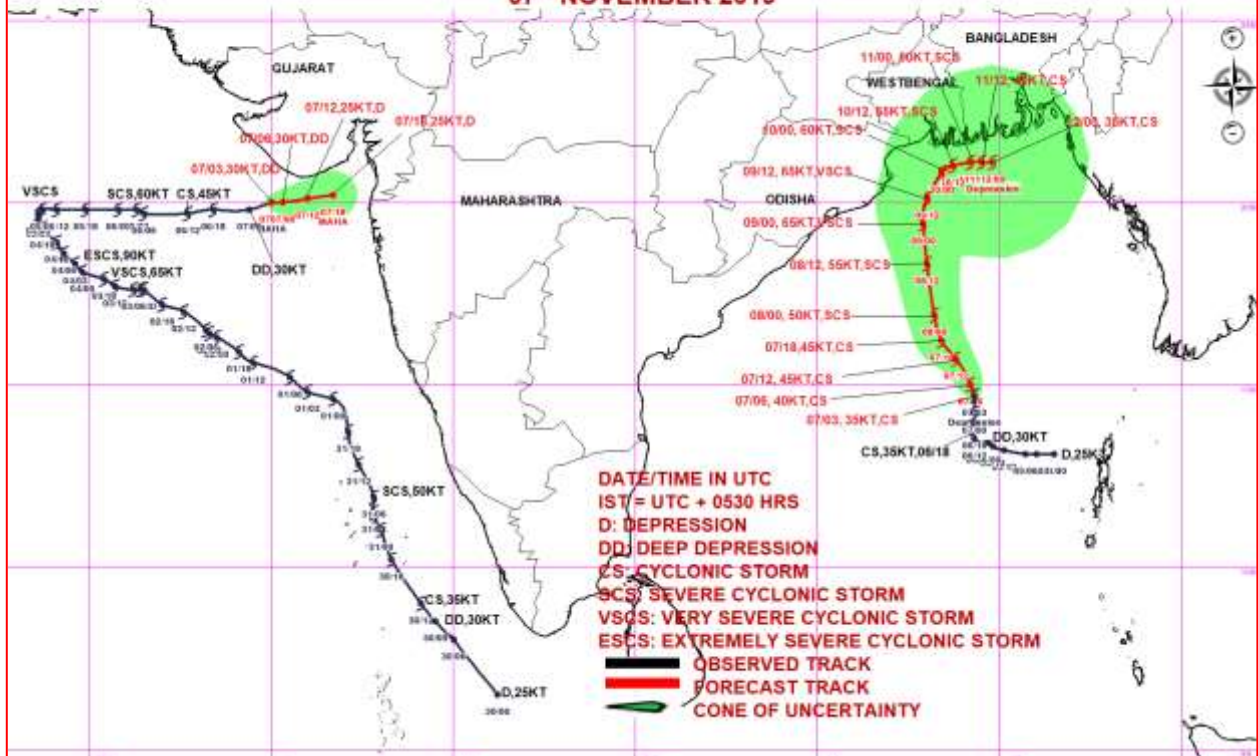
SAT : INSAT-3D IMG
IMG_TIR1 10.8 um
LIC Mercator

07-11-2019/(0400 to 0427) GMT
07-11-2019/(0930 to 0957) IST

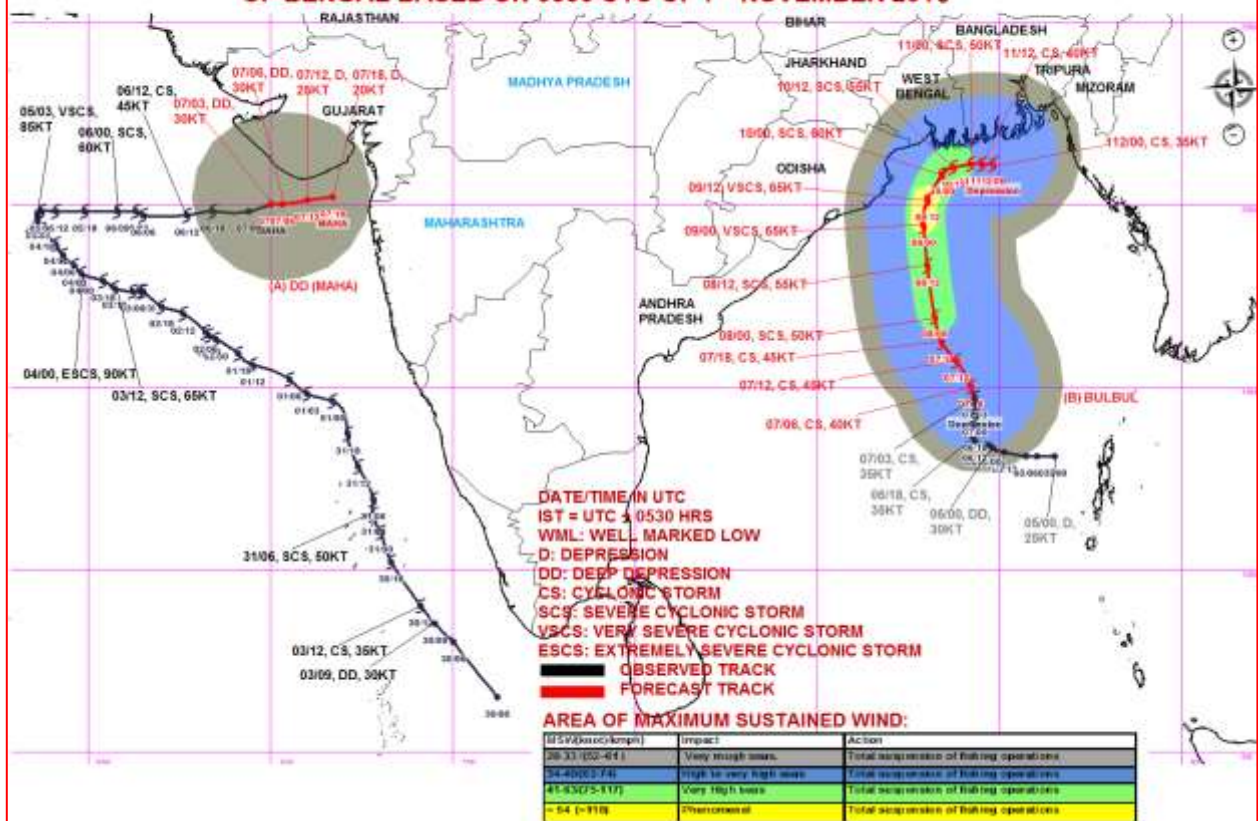


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) DEEP DEPRESSION OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL BASED ON 0300 UTC OF 07th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) DEEP DEPRESSION (MAHA) OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL BASED ON 0300 UTC OF 7th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 66 (ARB/04/2019) & BULLETIN NO.: 19 (BOB/04/2019)

TIME OF ISSUE: 1440 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub:(A) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral Bay of Bengal: CYCLONE WATCH FOR WEST BENGAL AND NORTH ODISHA COASTS

(B) Depression over eastcentral & adjoining northeast Arabian Sea

BULLETIN NO. : 19 (BOB/04/2019)

(A) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over eastcentral Bay of Bengal.

The **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over eastcentral Bay of Bengal moved north- northwestwards with a speed of 15 kmph during past 06 hours and lay centred at 1130 hrs IST of today, the 7th November 2019, over eastcentral Bay of Bengal, near Lat.15.0°N and Long. 89.2°E about 640 km south-southeast of Paradip (Odisha), 740 km south-southeast of Sagar Islands (West Bengal) and 780 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 24 hours. It is very likely to move initially north-northwestwards for next 12 hours and then nearly northwards till 9th November morning and then re-curve northeastwards towards Bangladesh and adjoining West Bengal.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
07.11.19/1130	15.0	89.2	70-80 gusting to 90	Cyclonic Storm
07.11.19/1730	15.6	88.5	80-90 gusting to 100	Cyclonic Storm
07.11.19/2330	16.2	88.2	90-100 gusting to 110	Severe Cyclonic Storm

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

08.11.19/0530	16.8	88.0	100-110 gusting to 115	Severe Cyclonic Storm
08.11.19/1130	16.7	88.0	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/2330	18.9	87.8	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	19.9	87.8	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/2330	20.8	88.2	100-110 gusting to 115	Severe Cyclonic Storm
10.11.19/1130	21.4	89.0	90-100 gusting to 110	Severe Cyclonic Storm
10.11.19/2330	21.8	89.7	80-90 gusting to 100	Cyclonic Storm
11.11.19/1130	22.1	90.3	70-80 gusting to 90	Cyclonic Storm
11.11.19/2330	22.4	91.0	50-60 gusting to 70	Deep Depression
12.11.19/1130	22.6	91.8	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:**
 - (i) Light to moderate rainfall at many places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara and Jagatsinghpur districts on 8th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.
- **West Bengal:**
 - (i) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with extremely heavy falls (≥ 20 cm in 24 hours) at isolated places over North and South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing over east central Bay of Bengal around the system centre. It is very likely to increase gradually and become 100-110 kmph gusting to 115 kmph by 8th November morning. It will increase further becoming 120-130 kmph gusting to 145 kmph over north Bay of Bengal from the night of 8th November for subsequent 12 hours.
- **Odisha coast:** Strong wind speed reaching 35 – 45 kmph gusting to 55 kmph becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely towards evening of 9th November over Jagatsinghpur, Balasore and Bhadrak districts. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50kmph gusting to 60 kmph on 8th and 9th November.
- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night and gradually increase and becoming 55-65 kmph gusting to 75 kmph from 9th November evening. It is likely to increase to gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iv) Sea condition

- Sea condition will be high over eastcentral Bay of Bengal during next 24 hours and become very high from 8th November morning for subsequent 24 hours over central & adjoining northwest Bay of Bengal and very high to phenomenal over North Bay of Bengal by 9th November morning for subsequent 12 hours.
- Sea condition will be rough to very rough along and off Odisha and West Bengal coasts from 8th onwards becoming very high on 9th and 10th November.

(v) Damage Expected over coastal districts of north Odisha and West Bengal:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

(vi) Action Suggested for coastal districts of north Odisha and West Bengal

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement may be restricted

(vii) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

BULLETIN NO. : 66 (ARB/04/2019)

B) Depression over eastcentral & adjoining northeast Arabian Sea

The **Deep Depression** over eastcentral & adjoining northeast Arabian Sea moved nearly eastwards with a speed of 18 kmph during past 06 hours, weakened into a **Depression** and lay centered at 1130 hrs IST of today, the 07th November, 2019 over eastcentral & adjoining northeast Arabian Sea near latitude 20.0°N and longitude 70.4°E, about 100 km nearly to the south of Veraval (Gujarat) and 90 km nearly to the south of Diu. It is very likely to move east-northeastwards, weaken into a Well Marked Low Pressure Area over northeast & adjoining eastcentral Arabian Sea off south Gujarat coast during next 12 hours.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
07.11.19/1130	20.0	70.4	40-50 gusting to 60	Depression
07.11.19/1730	20.2	70.9	30-40 gusting to 50	Depression
07.11.19/2330	20.4	71.4	20-30 gusting to 40	Well Marked Low

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall very likely at many places over south Gujarat state with heavy falls at isolated places over **Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar** during next 24 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 24 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off **Junagarh, Gir Somnath, Diu, Amreli, Bhavnagar, Bharuch, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli** districts during next 12 hours and decrease thereafter.
- **North Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off north Maharashtra coast (Palghar & Thane districts) during next 12 hours and decrease thereafter.
- **Arabian Sea:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre during next 12 hours and decrease thereafter.

(iii) Sea condition: Sea condition will be rough to very rough over eastcentral and adjoining northeast Arabian Sea, along & off Gujarat and adjoining north Maharashtra coasts during next 12 hours and improve thereafter.

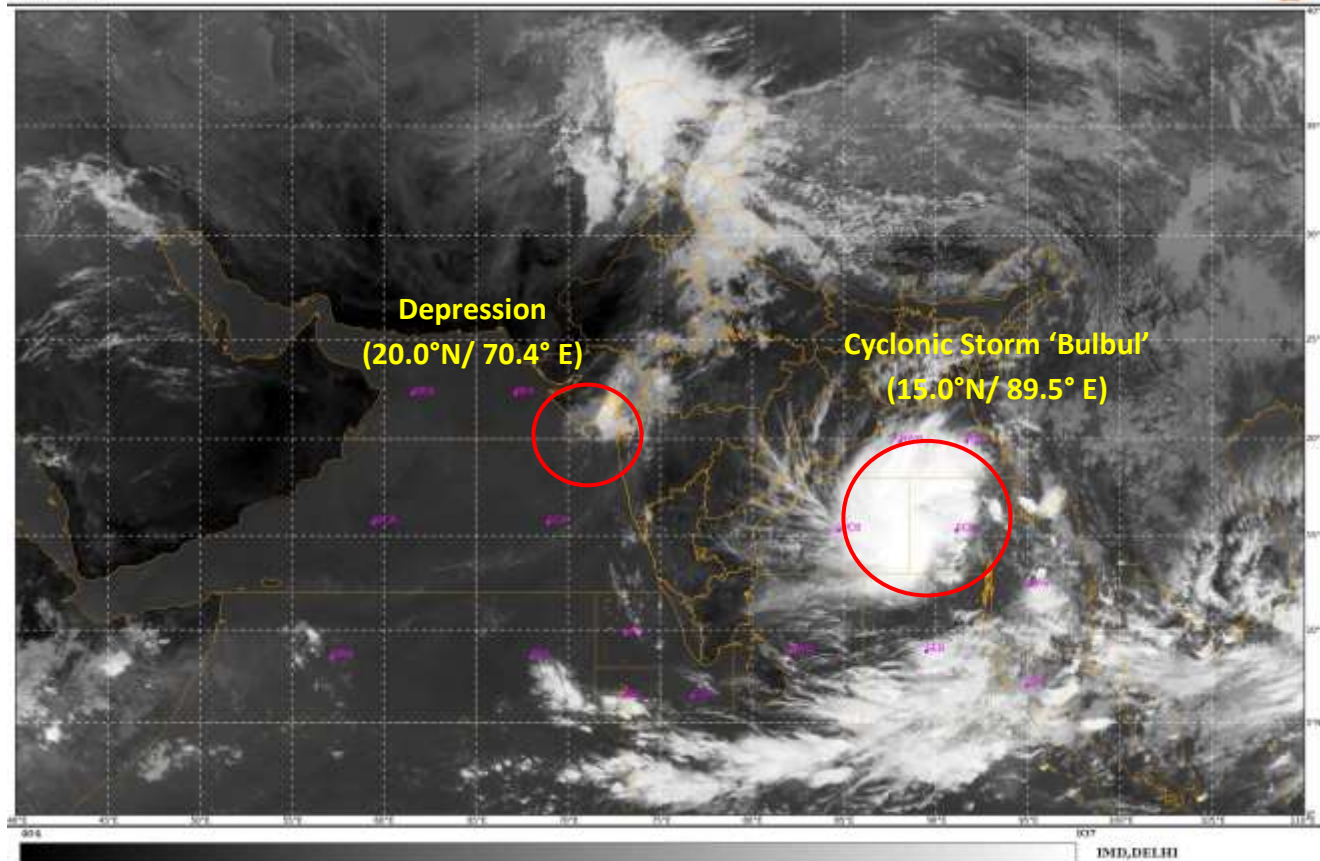
(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea along & off south Gujarat coast and adjoining north Maharashtra coast during next 12 hours.

The next bulletin will be issued at 1730 hrs IST of 07th November, 2019.

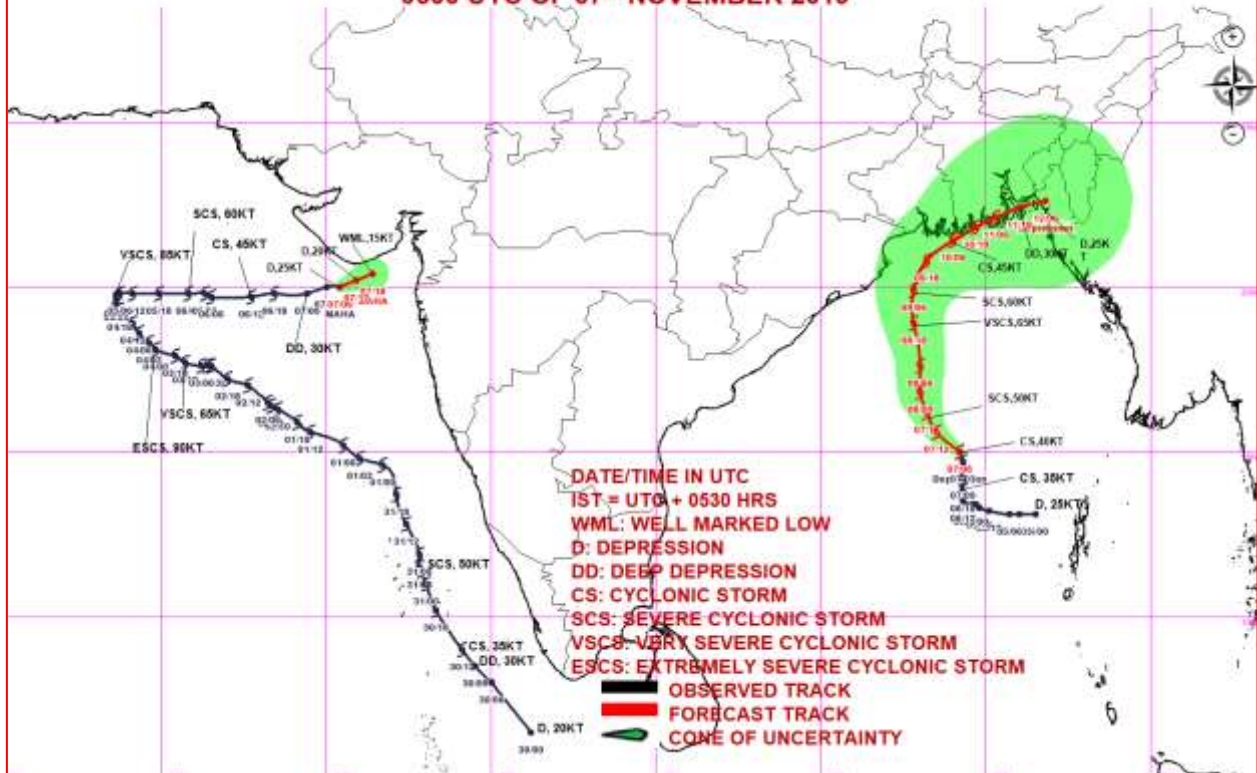
(Neetha K Gopal)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

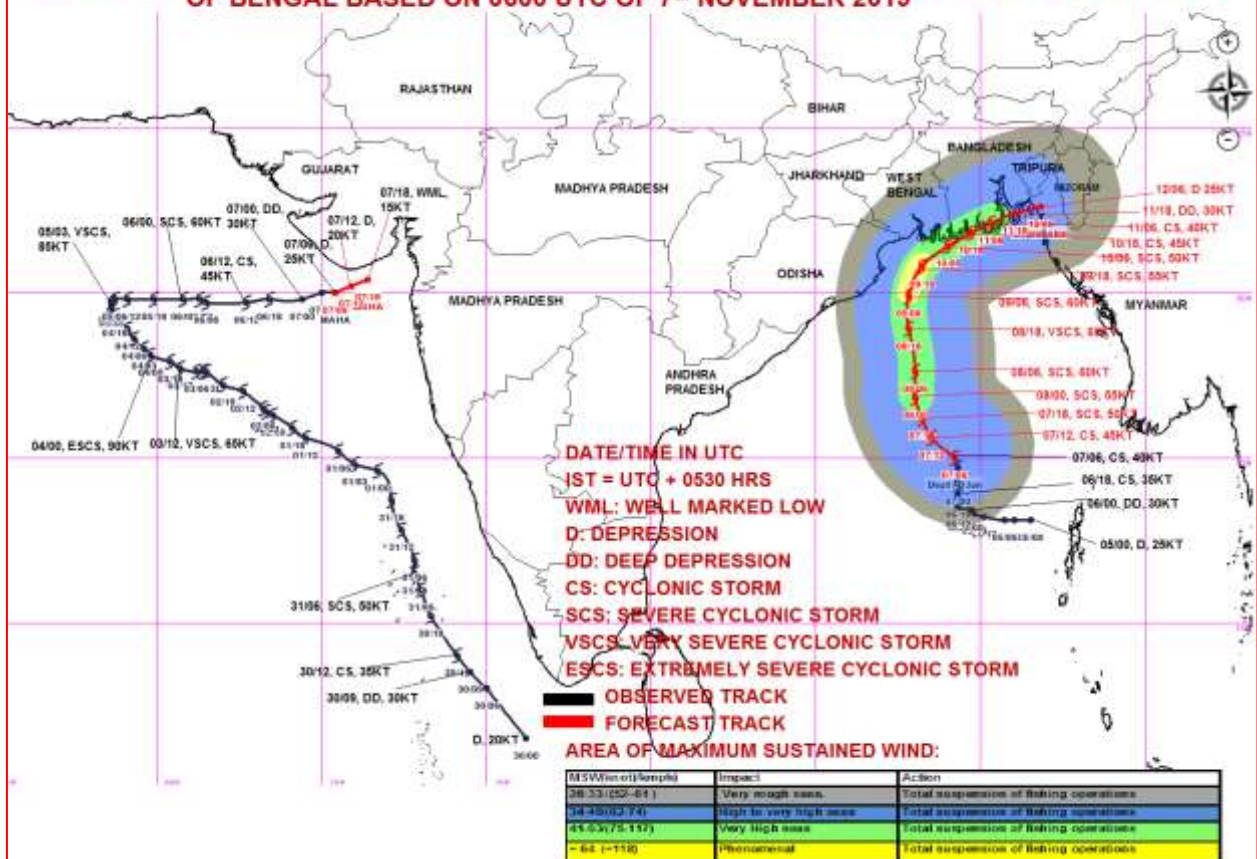


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL (B) DEPRESSION OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND BASED ON 0600 UTC OF 07th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) DEPRESSION (MAHA) OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 7th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 20 (BOB/04/2019) & BULLETIN NO.: 67 (ARB/04/2019)

TIME OF ISSUE: 1700 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub:(A) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE WATCH FOR WEST BENGAL AND NORTH ODISHA COASTS
(B) Depression over eastcentral & adjoining northeast Arabian Sea

BULLETIN NO. : 20 (BOB/04/2019)

(A) Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal.

The **Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over eastcentral Bay of Bengal moved northwestwards with a speed of 21 kmph during past 06 hours and lay centred at 1430 hrs IST of today, the 7th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.15.5°N and Long. 88.4°E about 560 km south-southeast of Paradip (Odisha), 680 km south-southeast of Sagar Islands (West Bengal) and 740 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify into a Severe Cyclonic Storm during next 6 hours. It is very likely to move initially north-northwestwards for next 12 hours and then nearly northwards till 9th November morning and then re-curve northeastwards towards Bangladesh and adjoining West Bengal.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
07.11.19/1430	15.5	88.4	80-90 gusting to 100	Cyclonic Storm

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

07.11.19/1730	15.8	88.2	90-100 gusting to 110	Severe Cyclonic Storm
07.11.19/2330	16.2	88.1	95-105 gusting to 115	Severe Cyclonic Storm
08.11.19/0530	16.8	88.0	100-110 gusting to 115	Severe Cyclonic Storm
08.11.19/1130	16.7	88.0	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/2330	18.9	87.8	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	19.9	87.8	110-120 gusting to 135	Severe Cyclonic Storm
09.11.19/2330	20.8	88.2	100-110 gusting to 115	Severe Cyclonic Storm
10.11.19/1130	21.4	89.0	90-100 gusting to 110	Severe Cyclonic Storm
10.11.19/2330	21.8	89.7	80-90 gusting to 100	Cyclonic Storm
11.11.19/1130	22.1	90.3	70-80 gusting to 90	Cyclonic Storm
11.11.19/2330	22.4	91.0	50-60 gusting to 70	Deep Depression
12.11.19/1130	22.6	91.8	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

- **Andaman and Nicobar Islands:** Light to moderate rainfall at most places very likely over **Andaman and Nicobar Islands** during next 24 hours.
- **Odisha:**
 - (i) Light to moderate rainfall at many places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara and Jagatsinghpur districts on 8th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.
- **West Bengal:**
 - (i) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with extremely heavy falls (≥ 20 cm in 24 hours) at isolated places over North and South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.
 - (ii) Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing over east central Bay of Bengal around the system centre. It is very likely to increase gradually and become 100-110 kmph gusting to 115 kmph by 8th November morning. It will increase further becoming 120-130 kmph gusting to 145 kmph over north Bay of Bengal from the night of 8th November for subsequent 12 hours.
- **Odisha coast:** Strong wind speed reaching 35 – 45 kmph gusting to 55 kmph becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely towards evening of 9th November over Jagatsinghpur, Balasore and Bhadrak districts. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50kmph gusting to 60 kmph on 8th and 9th November.
- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night and gradually increase and

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

becoming 55-65 kmph gusting to 75 kmph from 9th November evening. It is likely to increase to gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

(iv) Sea condition

- Sea condition will be high over eastcentral Bay of Bengal during next 24 hours and become very high from 8th November morning for subsequent 24 hours over central & adjoining northwest Bay of Bengal and very high to phenomenal over North Bay of Bengal by 9th November morning for subsequent 12 hours.
- Sea condition will be rough to very rough along and off Odisha and West Bengal coasts from 8th onwards becoming very high on 9th and 10th November.

(v) Damage Expected over coastal districts of north Odisha and West Bengal:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

(vi) Action Suggested for coastal districts of north Odisha and West Bengal

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement may be restricted

(vii) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 2 days and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

BULLETIN NO. : 67 (ARB/04/2019)

B) Depression over eastcentral & adjoining northeast Arabian Sea

The **Depression** over eastcentral & adjoining northeast Arabian Sea moved east-northeastwards with a speed of 11 kmph during past 06 hours, and lay centered at 1430 hrs IST of today, the 07th November, 2019 over northeast and adjoining eastcentral Arabian Sea near latitude 20.2°N and longitude 70.6°E, about 80 km to the south of Veraval (Gujarat) and 70 km to the south of Diu. It is very likely to move east-northeastwards, weaken into a Well Marked Low Pressure Area over northeast & adjoining eastcentral Arabian Sea off south Gujarat coast during next 6 hours.

Forecast track and intensity are given in the following table:

Date/Time(IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
07.11.19/1430	20.2	70.6	30-40 gusting to 50	Depression
07.11.19/1730	20.2	70.9	25-35 gusting to 45	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

07.11.19/2330	20.4	71.4	20-30 gusting to 40	Well Marked Low
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Warnings:

(i) Rainfall:

- **Gujarat:** Light to moderate rainfall very likely at many places over south Gujarat state with heavy falls at isolated places over **Diu, Junagarh, Gir Somnath, Amreli, Bhavnagar** during next 24 hours.
- **Maharashtra:** Light to moderate rainfall at many places over northern most districts of Konkan (Palghar & Thane districts) during next 24 hours.

(ii) Wind warning

- **Gujarat: Daman, Diu, Dadra & Nagar Haveli:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely to prevail over northeast Arabian Sea along & off **Junagarh, Gir Somnath, Diu, Amreli, Bhavnagar, Bharuch, Surat, Navsari, Valsad, Daman and Dadra & Nagar Haveli** districts during next 12 hours and decrease thereafter.
- **North Maharashtra:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off north Maharashtra coast (Palghar & Thane districts) during next 12 hours and decrease thereafter.
- **Arabian Sea:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over eastcentral & adjoining northeast Arabian Sea around the system centre during next 12 hours and decrease thereafter.

(iii) Sea condition: Sea condition will be rough to very rough over eastcentral and adjoining northeast Arabian Sea, along & off Gujarat and adjoining north Maharashtra coasts during next 12 hours and improve thereafter.

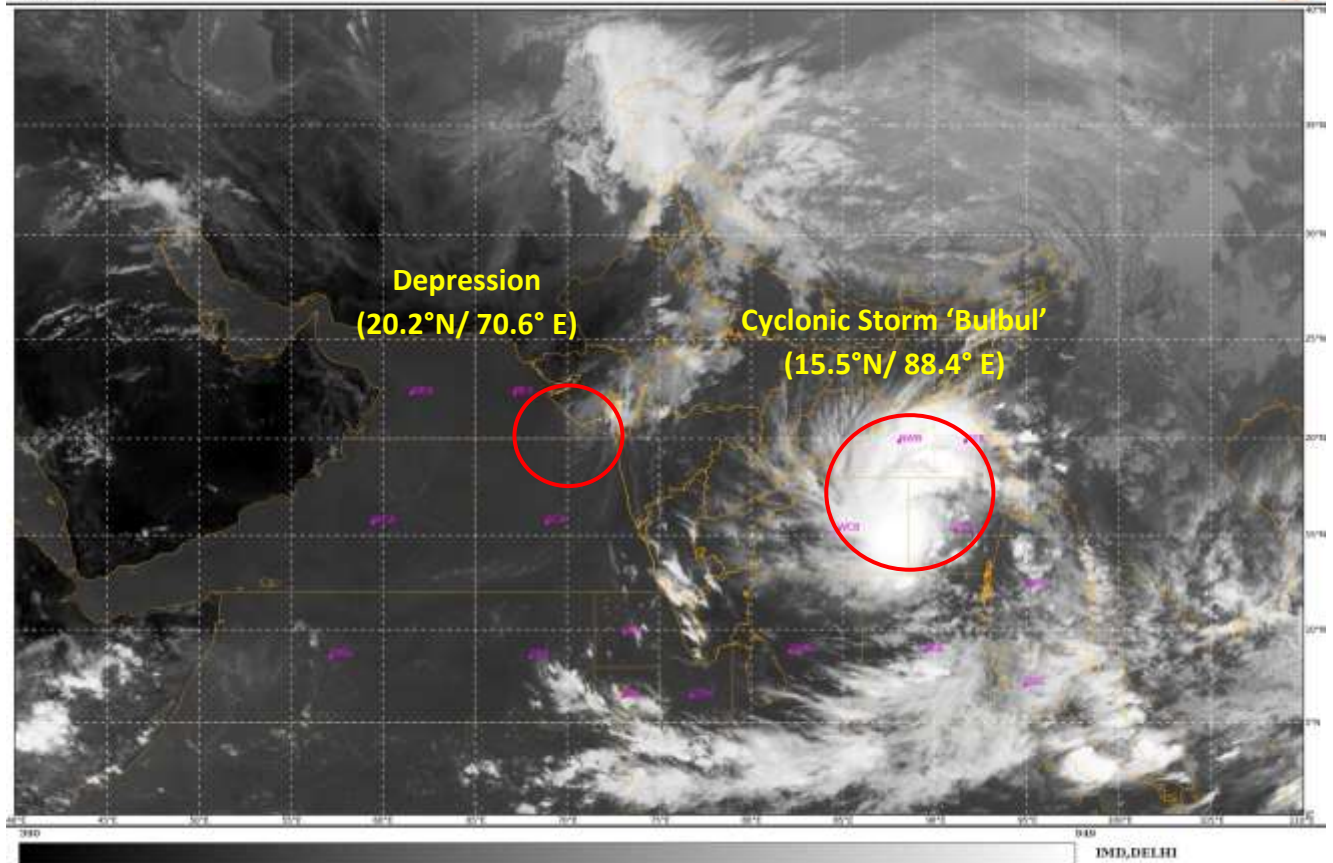
(v) Fishermen Warning

- The fishermen are advised not to venture into eastcentral & adjoining northeast Arabian Sea along & off south Gujarat coast and adjoining north Maharashtra coast during next 12 hours.

The next bulletin will be issued at 2030 hrs IST of 07th November, 2019.

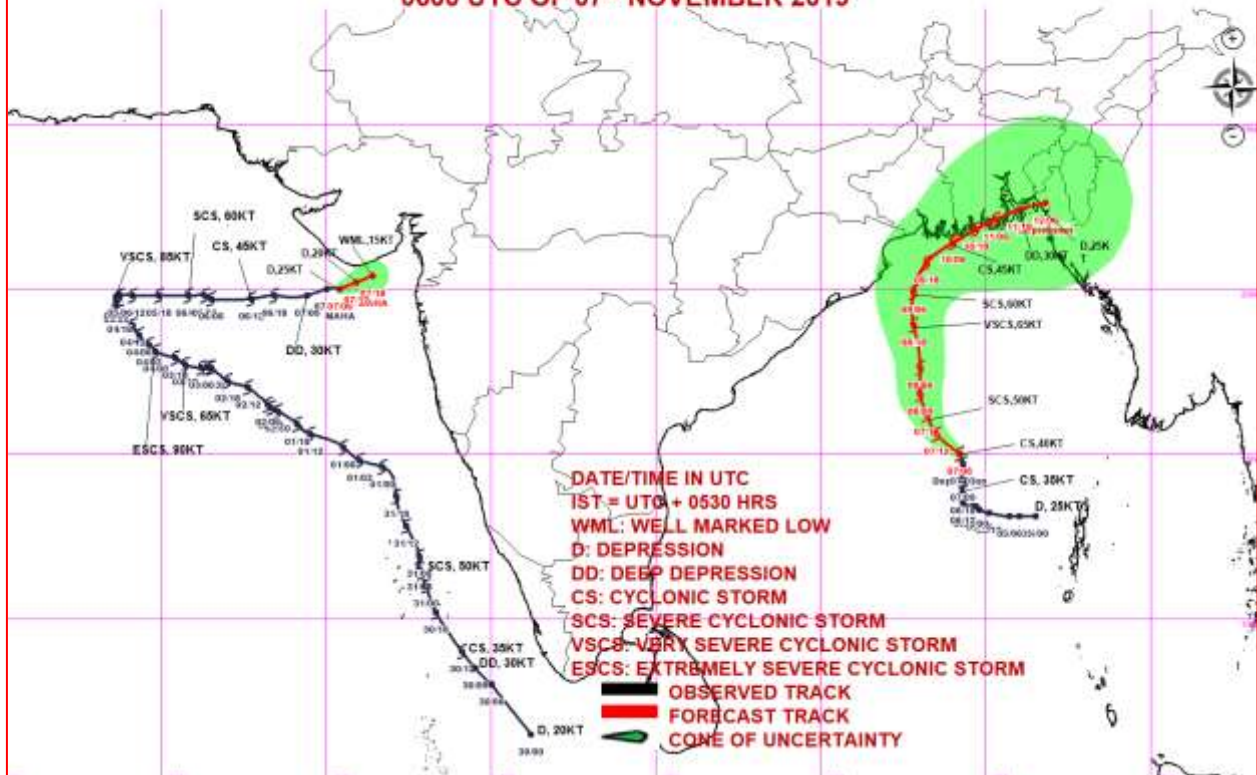
(RK JENAMANI)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

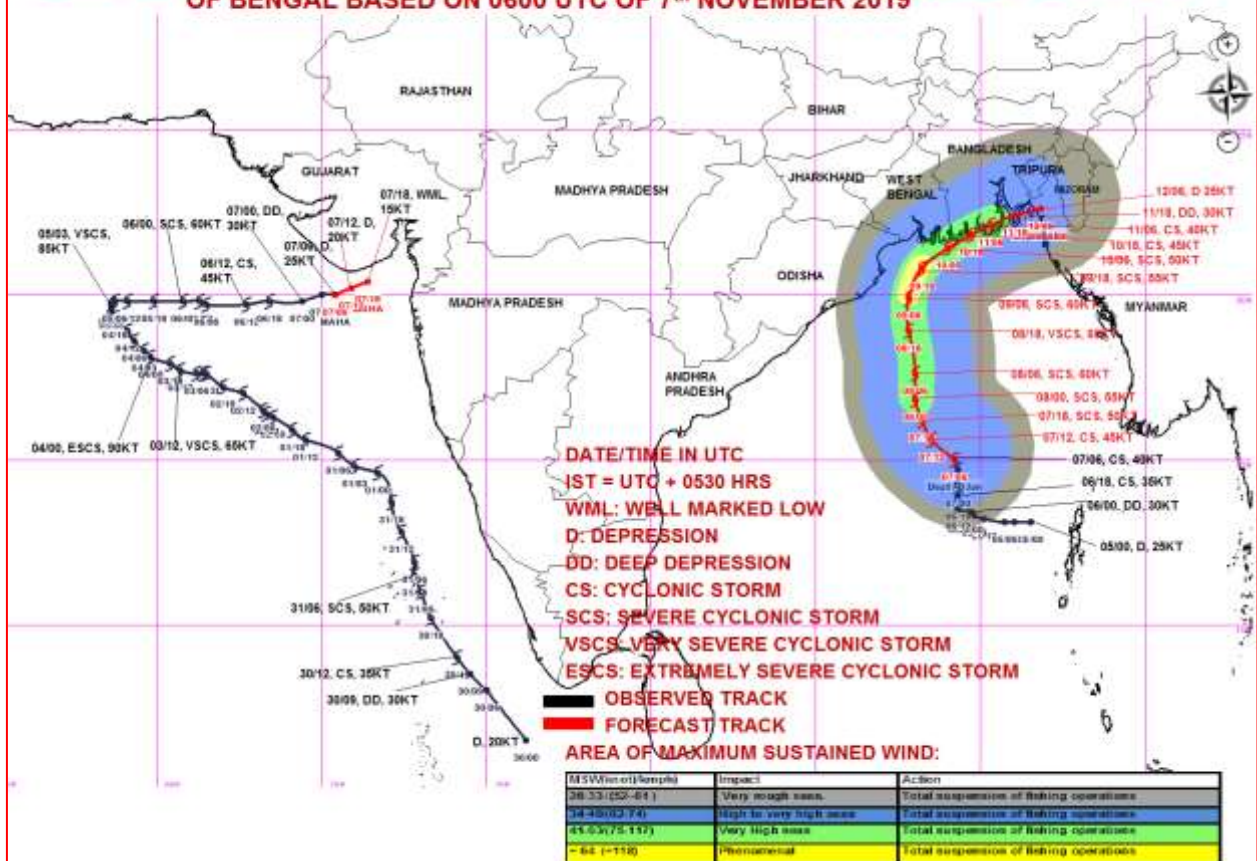


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH (A) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL (B) DEPRESSION OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND BASED ON 0600 UTC OF 07th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH (A) DEPRESSION (MAHA) OVER EASTCENTRAL & ADJOINING NORTHEAST ARABIAN SEA AND (B) CYCLONIC STORM "BULBUL" OVER EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 7th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)

BULLETIN NO.: 21 (BOB/04/2019) & BULLETIN NO.: 68 (ARB/04/2019)

TIME OF ISSUE: 2030 HOURS IST

DATED: 07.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)

ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)

ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)

ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)

CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)

CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)

CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

- Sub:(A) Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE WATCH FOR WEST BENGAL AND NORTH ODISHA COASTS
(B) Depression weakened into a Well marked low pressure area over northeast Arabian Sea and adjoining coastal Saurashtra.

BULLETIN NO. : 21 (BOB/04/2019)

- (A) Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal.**

The Cyclonic Storm '**Bulbul**' (**Pronounced as Bul bul**) over eastcentral Bay of Bengal moved northwestwards with a speed of 27 kmph during past 06 hours, intensified into a **Severe Cyclonic Storm** and lay centred at 1730 hrs IST of today, the 7th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.15.9°N and Long. 88.0°E about 510 km south-southeast of Paradip (Odisha), 640 km south of Sagar Islands (West Bengal) and 710 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move initially north-northwestwards for next 12 hours then nearly northwards till 9th November morning and then re-curve northeastwards towards Bangladesh and adjoining West Bengal.

Forecast track and intensity are given in the following table:

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
07.11.19/1730	15.9	88.0	90-100 gusting to 100	Severe Cyclonic Storm
07.11.19/2330	16.4	87.7	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/0530	16.8	87.5	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1130	17.6	87.4	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1730	18.3	87.4	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	19.5	87.5	120-130 gusting to 145	Severe Cyclonic Storm
09.11.19/1730	20.4	87.9	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	21.1	88.3	100-110 gusting to 115	Severe Cyclonic Storm
10.11.19/1730	21.5	89.0	90-100 gusting to 100	Severe Cyclonic Storm
11.11.19/0530	21.8	89.7	70-80 gusting to 90	Cyclonic Storm
11.11.19/1730	21.9	90.5	50-60 gusting to 70	Deep Depression
12.11.19/0530	22.0	91.2	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

• Odisha:

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.

• West Bengal:

- ✓ Light to moderate rainfall at a few places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 90-100 kmph gusting to 110 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 110-120 kmph gusting to 135 kmph by forenoon of 8th November. It will increase further becoming 120-130 kmph gusting to 145 kmph over westcentral & northwest Bay of Bengal from the 8th November evening for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph likely to commence along & off Odisha coast from 8th morning. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely from afternoon of 9th November along & off Jagatsinghpur, Balasore and Bhadrak districts and 60 – 70 kmph gusting to 80 kmph along & off Kendrapara district for subsequent 12 hours and decrease thereafter. It is likely to decrease from 10th onwards. Puri, Ganjam and

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Jajpur districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph on 8th & 9th November.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night, it will gradually increase becoming 55-65 kmph gusting to 75 kmph from 9th November evening and gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

(iii) Sea condition

- ✓ Sea condition will be very high over westcentral and adjoining eastcentral Bay of Bengal during next 24 hours and become phenomenal over westcentral and adjoining northwest Bay of Bengal from 8th November evening for subsequent 12 hours and high to very high over North Bay of Bengal from 9th November morning for subsequent 24 hours.
- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.

(iv) Damage Expected over coastal districts of north Odisha and West Bengal:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

(v) Action Suggested for coastal districts of north Odisha and West Bengal

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted

(vi) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 24 hours and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

BULLETIN NO. : 68 (ARB/04/2019)

B) Depression weakened into a Well marked low pressure area over northeast Arabian Sea and adjoining south Gujarat coast.

The **Depression** over northeast & adjoining eastcentral Arabian Sea moved east-northeastwards, weakened into a **Well marked low pressure area** over northeast Arabian Sea and adjoining south Gujarat coast at 1730 hrs IST of today, the 07th November, 2019.

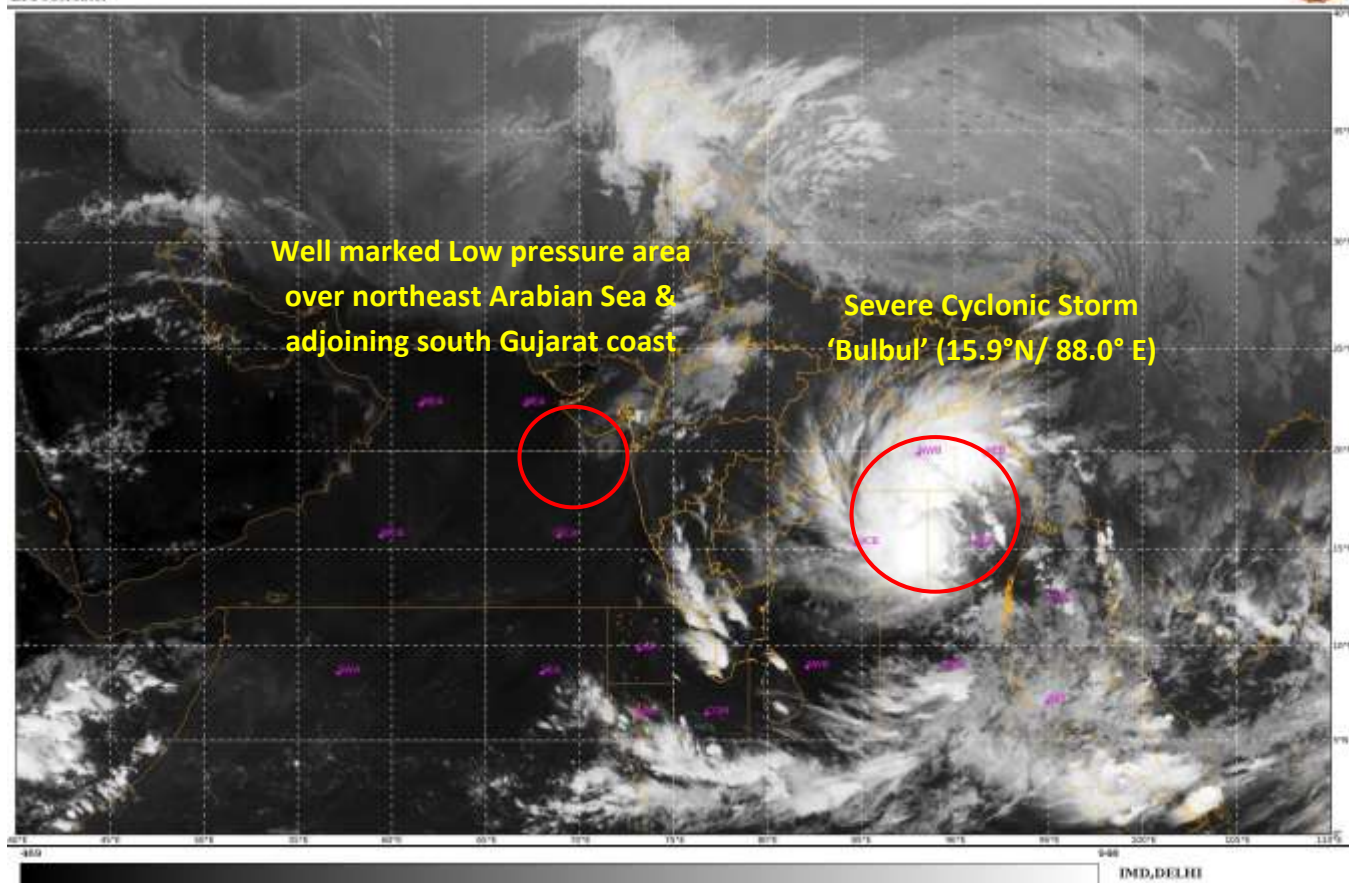
This is the last bulletin for this system. However, regular bulletins will continue from Meteorological Centre Ahmedabad

The next bulletin will be issued at 2330 hrs IST of 07th November, 2019.

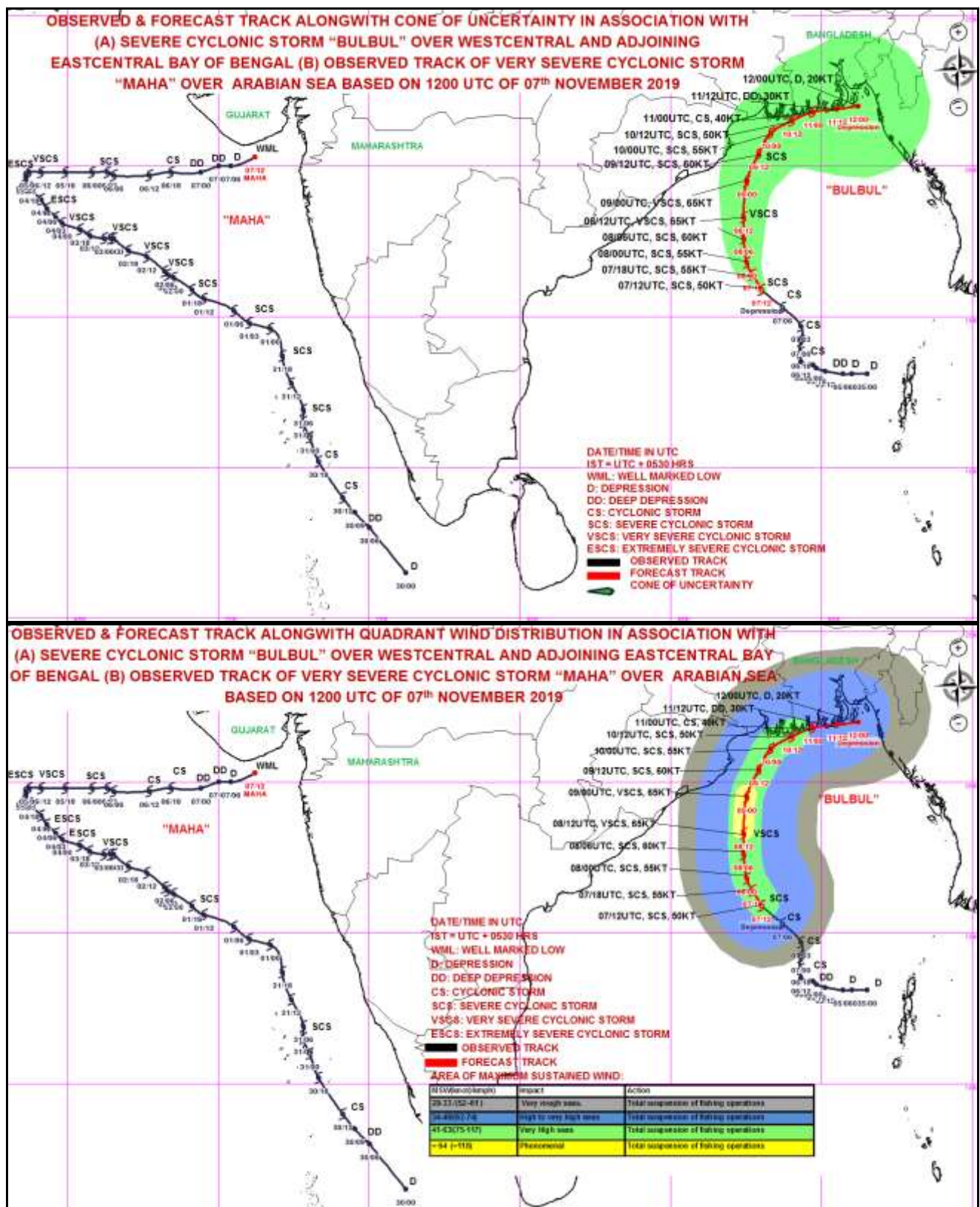
(RK JENAMANI)
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 22 (BOB/04/2019)

TIME OF ISSUE: 2230 HOURS IST

DATED: 07.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE ALERT FOR WEST BENGAL COAST: YELLOW MESSAGE

BULLETIN NO. : 22 (BOB/04/2019)

The Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved north-northwestwards with a speed of 16 kmph during past 06 hours and lay centred at 2030 hrs IST of today, the 7th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.16.2°N and Long. 87.9°E about 470 km south-southeast of Paradip (Odisha), 600 km south of Sagar Islands (West Bengal) and 690 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move initially north-northwestwards for next 12 hours then nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh) around forenoon of 10th November.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
07.11.19/2030	16.2	87.9	95-105 gusting to 115	Severe Cyclonic Storm
07.11.19/2330	16.4	87.7	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/0530	16.8	87.5	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1130	17.6	87.4	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1730	18.3	87.4	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/0530	19.5	87.5	120-130 gusting to 145	Severe Cyclonic Storm
09.11.19/1730	20.5	87.9	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	21.3	88.5	100-110 gusting to 115	Severe Cyclonic Storm
10.11.19/1730	22.0	89.2	90-100 gusting to 100	Severe Cyclonic Storm
11.11.19/0530	22.6	90.0	70-80 gusting to 90	Cyclonic Storm
11.11.19/1730	23.1	90.7	50-60 gusting to 70	Deep Depression
12.11.19/0530	23.6	91.4	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

- **Odisha:**

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.

- **West Bengal:**

✓ Light to moderate rainfall at a few places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.

✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.

✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 90-100 kmph gusting to 110 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 110-120 kmph gusting to 135 kmph by forenoon of 8th November. It will increase further becoming 120-130 kmph gusting to 145 kmph over westcentral & northwest Bay of Bengal from the 8th November evening for subsequent 12 hours and decrease gradually thereafter.

- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph likely to commence along & off Odisha coast from 8th morning. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely from afternoon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

and Bhadrak districts for subsequent 12 hours and decrease thereafter. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph on 8th & 9th November.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night, it will gradually increase becoming 55-65 kmph gusting to 75 kmph from 9th November evening and gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

(iii) Sea condition

- ✓ Sea condition will be very high over westcentral and adjoining eastcentral Bay of Bengal during next 24 hours and become phenomenal over westcentral and adjoining northwest Bay of Bengal from 8th November evening for subsequent 12 hours and high to very high over North Bay of Bengal from 9th November morning for subsequent 24 hours.
- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.

(iv) Storm Surge

- Storm surge of about 1.0 meter height above Astronomical tide is very likely to inundate low lying areas of South 24 Parganas and east Medinipur.

(v) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 24 hours and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted

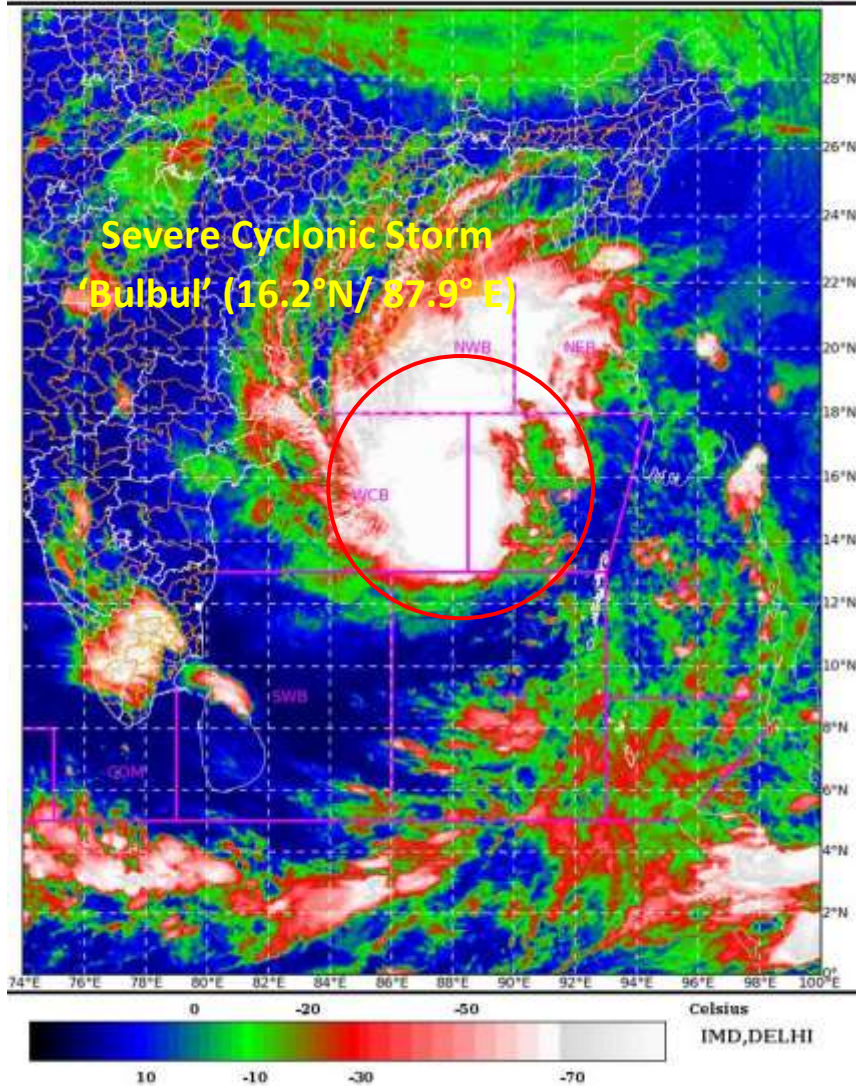
Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Movement in motor boats unsafe.

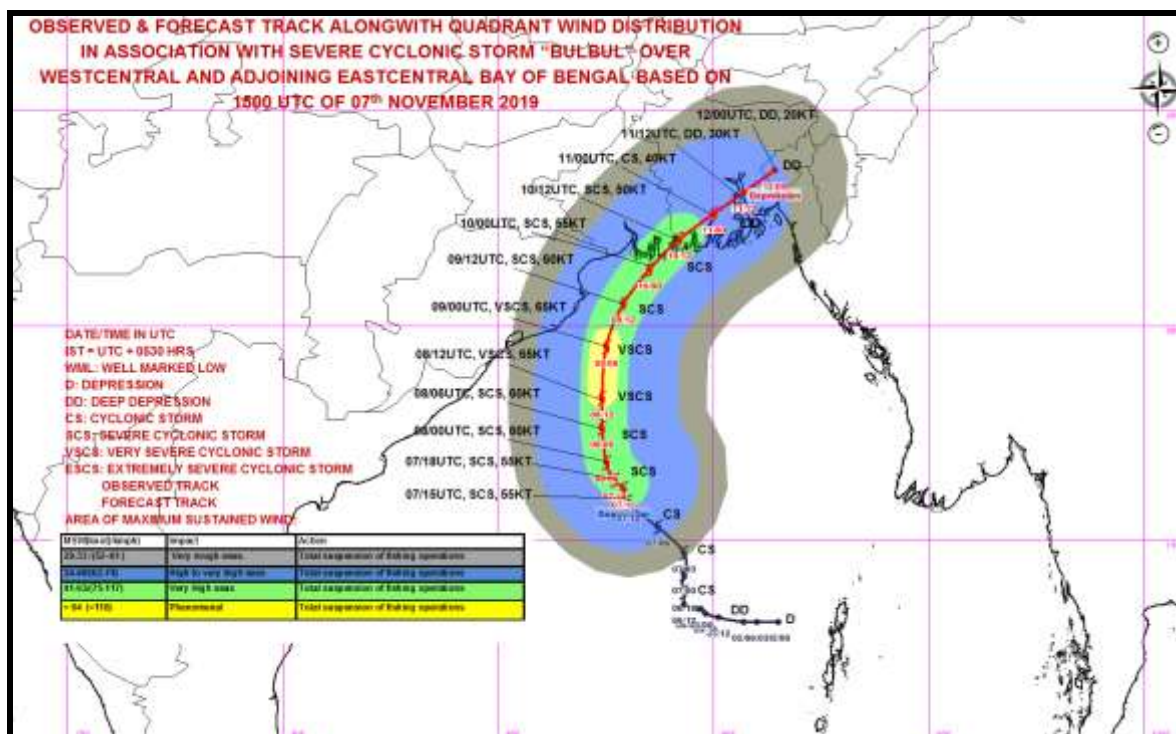
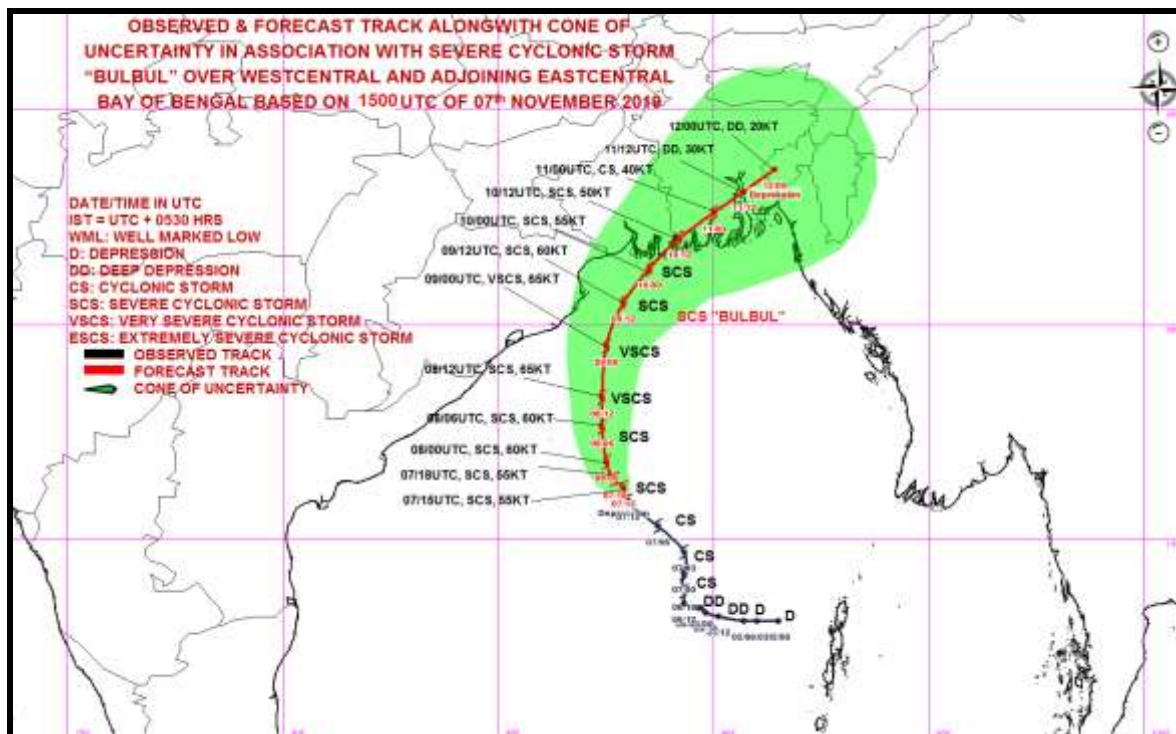
The next bulletin will be issued at 0230 hrs IST of 08th November, 2019.

(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 23 (BOB/04/2019)

TIME OF ISSUE: 0230 HOURS IST

DATED: 08.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
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H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
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DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE ALERT FOR WEST BENGAL COAST: YELLOW MESSAGE

BULLETIN NO. : 23 (BOB/04/2019)

The Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved north-northwestwards with a speed of 10 kmph during past 06 hours and lay centred at 2330 hrs IST of yesterday, the 7th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.16.4°N and Long. 87.8°E about 450 km south-southeast of Paradip (Odisha), 580 km south of Sagar Islands (West Bengal) and 670 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move initially north-northwestwards for next 12 hours then nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh) during the early hours of 10th November.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
07.11.19/2330	16.4	87.8	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/0530	16.9	87.6	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1130	17.7	87.6	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1730	18.5	87.6	125-135 gusting to 145	Very Severe Cyclonic Storm
08.11.19/2330	19.1	87.7	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	20.2	88.0	100-110 gusting to 120	Severe Cyclonic Storm
09.11.19/2330	21.3	88.7	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.3	89.6	75-85 gusting to 95	Cyclonic Storm
10.11.19/2330	22.7	90.5	55-65 gusting to 75	Deep Depression
11.11.19/1130	22.9	91.4	45-55 gusting to 65	Depression
11.11.19/2330	23.0	92.3	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

- **Odisha:**

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.

- **West Bengal:**

- ✓ Light to moderate rainfall at a few places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 100-110 kmph gusting to 120 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 110-120 kmph gusting to 135 kmph by forenoon of 8th November. It will increase further becoming 125-135 kmph gusting to 145 kmph over westcentral & northwest Bay of Bengal from the 8th November evening for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph likely to commence along & off Odisha coast from 8th morning. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely from afternoon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

and Bhadrak districts for subsequent 12 hours and decrease thereafter. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph on 8th & 9th November.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night, it will gradually increase becoming 55-65 kmph gusting to 75 kmph from 9th November evening and gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

(iii) Sea condition

- ✓ Sea condition will be very high over westcentral and adjoining eastcentral Bay of Bengal during next 24 hours and become phenomenal over westcentral and adjoining northwest Bay of Bengal from 8th November evening for subsequent 12 hours and high to very high over North Bay of Bengal from 9th November morning for subsequent 24 hours.
- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.

(iv) Storm Surge

- Storm surge of about 1.0 meter height above Astronomical tide is very likely to inundate low lying areas of South 24 Parganas and east Medinipur.

(v) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 24 hours and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted

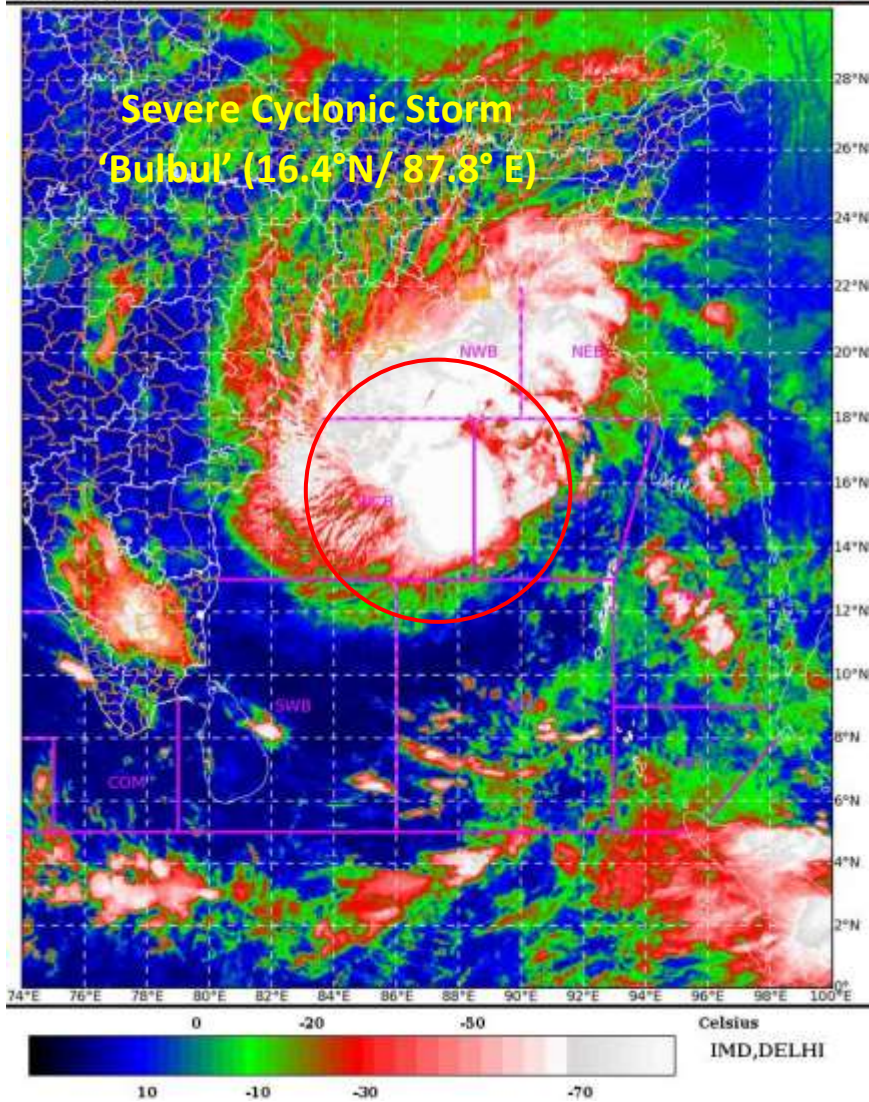
Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Movement in motor boats unsafe.

The next bulletin will be issued at 0530 hrs IST of 08th November, 2019.

(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 24 (BOB/04/2019)

TIME OF ISSUE: 0500 HOURS IST

DATED: 08.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE ALERT FOR WEST BENGAL COAST: YELLOW MESSAGE

BULLETIN NO. : 24 (BOB/04/2019)

The Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved north-northwestwards with a speed of 08 kmph during past 06 hours and lay centred at 0230 hrs IST of today, the 8th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.16.6°N and Long. 87.7°E about 420 km south-southeast of Paradip (Odisha), 560 km south-southwest of Sagar Islands (West Bengal) and 650 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move initially north-northwestwards for next 12 hours then nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh) during the early hours of 10th November.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
08.11.19/0230	16.6	87.7	100-110 gusting to 120	Severe Cyclonic Storm
08.11.19/0530	16.9	87.6	105-115 gusting to 125	Severe Cyclonic Storm
08.11.19/1130	17.7	87.6	110-120 gusting to 135	Severe Cyclonic Storm
08.11.19/1730	18.5	87.6	125-135 gusting to 145	Very Severe Cyclonic Storm
08.11.19/2330	19.1	87.7	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/1130	20.2	88.0	100-110 gusting to 120	Severe Cyclonic Storm
09.11.19/2330	21.3	88.7	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.3	89.6	75-85 gusting to 95	Cyclonic Storm
10.11.19/2330	22.7	90.5	55-65 gusting to 75	Deep Depression
11.11.19/1130	22.9	91.4	45-55 gusting to 65	Depression
11.11.19/2330	23.0	92.3	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

- **Odisha:**

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj, Cuttack and Jajpur districts on 9th November 2019.

- **West Bengal:**

- ✓ Light to moderate rainfall at a few places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, isolated heavy to very heavy falls over East and West Medinipur, Howrah, and Hooghly on 9th November 2019.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North and South 24 Parganas, and isolated heavy falls over Howrah, Hooghly and Nadiya districts on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 100-110 kmph gusting to 120 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 110-120 kmph gusting to 135 kmph by forenoon of 8th November. It will increase further becoming 125-135 kmph gusting to 145 kmph over westcentral & northwest Bay of Bengal from the 8th November evening for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph likely to commence along & off Odisha coast from 8th morning. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th over Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph likely from afternoon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

and Bhadrak districts for subsequent 12 hours and decrease thereafter. It is likely to decrease from 10th onwards. Puri, Ganjam and Jajpur districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph on 8th & 9th November.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coasts from 8th November night, it will gradually increase becoming 55-65 kmph gusting to 75 kmph from 9th November evening and gale wind speed reaching 70-80 kmph gusting to 90 kmph by 10th morning.

(iii) Sea condition

- ✓ Sea condition will be very high over westcentral and adjoining eastcentral Bay of Bengal during next 24 hours and become phenomenal over westcentral and adjoining northwest Bay of Bengal from 8th November evening for subsequent 12 hours and high to very high over North Bay of Bengal from 9th November morning for subsequent 24 hours.
- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.

(iv) Storm Surge

- Storm surge of about 1.0 meter height above Astronomical tide is very likely to inundate low lying areas of South 24 Parganas and east Medinipur.

(v) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into eastcentral Bay of Bengal during next 24 hours and into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 12th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – west Bengal coasts from 8th November onwards.
- The fishermen out at Sea are advised to return to the coast from these areas.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted

Action suggested for coastal districts of West Bengal

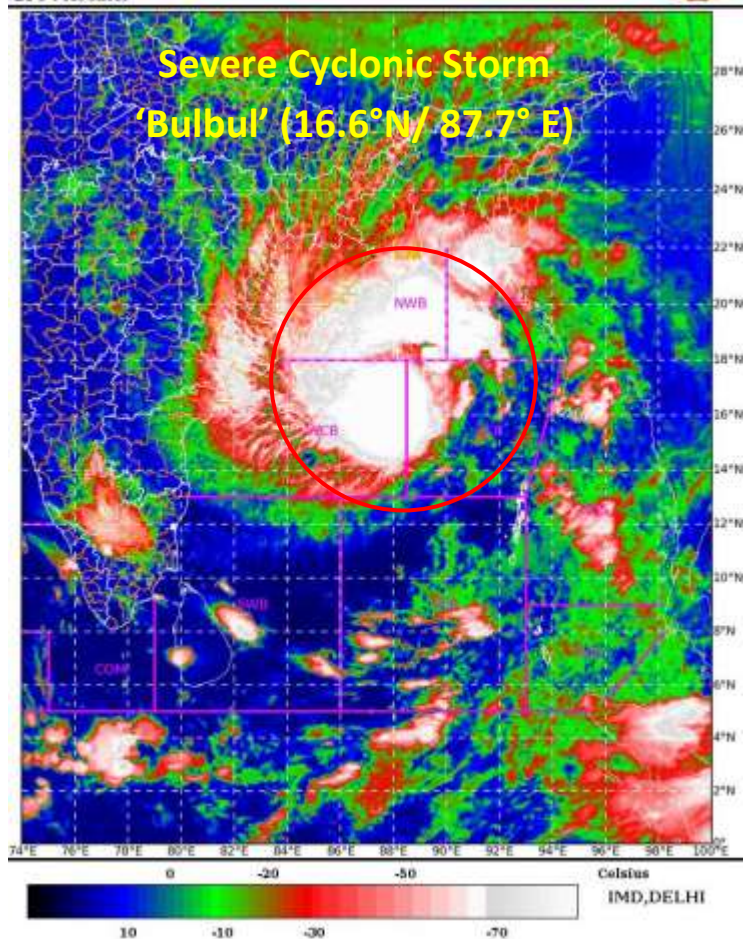
- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Movement in motor boats unsafe.

The next bulletin will be issued at 0830 hrs IST of 08th November, 2019.

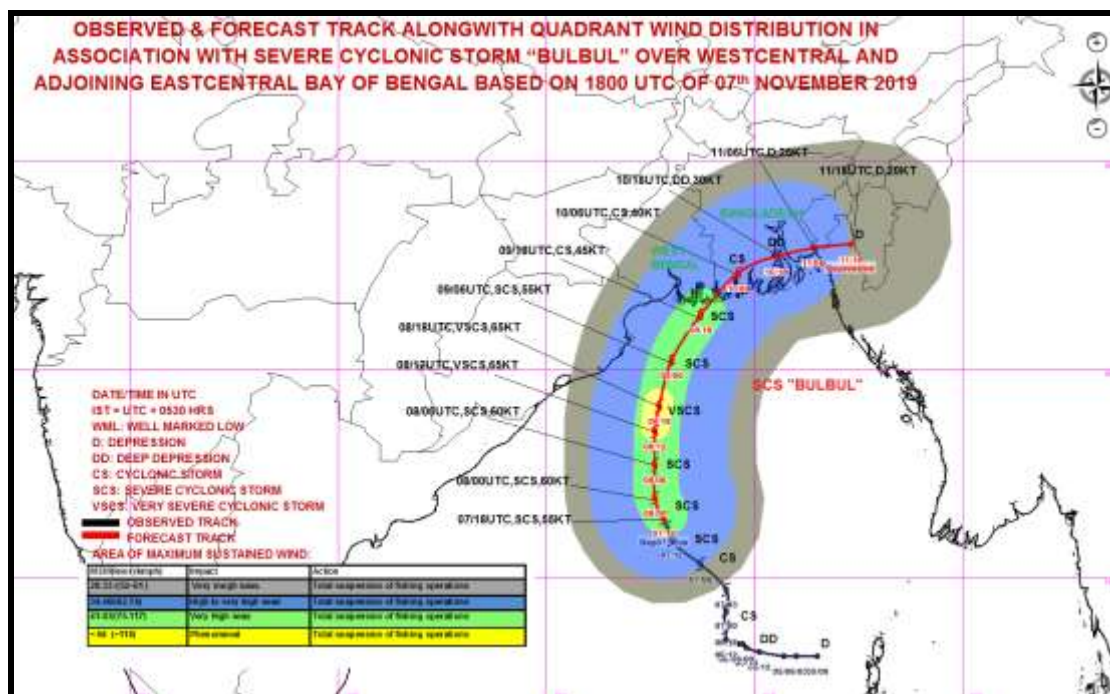
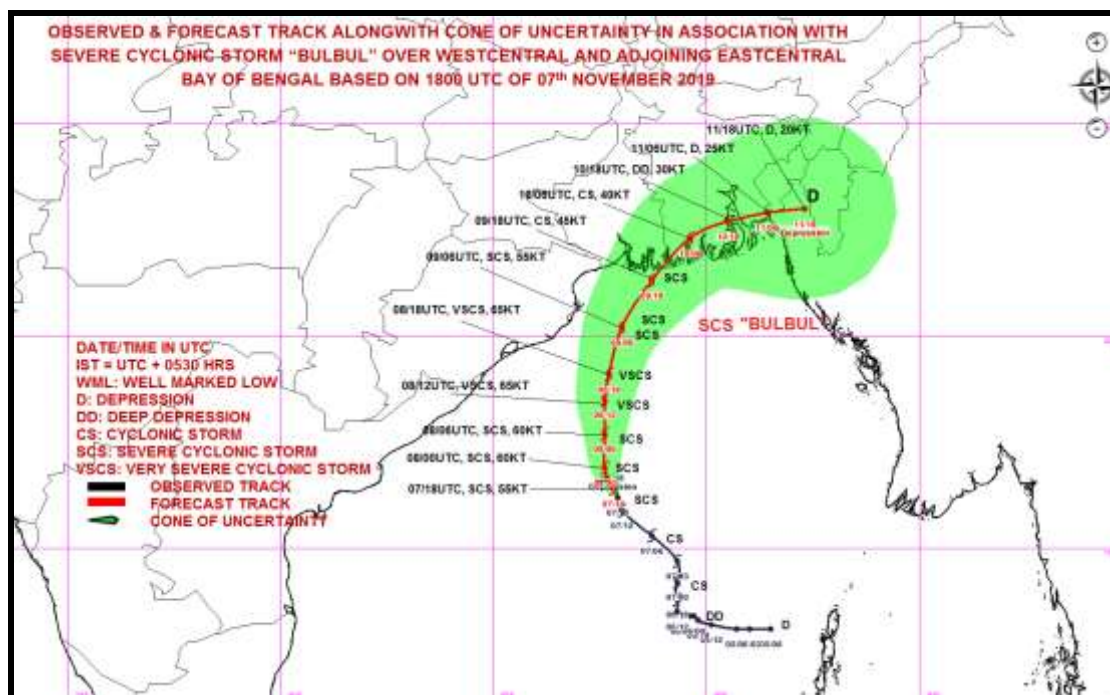
(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 25 (BOB/04/2019)

TIME OF ISSUE: 0845 HOURS IST

DATED: 08.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
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CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674 -2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0866-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE ALERT FOR WEST BENGAL COAST: YELLOW MESSAGE

BULLETIN NO. : 25 (BOB/04/2019)

The Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral & adjoining eastcentral Bay of Bengal moved north-northwestwards with a speed of 10 kmph during past 06 hours, intensified into a Very Severe Cyclonic Storm and lay centred at 0530 hrs IST of today, the 8th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.16.9°N and Long. 87.6°E about 390 km south-southeast of Paradip (Odisha), 530 km south-southwest of Sagar Islands (West Bengal) and 630 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta during the early hours of 10th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (^o N)	Long. (^o E)		
08.11.19/0530	16.9	87.6	120-130 gusting to 140	Very Severe Cyclonic Storm
08.11.19/1130	17.7	87.6	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/1730	18.5	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.1	87.7	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/0530	19.6	87.8	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/1730	20.8	88.3	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/0530	21.8	89.1	100-110 gusting to 120	Severe Cyclonic Storm
10.11.19/1730	22.5	90.1	75-85 gusting to 95	Cyclonic Storm
11.11.19/0530	22.8	90.8	50-60 gusting to 70	Deep Depression
11.11.19/1730	22.9	91.2	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

• Odisha:

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj and Jajpur districts on 9th November 2019.

• West Bengal:

- ✓ Light to moderate rainfall at a few places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East and West Medinipur, and isolated heavy to very heavy rainfall over Howrah and Hooghly on 9th November 2019.
- ✓ Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places over North and South 24 Parganas, Nadiya and heavy falls at isolated places over East Medinipur district on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 120-130 kmph gusting to 140 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 145-155 kmph gusting to 170 kmph by early hours of 9th November over northwest & adjoining westcentral Bay of Bengal for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph prevails along & off Odisha coast. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph very likely from around noon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph from afternoon of 8th November for the subsequent 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coast from 8th November night. It will gradually increase becoming gale wind speed reaching 100-110 kmph gusting to 120 kmph from 09th midnight to 10th forenoon along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly.

(iii) Sea condition

- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.
- ✓ Sea condition will be rough to very rough over north Bay of Bengal till 8th evening. It will gradually become very high to phenomenal over northwest & adjoining westcentral Bay of Bengal from 8th November evening for subsequent 48 hours and very rough to very high over northeast Bay of Bengal from 9th November morning for subsequent 48 hours
- ✓ Sea condition is phenomenal over westcentral and adjoining eastcentral Bay of Bengal around the system centre. It will be Phenomenal to very high over these areas for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 1.5 meter height above Astronomical tide is very likely to inundate low lying areas of South 24 Parganas and east Medinipur during the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 10th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – West Bengal coasts from 8th to 10th November.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

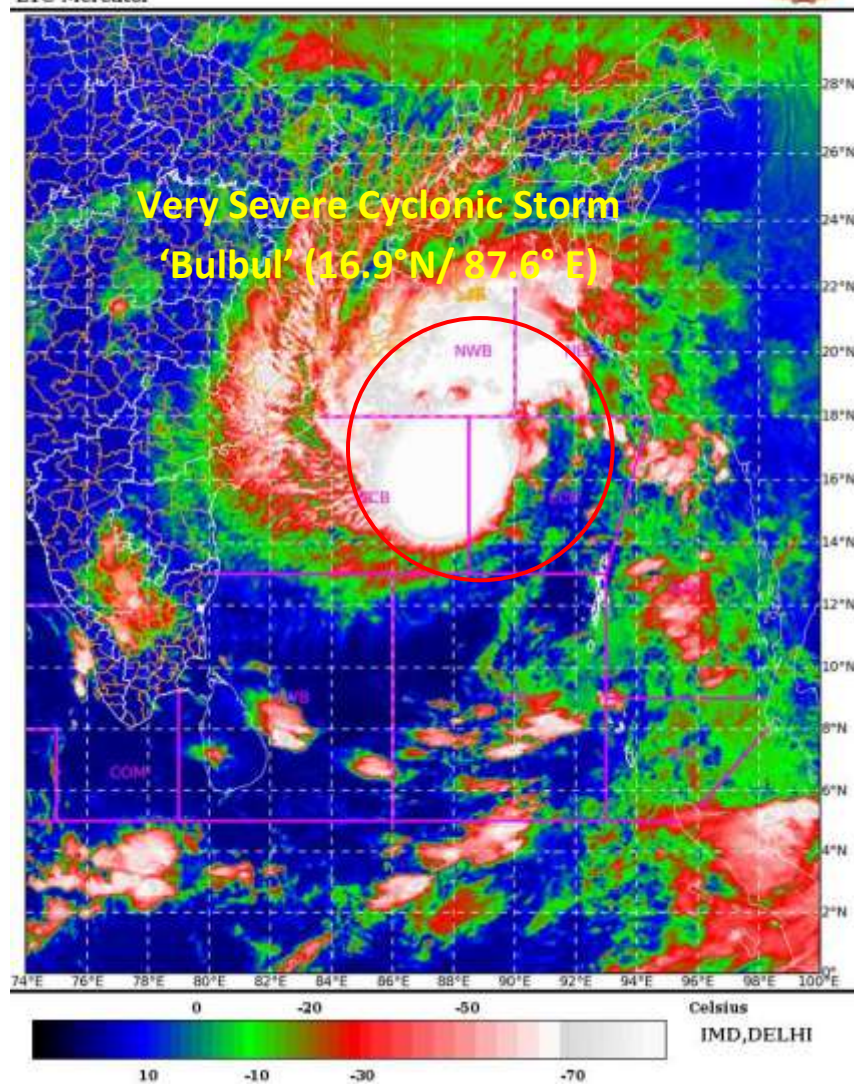
- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

The next bulletin will be issued at 1130 hrs IST of 08th November, 2019.

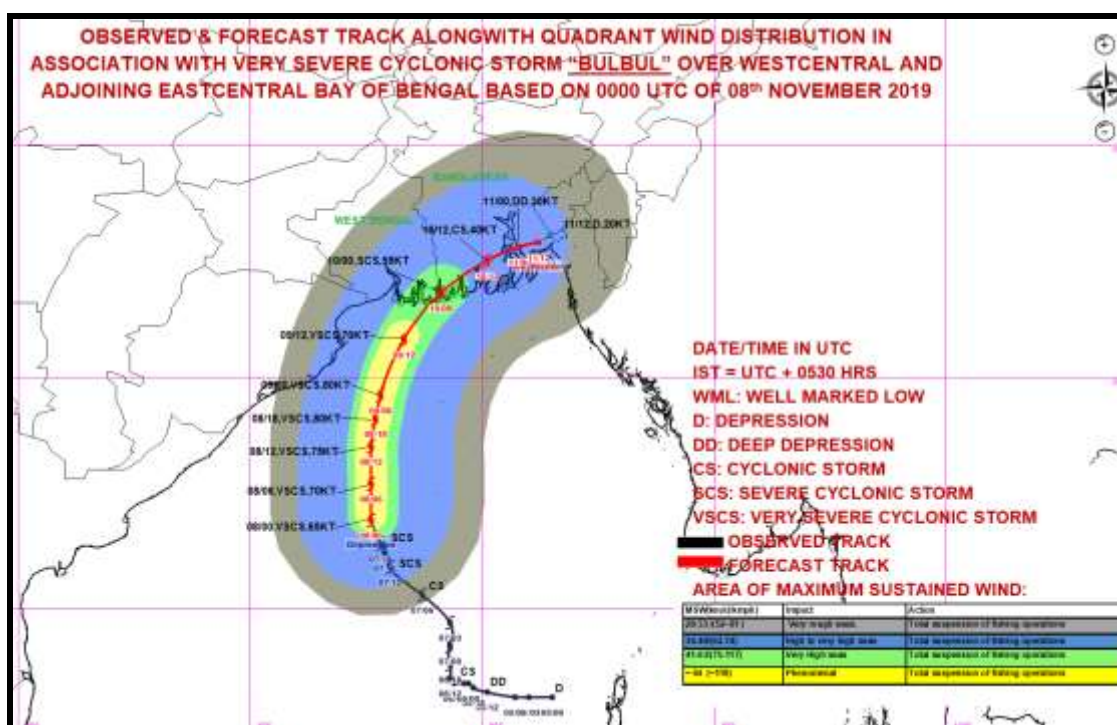
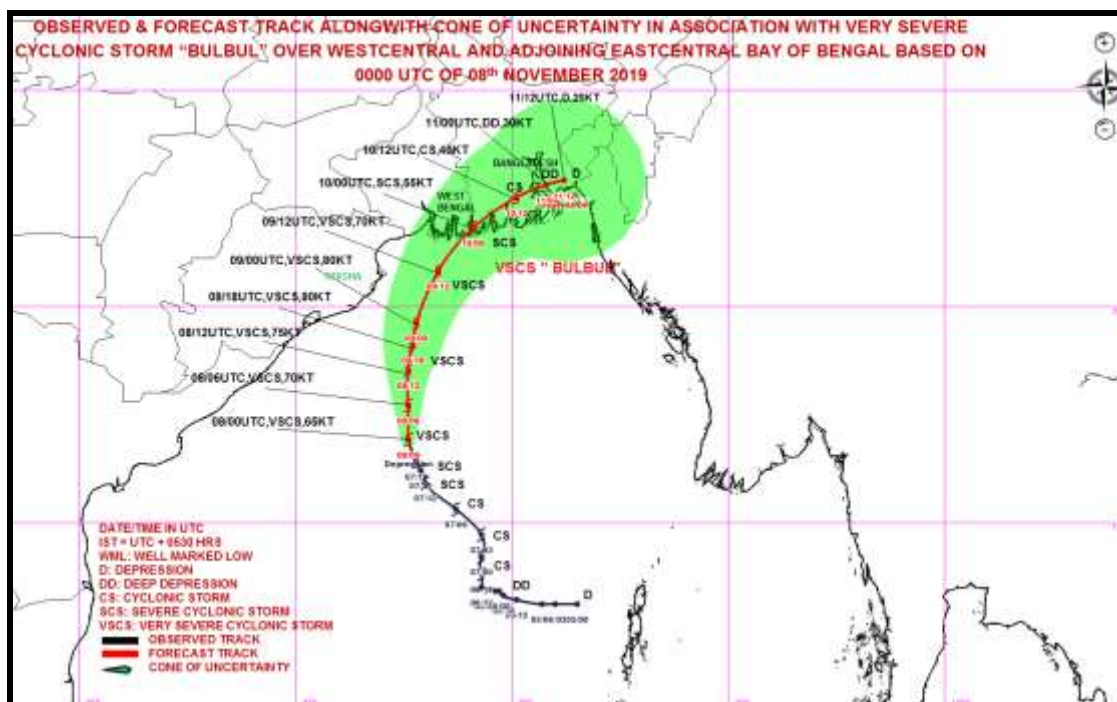
(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 26 (BOB/04/2019) (Modified)

TIME OF ISSUE: 1110 HOURS IST

DATED: 08.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

BULLETIN NO. : 26 (BOB/04/2019)

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal continued to move north-northwestwards with a speed of 12 kmph during past 06 hours, and lay centred at 0830 hrs IST of today, the 8th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.17.2°N and Long. 87.6°E about 350 km south-southeast of Paradip (Odisha), 490 km south-southwest of Sagar Islands (West Bengal) and 590 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta during the early hours of 10th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. ($^{\circ}$ N)	Long. ($^{\circ}$ E)		
08.11.19/0830	17.2	87.6	120-130 gusting to 145	Very Severe Cyclonic Storm
08.11.19/1130	17.7	87.6	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/1730	18.5	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.1	87.7	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/0530	19.6	87.8	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/1730	20.8	88.3	130-140 gusting to 155	Very Severe Cyclonic Storm
10.11.19/0530	21.8	89.1	100-110 gusting to 120	Severe Cyclonic Storm
10.11.19/1730	22.5	90.1	75-85 gusting to 95	Cyclonic Storm
11.11.19/0530	22.8	90.8	50-60 gusting to 70	Deep Depression
11.11.19/1730	22.9	91.2	35-45 gusting to 55	Depression

Warnings:

(i) Rainfall:

• Odisha:

(i) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy falls** over Puri, Kendrapara, Bhadrak and Jagatsinghpur districts on 8th November 2019.

(ii) Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and heavy falls at isolated places over Mayurbhanj and Jajpur districts on 9th November 2019.

• West Bengal:

- Light to moderate rainfall at many places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- Light to moderate rainfall **at most places** very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East and West Medinipur, and isolated heavy to very heavy rainfall over Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places over North and South 24 Parganas, Nadiya and heavy falls at isolated places over East Medinipur district on 10th November 2019.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 120-130 kmph gusting to 140 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 145-155 kmph gusting to 170 kmph by early hours of 9th November over northwest & adjoining westcentral Bay of Bengal for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 35– 45 kmph gusting to 55 kmph prevails along & off Odisha coast. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of 8th along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph very likely from around noon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph from afternoon of 8th November for the subsequent 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coast from 8th November night. It will gradually increase becoming gale wind speed reaching **110-120 kmph gusting to 135 kmph** from 09th midnight to 10th forenoon along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly.

(iii) Sea condition

- ✓ Sea condition will be rough to very rough along & off Odisha and West Bengal coasts from 8th onwards becoming high to very high on 9th and 10th November.
- ✓ Sea condition will be rough to very rough over north Bay of Bengal till 8th evening. It will gradually become very high to phenomenal over northwest & adjoining westcentral Bay of Bengal from 8th November evening for subsequent 48 hours and very rough to very high over northeast Bay of Bengal from 9th November morning for subsequent 48 hours
- ✓ Sea condition is phenomenal over westcentral and adjoining eastcentral Bay of Bengal around the system centre. It will be Phenomenal to very high over these areas for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 1.5 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and east Medinipur during the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations from 8th onwards over Odisha-West Bengal coasts.
- Fishermen are advised not to venture into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 10th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – West Bengal coasts from 8th to 10th November.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

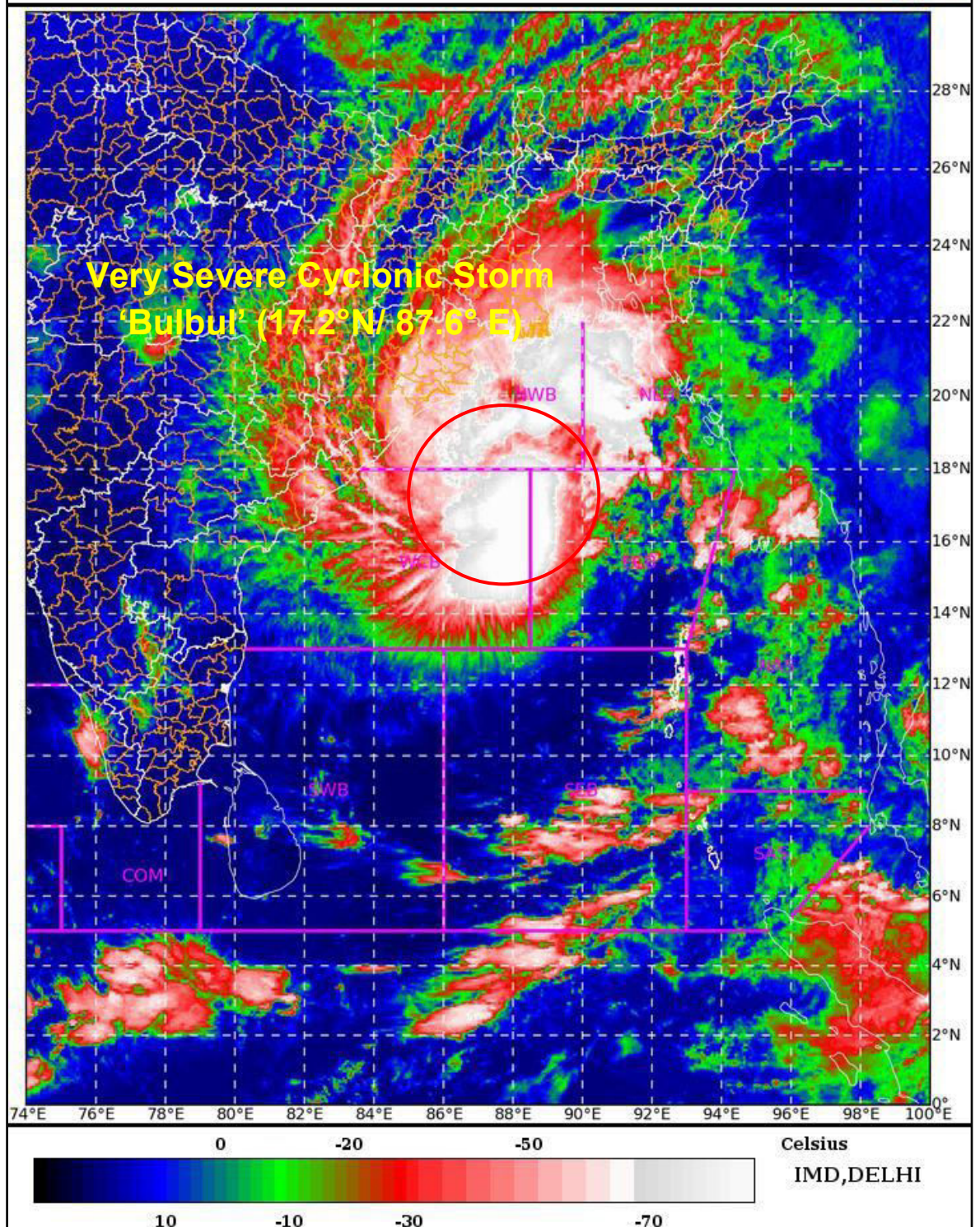
- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

The next bulletin will be issued at 1430 hrs IST of 08th November, 2019.

**(Sunitha Devi S)
Scientist-E, RSMC, New Delhi**

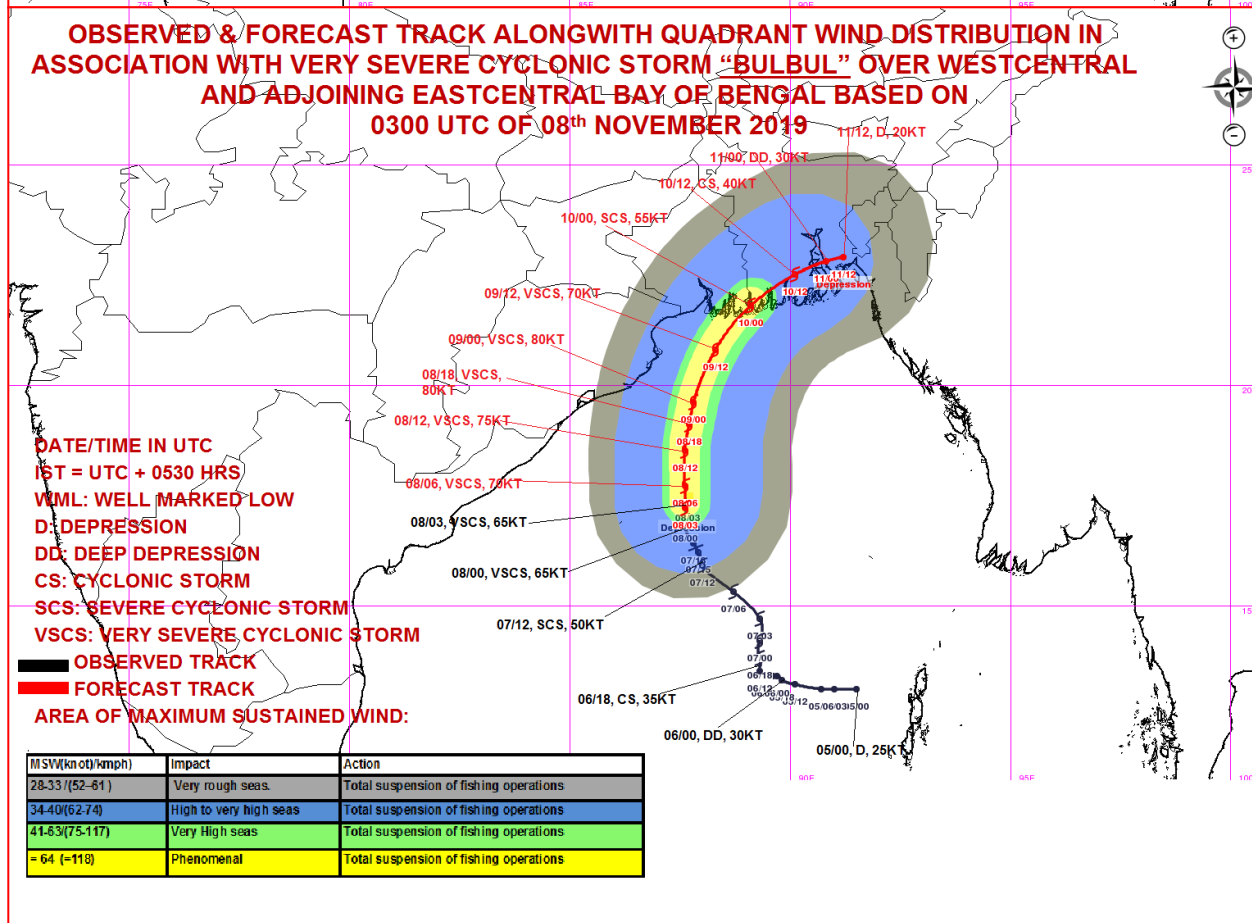
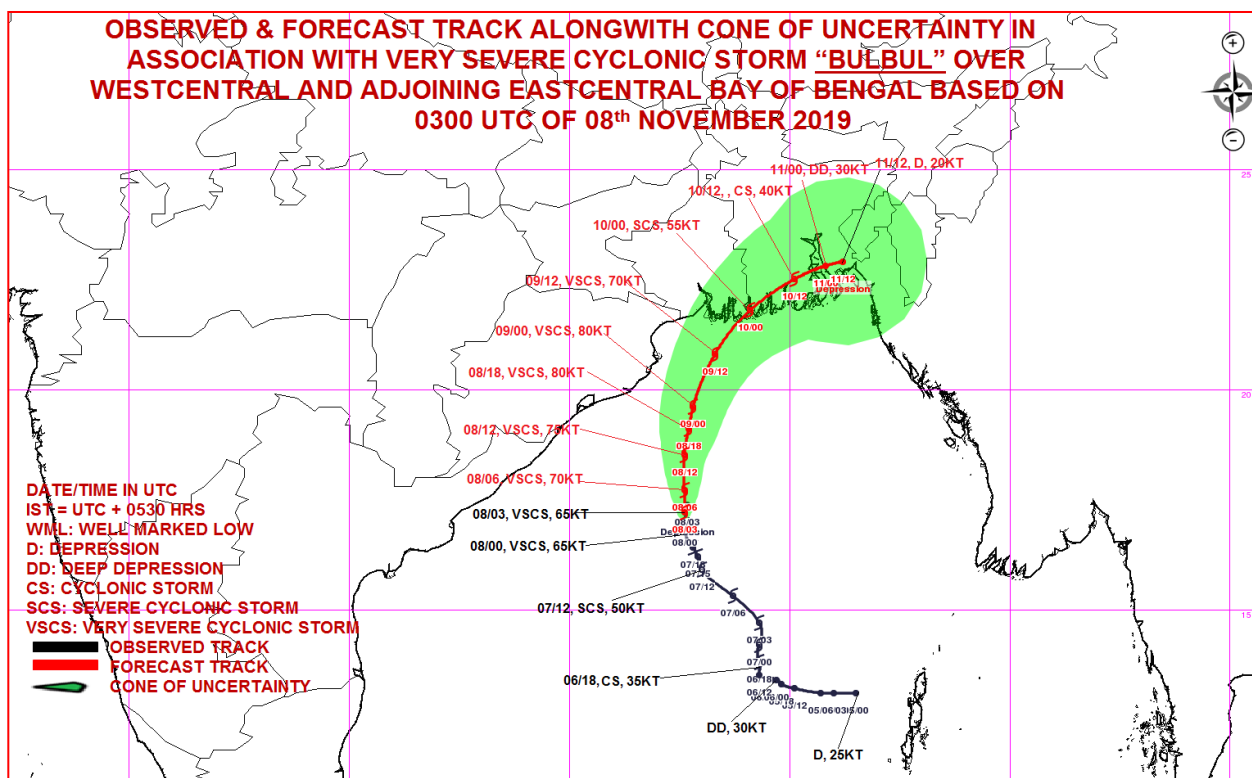
Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 27 (BOB/04/2019)

TIME OF ISSUE: 1400 HOURS IST

DATED: 08.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)**

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

BULLETIN NO. : 27 (BOB/04/2019)

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved northwards with a speed of 13 kmph during past 06 hours, and lay centred at 1130 hrs IST of today, the 8th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.17.6°N and Long. 87.6°E about 310 km south-southeast of Paradip (Odisha), 450 km south-southwest of Sagar Islands (West Bengal) and 550 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta around midnight of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (⁰ N)	Long. (⁰ E)		
08.11.19/1130	17.6	87.6	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/1730	18.7	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.4	87.6	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.8	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/2330	22.0	89.2	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/1130	23.2	90.8	70-80 gusting to 90	Cyclonic Storm
10.11.19/2330	23.9	92.6	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

• Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts on 8th November 2019.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

• West Bengal:

- Light to moderate rainfall at many places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places over North and South 24 Parganas, Nadiya and heavy falls at isolated places over East Medinipur district on 10th November 2019.

• North Eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam& Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 130-140 kmph gusting to 155 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 150-160 kmph gusting to 175 kmph by tonight over northwest & adjoining westcentral Bay of Bengal for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Strong wind speed reaching 40– 50 kmph gusting to 60 kmph prevails along & off Odisha coast. It is very likely to increase becoming squally wind speed reaching 45-55 kmph gusting to 65 kmph by afternoon of today, the 8th November along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. Gale wind speed reaching 70-80 kmph gusting to 90 kmph very likely from around noon of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph from afternoon of 8th November for the subsequent 24 hours.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coast from tonight. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from 09th midnight to 10th forenoon along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- ✓ Sea condition is rough to very rough along & off Odisha and West Bengal coasts and is likely to become high to very high on 9th and 10th November.
- ✓ Sea condition will be rough to very rough over north Bay of Bengal till the evening of today, the 8th November. It will gradually become very high to phenomenal over northwest & adjoining westcentral Bay of Bengal from the evening of today, the 8th November for subsequent 36 hours and very rough to very high over northeast Bay of Bengal from 9th November morning for subsequent 36 hours.
- ✓ Sea condition is phenomenal over westcentral and adjoining eastcentral Bay of Bengal around the system centre. It will be Phenomenal to very high over these areas for subsequent 24 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till forenoon of 10th November.
- Fishermen are advised not to venture into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 10th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – West Bengal coasts from 8th to 10th November.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

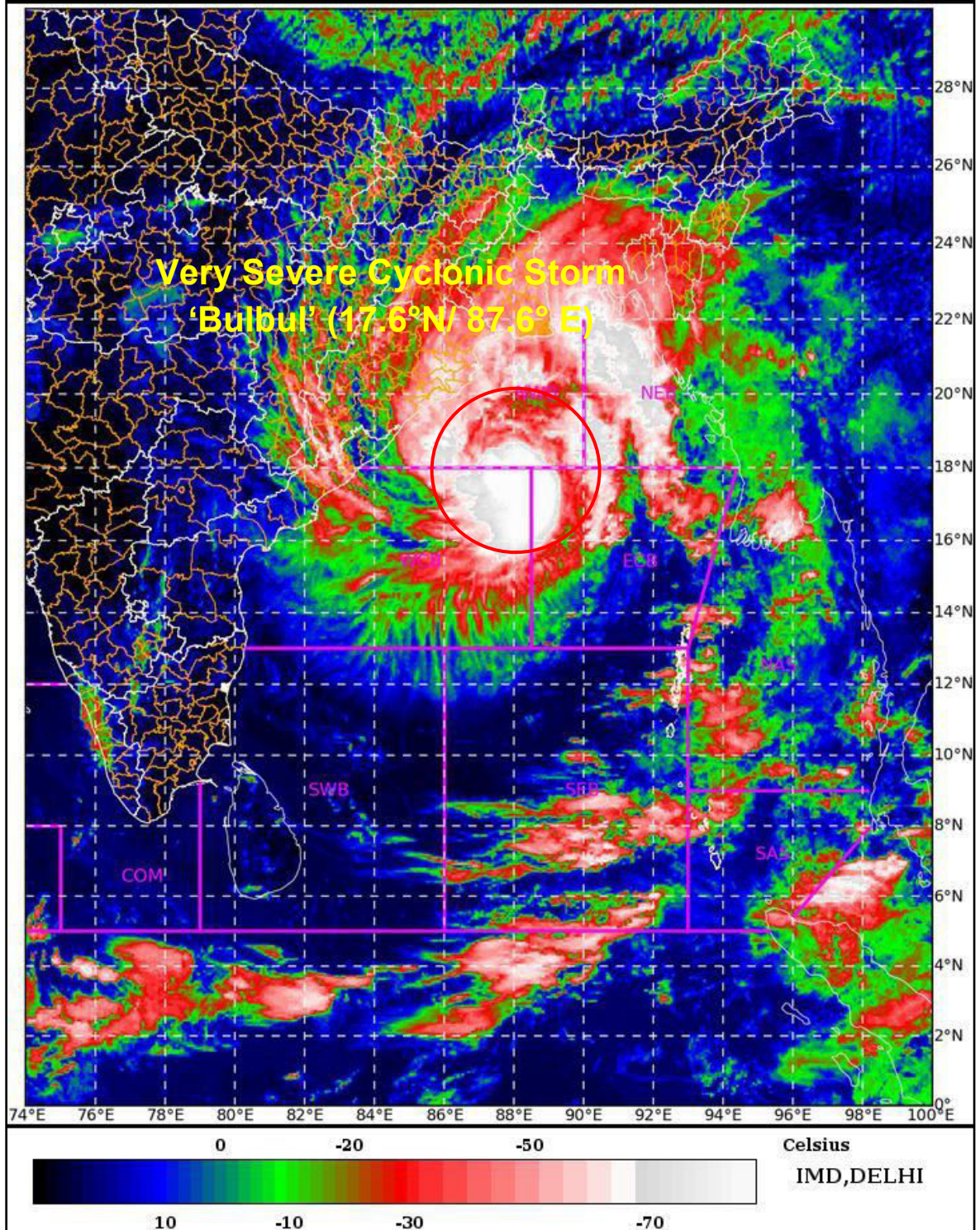
The next bulletin will be issued at 1730 hrs IST of 08th November, 2019.

**(Neetha K. Gopal)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

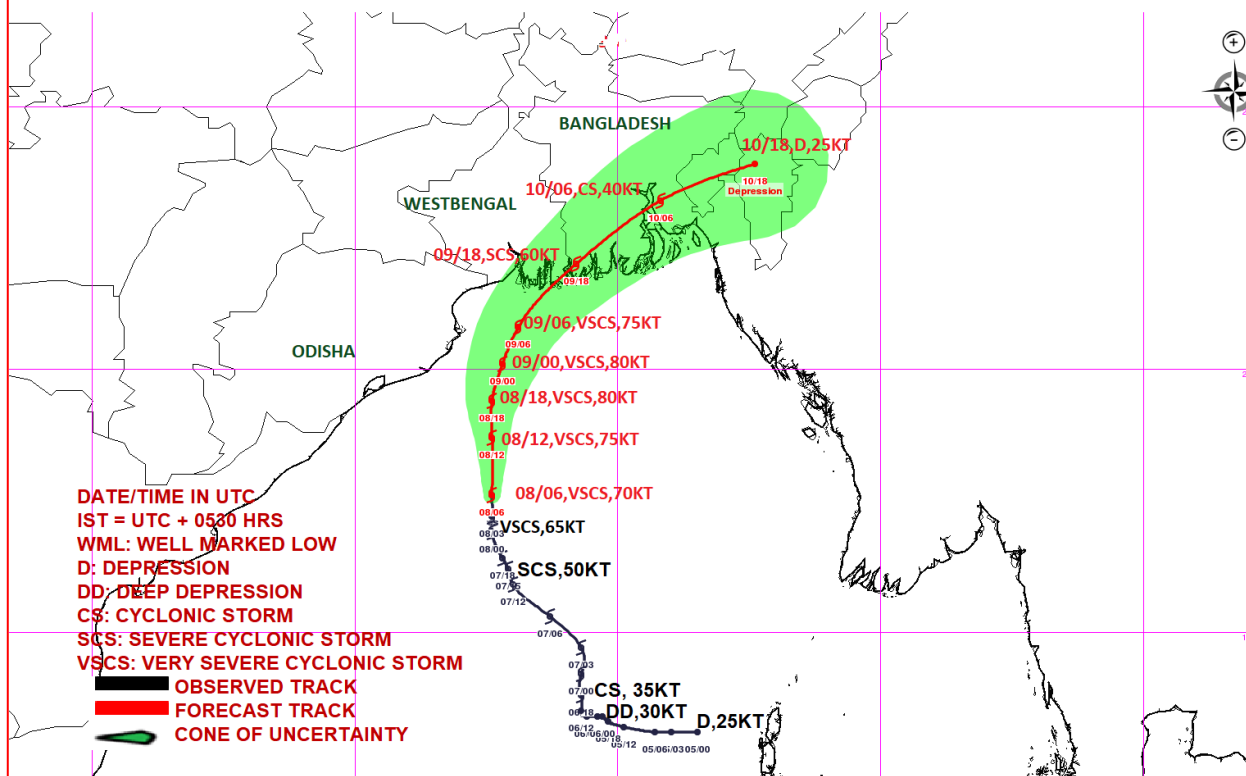
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 08-11-2019/(0630 to 0657) GMT
IMG_TIR1_TEMP 10.8 um 08-11-2019/(1200 to 1227) IST
L1C Mercator

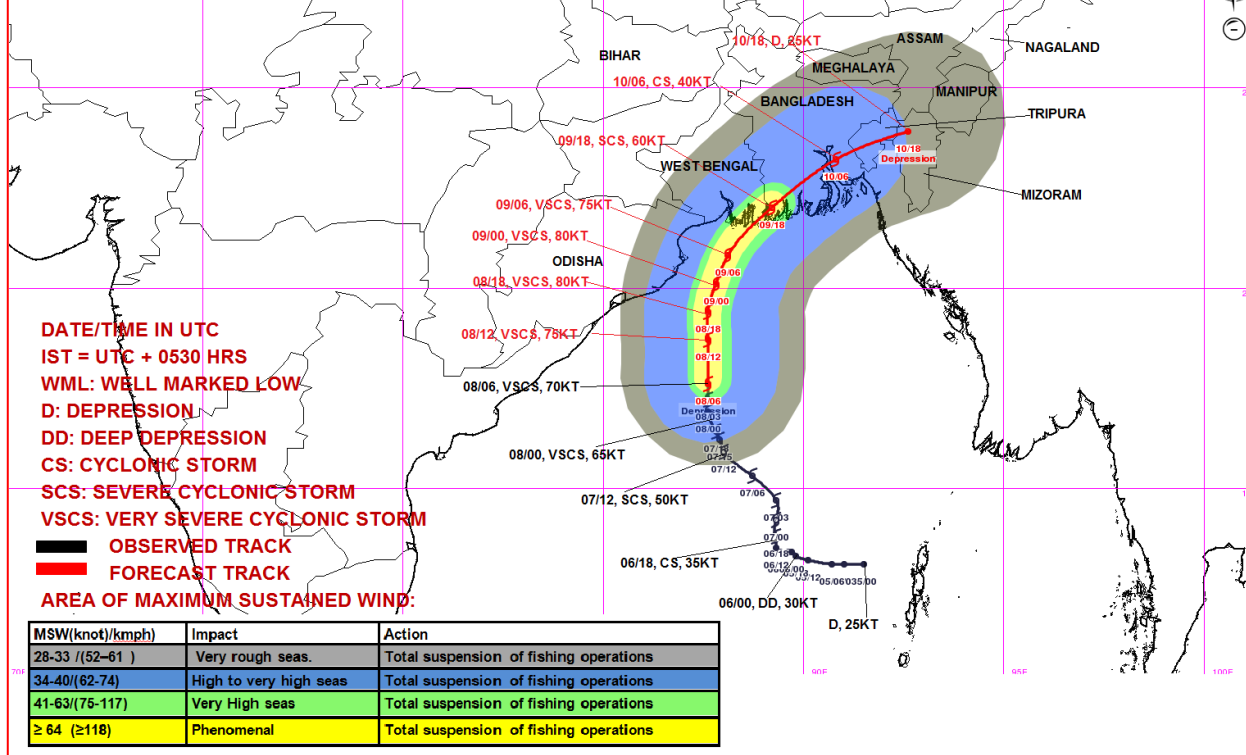


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH SEVERE CYCLONIC STORM “BULBUL” OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 08th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM “BULBUL” OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 08th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 28 (BOB/04/2019)

TIME OF ISSUE: 1700 HOURS IST

DATED: 08.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, KERALA (FAX NO. 0471-2327176)
ADMINISTRATOR, LAKSHADWEEP ISLANDS (FAX NO. 0489-6263180)
ADMINISTRATOR, UNION TERRITORY OF DAMAN & DIU (0260-2230775)
ADMINISTRATOR, UNION TERRITORY OF DADRA NAGAR HAVELI (0260-2230775)
CHIEF SECRETARY, KARNATAKA (FAX NO. 080-22258913)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOA (FAX NO. 0832-2415201)
CHIEF SECRETARY, MAHARASHTRA (FAX NO. 022- 22028594)
CHIEF SECRETARY, GUJARAT (FAX NO. 079-23250305)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over westcentral and adjoining eastcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

BULLETIN NO. : 28 (BOB/04/2019)

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved northwards with a speed of 17 kmph during past 06 hours, and lay centred at 1430 hrs IST of today, the 8th November 2019, over westcentral & adjoining eastcentral Bay of Bengal, near Lat.18.1°N and Long. 87.6°E about 260 km south-southeast of Paradip (Odisha), 390 km south-southwest of Sagar Islands (West Bengal) and 510 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify further till early morning of 9th November. It is very likely to move nearly northwards till 9th November morning. Thereafter, it is very likely to re-curve northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by midnight of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (^o N)	Long. (^o E)		
08.11.19/1430	18.1	87.6	130-140 gusting to 155	Very Severe Cyclonic Storm
08.11.19/1730	18.7	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.4	87.6	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.8	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/2330	22.0	89.2	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/1130	23.2	90.8	70-80 gusting to 90	Cyclonic Storm
10.11.19/2330	23.9	92.6	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

• Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy falls over Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts on 8th November 2019.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with isolated heavy to very heavy falls over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

• West Bengal:

- Light to moderate rainfall at many places with isolated heavy falls very likely over North and South 24 Parganas and east Medinipur districts on 8th November.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places over North and South 24 Parganas, Nadiya and heavy falls at isolated places over East Medinipur district on 10th November 2019.

• North Eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam& Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 130-140 kmph gusting to 155 kmph is prevailing over westcentral & adjoining eastcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 150-160 kmph gusting to 175 kmph by tonight over northwest & adjoining westcentral Bay of Bengal for subsequent 12 hours and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 45-55 kmph gusting to 65 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts and is likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph from morning hours of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph from afternoon of 8th November for the subsequent 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- **West Bengal coast:** Squally wind speed reaching 40 – 50 kmph gusting to 60 kmph likely to commence over West Bengal coast from tonight. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from 09th midnight to 10th forenoon along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- ✓ Sea condition is rough to very rough along & off Odisha and West Bengal coasts and is likely to become high to very high on 9th and 10th November.
- ✓ Sea condition is phenomenal over westcentral and adjoining eastcentral Bay of Bengal around the system centre during next 12 hours. Sea condition will be very high to phenomenal over northwest & adjoining westcentral Bay of Bengal for subsequent 24 hours and very rough to very high over northeast Bay of Bengal from 9th November morning for subsequent 36 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till forenoon of 10th November.
- Fishermen are advised not to venture into westcentral & adjoining northwest Bay of Bengal during 8th & 9th Nov. 2019 and over north Bay of Bengal during 9th – 10th November.
- Fishermen are advised not to venture into northwest Bay of Bengal along & off Odisha – West Bengal coasts from 8th to 10th November.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations from 8th November onwards.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

The next bulletin will be issued at 2030 hrs IST of 08th November, 2019.

**(R K JENAMANI)
Scientist-F, RSMC, New Delhi**

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG

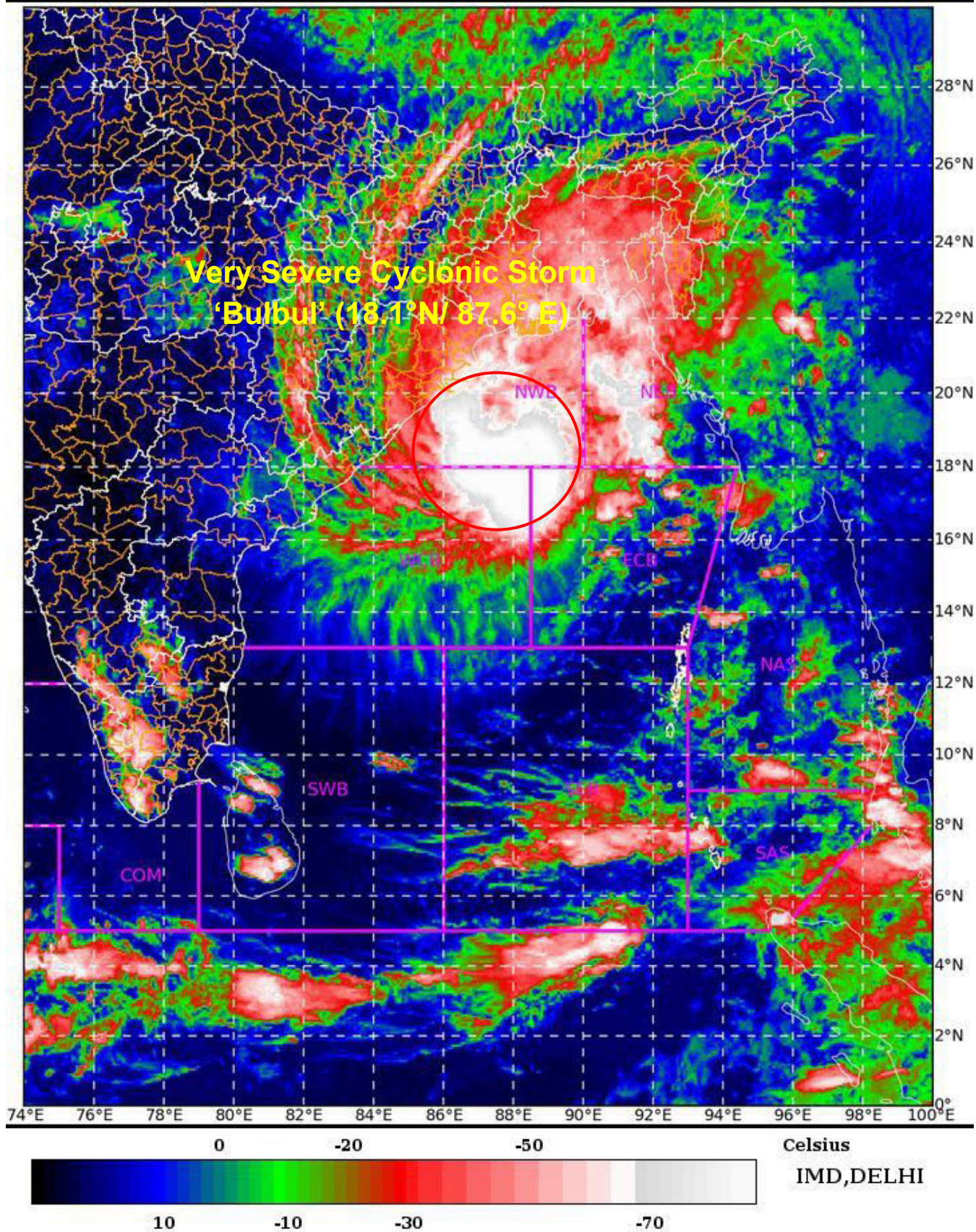
08-11-2019/(1000 to 1026) GMT

IMG_TIR1_TEMP 10.8 um

08-11-2019/(1530 to 1556) IST



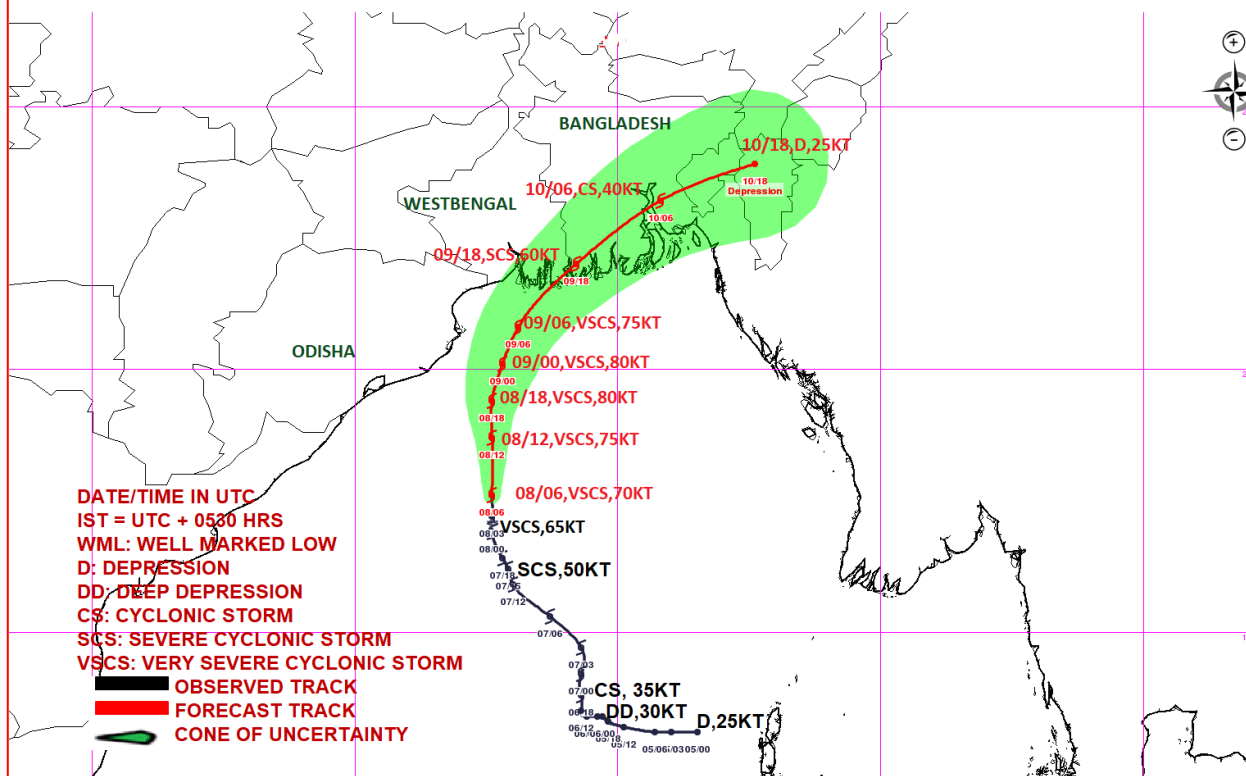
L1C Mercator



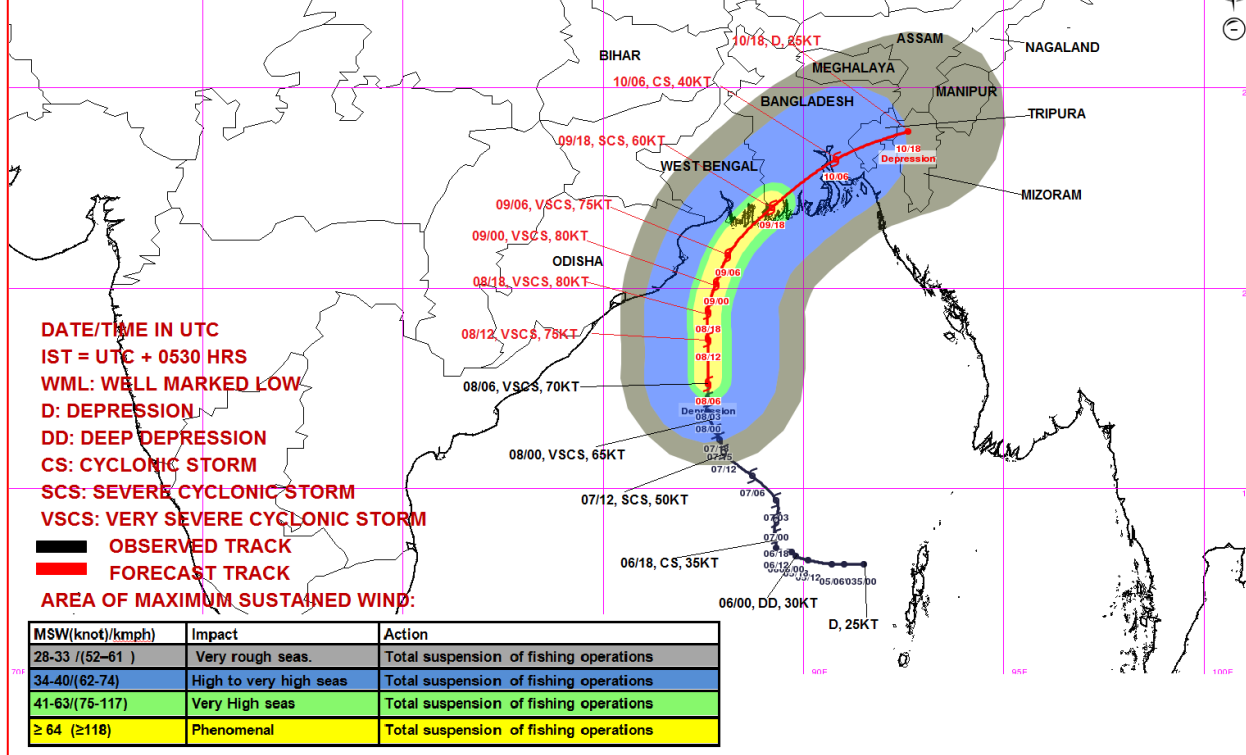
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH SEVERE CYCLONIC STORM “BULBUL” OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 08th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM “BULBUL” OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL BASED ON 0600 UTC OF 08th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 29 (BOB/04/2019)

TIME OF ISSUE: 2030 HOURS IST

DATED: 08.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest and adjoining westcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over westcentral & adjoining eastcentral Bay of Bengal moved northwards with a speed of 17 kmph during past 06 hours, and lay centred at 1730 hrs IST of today, the 8th November 2019, over northwest and adjoining westcentral Bay of Bengal, near Lat.18.5°N and Long. 87.6°E about 220 km south-southeast of Paradip (Odisha), 350 km south-southwest of Sagar Islands (West Bengal) and 470 km south-southwest of Khepupara (Bangladesh) . It is very likely to intensify slightly till early morning of 9th November. It is very likely to move nearly northwards for some more time and re-curve northeastwards thereafter. It is very likely to cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by midnight of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
08.11.19/1730	18.5	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.4	87.7	145-155 gusting to 170	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.8	150-160 gusting to 175	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1730	21.4	88.7	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	22.6	90.0	80-90 gusting to 100	Cyclonic Storm
10.11.19/1730	23.5	91.7	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** (Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts) during next 06 hours.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

West Bengal:

- Light to moderate rainfall at many places very likely over North and South 24 Parganas and east Medinipur districts during next 06 hours.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy falls at isolated places over North and South 24 Parganas and Nadiya on 10th November 2019.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 140-150 kmph gusting to 165 kmph is prevailing over northwest & adjoining westcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 150-160 kmph gusting to 175 kmph by 9th morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. It is very likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph from morning hours of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 24 hours.
- **West Bengal coast:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over West Bengal coast. It will gradually increase becoming gale wind speed reaching 100-120 kmph gusting to 135 kmph from 09th midnight to 10th morning along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 kmph gusting to 70 kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- ✓ Sea condition is rough to very rough along & off Odisha and West Bengal coasts and is likely to become high to very high on 9th and 10th November.
- ✓ Sea condition is very likely to be phenomenal over westcentral Bay of Bengal during next 12 hours, over northwest Bay of Bengal during next 24 hours. Sea condition will be high to very high over northeast Bay of Bengal during 9th evening to 10th morning and become rough to very rough for subsequent 12 hours.

(iv) Storm Surge

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till forenoon of 10th November.
- Fishermen are advised not to venture into westcentral & adjoining eastcentral Bay of Bengal during next 24 hours, over North Bay of Bengal till 10th evening.
- Fishermen are advised not to venture into along & off Odisha – West Bengal coasts till 10th morning.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

The next bulletin will be issued at 2330 hrs IST of 08th November, 2019.

(R K JENAMANI)

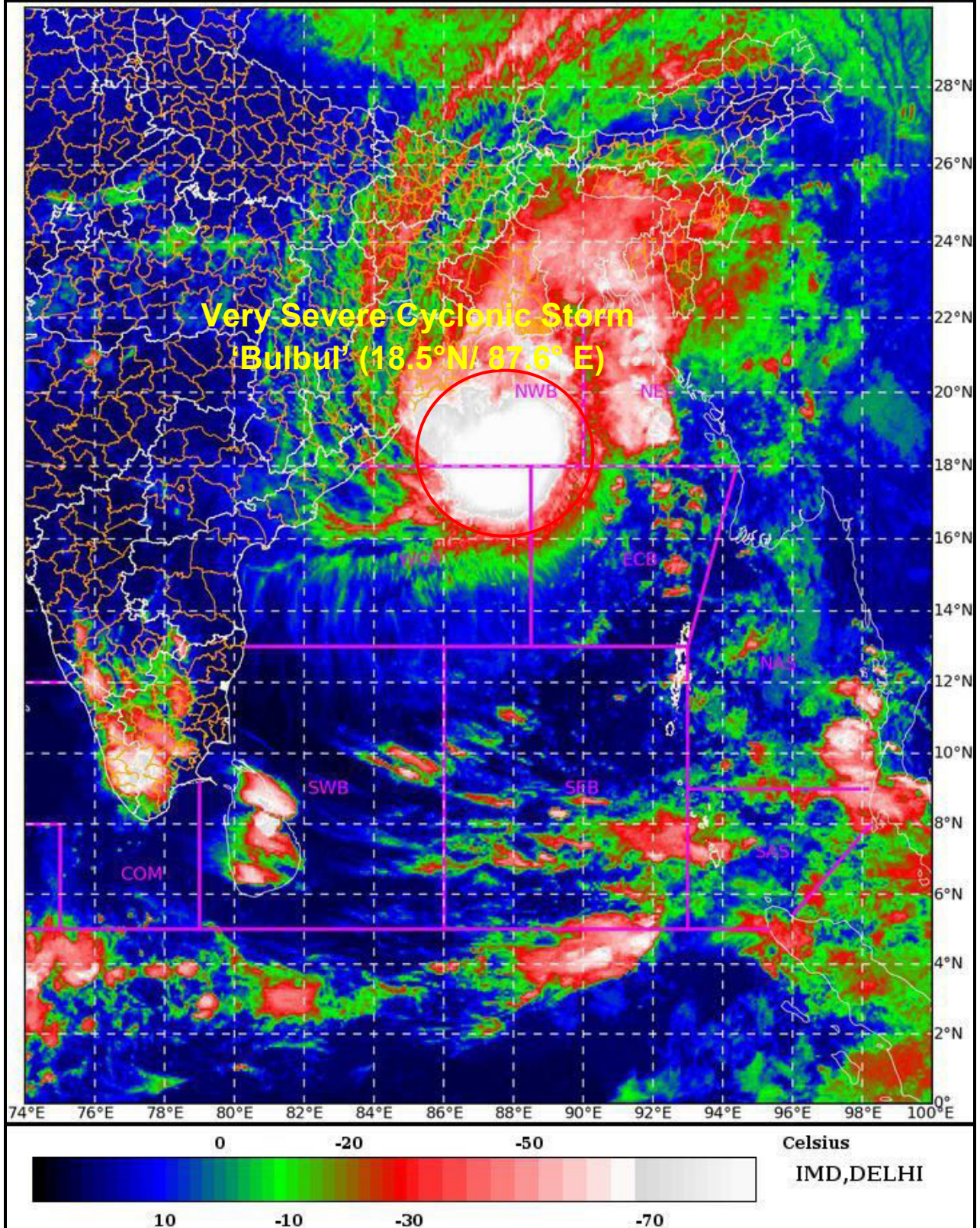
Scientist-F, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

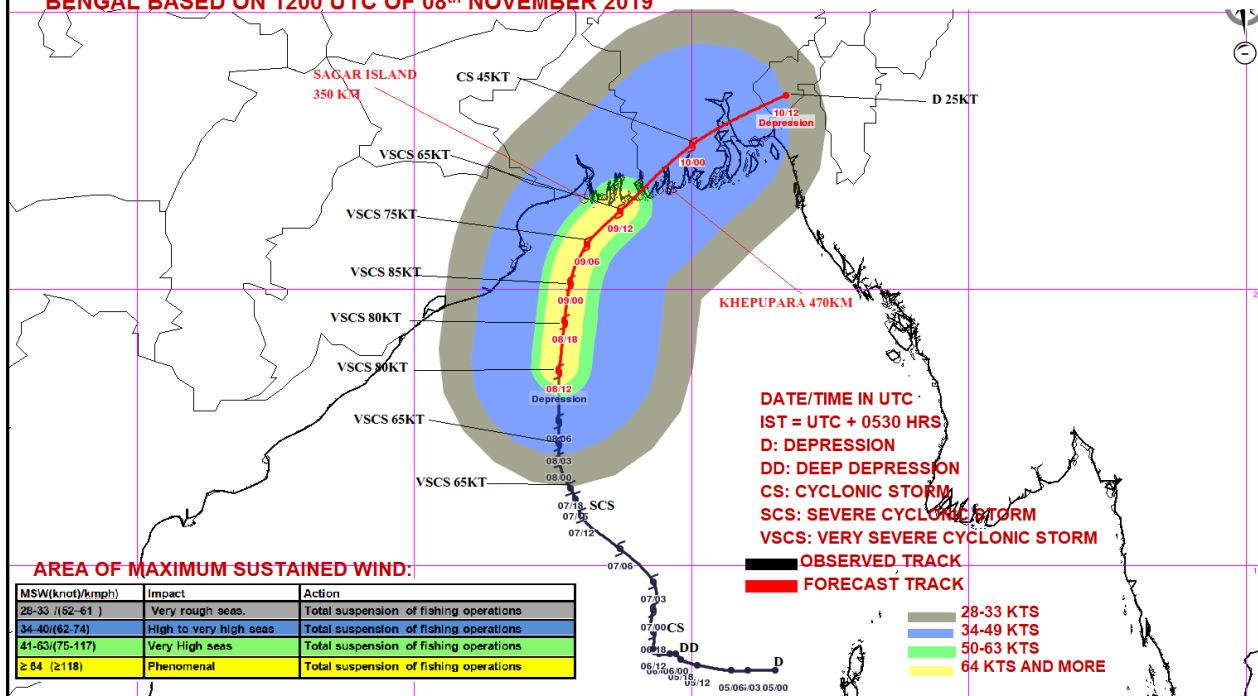
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 08-11-2019/(1300 to 1326) GMT
IMG_TIR1_TEMP 10.8 um 08-11-2019/(1830 to 1856) IST
L1C Mercator

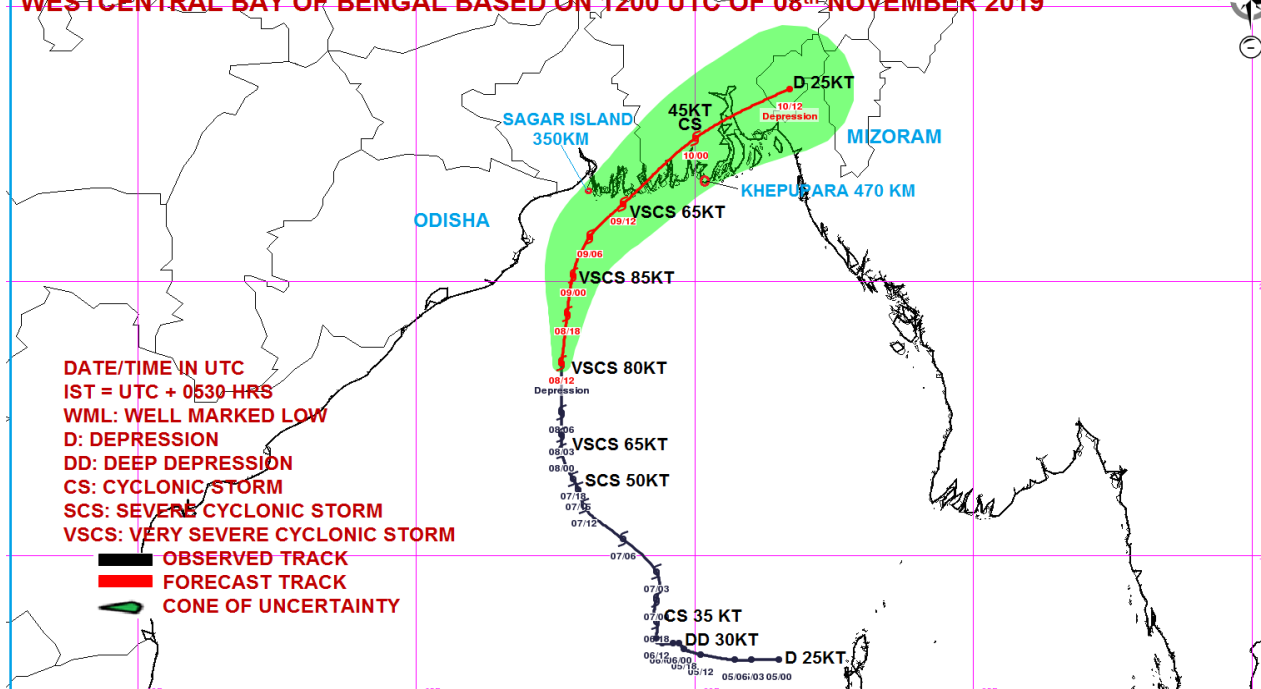


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM "BULBUL" OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 1200 UTC OF 08th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM "BULBUL" OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 1200 UTC OF 08th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 30 (BOB/04/2019)

TIME OF ISSUE: 2250 HOURS IST

DATED: 08.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest and adjoining westcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over northwest and adjoining westcentral Bay of Bengal moved nearly northwards with a speed of 21 kmph during past 06 hours, and lay centred at 2030 hrs IST of today, the 8th November 2019, over northwest and adjoining westcentral Bay of Bengal, near Lat.19.2°N and Long. 87.7°E about 270 km south-southwest of Sagar Islands (West Bengal) and 410 km southwest of Khepupara (Bangladesh) and 160 km southeast of Paradip (Odisha). It is very likely to intensify slightly till early morning of 9th November. It is very likely to move nearly northwards for some more time and re-curve northeastwards thereafter. It is very likely to cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by midnight of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is now being tracked by the Doppler Weather Radars at Paradip and Gopalpur in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
08.11.19/2030	19.2	87.7	140-150 gusting to 165	Very Severe Cyclonic Storm
08.11.19/2330	19.4	87.8	145-155 gusting to 170	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.9	145-155 gusting to 170	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1730	21.4	88.7	120-130 gusting to 145	Very Severe Cyclonic Storm
10.11.19/0530	22.6	90.0	80-90 gusting to 100	Cyclonic Storm
10.11.19/1730	23.5	91.7	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** (Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts) during next 06 hours.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

West Bengal:

- Light to moderate rainfall at many places very likely over North and South 24 Parganas and east Medinipur districts during next 06 hours.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy falls at isolated places over North and South 24 Parganas and Nadiya on 10th November 2019.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 140-150 kmph gusting to 165 kmph is prevailing over northwest & adjoining westcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 145-155 kmph gusting to 170 kmph by 9th morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. It is very likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph from morning hours of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 24 hours.
- **West Bengal coast:** Squally wind speed reaching 40-50 kmph gusting to 60 kmph is prevailing over West Bengal coast. It will gradually increase becoming gale wind speed reaching 100-120 kmph gusting to 135 kmph from 09th midnight to 10th morning along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 40-60 kmph gusting to 70 kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- ✓ Sea condition is rough to very rough along & off Odisha and West Bengal coasts and is likely to become high to very high on 9th and 10th November.
- ✓ Sea condition is very likely to be phenomenal over westcentral Bay of Bengal during next 12 hours, over northwest Bay of Bengal during next 24 hours. Sea condition will be high to very high over northeast Bay of Bengal during 9th evening to 10th morning and become rough to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till forenoon of 10th November.
- Fishermen are advised not to venture into westcentral & adjoining eastcentral Bay of Bengal during next 24 hours, over North Bay of Bengal till 10th evening.
- Fishermen are advised not to venture into along & off Odisha – West Bengal coasts till 10th morning.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

The next bulletin will be issued at 0230 hrs IST of 09th November, 2019.

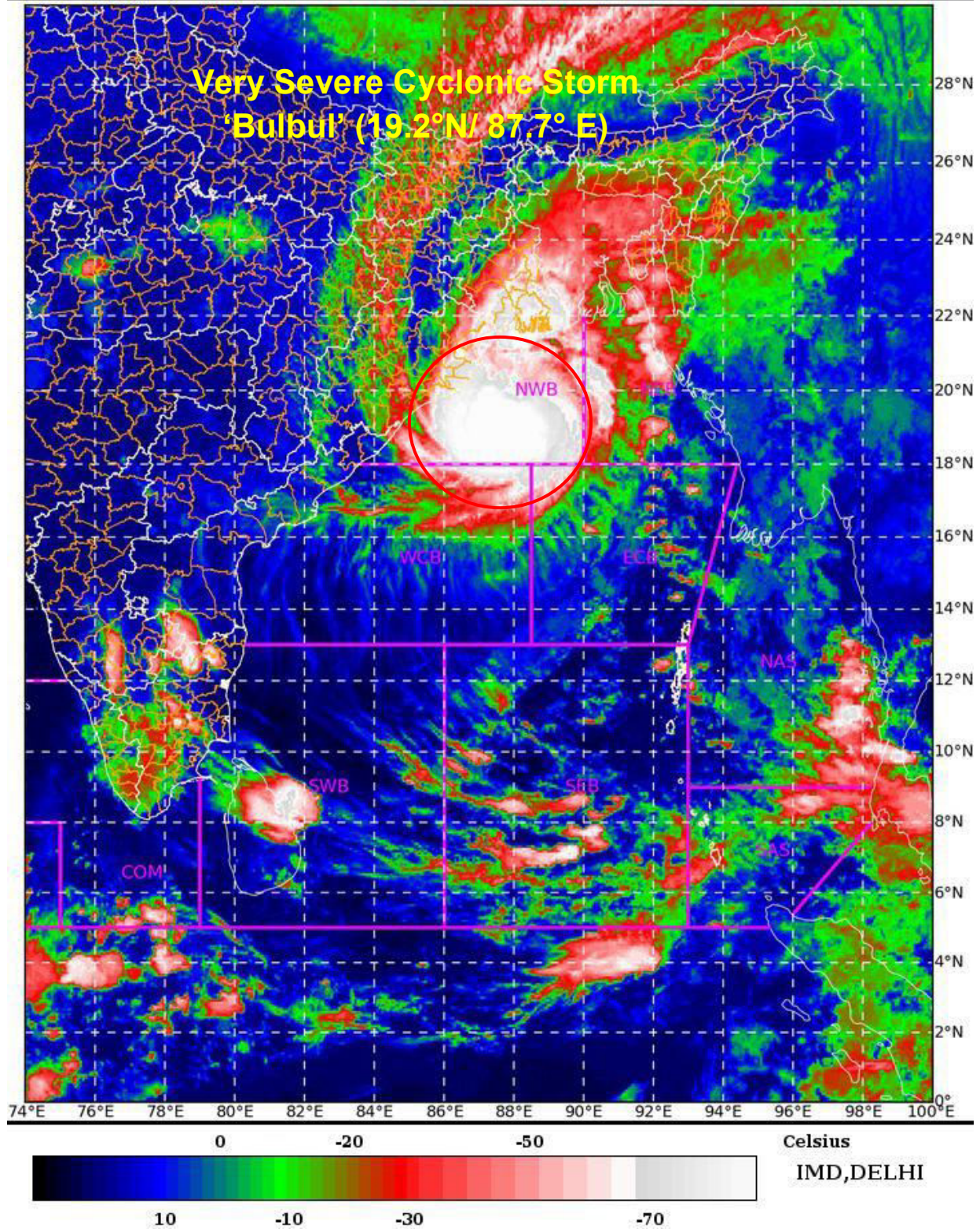
(ANANDA KUMAR DAS)

Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/ MC Goa/ MC Bengaluru/ CWC Ahmedabad/ Thiruvananthapuram/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

2019/11/08

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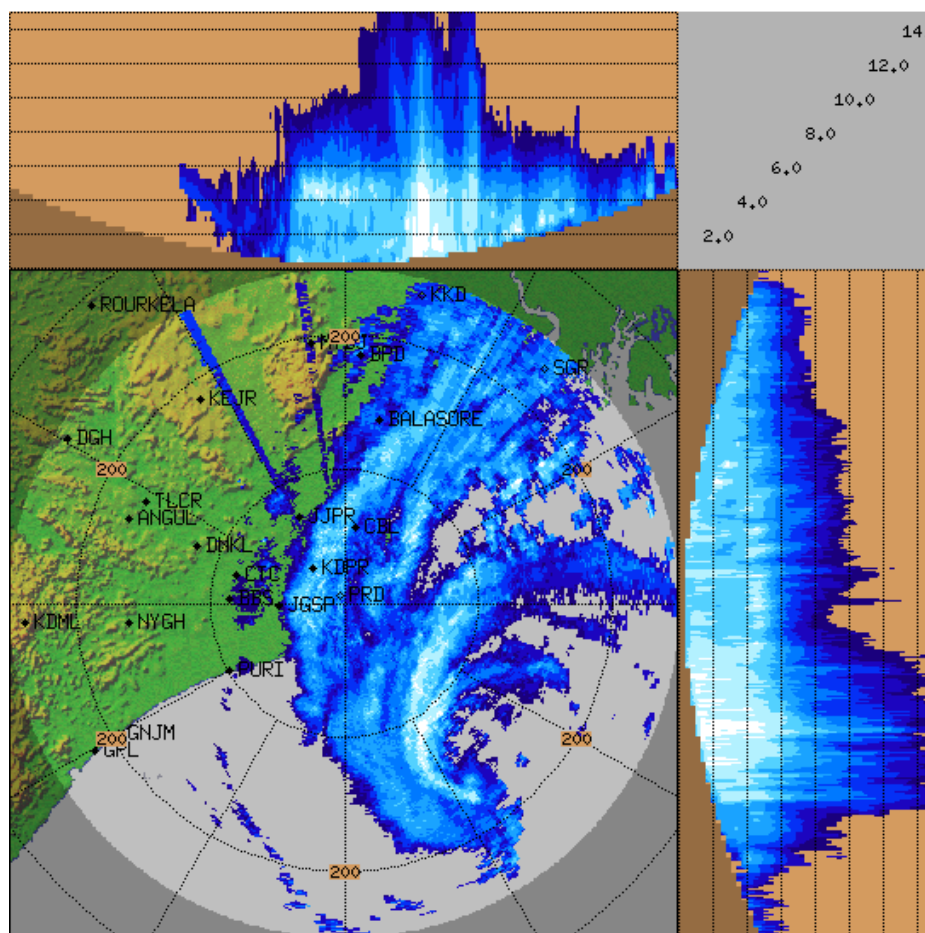
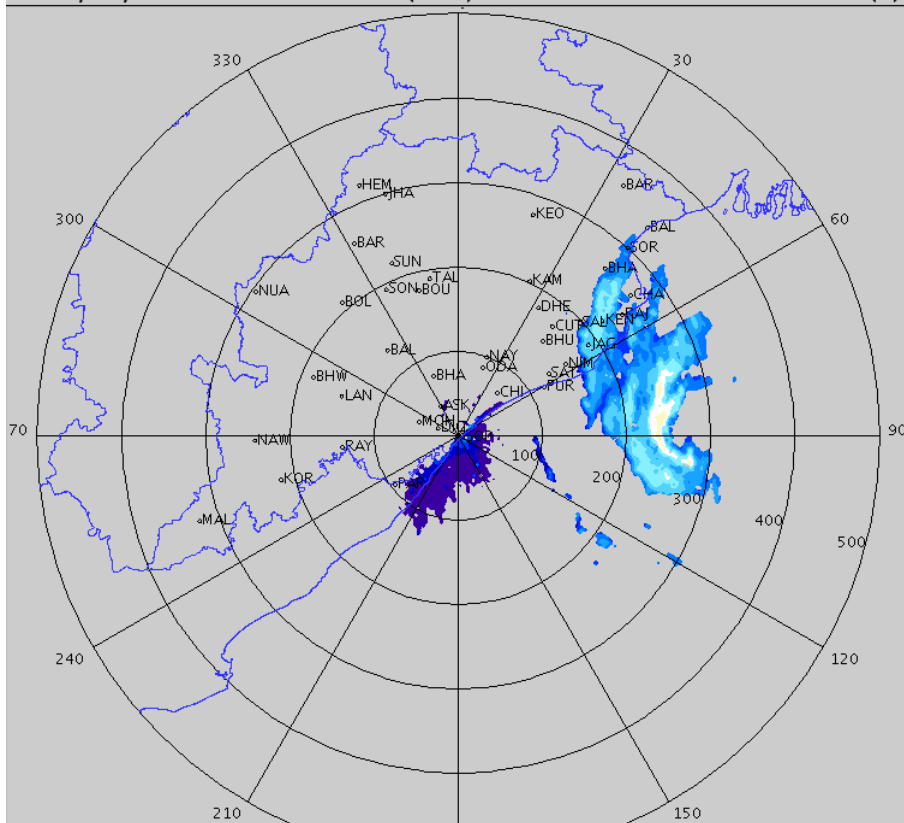
PPI(Z)

DWR GOPALPUR
(19.2743N , 84.8819E , 26.0000 mts)

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Display Res : 1.4 Km/Pix
DDR Enable : Yes
Scan Elev (Lo, Hi) : 0.2, 1.0 Deg
PRF (Lo, Hi) : 0, 300 Hz
Scan Res : 300 mts
Scan RPM : 2.0
Log Threshold : 3 dB
DTP : 24
Pulse Width : 2.0 micro sec
Clutter Filter : IIR-HP(9.0 Hz)
SQI : 0.0
CSR : 20 dB
Scan Range : 490 Km
Preprocessings : NONE
Filters : NONE

dBZ

No Data
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56.33: 60.67
52.00: 56.33
47.67: 52.00
43.33: 47.67
39.00: 43.33
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30.33: 34.67
26.00: 30.33
21.67: 26.00
17.33: 21.67
13.00: 17.33
8.67: 13.00
4.33: 8.67
0.00: 4.33



PARADEEP-RADAR
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MAX_Z
Task: IMD-B
Min Hgt:0.0 km
Max Hgt:15.0 km
Max Range:250 km
16:12:18Z
8 NOV 2019 UTC

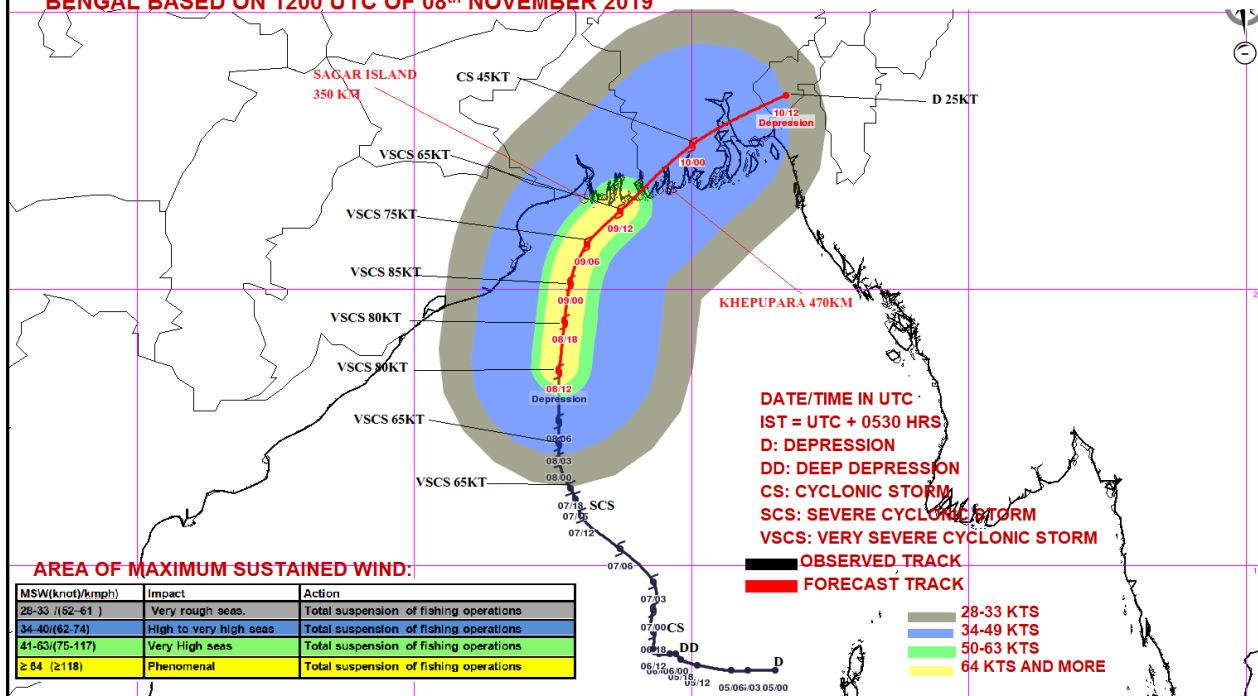
Reflectivity in dBZ

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58	62
54	58
50	54
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30	34
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20	25
15	20
10	15
5	10
0	5

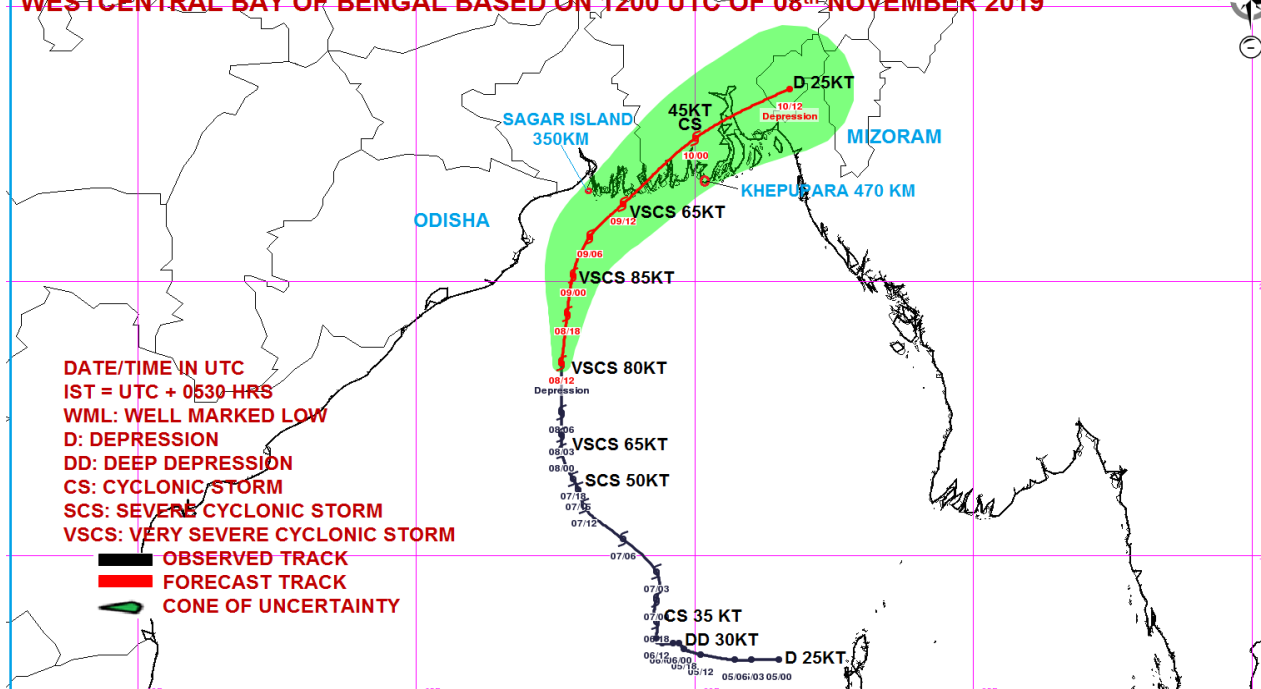
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM "BULBUL" OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 1200 UTC OF 08th NOVEMBER 2019



OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM "BULBUL" OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 1200 UTC OF 08th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 31 (BOB/04/2019)

TIME OF ISSUE: 0230 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest and adjoining westcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (**Pronounced as Bul bul**) over northwest and adjoining westcentral Bay of Bengal moved northwards with a speed of 17 kmph during past 06 hours, and lay centred at 2330 hrs IST of today, the 8th November 2019, over northwest and adjoining westcentral Bay of Bengal, near Lat.19.3°N and Long. 87.6°E about 260 km south-southwest of Sagar Islands (West Bengal), 400 km west-southwest of Khepupara (Bangladesh) and 140 km southeast of Paradip (Odisha). It is very likely to retain intensity till early morning of 9th November. It is very likely to move nearly northwards for some more time and re-curve northeastwards thereafter. It is expected to move fast and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/night of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Paradip and Gopalpur in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
08.11.19/2330	19.3	87.6	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.8	145-155 gusting to 170	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1730	21.4	88.5	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	22.2	89.3	80-90 gusting to 100	Severe Cyclonic Storm
10.11.19/1130	23.2	90.7	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** (Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts) during next 06 hours.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

West Bengal:

- Light to moderate rainfall at many places very likely over North and South 24 Parganas and east Medinipur districts during next 06 hours.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy falls at isolated places over North and South 24 Parganas and Nadiya on 10th November 2019.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 140-150 kmph gusting to 165 kmph is prevailing over northwest & adjoining westcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 145-155 kmph gusting to 170 kmph by 9th morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. It is very likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph from morning hours of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 12 hours.
- **West Bengal coast:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from 09th afternoon for next 12 hours along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 50-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be rough to very rough along & off south Odisha coast during next 12 hours. It is very likely to become high to very high till 9th night north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is very likely to be phenomenal over westcentral Bay of Bengal during next 06 hours and over northwest Bay of Bengal from 9th morning for next 12 hours. It is very likely to become high to very high for subsequent 12 hours. Sea condition will be high to very high over northeast Bay of Bengal till 9th evening and become rough to very rough for subsequent 12 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral & adjoining eastcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

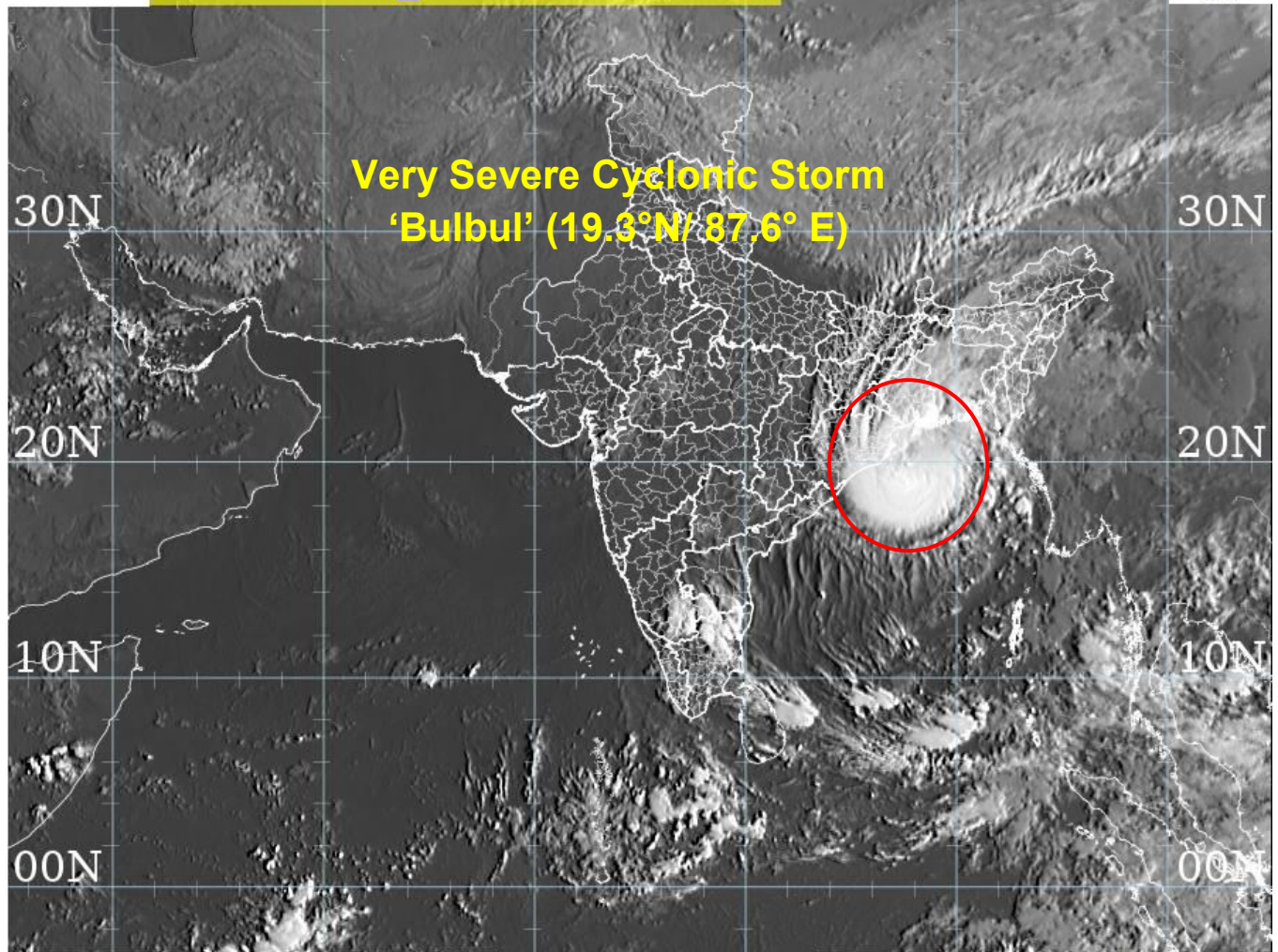
The next bulletin will be issued at 0530 hrs IST of 09th November, 2019.

**(ANANDA KUMAR DAS)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



60E 70E 80E 90E 10
MSG-1: SEVIRI [ir108_3d]
20191108_1930UTC



70E

80E



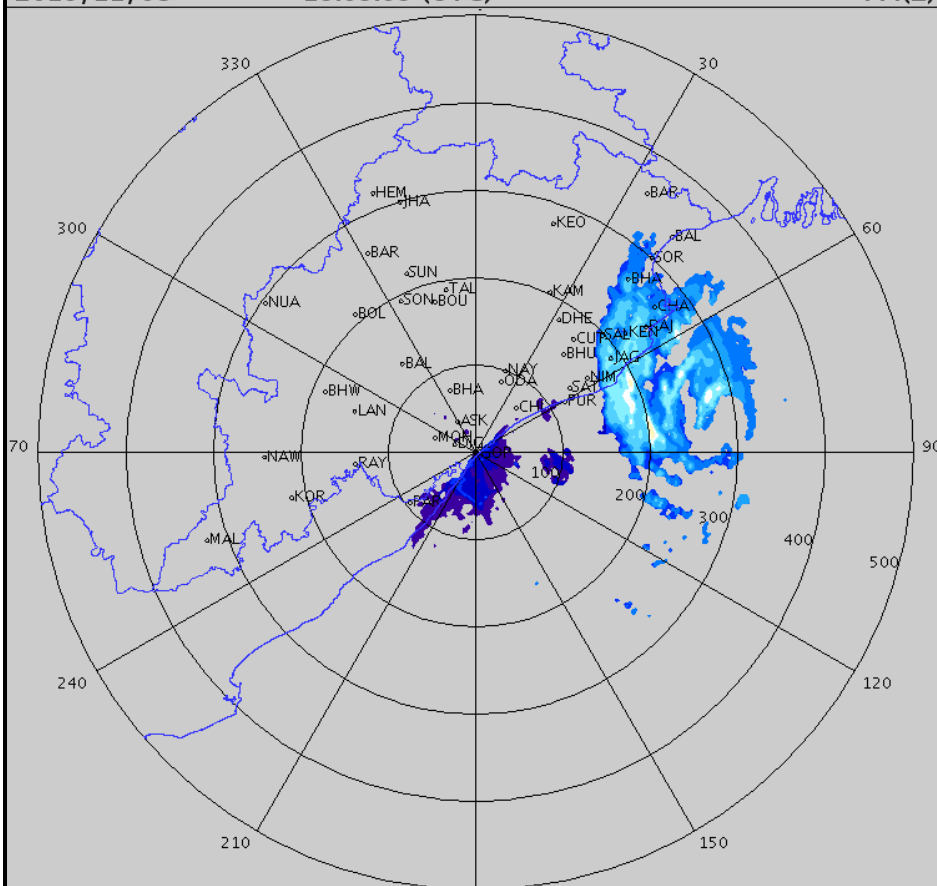
NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

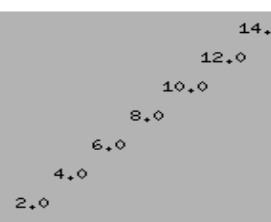
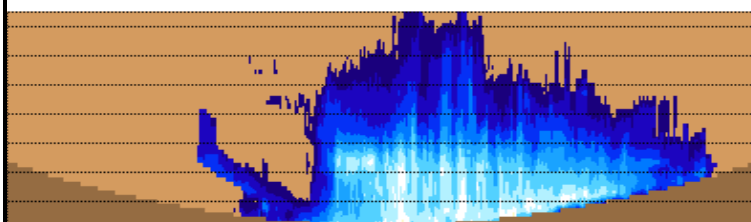
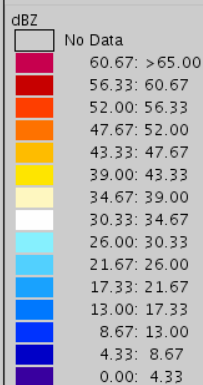
2019/11/08

19:09:09 (UTC)

PPI(Z)

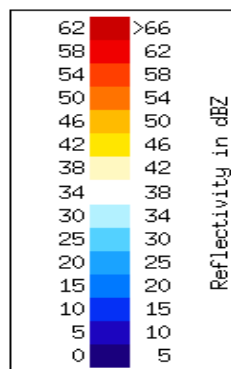
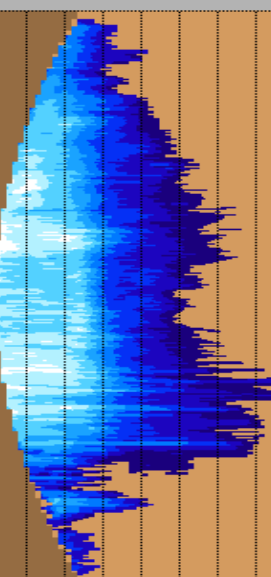
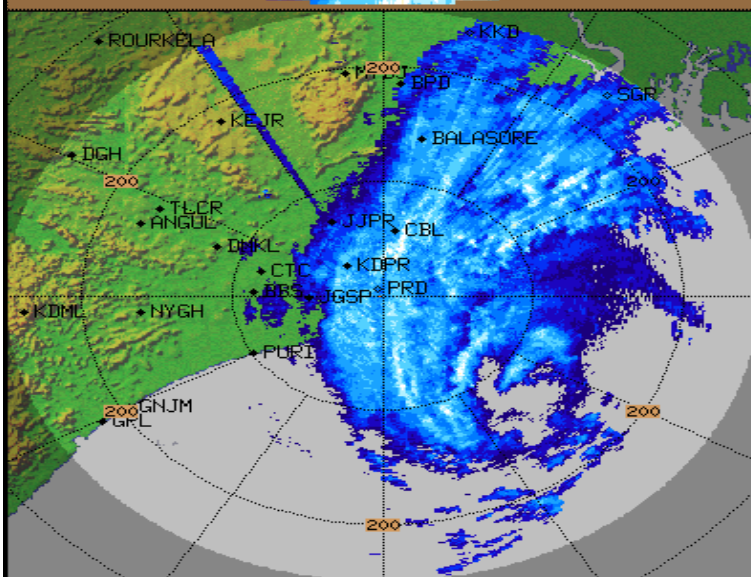
DWR GOPALPUR
(19.2743N, 84.8819E, 26.0000 mts)

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 Display Res : 1.4 Km/Pix
 DDR Enable : Yes
 Scan Elev (Lo, Hi) : 0.2, 1.0 Deg
 PRF (Lo, Hi) : 0, 300 Hz
 Scan Res : 300 mts
 Scan RPM : 2.0
 Log Threshold : 3 dB
 DTP : 24
 Pulse Width : 2.0 micro sec
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 CSR : 20 dB
 Scan Range : 490 Km
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 Filters : NONE



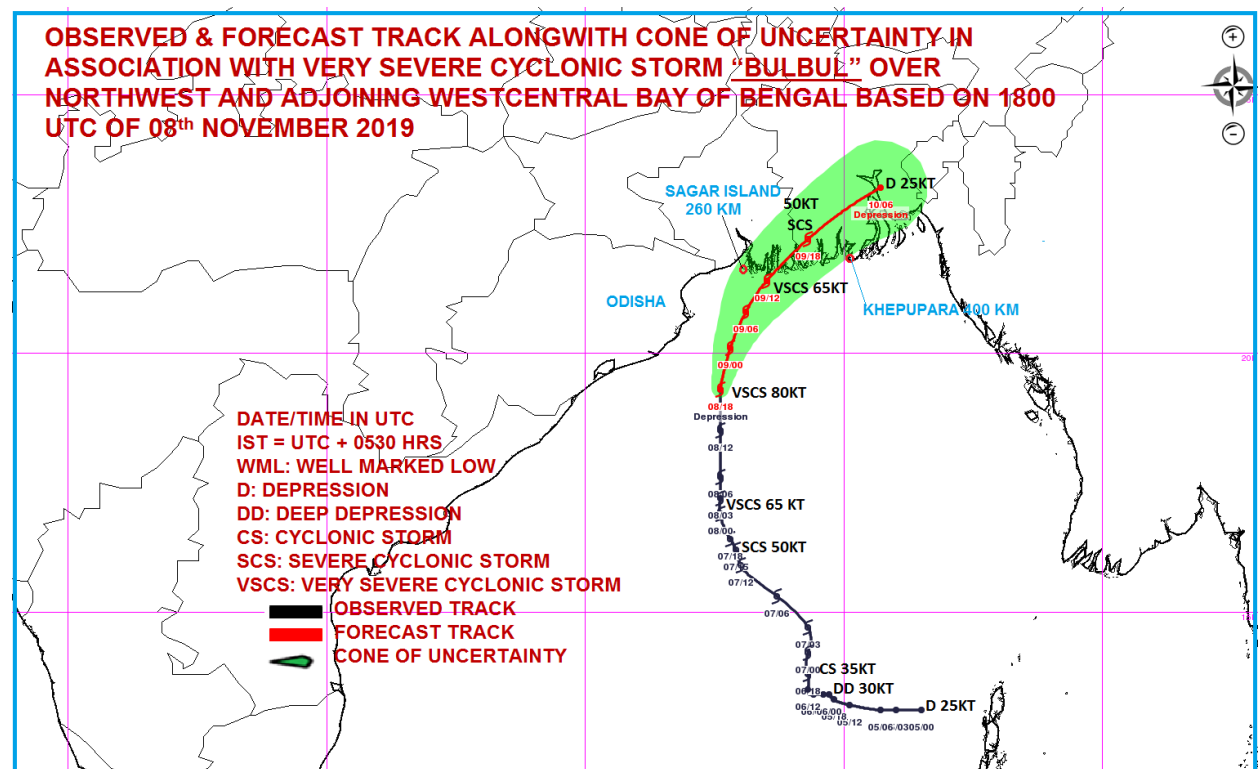
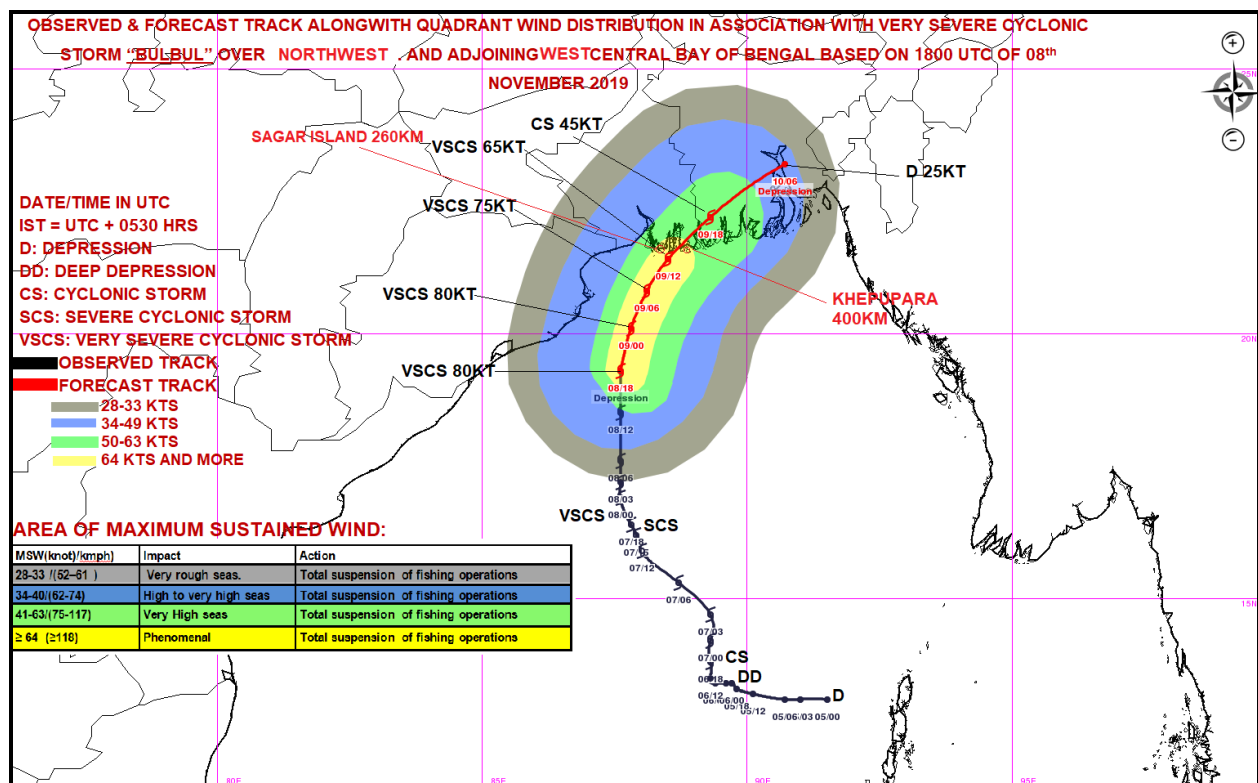
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 Max with panels
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 Min Hgt:0.0 km
 Max Hgt:15.0 km
 Max Range:250 km

18:42:19Z
 8 NOV 2019 UTC



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 32 (BOB/04/2019)

TIME OF ISSUE: 0545 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest and adjoining westcentral Bay of Bengal: CYCLONE WARNING FOR WEST BENGAL COAST: ORANGE MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (**Pronounced as Bul bul**) over northwest and adjoining westcentral Bay of Bengal moved northwards with a speed of 7 kmph during past 06 hours, and lay centred at 0230 hrs IST of today, the 9th November 2019, over northwest and adjoining westcentral Bay of Bengal, near Lat.19.6°N and Long. 87.7°E about 230 km south-southwest of Sagar Islands (West Bengal), 370 km southwest of Khepupara (Bangladesh) and 130 km east-southeast of Paradip (Odisha). It is very likely to retain intensity during next 06 hours and very likely to move nearly northwards. Thereafter, it is very likely to re-curve northeastwards and expected to move fast and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/night of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Paradip and Gopalpur in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/0230	19.6	87.7	140-150 gusting to 165	Very Severe Cyclonic Storm
09.11.19/0530	20.1	87.8	145-155 gusting to 170	Very Severe Cyclonic Storm
09.11.19/1130	20.8	88.1	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1730	21.4	88.5	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	22.2	89.3	80-90 gusting to 100	Severe Cyclonic Storm
10.11.19/1130	23.2	90.7	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** (Puri, Kendrapara, Bhadrak, Balasore and Jagatsinghpur districts) during next 06 hours.
- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

West Bengal:

- Light to moderate rainfall at many places very likely over North and South 24 Parganas and east Medinipur districts during next 06 hours.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy falls at isolated places over North and South 24 Parganas and Nadiya on 10th November 2019.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 140-150 kmph gusting to 165 kmph is prevailing over northwest & adjoining westcentral Bay of Bengal around the system centre. It is very likely to increase gradually and become 145-155 kmph gusting to 170 kmph by 9th morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. It is very likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph from morning hours of 9th November along & off Jagatsinghpur, Kendrapara, Balasore and Bhadrak districts for subsequent 12 hours and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 12 hours.
- **West Bengal coast:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is prevailing over West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from 09th afternoon for next 12 hours along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 50-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be rough to very rough along & off south Odisha coast during next 12 hours. It is very likely to become high to very high till 9th night north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is very likely to be phenomenal over westcentral Bay of Bengal during next 06 hours and over northwest Bay of Bengal from 9th morning for next 12 hours. It is very likely to become high to very high for subsequent 12 hours. Sea condition will be high to very high over northeast Bay of Bengal till 9th evening and become rough to very rough for subsequent 12 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral & adjoining eastcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

The next bulletin will be issued at 0830 hrs IST of 09th November, 2019.

**(ANANDA KUMAR DAS)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

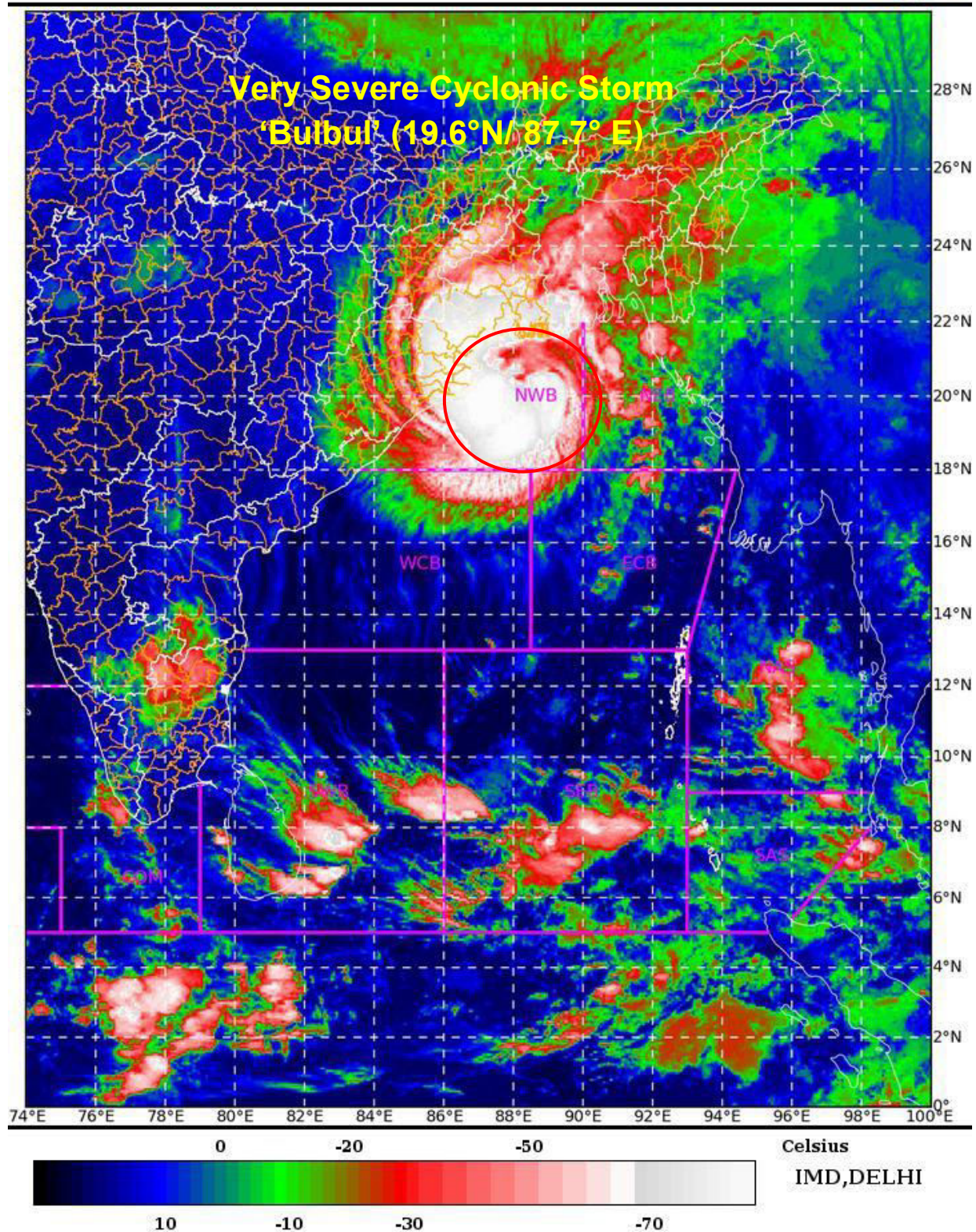
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08-11-2019/(2300 to 2326) GMT

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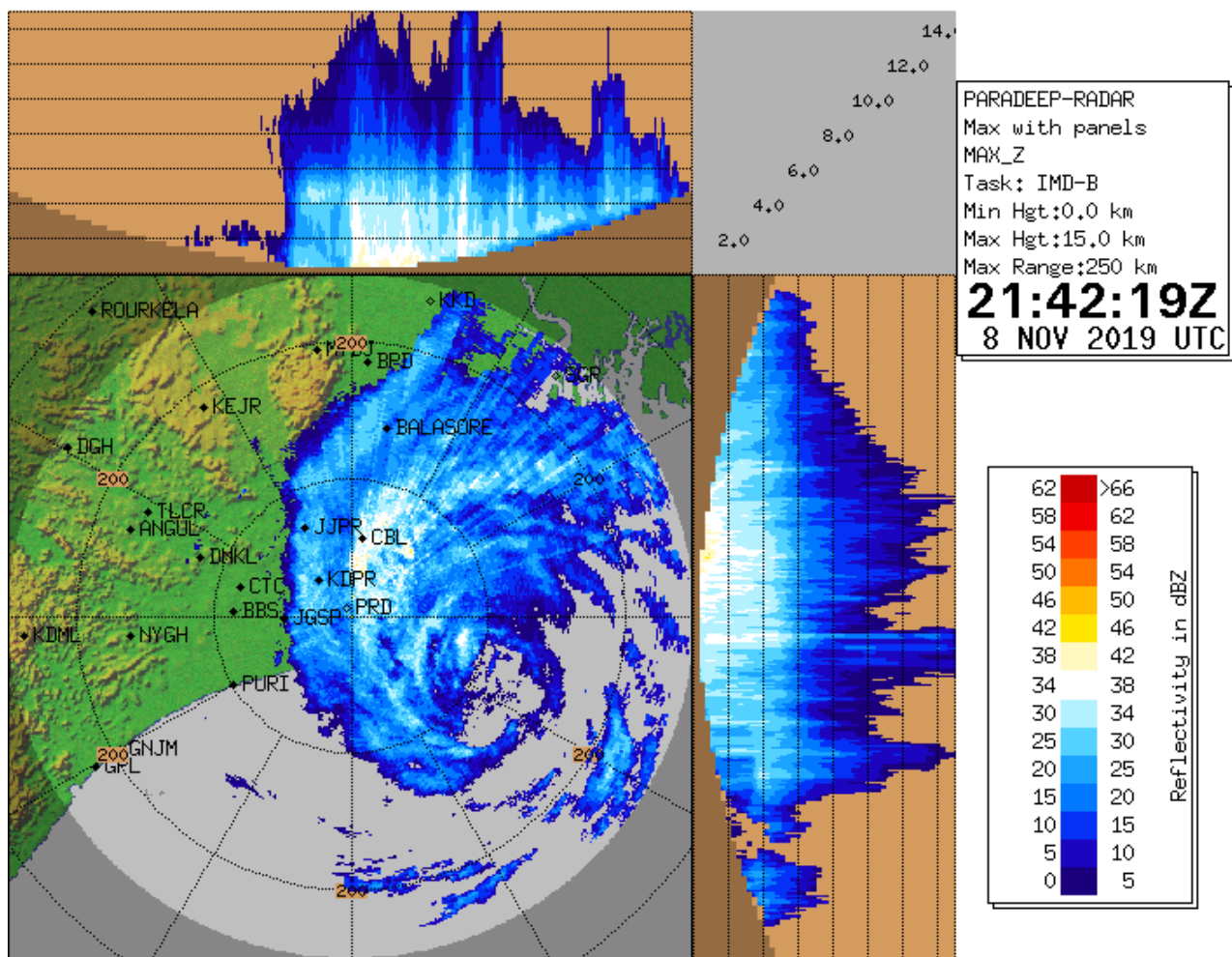
09-11-2019/(0430 to 0456) IST

L1C Mercator

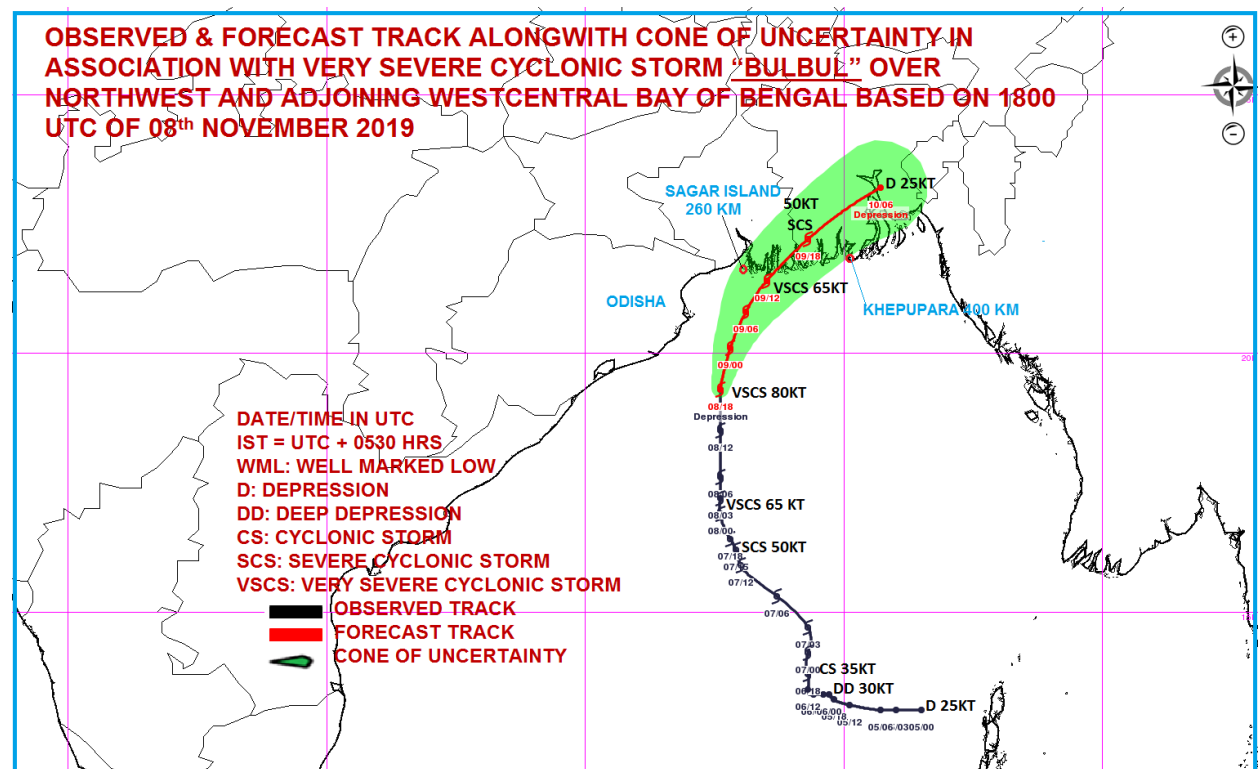
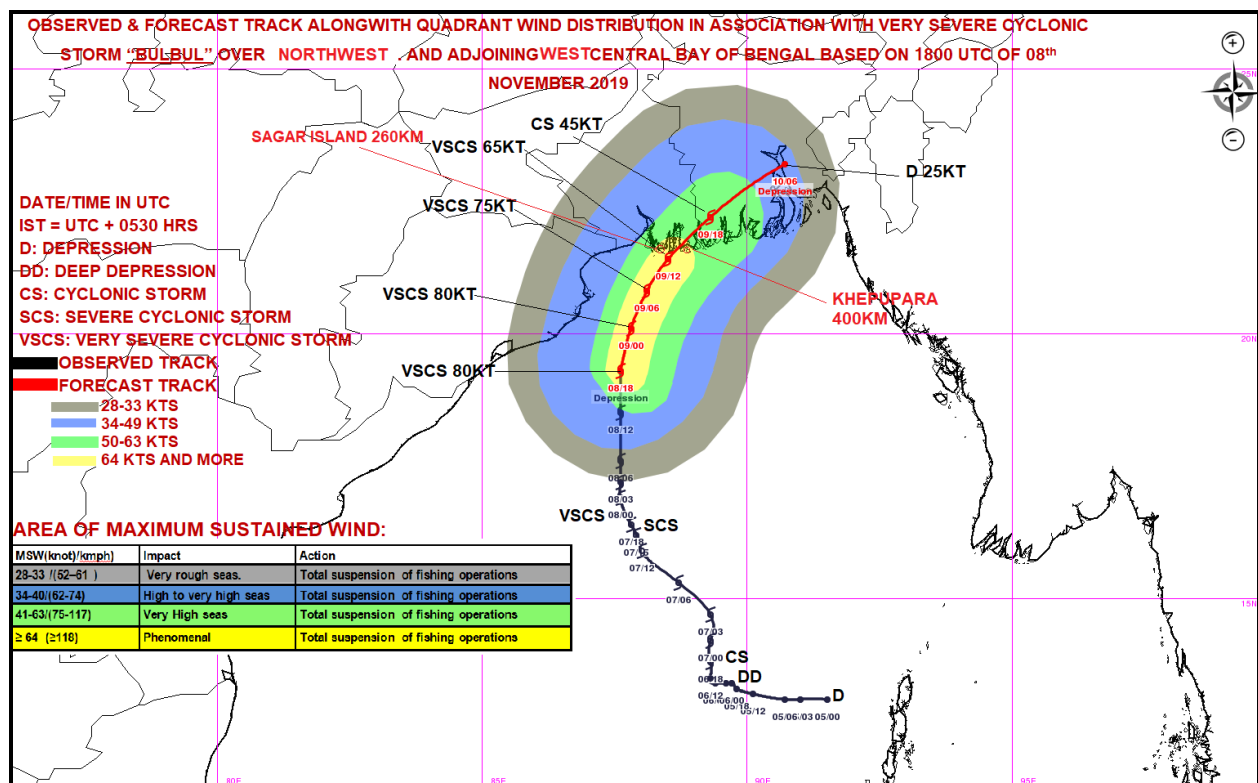


NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 33 (BOB/04/2019)

TIME OF ISSUE: 0830 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over northwest and adjoining westcentral Bay of Bengal moved nearly northwards with a speed of 13 kmph during past 06 hours, and lay centred at 0530 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.20.0°N and Long. 87.7°E about 110 km east-southeast of Paradip (Odisha), 190 km south-southwest of Sagar Islands (West Bengal) and 340 km south-southwest of Khepupara (Bangladesh). It is very likely to weaken gradually, move northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/night of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/0530	20.0	87.7	135-145 gusting to 160	Very Severe Cyclonic Storm
09.11.19/1130	20.6	88.0	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1730	21.3	88.5	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	21.9	89.2	100-110 gusting to 120	Severe Cyclonic Storm
10.11.19/0530	22.5	90.0	70-80 gusting to 90	Cyclonic Storm
10.11.19/1730	23.6	91.4	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district on 9th November 2019.

West Bengal:

- Light to moderate rainfall at many places very likely over North and South 24 Parganas and east Medinipur districts during next 06 hours.
- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly on 9th November 2019.
- Light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya till 10th November morning.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 135-145 kmph gusting to 160 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 120-130 kmph gusting to 145 kmph by 9th evening and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 60-70 kmph gusting to 80 kmph is prevailing along & off Kendrapara, Jagatsinghpur, Balasore and Bhadrak districts. It is very likely to become Gale wind speed reaching 70-80 kmph gusting to 90 kmph during next 06 hours along & off these coasts and decrease thereafter. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 06 hours.
- **West Bengal coast:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from 09th afternoon for next 12 hours along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 50-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be high to very high till 9th night along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is phenomenal over northwest Bay of Bengal. It is very likely to continue to be phenomenal till evening and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of Bengal till 9th evening and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of 9th November for the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.
- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of 9th November 2019.

The next bulletin will be issued at 1130 hrs IST of 09th November, 2019.

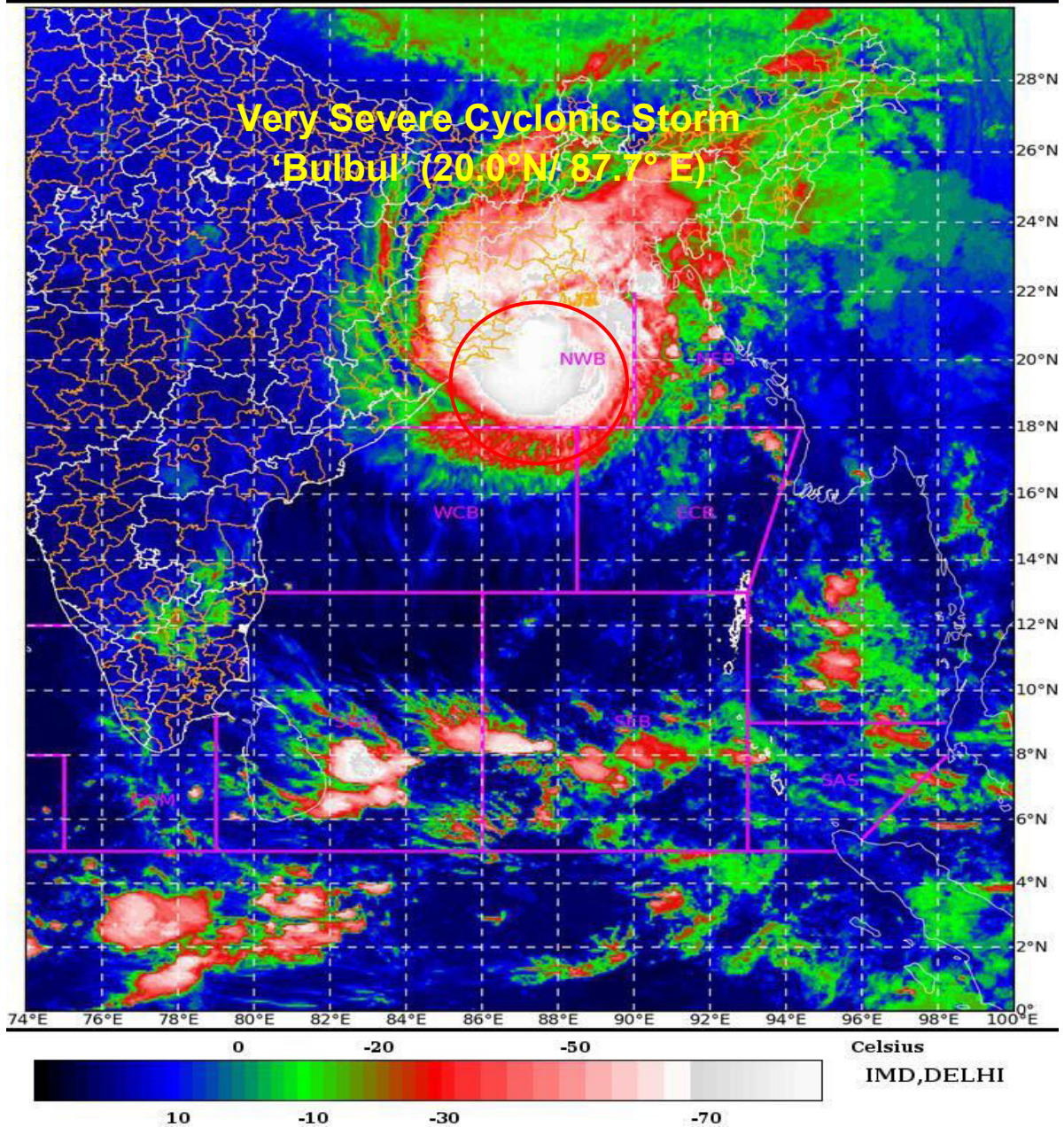
**(ANANDA KUMAR DAS)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG 09-11-2019/(0100 to 0126) GMT

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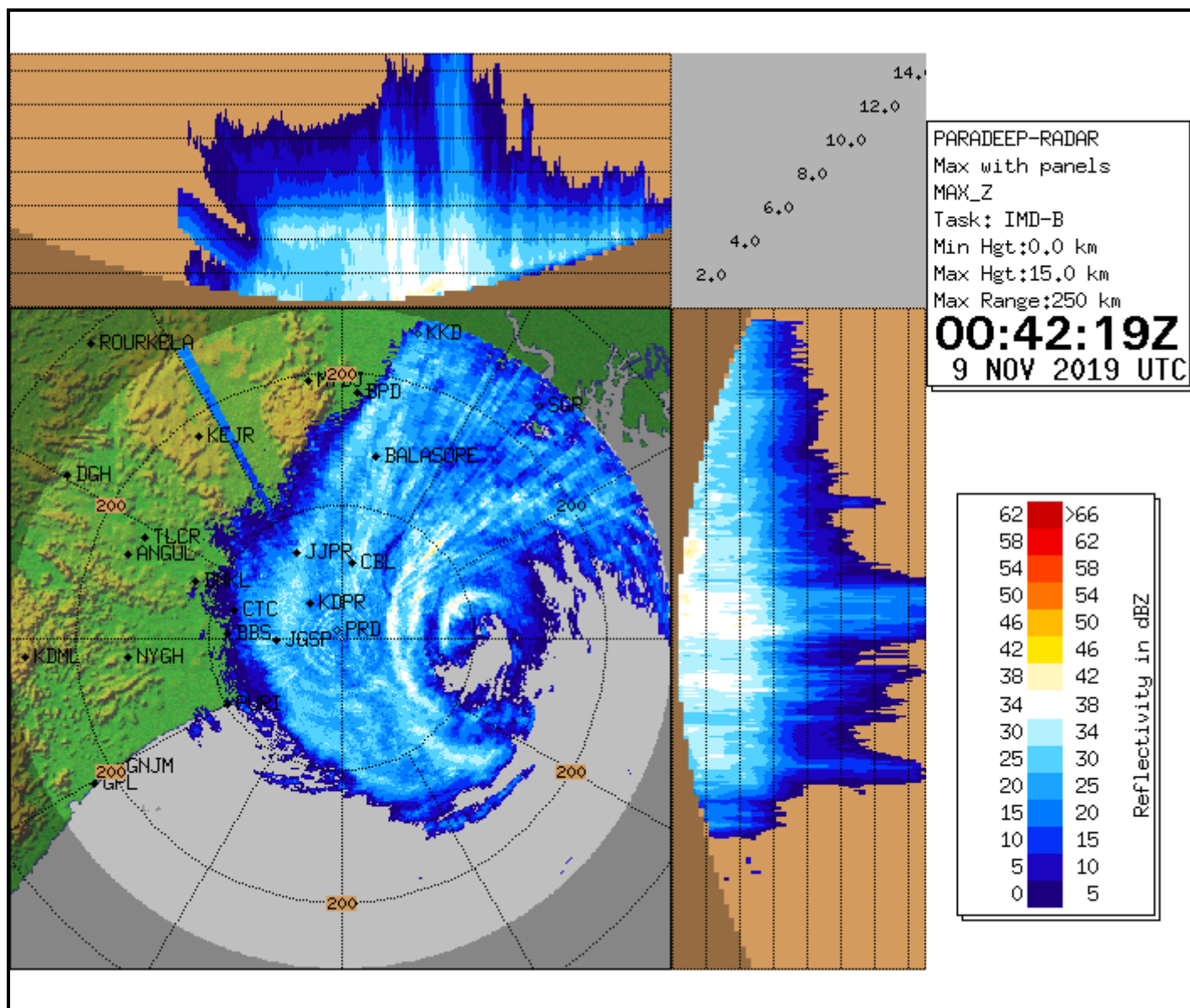
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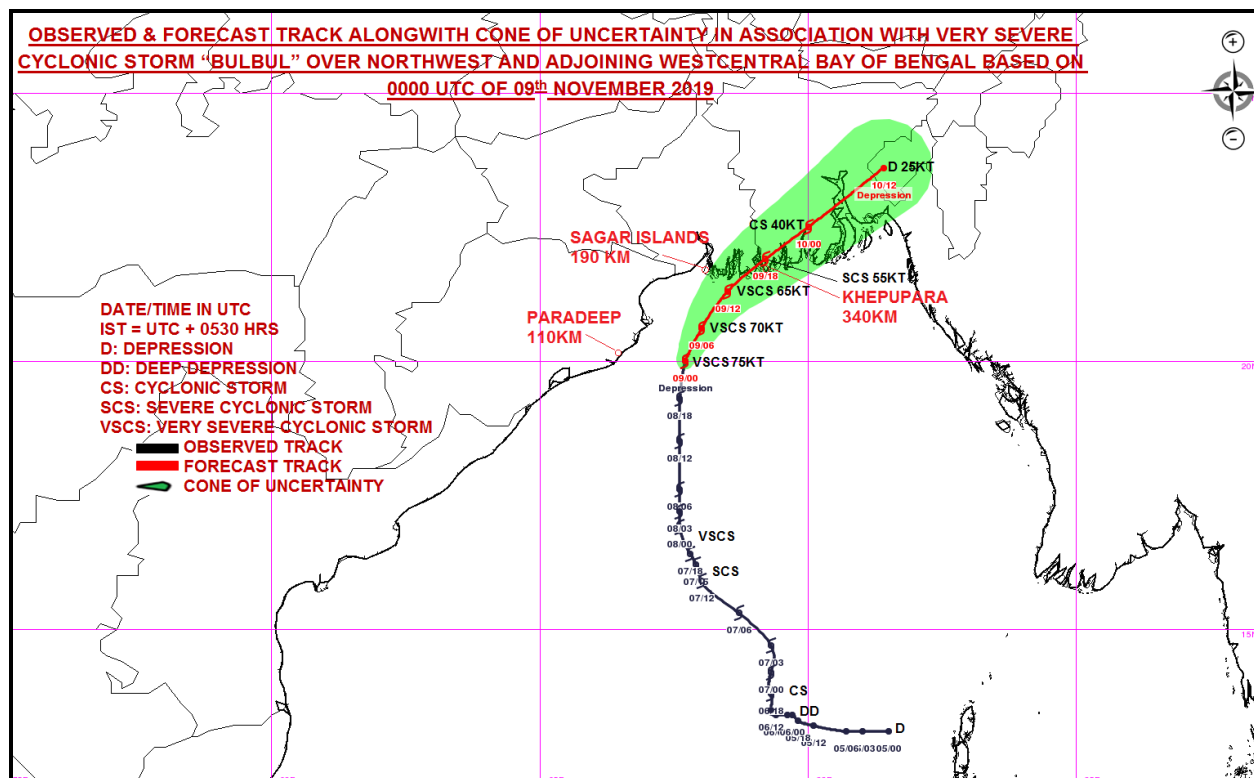
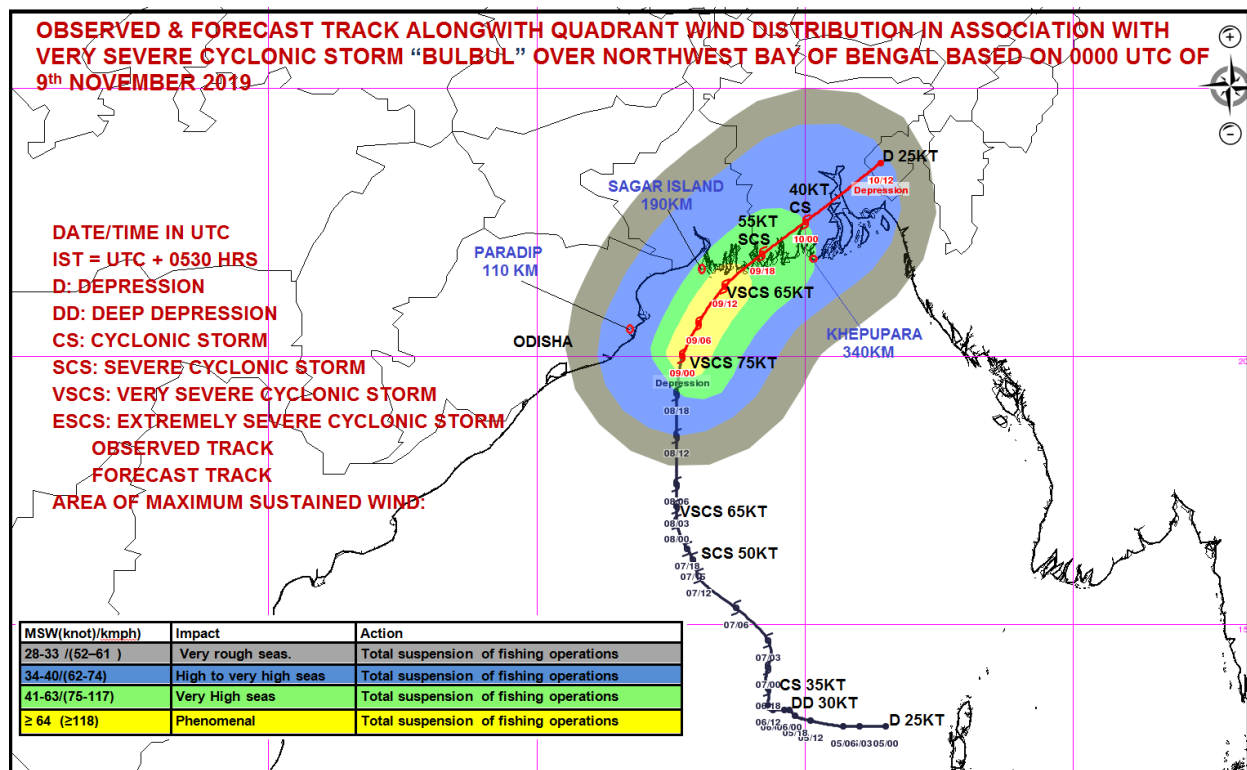
NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 34 (BOB/04/2019)

TIME OF ISSUE: 1040 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over northwest Bay of Bengal moved nearly northwards with a speed of 15 kmph during past 06 hours, and lay centred at 0830 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.20.4°N and Long. 87.6°E about 95 km east-northeast of Paradip (Odisha), 140 km south-southwest of Sagar Islands (West Bengal), 100 km southeast of Chandbali, 140 km south-southwest Balasore, 130 km south-southwest of Digha and 320 km southwest of Khepupara (Bangladesh). It is very likely to weaken gradually, move northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/ night of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm '**Bulbul**' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/0830	20.4	87.6	130-140 gusting to 155	Very Severe Cyclonic Storm
09.11.19/1130	20.8	87.8	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/1730	21.4	88.5	115-125 gusting to 140	Very Severe Cyclonic Storm
09.11.19/2330	21.9	89.2	100-110 gusting to 120	Severe Cyclonic Storm
10.11.19/0530	22.5	90.0	70-80 gusting to 90	Cyclonic Storm
10.11.19/1730	23.6	91.4	40-50 gusting to 60	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, Bhadrak, Kendrapara and Jagatsinghpur districts and with heavy falls at isolated places over Jajpur district today, the 9th November 2019.

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly today, the 9th November 2019.
- Light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya till 10th November morning.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on today, the 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 130-140 kmph gusting to 155 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 115-125 kmph gusting to 140 kmph by today, the 9th evening and decrease gradually thereafter.
- **Odisha coast:** Gale wind speed reaching 70-80 kmph gusting to 90 kmph is likely to continue along & off Kendrapara, Jagatsinghpur districts during next 3 hours, and along & off Balasore and Bhadrak districts for next 6 hours. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 06 hours.
- **West Bengal coast:** Squally wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 115-125 kmph gusting to 140 kmph from the evening of today, the 9th November for next 12 hours along & off East Medinipur, North & South 24 Parganas. Squally wind speed reaching 50-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be high to very high till tonight along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is phenomenal over northwest Bay of Bengal. It is very likely to continue to be phenomenal till today evening and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of Bengal till today evening and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today, the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas of Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of today, the 9th November for the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.
- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of today, 9th November 2019.

The next bulletin will be issued at 1430 hrs IST of 09th November, 2019.

**(Neetha K. Gopal)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

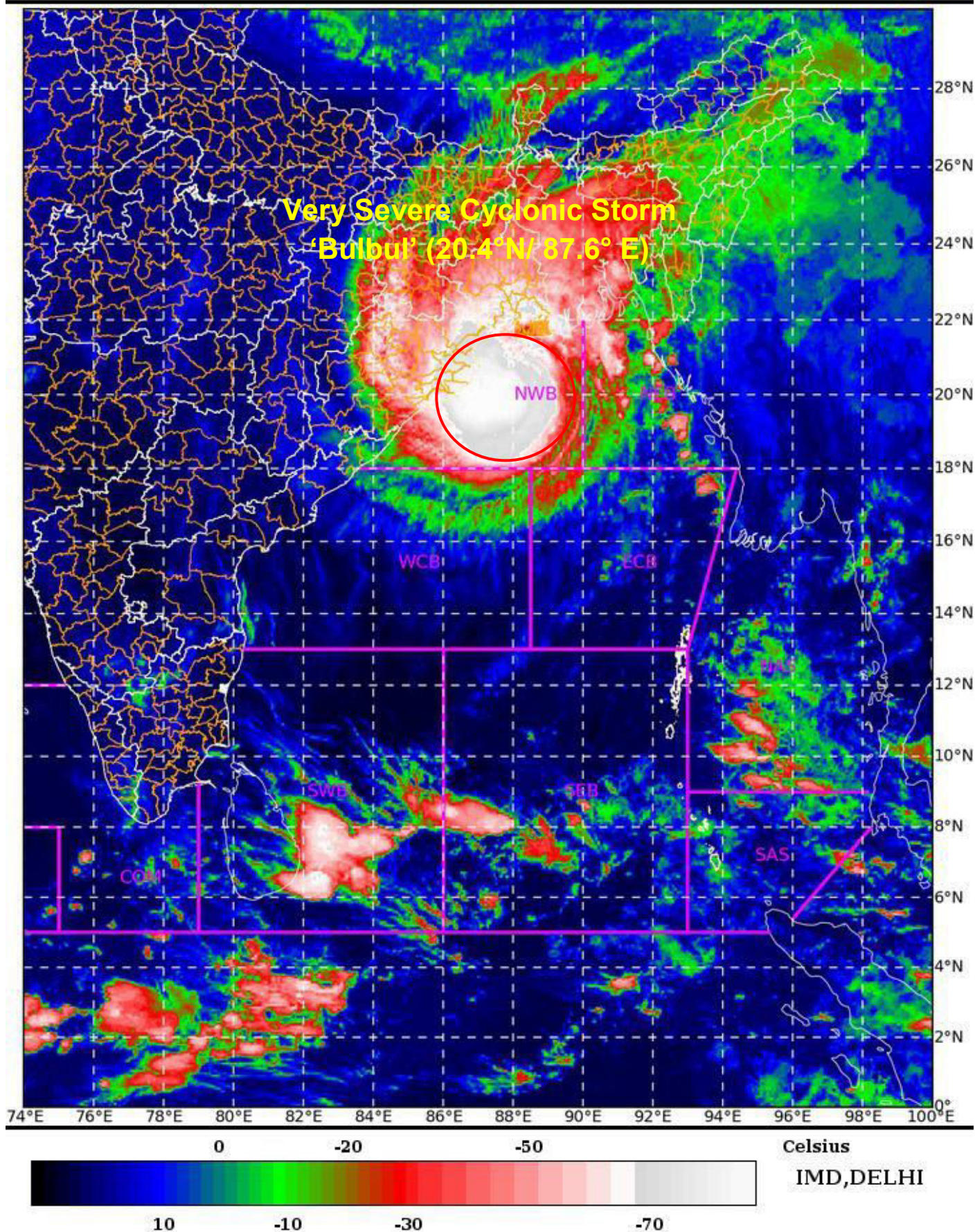
SAT : INSAT-3D IMG

09-11-2019/(0300 to 0326) GMT

IMG_TIR1_TEMP 10.8 um

09-11-2019/(0830 to 0856) IST

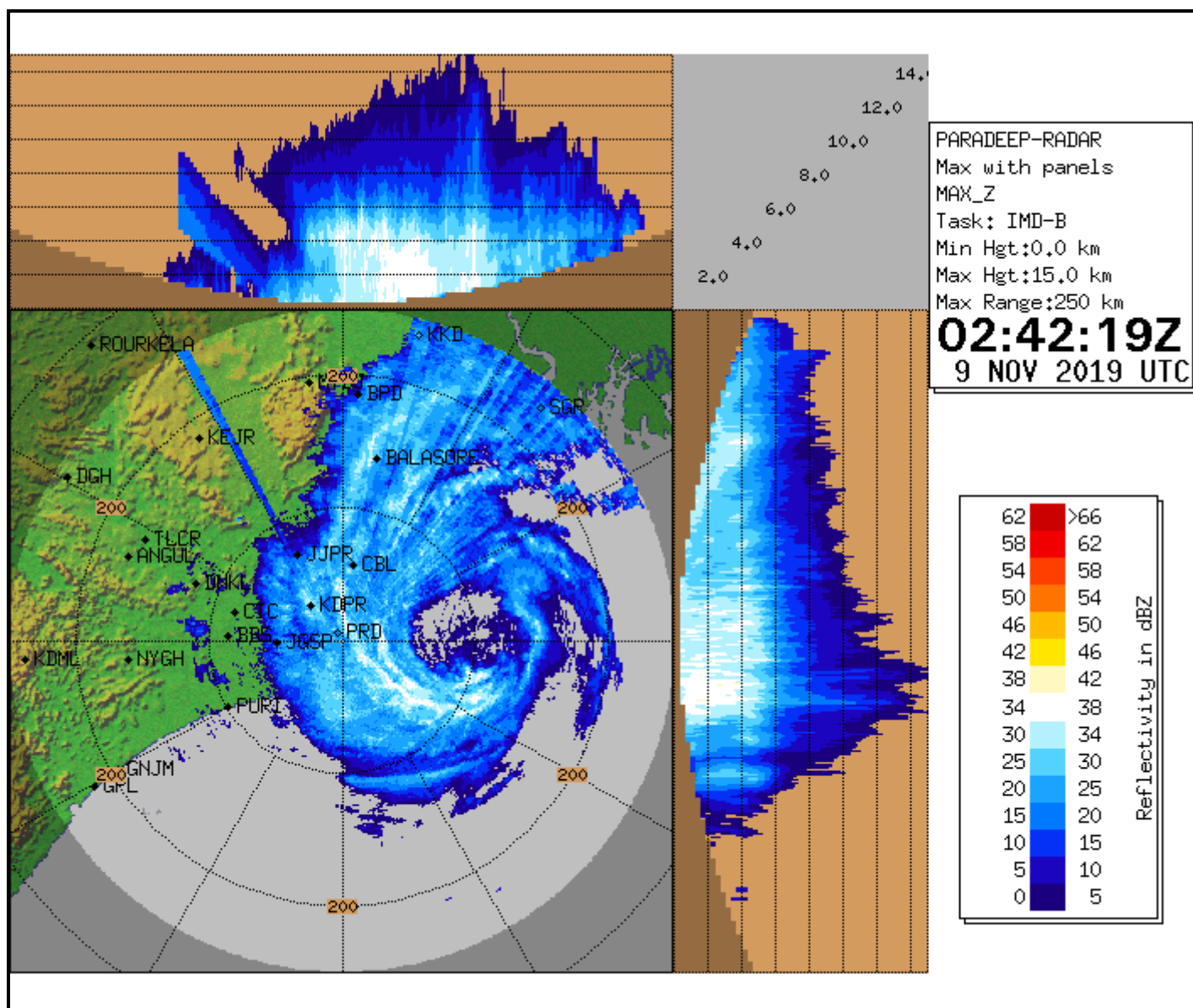
L1C Mercator



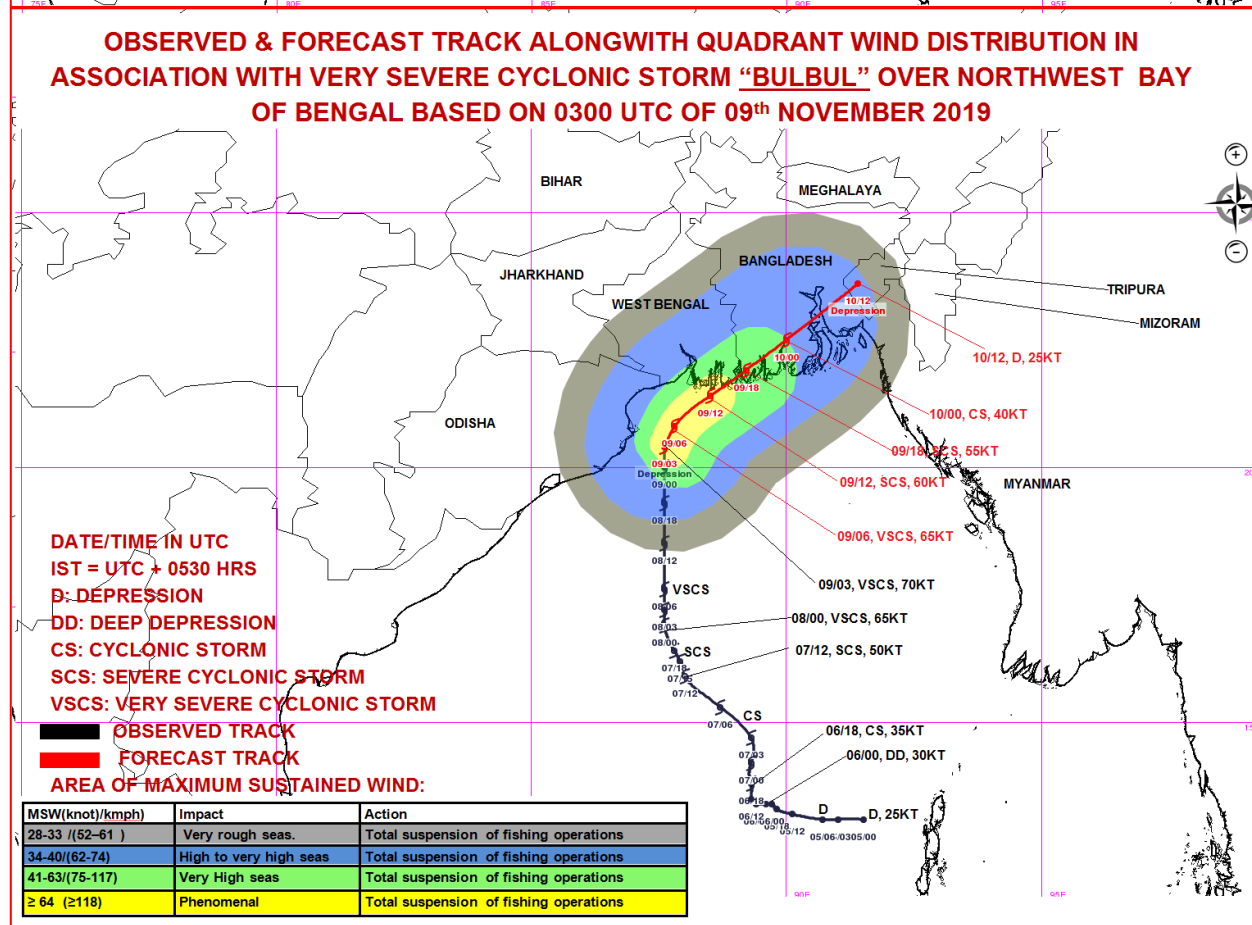
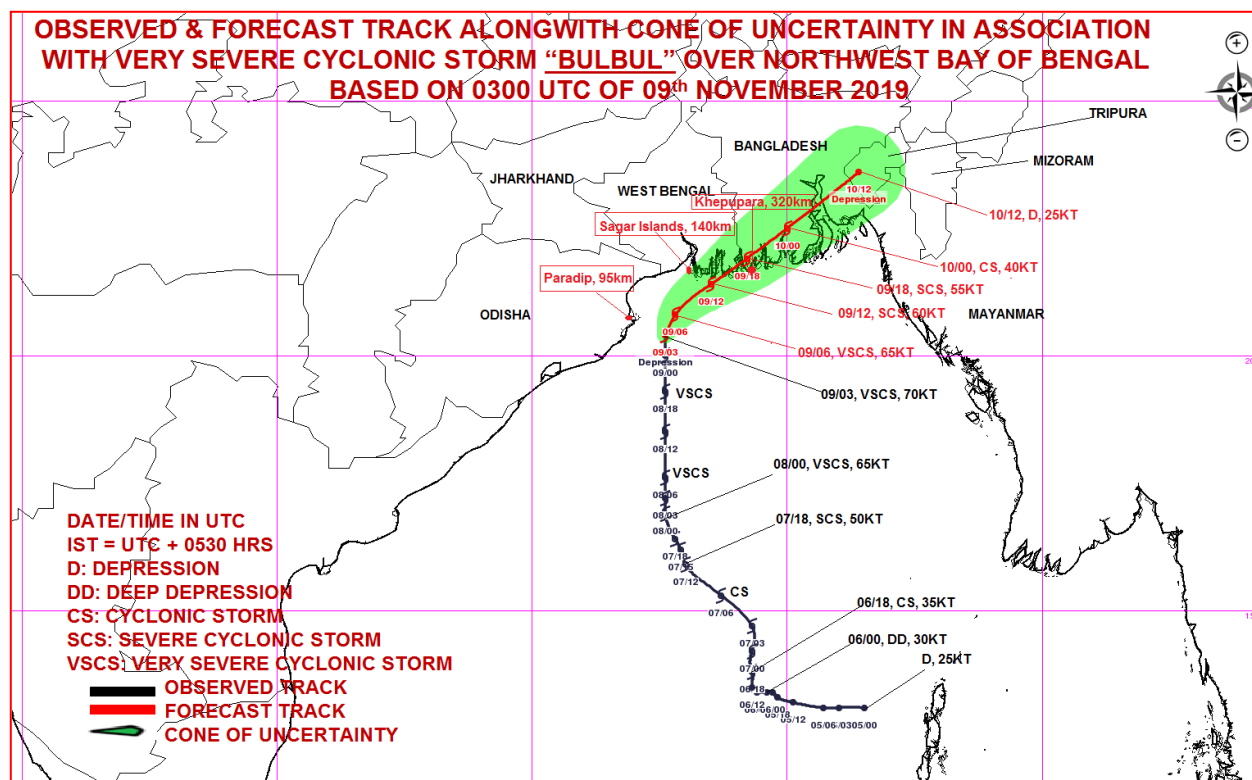
NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 35 (BOB/04/2019)

TIME OF ISSUE: 1320 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over northwest Bay of Bengal moved nearly northwards with a speed of 12 kmph during past 06 hours, and lay centred at 1130 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.20.65°N and Long. 87.85°E about 125 km east-northeast of Paradip (Odisha), 110 km south-southwest of Sagar Islands (West Bengal), 120 km east-southeast of Chandbali, 135 km south-southeast Balasore, 110 km south-southwest of Digha, 215 km south-southwest of Kolkata and 290 km west-southwest of Khepupara (Bangladesh). It is very likely to weaken gradually, move northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/ night (between 2000 & 2300 hours IST) of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/1130	20.65	87.85	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/1730	21.2	88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	21.8	88.7	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	22.4	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.9	90.0	50-60 gusting to 70	Cyclonic Storm
10.11.19/2330	23.2	91.2	30-40 gusting to 50	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, and Bhadrak, districts and with heavy falls at isolated places over Kendrapara, Jagatsinghpur and Jajpur district today, the 9th November 2019.

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly today, the 9th November 2019.
- Light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya till 10th November morning.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on today, the 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 125-135 kmph gusting to 150 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 115-125 kmph gusting to 140 kmph by evening of the today, 9th and decrease gradually thereafter.
- **Odisha coast:** Gale wind speed reaching 70-80 kmph gusting to 90 kmph is likely to continue along & off Kendrapara, Jagatsinghpur districts during next 3 hours, and along & off Balasore and Bhadrak districts for next 6 hours. Puri and Ganjam districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 06 hours.
- **West Bengal coast:** Squally wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from the afternoon of today, the 9th November for next 09 hours along & off West & East Medinipur, North & South 24 Parganas districts. Squally wind speed reaching 50-60 kmph gusting to 70 kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be high to very high till tonight along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is phenomenal over northwest Bay of Bengal. It is very likely to continue to be phenomenal till today evening and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of Bengal till today evening and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today, the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas of Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

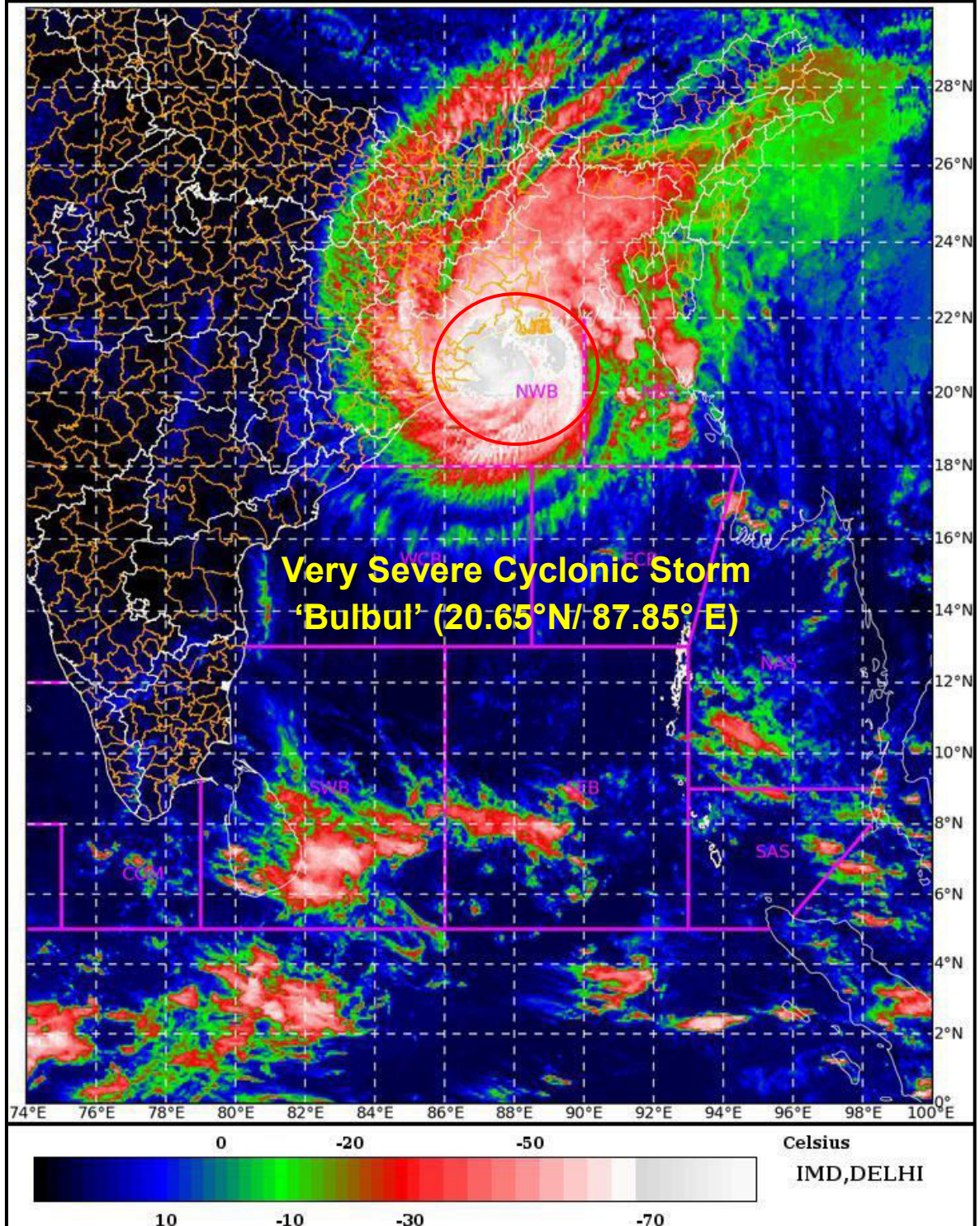
- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of today, the 9th November for the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.
- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of today, 9th November 2019.

The next bulletin will be issued at 1730 hrs IST of 09th November, 2019.

**(Neetha K. Gopal)
Scientist-E, RSMC, New Delhi**

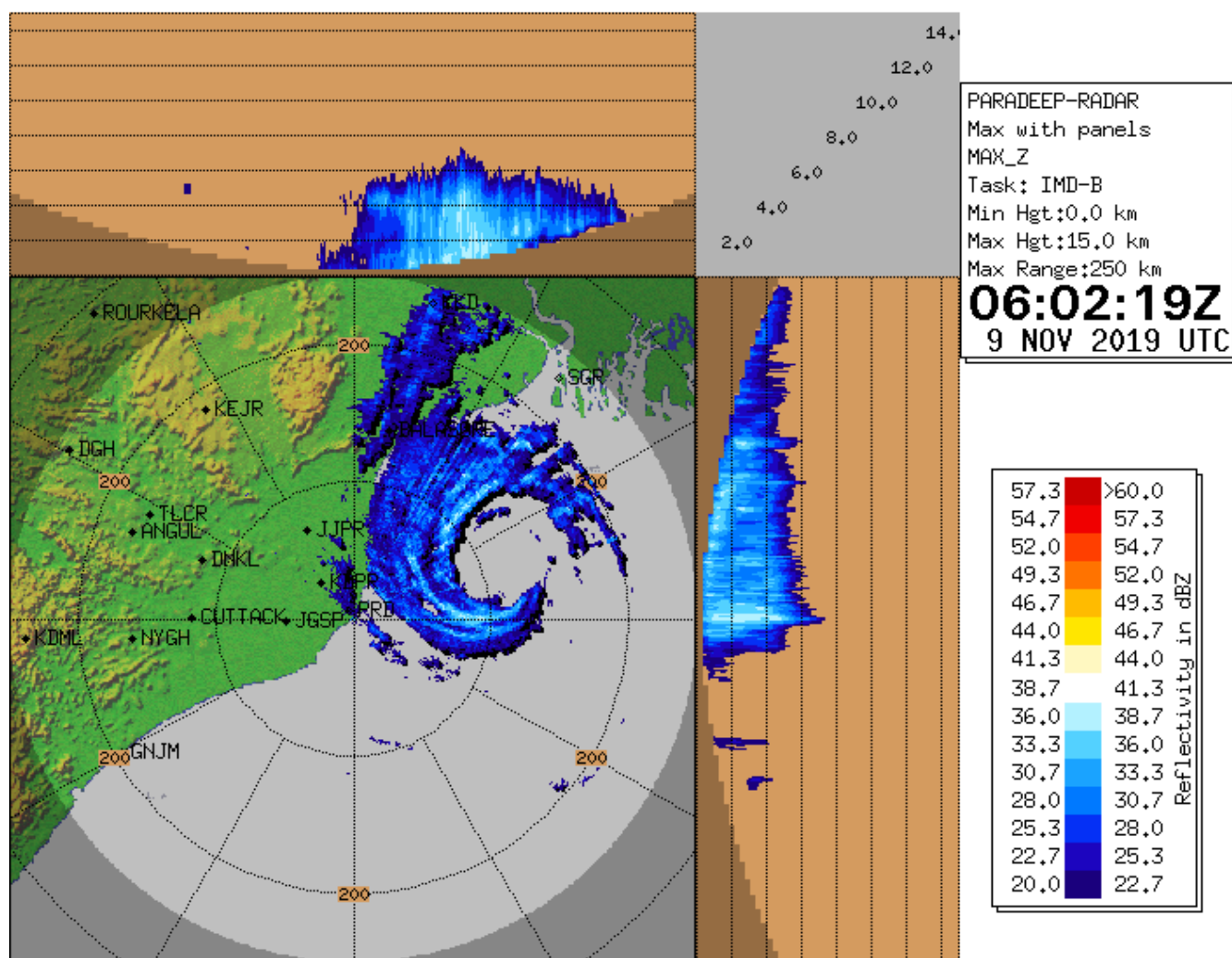
Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG 09-11-2019/(0630 to 0657) GMT
 IMG_TIR1_TEMP 10.8 um 09-11-2019/(1200 to 1227) IST
 L1C Mercator

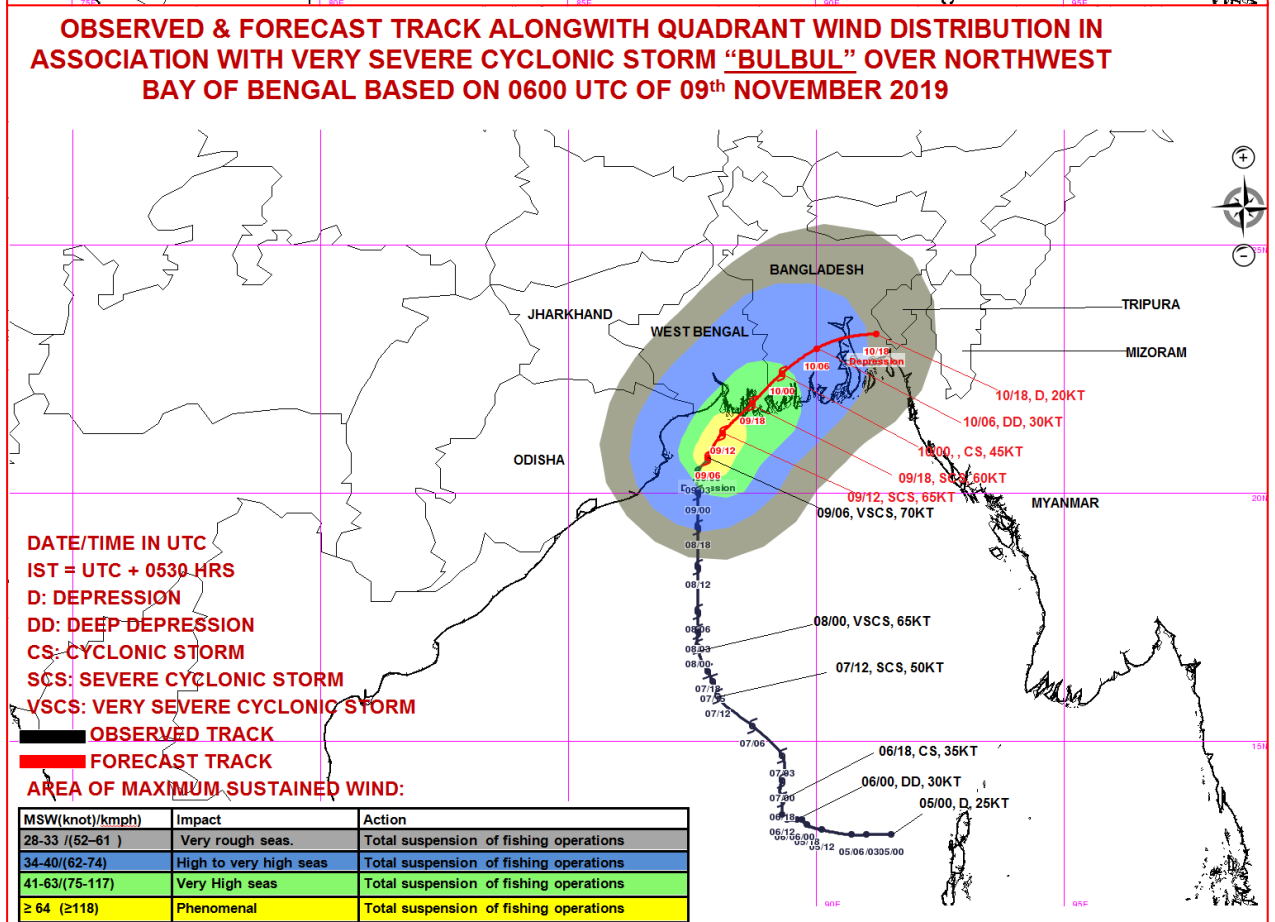
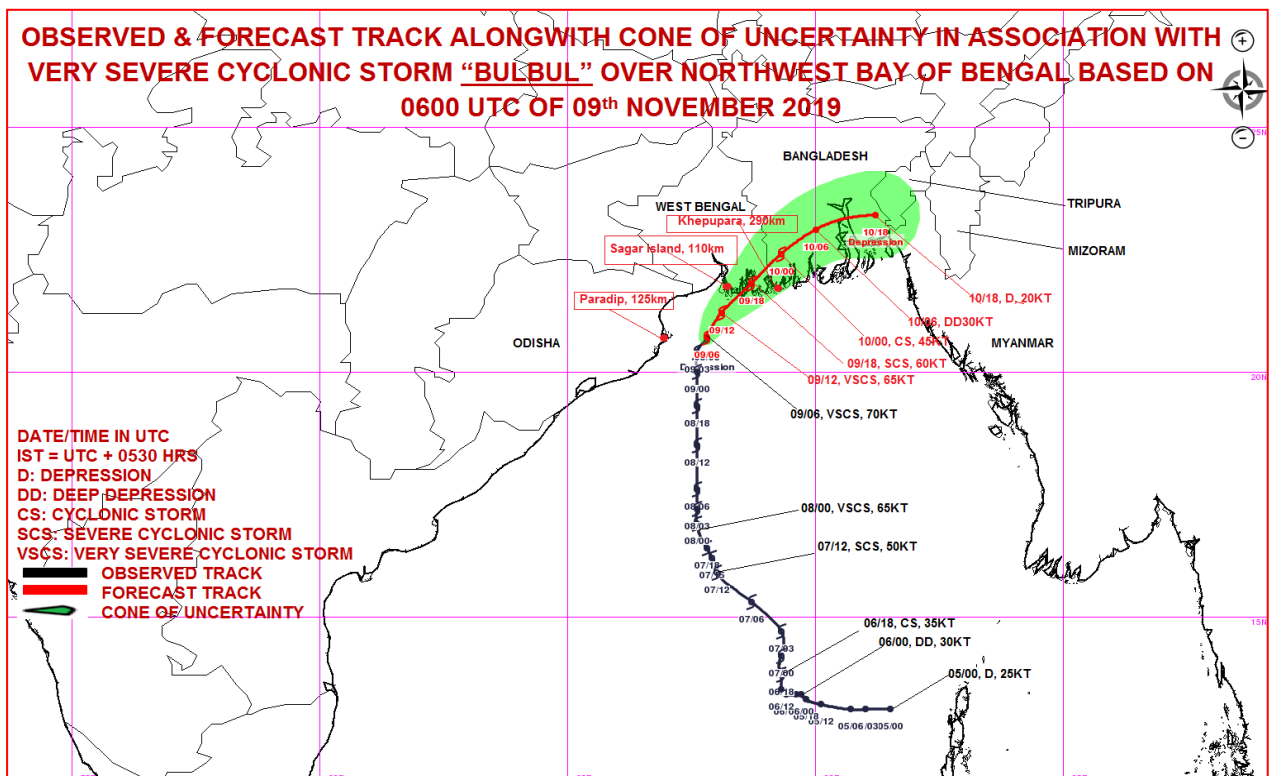


NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



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Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 36 (BOB/04/2019)

TIME OF ISSUE: 1520 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The Very Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over northwest Bay of Bengal continued to move nearly northwards with a speed of 09 kmph during past 06 hours, and lay centred at 1430 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.20.9°N and Long. 87.9°E about 140 km east-northeast of Paradip (Odisha), 85 km south of Sagar Islands (West Bengal), 120 km east of Chandbali, 120 km south-southeast Balasore, 90 km south-southeast of Digha, 185 km south-southwest of Kolkata and 270 km west-southwest of Khepupara (Bangladesh). It is very likely to weaken gradually, move northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/ night (between 2000 & 2300 hours IST) of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
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09.11.19/1730	21.2	88.1	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	21.8	88.7	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	22.4	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.9	90.0	50-60 gusting to 70	Cyclonic Storm
10.11.19/2330	23.2	91.2	30-40 gusting to 50	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy to very heavy falls** over Balasore, and Bhadrak, districts today, the 9th November 2019.

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur, and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly today, the 9th November 2019.
- Light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya till 10th November morning.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura on today, the 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 125-135 kmph gusting to 150 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 115-125 kmph gusting to 140 kmph by evening of the today, 9th and decrease gradually thereafter.
- **Odisha coast:** Gale wind speed reaching 70-80 kmph gusting to 90 kmph is likely to continue along & off districts Balasore and Bhadrak districts for next 6 hours. Kendrapara and Jagatsinghpur, districts are likely to experience squally wind speed reaching 40-50 kmph gusting to 60 kmph during next 09 hours.
- **West Bengal coast:** Squally wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph from the afternoon of today, the 9th November for next 09 hours along & off West & East Medinipur, North & South 24 Parganas districts. Squally wind speed reaching 50-60 Kmph gusting to 70 Kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.

(iii) Sea condition

- Sea condition will be high to very high till tonight along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is phenomenal over northwest Bay of Bengal. It is very likely to continue to be phenomenal till today evening and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of Bengal till today evening and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into westcentral Bay of Bengal during next 12 hours and over north Bay of Bengal for next 24 hours.

(vi) Damage Expected over coastal districts of north Odisha:

- Damage to thatched houses/ huts. Unattached metal sheets may fly.
- Damage to embankments/ salt pans.
- Partial damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of trees. Damage to banana and papaya trees. Large dead limbs blown from trees.
- Major damage to coastal crops

Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of north Odisha

- Total suspension of fishing operations till 10th morning.
- People in affected areas to remain indoors.
- Movement in motor boats unsafe.
- Beach movement to be restricted.

Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- **Movement in motor boats and small ships unsafe.**
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today, the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas of Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.
- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of today, the 9th November for

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.

- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of today, 9th November 2019.

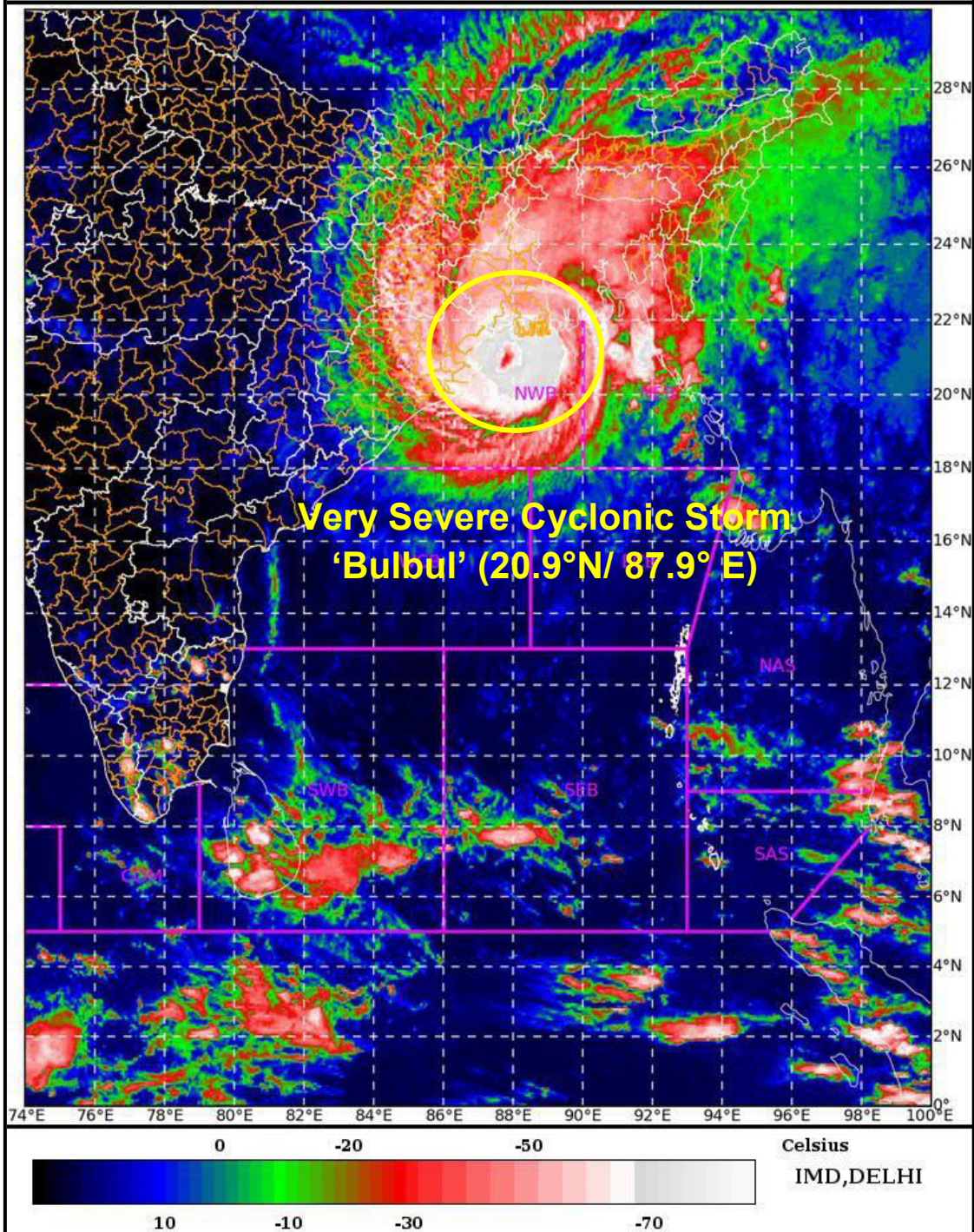
The next bulletin will be issued at 2030 hrs IST of 09th November, 2019.

**(Neetha K. Gopal)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

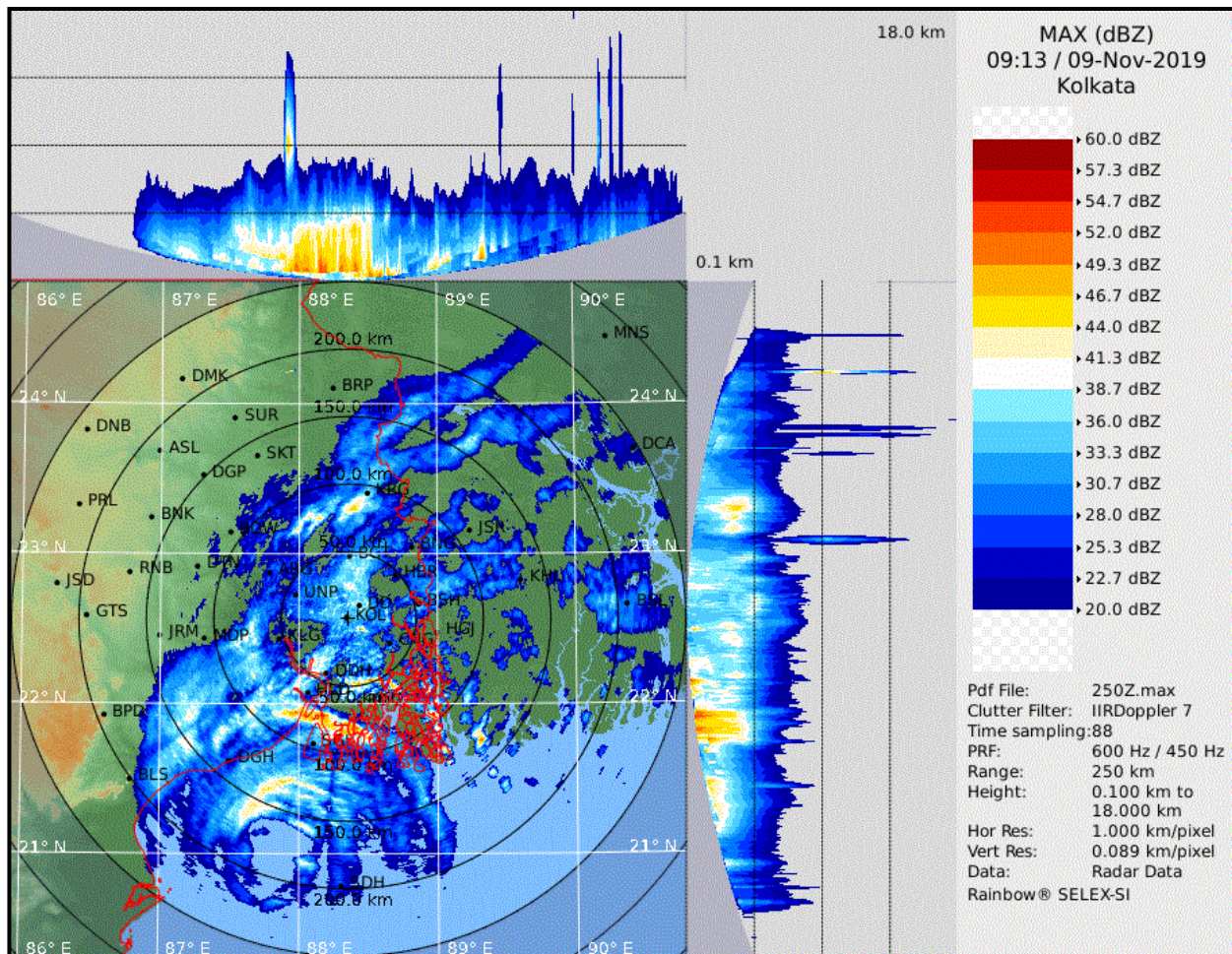
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

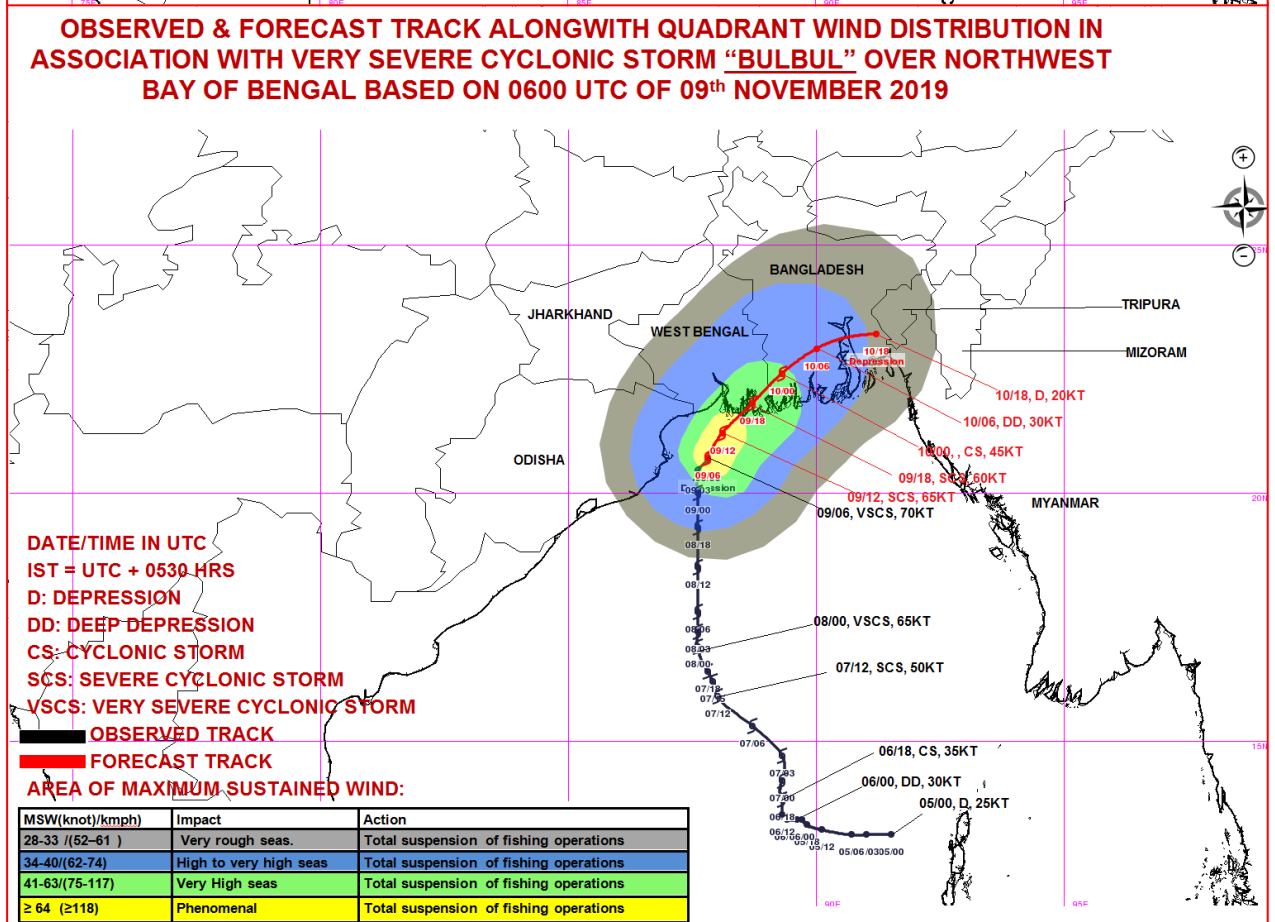
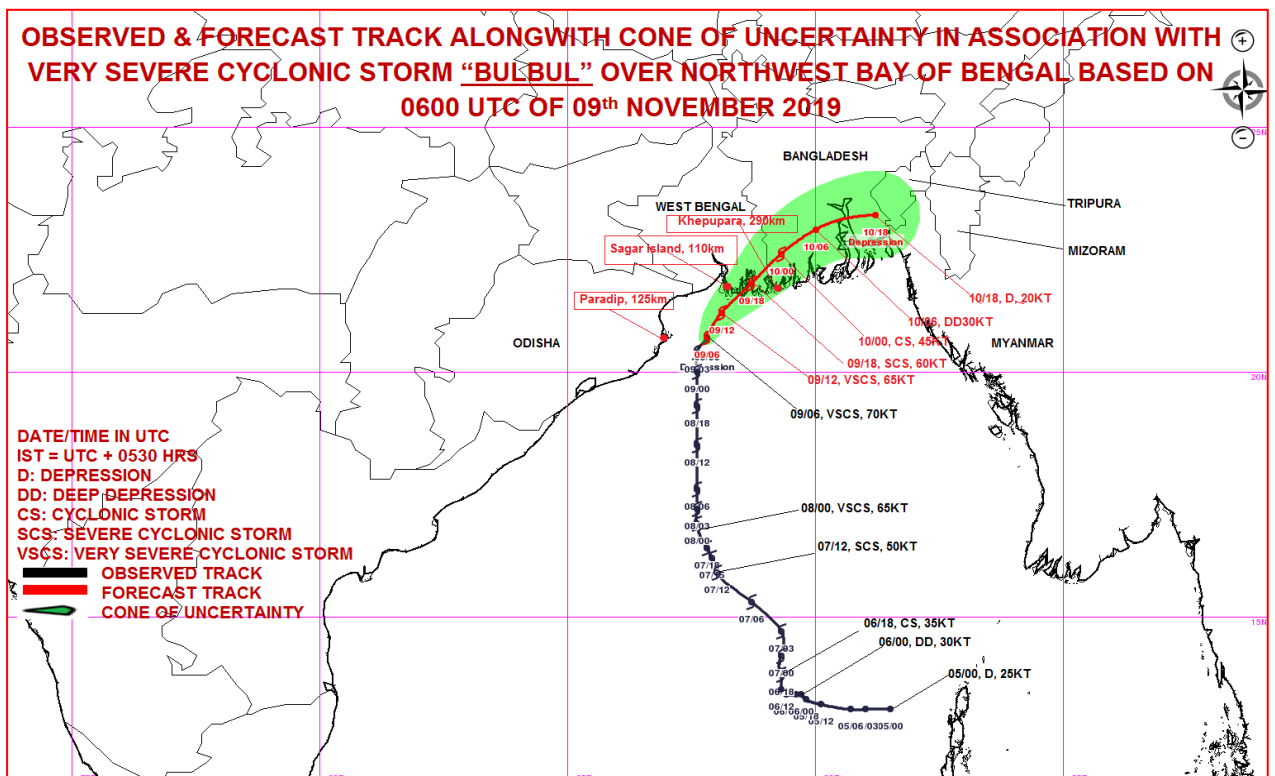
SAT : INSAT-3D IMG 09-11-2019/(0830 to 0857) GMT
IMG_TIR1_TEMP 10.8 um 09-11-2019/(1400 to 1427) IST
L1C Mercator



NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.





Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 37 (BOB/04/2019)

TIME OF ISSUE: 1900 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The **Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over northwest Bay of Bengal moved north-northeastwards with a speed of 11 kmph during past 06 hours, and lay centred at 1730 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.21.2°N and Long. 88.1°E about 175 km east-northeast of Paradip (Odisha), 50 km south of Sagar Islands (West Bengal), 150 km northeast of Chandbali, 125 km east-southeast Balasore, 75 km southeast of Digha, 150 km south-southeast of Kolkata and 235 km west-southwest of Khepupara (Bangladesh). It is very likely to weaken gradually, move northeastwards and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta by late evening/ night (between 2000 & 2300 hours IST) of 9th November as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/1730	21.2	88.1	125-135 gusting to 150	Very Severe Cyclonic Storm
09.11.19/2330	21.8	88.7	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	22.4	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.9	90.0	60-70 gusting to 80	Cyclonic Storm
10.11.19/1730	23.1	90.6	30-40 gusting to 50	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy falls** over Balasore district during next 06 hours.

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly during next 12 hours.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over Mizoram and Tripura, today, the 9th November and over South Assam & Meghalaya, Tripura, and Mizoram on 10th November.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 125-135 kmph gusting to 150 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 80-90 kmph gusting to 100 kmph by tomorrow the 10th November morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 55-65 kmph gusting to 75 kmph is likely along & off Balasore district for next 6 hours. Kendrapara and Jagatsinghpur, districts are likely to experience strong wind speed reaching 35-45 kmph gusting to 55 kmph during next 06 hours.
- **West Bengal coast:** Squally wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph during 2000 hours IST of today to 0530 hours of tomorrow, the 10th November along & off West and East Medinipur and North & South 24 Parganas districts. Squally wind speed reaching 50-60 kmph gusting to 70 kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period and strong wind speed reaching 30 - 40 kmph gusting to 50 kmph likely to prevail over Kolkata during the same period. .

(iii) Sea condition

- Sea condition will be high to very high till tonight along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is phenomenal over northwest Bay of Bengal. It is very likely to continue to be phenomenal during next 09 hours and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of Bengal till tonight and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during the time of landfall. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into north Bay of Bengal for next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vi) Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today, the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas of Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.
- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of today, the 9th November for the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.
- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching, 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of today, 9th November 2019.

The next bulletin will be issued at 2330 hrs IST of 09th November, 2019.

**(Sunitha devi.S)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

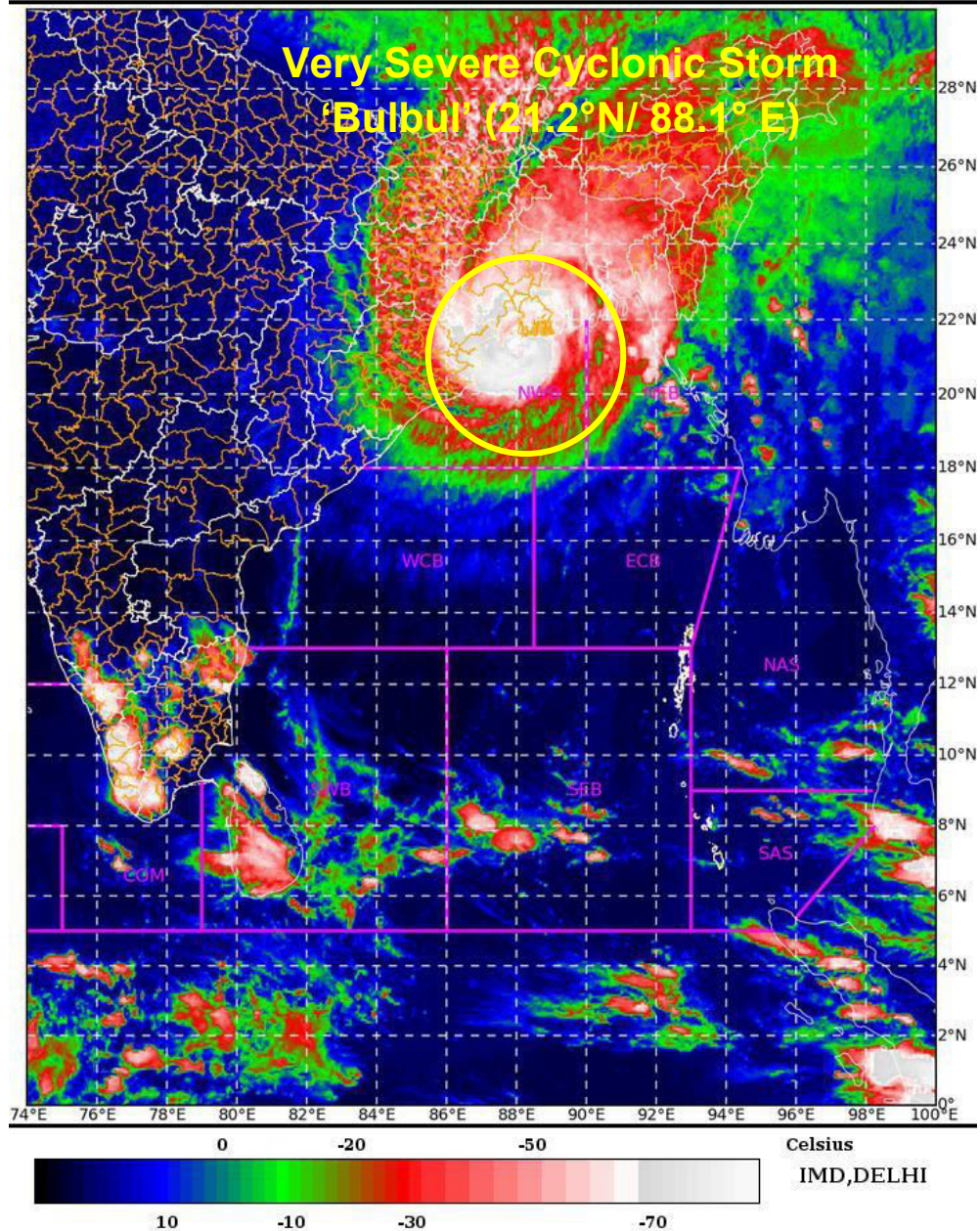
SAT : INSAT-3D IMG

09-11-2019/(1130 to 1156) GMT

IMG_TIR1_TEMP 10.8 um

09-11-2019/(1700 to 1726) IST

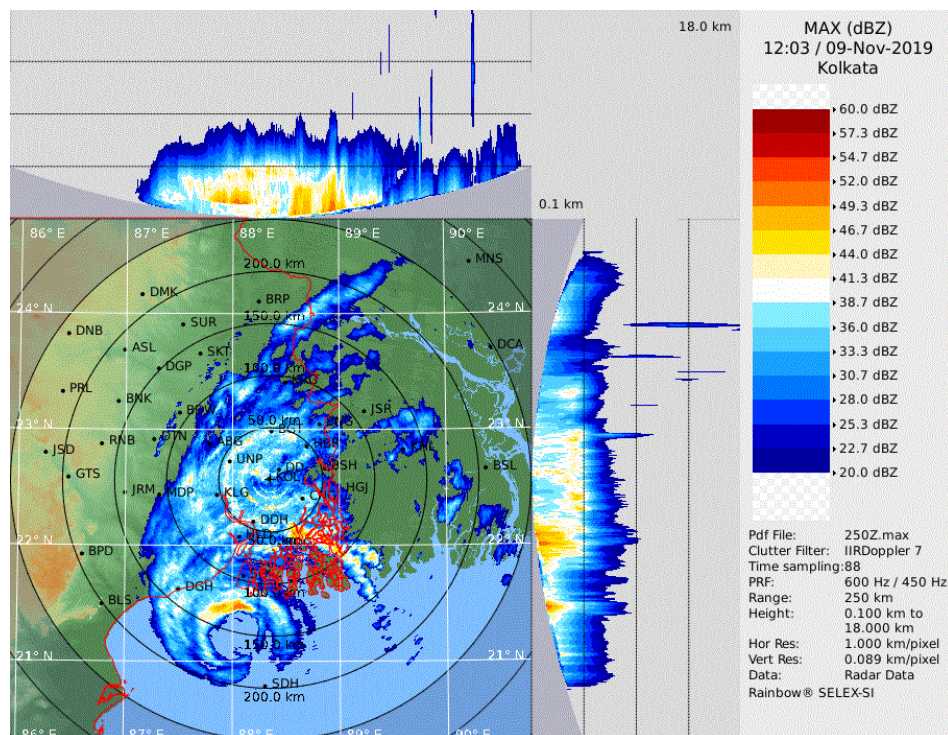
L1C Mercator



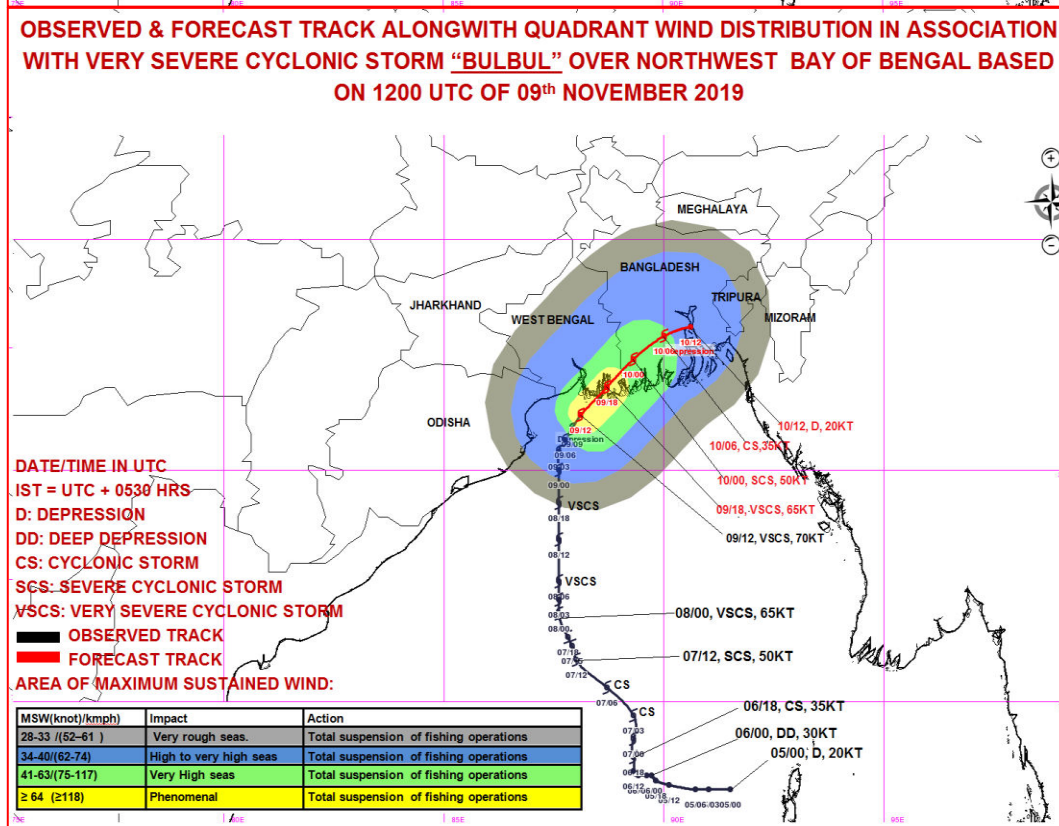
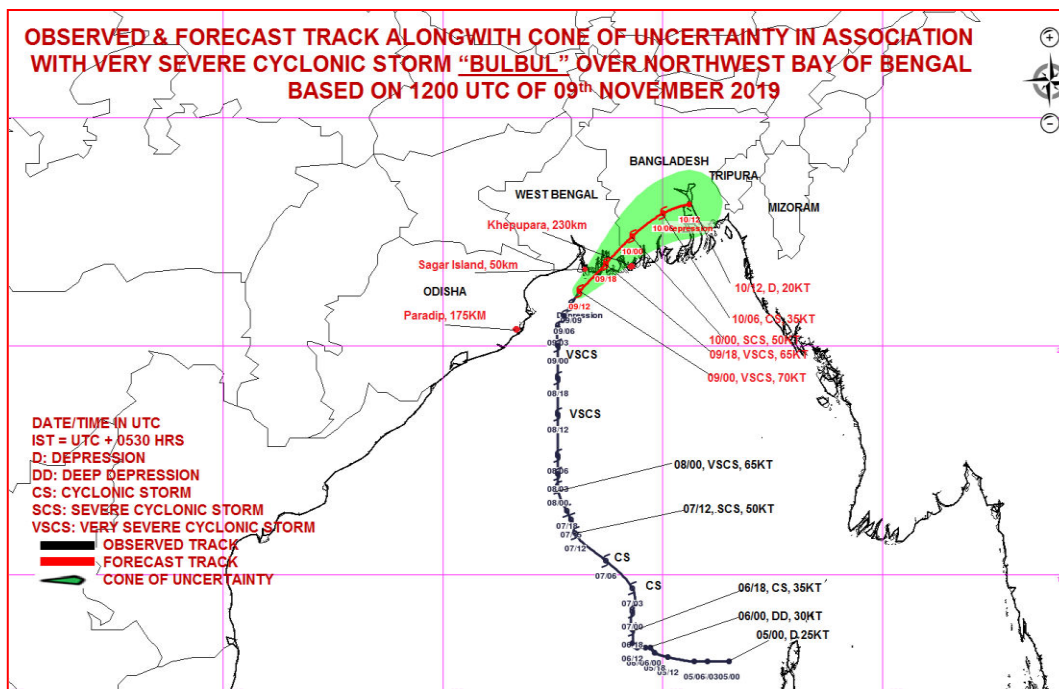
NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 38 (BOB/04/2019)

TIME OF ISSUE: 2140 HOURS IST

DATED: 09.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over northwest Bay of Bengal: CYCLONE WARNING AND POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE

The **Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over northwest Bay of Bengal moved northeastwards with a speed of 11 kmph during past 06 hours, and lay centred at 2030 hrs IST of today, the 9th November 2019, over northwest Bay of Bengal, near Lat.21.4°N and Long. 88.3°E about 40 km east-southeast of Sagar Islands (West Bengal), 85 km east-southeast of Digha, 125 km south-southwest of Kolkata, 100 km south-southwest of Canning Town (west Bengal) and 210 km west-southwest of Khepupara (Bangladesh). The land fall process has started. Wall cloud region is entering into land. It is very likely to move northeastwards, weaken gradually and cross West Bengal - Bangladesh Coasts between Sagar Islands (West Bengal) and Khepupara (Bangladesh), across Sunderban delta during next 03 hours as a Severe Cyclonic Storm with maximum sustained wind speed of 110-120 Kmph gusting to 135 Kmph.

The Very Severe Cyclonic Storm 'Bulbul' is being tracked by the Doppler Weather Radars at Gopalpur, Paradip and Kolkata in addition to other observing platforms.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/2030	21.4	88.3	120-130 gusting to 145	Very Severe Cyclonic Storm
09.11.19/2330	21.8	88.7	110-120 gusting to 135	Severe Cyclonic Storm
10.11.19/0530	22.4	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.9	90.0	50-60 gusting to 70	Deep Depression
10.11.19/1730	23.1	90.6	30-40 gusting to 50	Depression

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Warnings:

(i) Rainfall:

Odisha:

- Light to moderate rainfall at most places very likely over **north coastal districts of Odisha** with **isolated heavy falls** over Balasore district during next 03 hours.

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places and **extremely heavy falls (≥ 20 cm in 24 hours)** at isolated places over North & South 24 Parganas, East Medinipur and isolated heavy to very heavy rainfall over West Medinipur, Howrah and Hooghly during next 12 hours.

North-eastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 36 hours.

(ii) Wind warning

- **Bay of Bengal:** Gale wind speed reaching 120-130 kmph gusting to 145 kmph is prevailing over northwest Bay of Bengal around the system centre. It is very likely to decrease gradually and become 80-90 kmph gusting to 100 kmph by tomorrow the 10th November morning and decrease gradually thereafter.
- **Odisha coast:** Squally wind speed reaching 50-60 kmph gusting to 70 kmph is likely along & off Balasore district for next 3 hours. Kendrapara and Jagatsinghpur districts are likely to experience strong wind speed reaching 35-45 kmph gusting to 55 kmph during next 03 hours.
- **West Bengal coast:** Squally wind speed reaching 70-80 kmph gusting to 90 kmph is prevailing along and off West Bengal coast. It will gradually increase becoming gale wind speed reaching 110-120 kmph gusting to 135 kmph during next 06 hours along & off West and East Medinipur and North & South 24 Parganas districts and decrease gradually thereafter. Squally wind speed reaching 50-60 kmph gusting to 70 kmph also likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period and strong wind speed reaching 30 - 40 kmph gusting to 50 kmph likely to prevail over Kolkata during the same period. .

(iii) Sea condition

- Sea condition will be high to very rough during next 06 hours along & off north Odisha coast and along & off West Bengal & Bangladesh coasts till 10th November morning.
- Sea condition is very high to phenomenal over northwest Bay of Bengal. It is very likely to improve and become very rough to High by tomorrow, the 10th November morning and improve gradually thereafter. Sea condition will be high to very high over northeast Bay of tonight and become high to very rough for subsequent 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 2.0 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas and 0.5-1.0 meter height above Astronomical tide is very likely to inundate low lying areas of east Medinipur during next 03 hours. The maximum extent of inundation is likely to be around 2 km over South and North 24 Parganas.

(v) Fishermen Warning

- Total suspension of fishing operations over Odisha-West Bengal coasts till morning of 10th November.
- Fishermen are advised not to venture into Sea along & off Odisha – West Bengal coasts till 10th morning.
- Fishermen are advised not to venture into north Bay of Bengal for next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(vi) Damage Expected over coastal districts of West Bengal:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of West Bengal

- Total suspension of fishing operations till 10th morning.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

Post-Landfall Outlook

- After the landfall over Sunderban delta by night of today, the 9th November as a Severe Cyclonic Storm with a wind speed of 110-120 kmph gusting to 135 kmph, it is very likely to move east-northeastwards across Bangladesh and weaken gradually. As such, the system is expected to maintain Cyclone intensity till 10th morning over Bangladesh and adjoining areas of Gangetic West Bengal North and South 24 Parganas and Nadiya district.
- Under its influence, light to moderate rainfall at most places with heavy falls at isolated places very likely over North and South 24 Parganas and Nadiya districts of West Bengal till the morning of 10th November 2019.
- Gale wind speed reaching 110-120 kmph gusting to 135 kmph is likely over North and South 24 Parganas and Nadiya districts of West Bengal during the night of today, the 9th November for the next 06 hours and decrease gradually thereafter becoming squally wind speed reaching 50-60 Kmph gusting to 70 Kmph over these districts till 10th morning.
- Squally wind speed reaching 40-50 Kmph gusting to 60 Kmph is likely over adjoining districts of West Medinipur, Howrah and Hooghly during the same period.
- Strong wind speed reaching, 30-40 kmph gusting to 50 kmph is likely over Kolkata during the night of today, 9th November 2019.

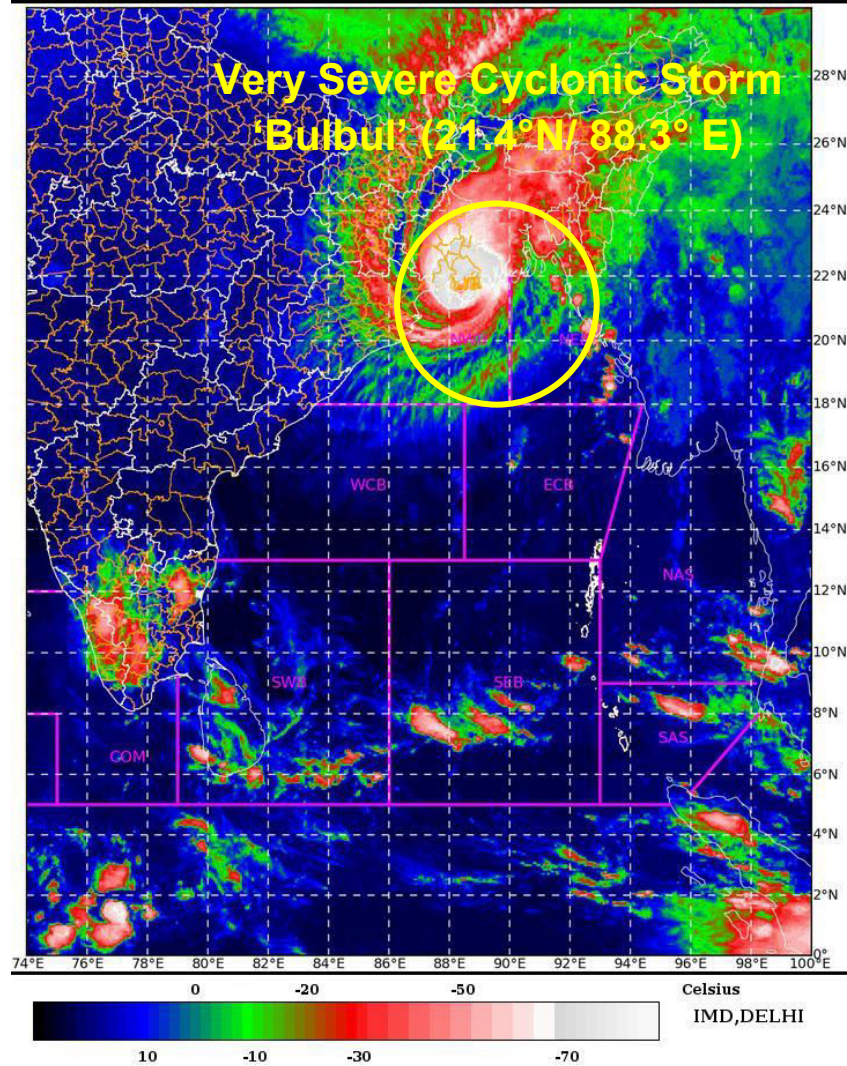
The next bulletin will be issued at 0230 hrs IST of 10th November, 2019.

(V.R. Durai)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

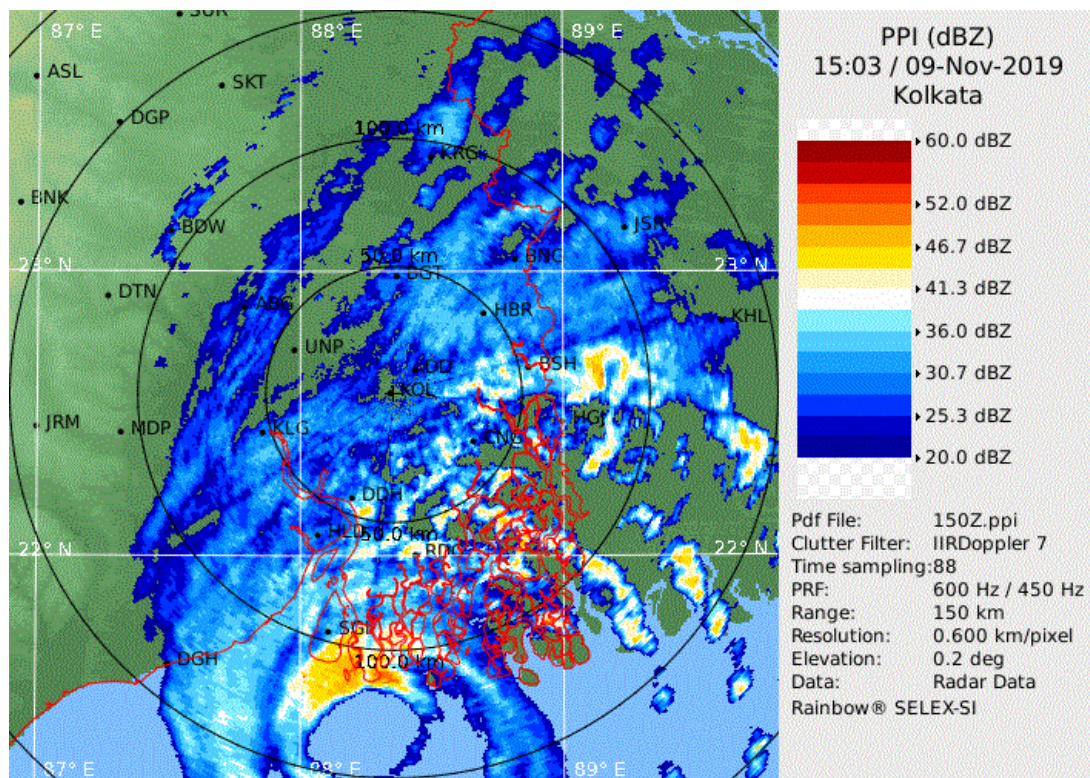
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 09-11-2019/(1530 to 1556) GMT
 IMG_TIR1_TEMP 10.8 um 09-11-2019/(2100 to 2126) IST
 L1C Mercator

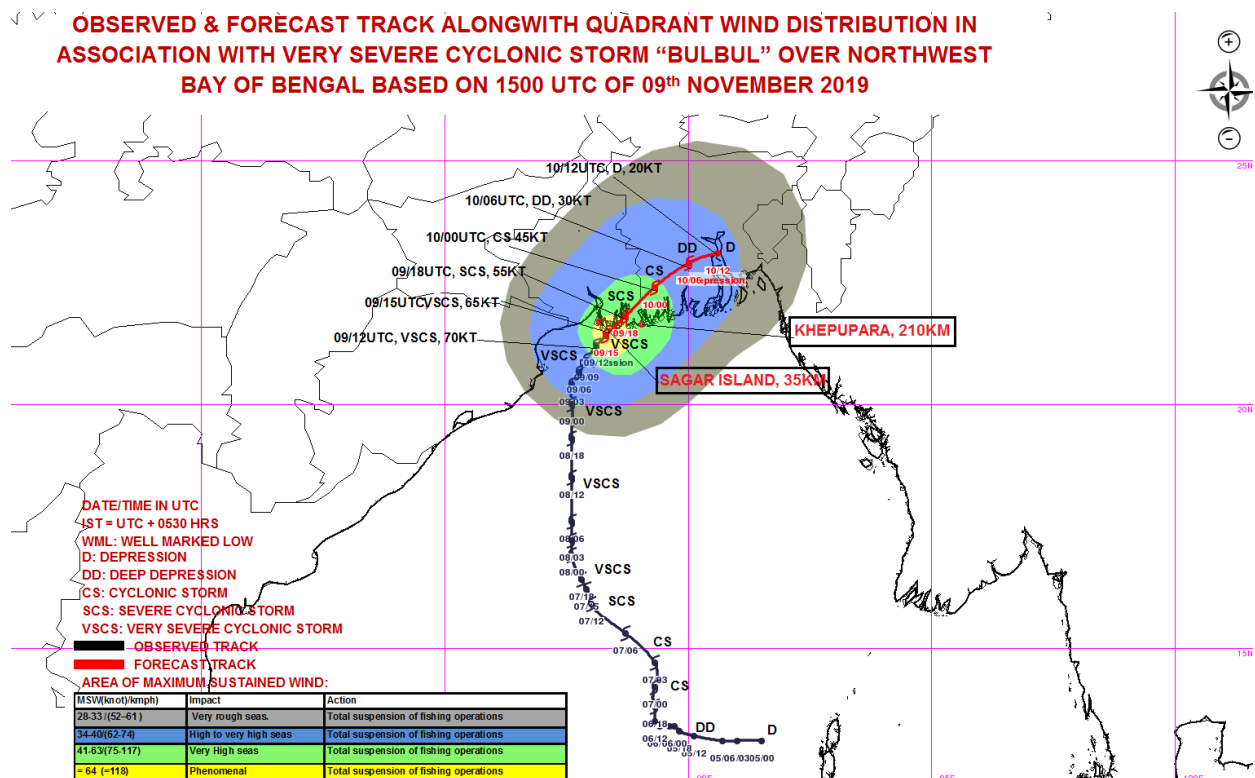
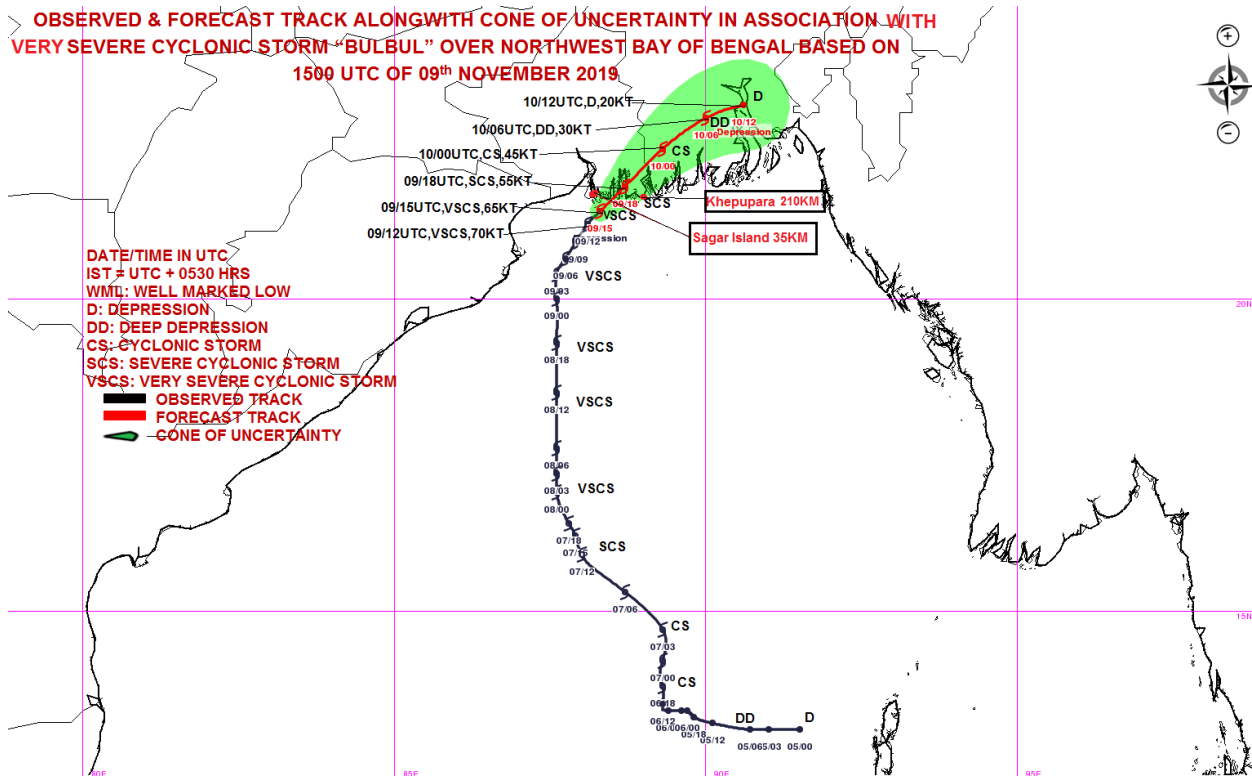


NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 39 (BOB/04/2019)

TIME OF ISSUE: 0230 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

UNI (FAX NO. 23355841)

D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

**Sub: Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal West Bengal:
POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST: RED MESSAGE**

The **Very Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over northwest Bay of Bengal moved northeastwards with a speed of 11 kmph during past 06 hours, weakened into a **Severe Cyclonic Storm** and crossed West Bengal coast close to Sunderban Dhanchi forest during 2030 to 2330 hours IST of yesterday, the 9th November, 2019 with a maximum sustained wind speed of 110-120 Kmph gusting to 130 Kmph and lay centred at 2330 hrs IST of 9th November 2019, over coastal West Bengal, near Lat. 21.6°N and Long. 88.6°E (close to the east of Sunderban Dhanchi forest), about 55 km east of Sagar Islands (West Bengal), 115 km east of Digha, 110 km south-southeast of Kolkata, 75 km south of Canning Town (West Bengal) and 175 km west-southwest of Khepupara (Bangladesh).

It is very likely to move east-northeastwards towards Bangladesh across south 24 Parganas district of West Bengal, weaken gradually into a cyclonic storm over coastal Bangladesh and adjoining south & north 24 Parganas districts of West Bengal by today the 10th November morning.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
09.11.19/2330	21.6	88.6	105-115 gusting to 125	Severe Cyclonic Storm
10.11.19/0530	22.0	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.3	90.0	50-60 gusting to 70	Deep Depression
10.11.19/1730	22.5	90.6	30-40 gusting to 50	Depression

Warnings:

(i) Rainfall:

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at a few places over North & South 24 Parganas, East Medinipur and isolated heavy rainfall over West Medinipur, Howrah, Nadiya and Hooghly during next 12 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Northeastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 36 hours.

(ii) Wind warning

- Gale wind speed reaching 100-110 kmph gusting to 120 kmph is likely to prevail along & off East South & North 24 Parganas and 80-100 kmph gusting to 110 kmph along & off West & East Medinipur district during next 03 hours and decrease thereafter.

(iii) Sea condition

- Sea condition will be high to very high along & off West Bengal & Bangladesh coasts during next 06 hours and improve thereafter.
- Sea condition is very high to very high over northwest Bay of Bengal. It is very likely to improve and become very rough to High by today, the 10th November morning and improve gradually thereafter. Sea condition will be high to very rough over northeast Bay of tonight during next 12 hours.

(iv) Storm Surge

- Storm surge of about 1.0 to 1.5 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas during next 06 hours.

(v) Fishermen Warning

- Fishermen are advised not to venture into Sea along & off north Odisha – West Bengal coasts during next 12 hours.
- Fishermen are advised not to venture into north Bay of Bengal for next 18 hours.

(vi) Damage Expected over coastal districts of West Bengal during next 06 hours:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of West Bengal during next 06 hours:

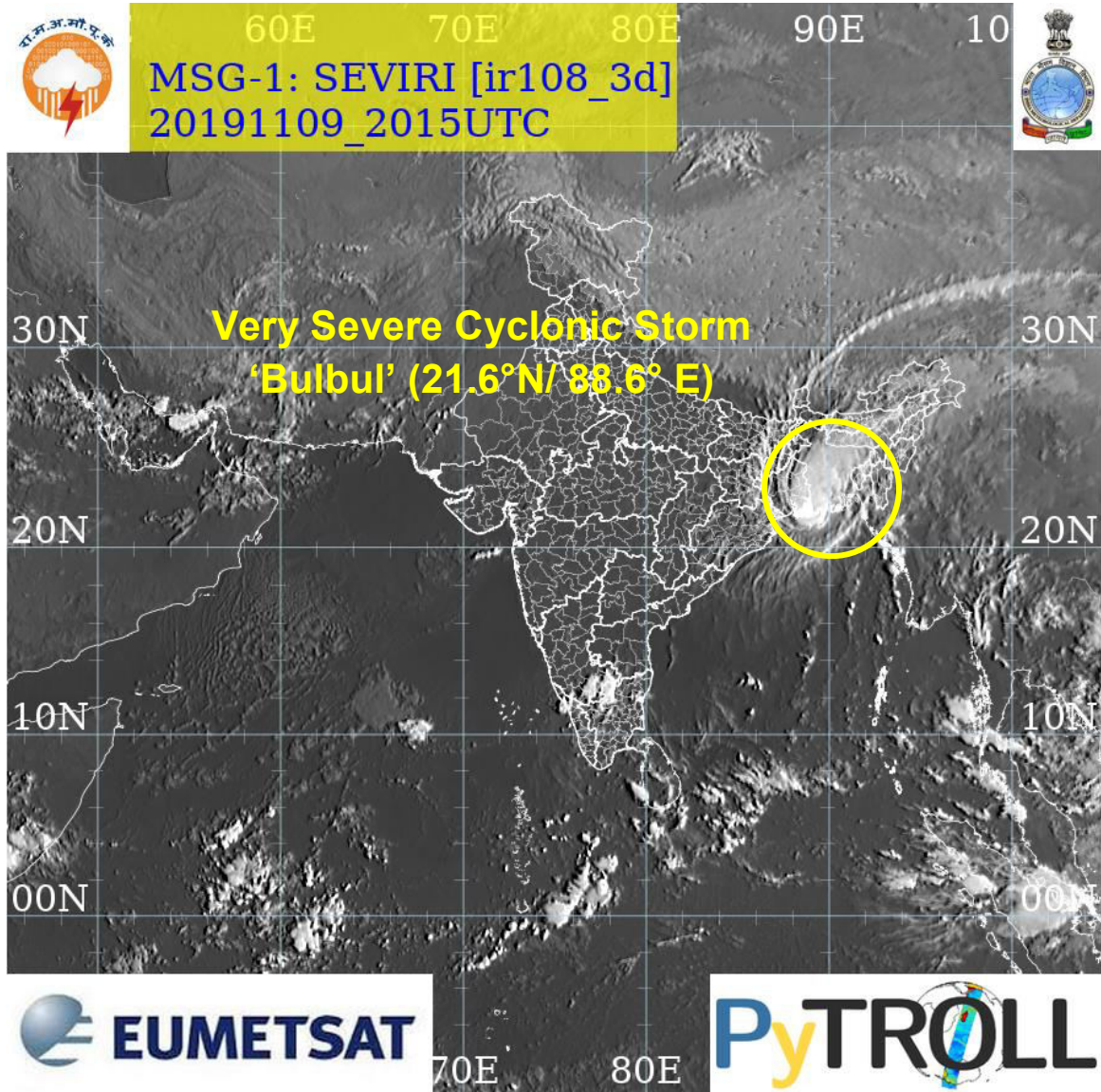
- Total suspension of fishing.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

The next bulletin will be issued at 0530 hrs IST of 10th November, 2019.

(V.R. Durai)
Scientist-E, RSMC, New Delhi

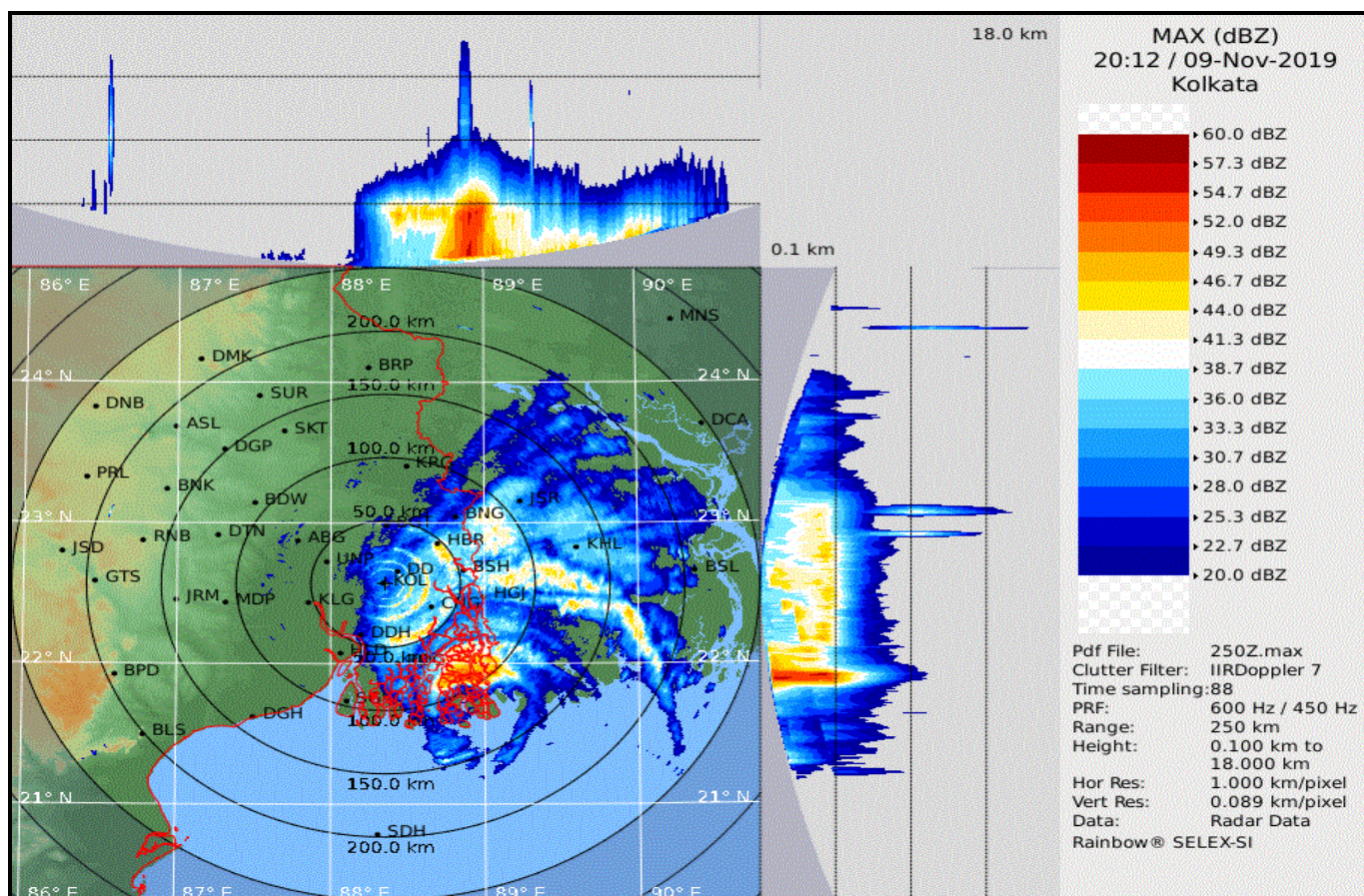
Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

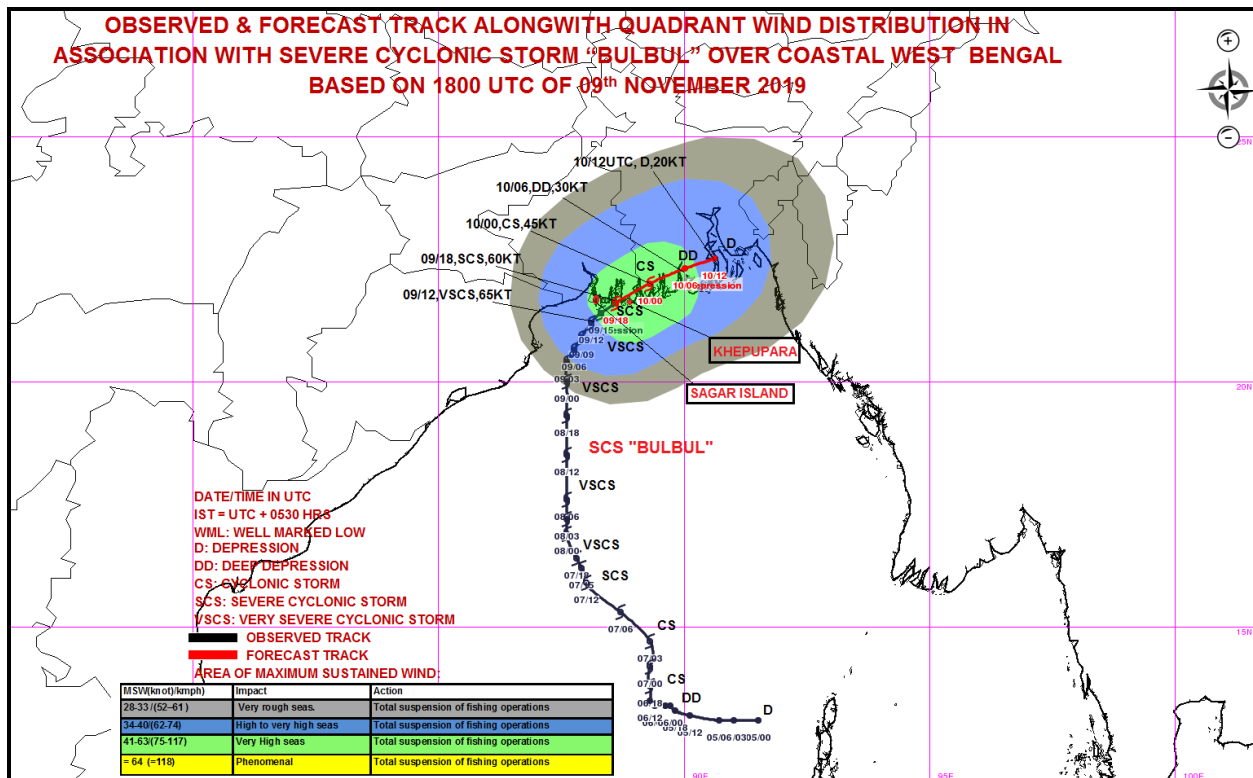
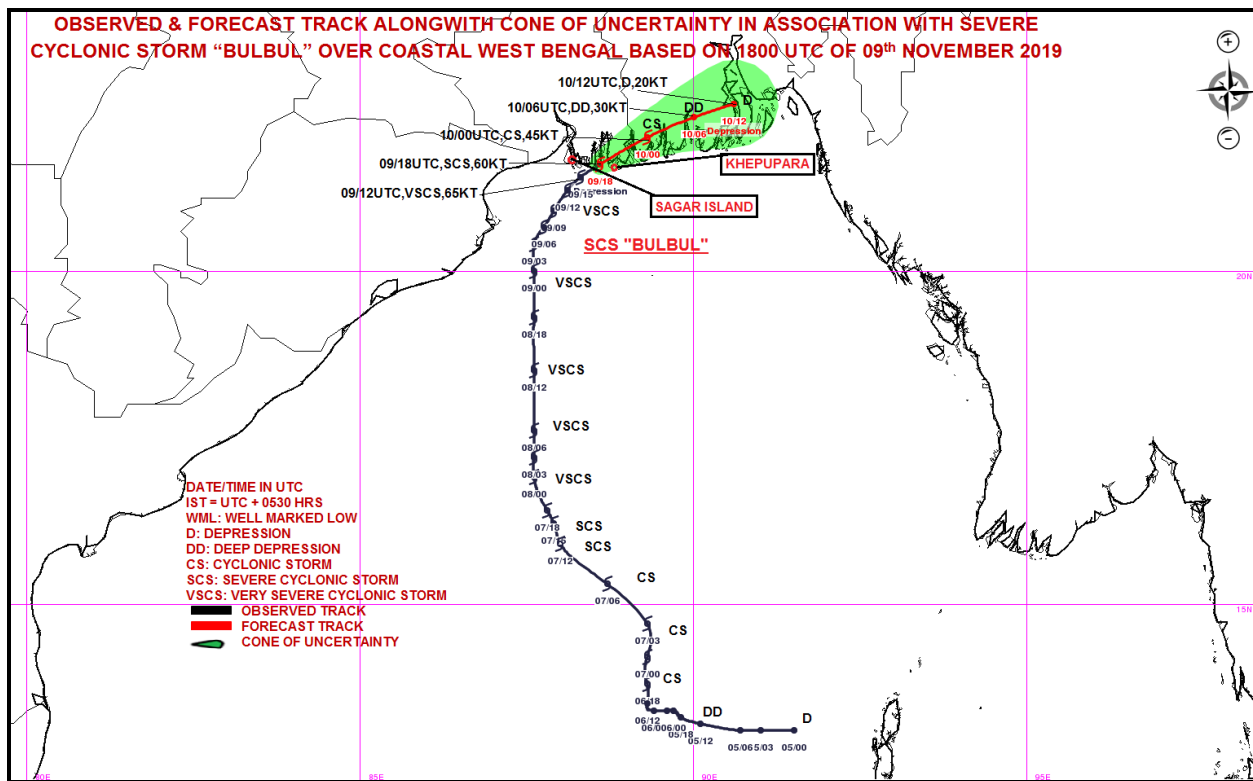


NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 40 (BOB/04/2019)

TIME OF ISSUE: 0400 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)
CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal West Bengal & adjoining Bangladesh: POST-LANDFALL OUTLOOK FOR WEST BENGAL COAST

The **Severe Cyclonic Storm 'Bulbul' (Pronounced as Bul bul)** over coastal West Bengal moved northeastwards with a speed of 11 kmph during past 06 hours and lay centered at 0230 hrs IST of 10th November 2019 over coastal West Bengal & adjoining Bangladesh near Lat. 21.8°N and Long. 89.0°E, about 100 km northeast of Sagar Islands (West Bengal), 12 km southwest of Sunderban National Park, 105 km southeast of Kolkata and 125 km west-southwest of Khepupara (Bangladesh).

It is very likely to move east-northeastwards across Bangladesh. It is likely to weaken into a Cyclonic Storm over coastal Bangladesh and adjoining south & north 24 Parganas districts of West Bengal during next 03 hours and into a Deep Depression during subsequent 06 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/0230	21.8	89.0	90-100 gusting to 110	Severe Cyclonic Storm
10.11.19/0530	22.0	89.3	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.3	90.0	50-60 gusting to 70	Deep Depression
10.11.19/1730	22.5	90.6	30-40 gusting to 50	Depression

Warnings:

(i) Rainfall:

West Bengal:

- Light to moderate rainfall at most places very likely over **coastal districts of West Bengal** with heavy to very heavy falls at isolated places over North & South 24 Parganas and isolated heavy falls over East Medinipur and Nadiya districts during next 06 hours.

Northeastern States:

- Light to moderate rainfall at many places with isolated heavy falls very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 36 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- Gale wind, speed reaching 90-100 kmph gusting to 110 kmph, prevailing around the system centre. Gale wind speed is very likely to decrease gradually becoming 70-80 kmph gusting to 90 kmph along & off south & north 24 Parganas and 50-60 kmph gusting to 70 kmph along & off West & East Medinipur district by early morning hours and decrease thereafter.

(iii) Sea condition

- Sea condition will be high to very high along & off West Bengal & Bangladesh coasts during next 06 hours and improve thereafter.
- Sea condition is very high to very high over northwest Bay of Bengal. It is very likely to improve and become very rough to High by today, the 10th November morning and improve gradually thereafter. Sea condition will be high to very rough over northeast Bay of tonight during next 12 hours.

(iv) Storm Surge

- Storm surge of about 0.5 meter height above Astronomical tide is very likely to inundate low lying areas of South and North 24 Parganas during next 06 hours.

(v) Fishermen Warning

- Fishermen are advised not to venture into Sea along & off north Odisha – West Bengal coasts during next 12 hours.
- Fishermen are advised not to venture into North Bay of Bengal for next 18 hours.

(vi) Damage Expected over coastal districts of West Bengal during next 06 hours:

- Major damage to thatched houses/ huts. Roof tops may blow off. Unattached metal sheets may fly.
- Minor damage to power and communication lines.
- Major damage to Kutcha and some damage to Pucca roads. Flooding of escape routes.
- Breaking of tree branches, uprooting of large avenue trees. Moderate damage to banana and papaya trees. Dead limbs blown from trees.
- Major damage to coastal crops.
- Damage to embankments/ salt pans.
- Small boats, country crafts may get detached from moorings.

(vii) Action suggested for coastal districts of West Bengal during next 06 hours:

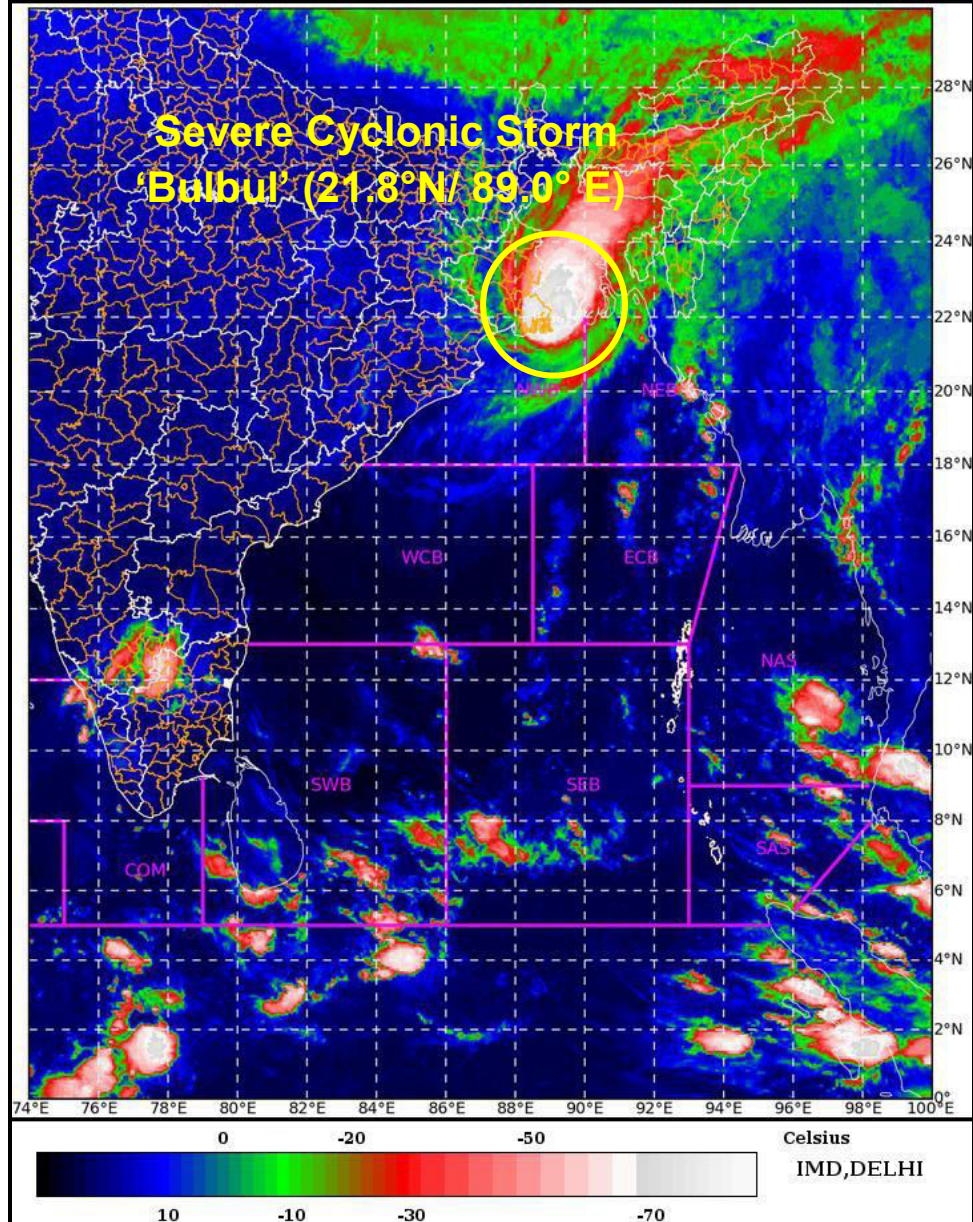
- Total suspension of fishing.
- Coastal hutment dwellers to be moved to safer places. Mobilise evacuation from coastal areas of South and North 24 Parganas. People in affected areas to remain indoors.
- Rail and Road traffic to be regulated.
- Movement in motor boats and small ships unsafe.
- Beach movement to be restricted.

The next bulletin will be issued at 0830 hrs IST of today, the 10th November, 2019.

(V.R. Durai)
Scientist-E, RSMC, New Delhi

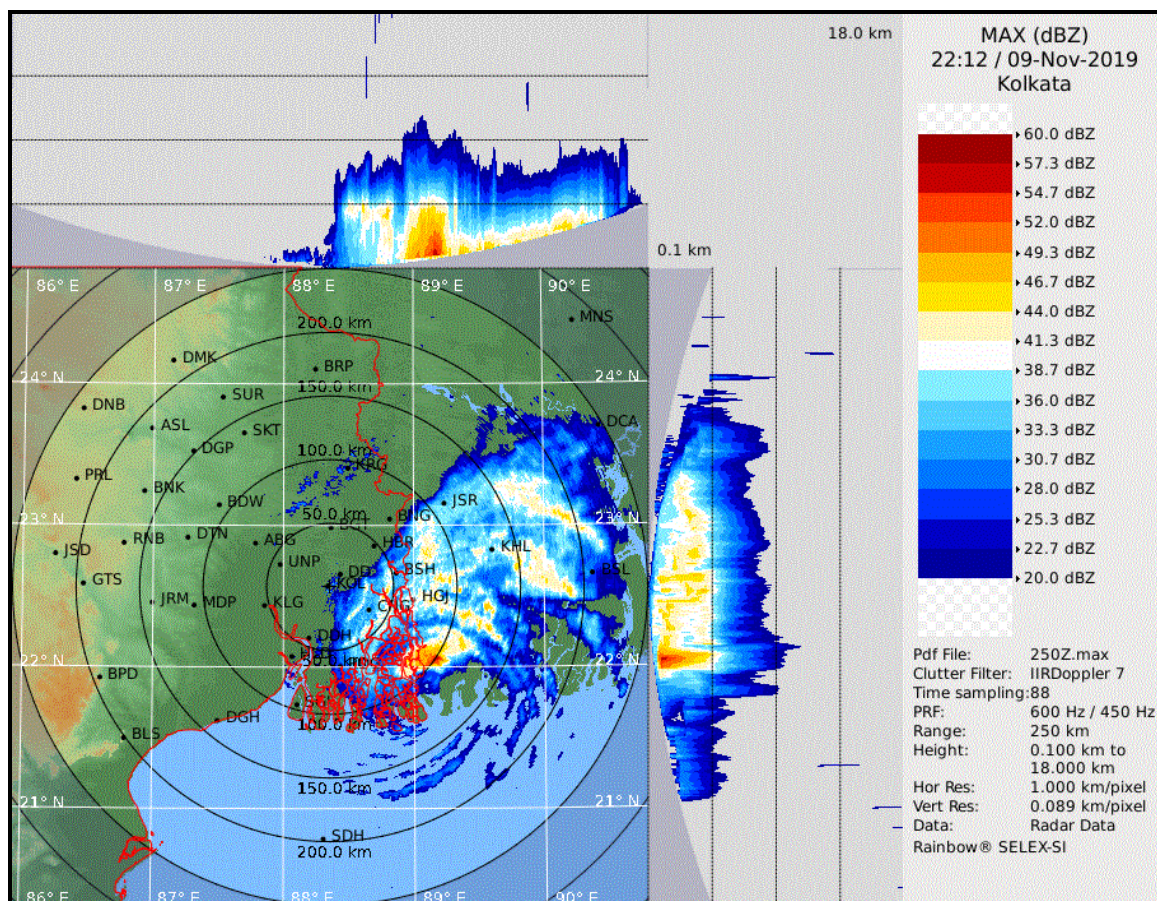
Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.

SAT : INSAT-3D IMG 09-11-2019/(2130 to 2156) GMT
IMG_TIR1_TEMP 10.8 um 10-11-2019/(0300 to 0326) IST
L1C Mercator

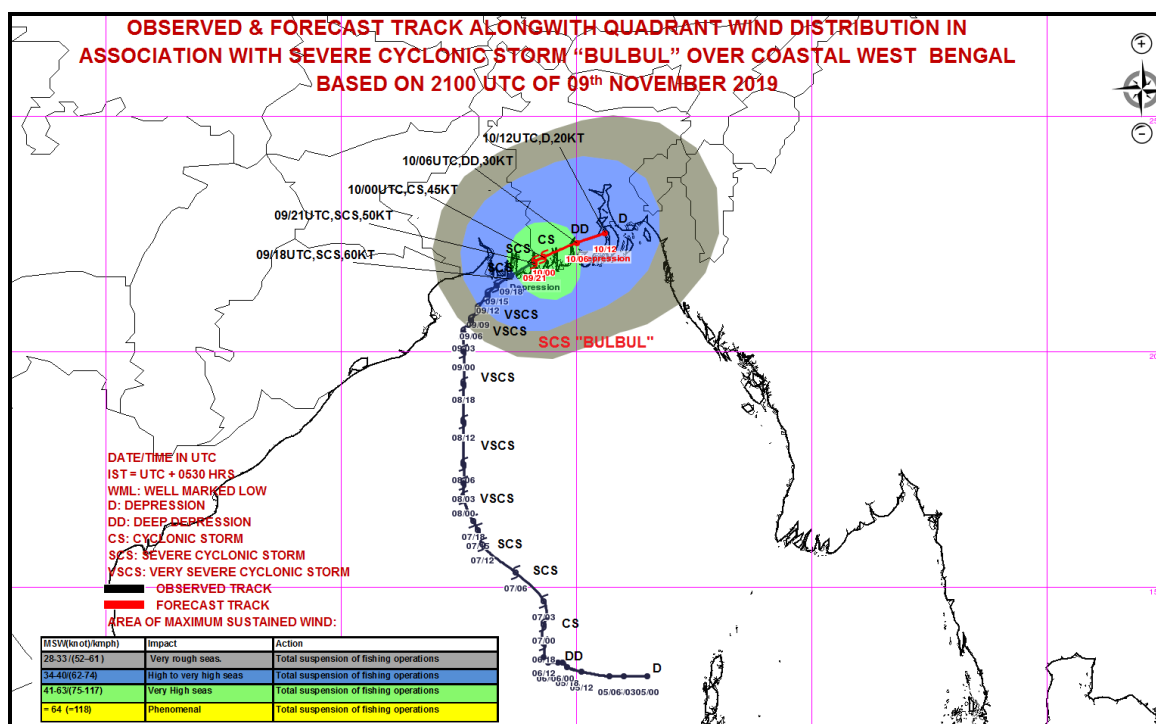
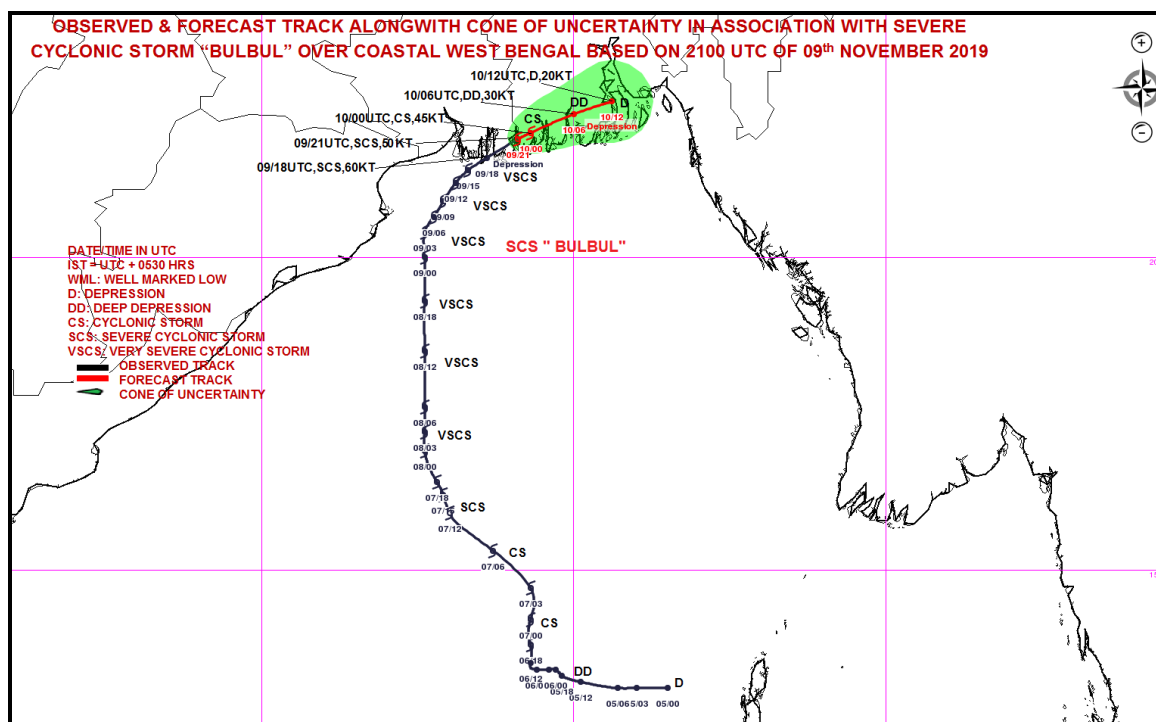


NWB=> NorthWest Bay of Bengal

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 41 (BOB/04/2019)

TIME OF ISSUE: 0800 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)

CONTROL ROOM NDMA (FAX.NO. 26701729)

JS NDMA (FAX.NO. 26701864)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)

SECRETARY, MOES, (FAX NO. 24629777)

H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

DIRECTOR GENERAL, DOORDARSHAN (23385843)

DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)

PIB MOES (FAX NO. 23389042)

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D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)

DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)

CHIEF SECRETARY, TAMILNADU (FAX NO.044-25672304)

CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)

CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

CHIEF SECRETARY, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

Sub: Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal Bangladesh & neighbourhood.

The Severe Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over coastal West Bengal moved east-northeastwards with a speed of 17 kmph during past 06 hours, weakened into a **Cyclonic Storm** and lay centered at 0530 hrs IST of 10th November 2019 over coastal Bangladesh & neighbourhood, near Lat. 22.1°N and Long. 89.5°E, about 160 km east-northeast of Sagar Islands (West Bengal), 75 km east-northeast of Sunderban National Park, 130 km east-southeast of Kolkata and 75 km west-northwest of Khepupara (Bangladesh).

It is very likely to move east-northeastwards across Bangladesh. It is likely to weaken into a Deep Depression over coastal Bangladesh and neighbourhood during next 06 hours and into a Depression during subsequent 06 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/0530	22.1	89.5	80-90 gusting to 100	Cyclonic Storm
10.11.19/1130	22.3	90.0	60-70 gusting to 80	Cyclonic Storm
10.11.19/1730	22.5	90.6	50-60 gusting to 70	Deep Depression

Warnings:

(i) Rainfall:

West Bengal:

- Light to moderate rainfall at most places very likely over with heavy at isolated places over North & South 24 Parganas, East Medinipur and Nadiya districts during next 06 hours.

Northeastern States:

- Light to moderate rainfall at many places very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- Gale wind, speed reaching 80-90 kmph gusting to 100 kmph, prevailing around the system centre. It will decrease becoming 55- 65 kmph gusting to 75 kmph over coastal Bangladesh and adjoining North Bay of Bengal, by afternoon of today, the 10th November.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely along & off south & north 24 Parganas during next 06 hours and decrease thereafter becoming 40 – 50 kmph gusting to 60 kmph during subsequent 06 hours.

(iii) Sea condition

- Sea condition will be high over North Bay of Bengal along & off West Bengal & Bangladesh coasts during next 06 hours and very rough during subsequent 06 hours.

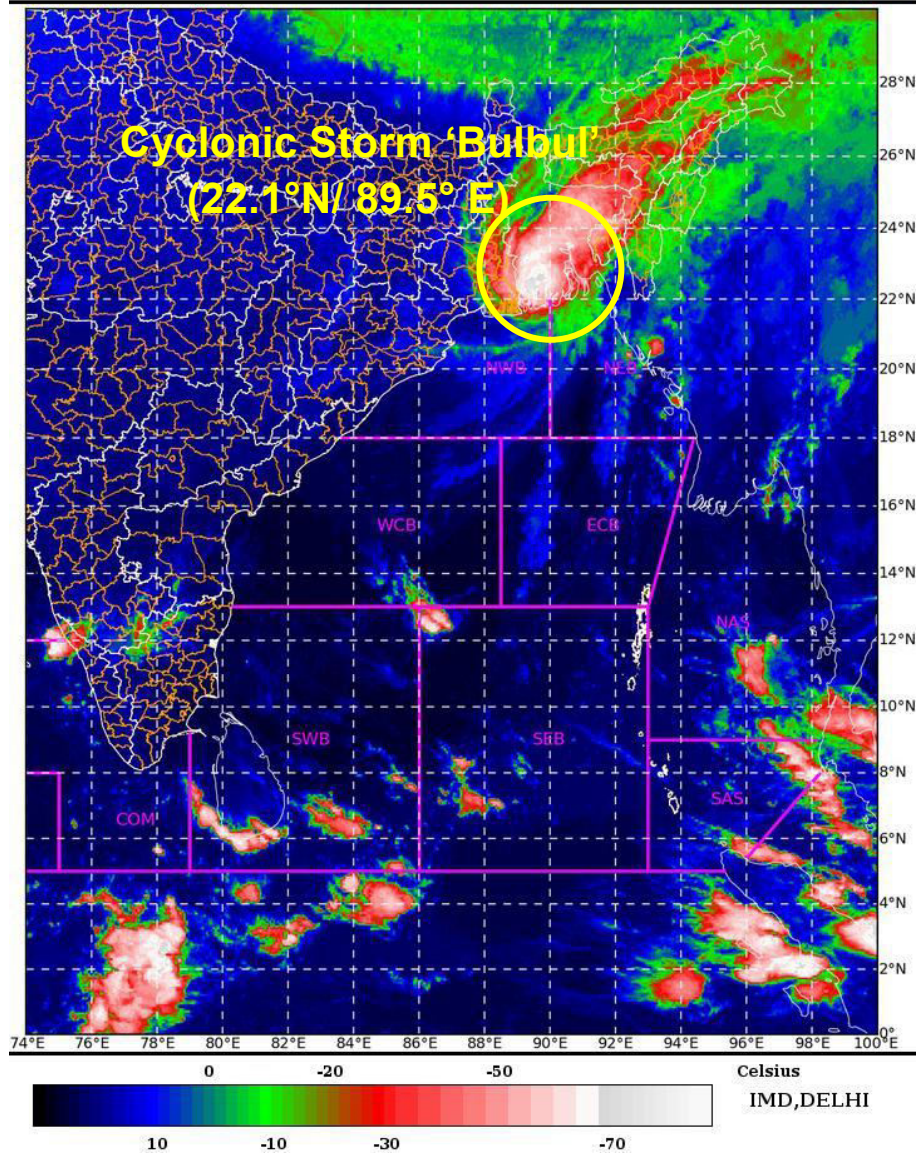
(iv) Fishermen Warning

- Fishermen are advised not to venture into Sea along & off West Bengal - Bangladesh coasts during next 12 hours.

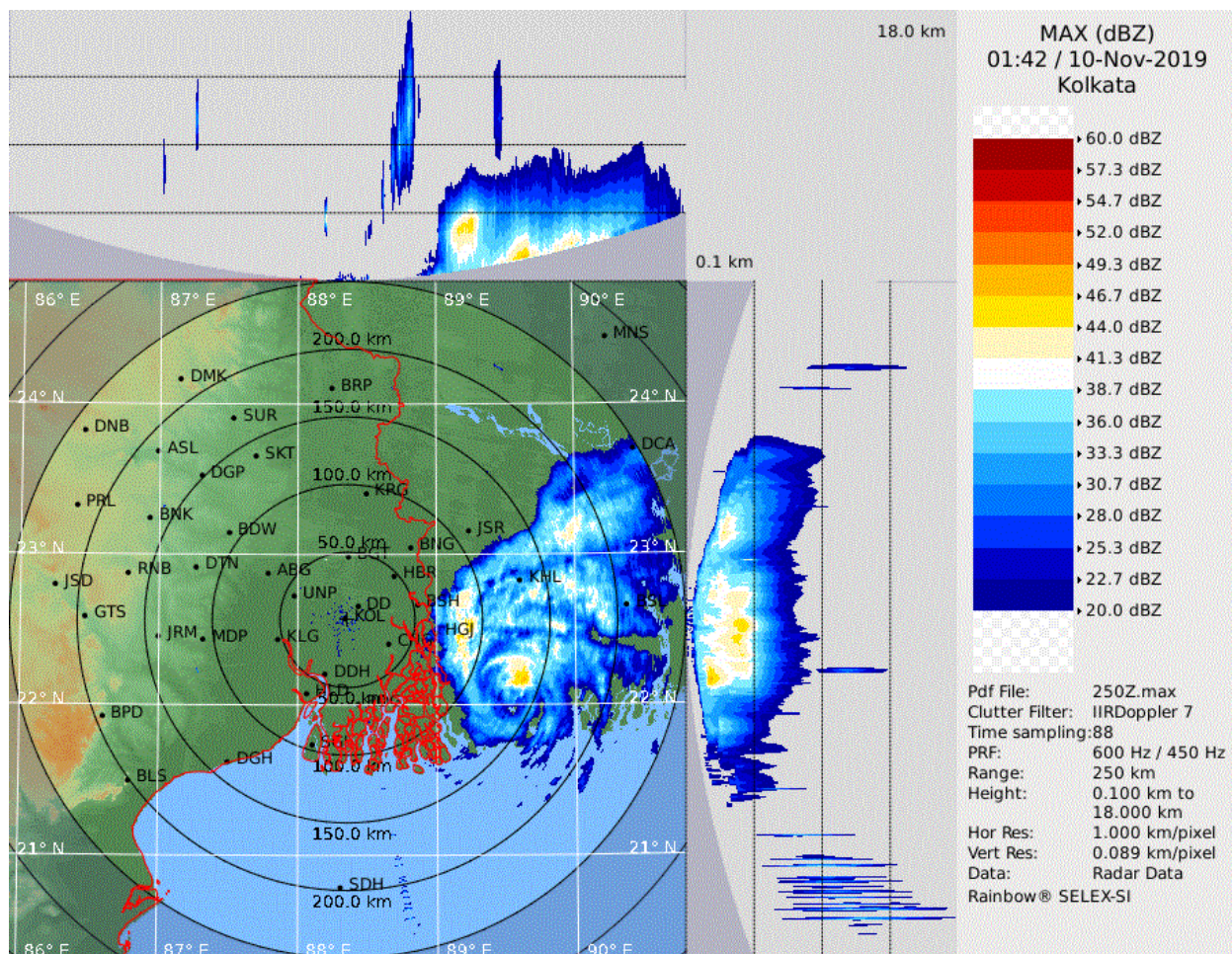
The next bulletin will be issued at 1130 hrs IST of today, the 10th November, 2019.

(V.R. Durai)
Scientist-E, RSMC, New Delhi

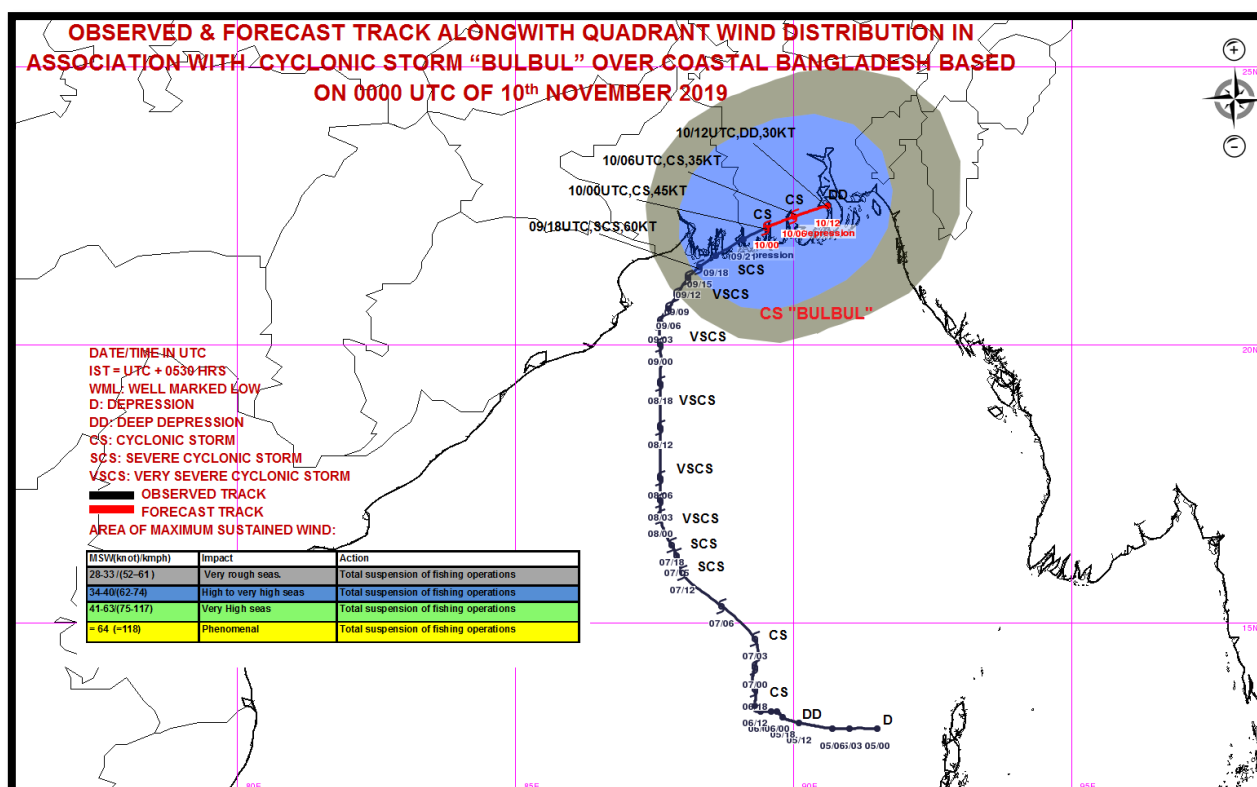
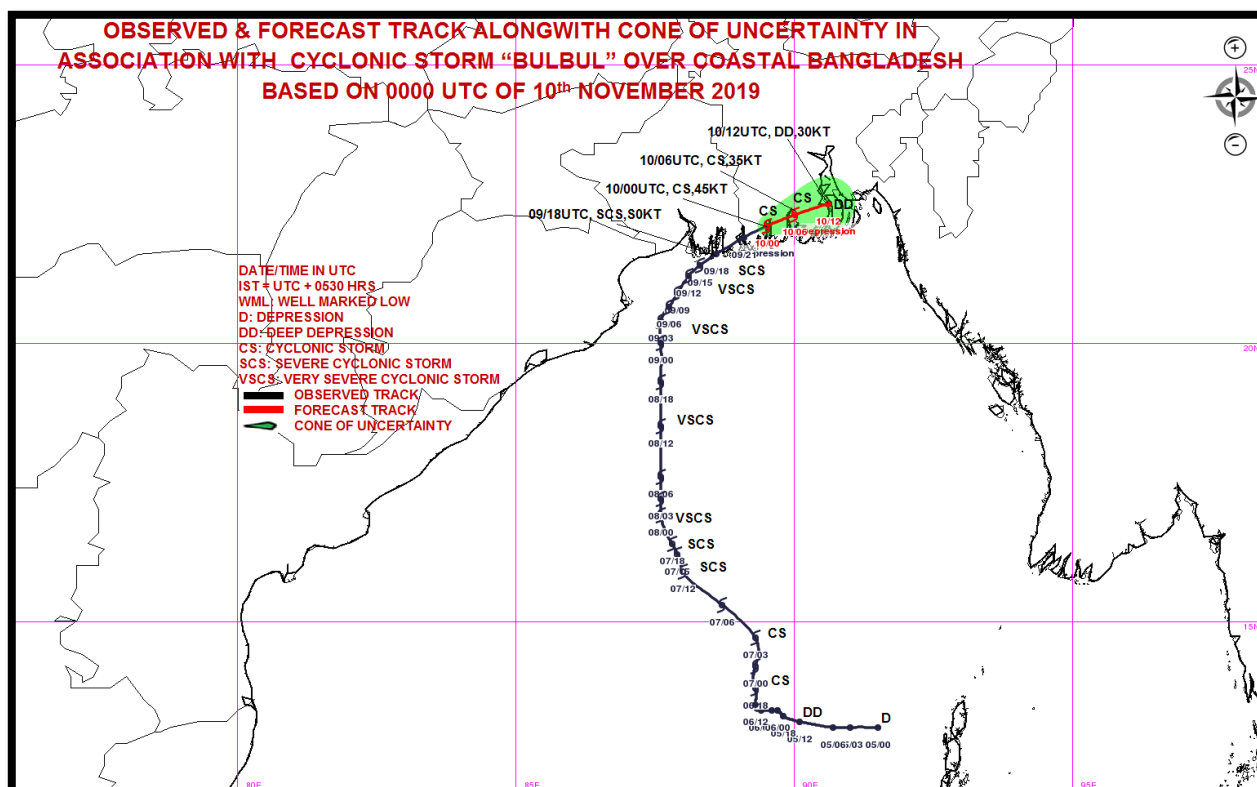
Copy to: ACWC Chennai / ACWC Kolkata/ CWC Visakhapatnam/ CWC Bhubaneswar/ M.O. Port Blair.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 42 (BOB/04/2019)

TIME OF ISSUE: 1100 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

Sub: Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal Bangladesh & neighbourhood.

The Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over coastal Bangladesh and neighbourhood moved east-northeastwards with a speed of 14 kmph during past 06 hours and lay centered at 0830 hrs IST of 10th November 2019 over coastal Bangladesh & neighbourhood, near Lat. 22.2°N and Long. 89.7°E, about 180 km east-northeast of Sagar Islands (West Bengal), 70 km east-northeast of Sunderban National Park, 140 km east-southeast of Kolkata and 60 km west-northwest of Khepupara (Bangladesh).

It is very likely to move east-northeastwards and weaken into a Deep Depression over coastal Bangladesh and neighbourhood during next 06 hours and into a Depression during subsequent 06 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/0830	22.2	89.7	75-85 gusting to 95	Cyclonic Storm
10.11.19/1130	22.3	90.0	60-70 gusting to 80	Cyclonic Storm
10.11.19/1730	22.5	90.6	50-60 gusting to 70	Deep Depression
10.11.19/2330	22.8	91.2	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

West Bengal:

- Light to moderate rainfall at many places very likely over North & South 24 Parganas, East Medinipur and Nadiya districts during next 06 hours.

Northeastern States:

- Light to moderate rainfall at many places very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- Gale wind, speed reaching 75-85 kmph gusting to 95 kmph, prevailing around the system centre. It will decrease becoming 60- 70 kmph gusting to 80 kmph over coastal Bangladesh and adjoining North Bay of Bengal, by afternoon of today, the 10th November.
- Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off south & north 24 Parganas during next 06 hours and decrease thereafter.
- Strong wind speed reaching 30-40 Kmph gusting to 50 Kmph likely to prevail over Mizoram and Tripura during next 12 hours.

(iii) Sea condition

- Sea condition will be high over North Bay of Bengal along & off Bangladesh coast and very rough over northwest Bay of Bengal and along & off West Bengal coast during next 06 hours. It will be rough to very rough over North Bay of Bengal along & off Bangladesh coast and rough along & off west Bengal coast during subsequent 06 hours.

(iv) Fishermen Warning

- Fishermen are advised not to venture into Sea along & off West Bengal - Bangladesh coasts during next 12 hours.

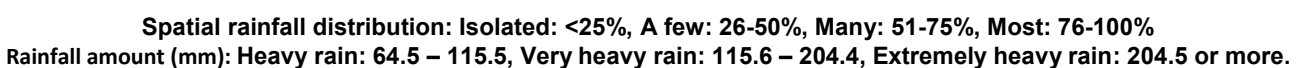
The next bulletin will be issued at 1430 hrs IST of today, the 10th November, 2019.

**(Sunitha Devi)
Scientist-E, RSMC, New Delhi**

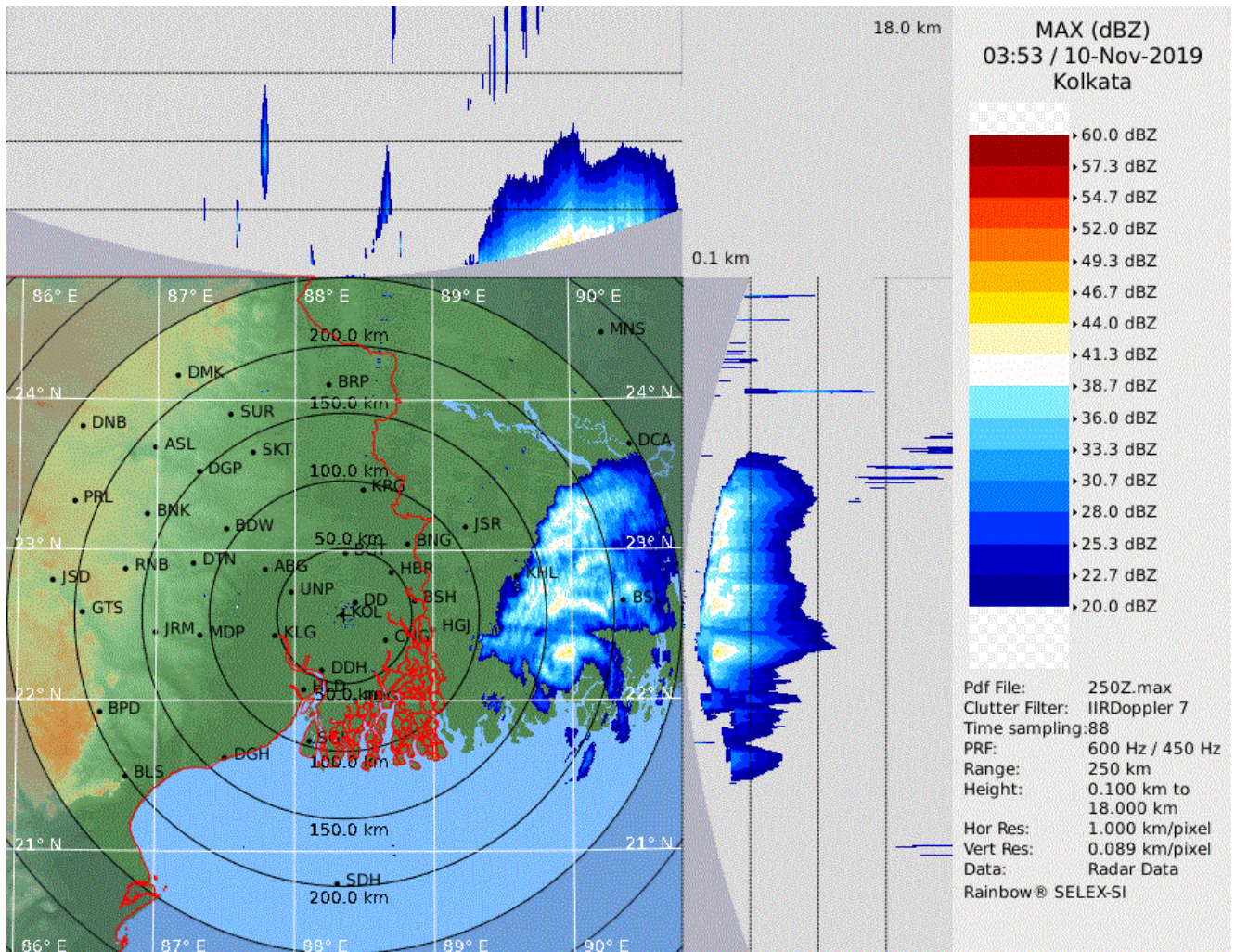
Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MCAgartala.

10-11-2019/(0300 to 0327) GMT

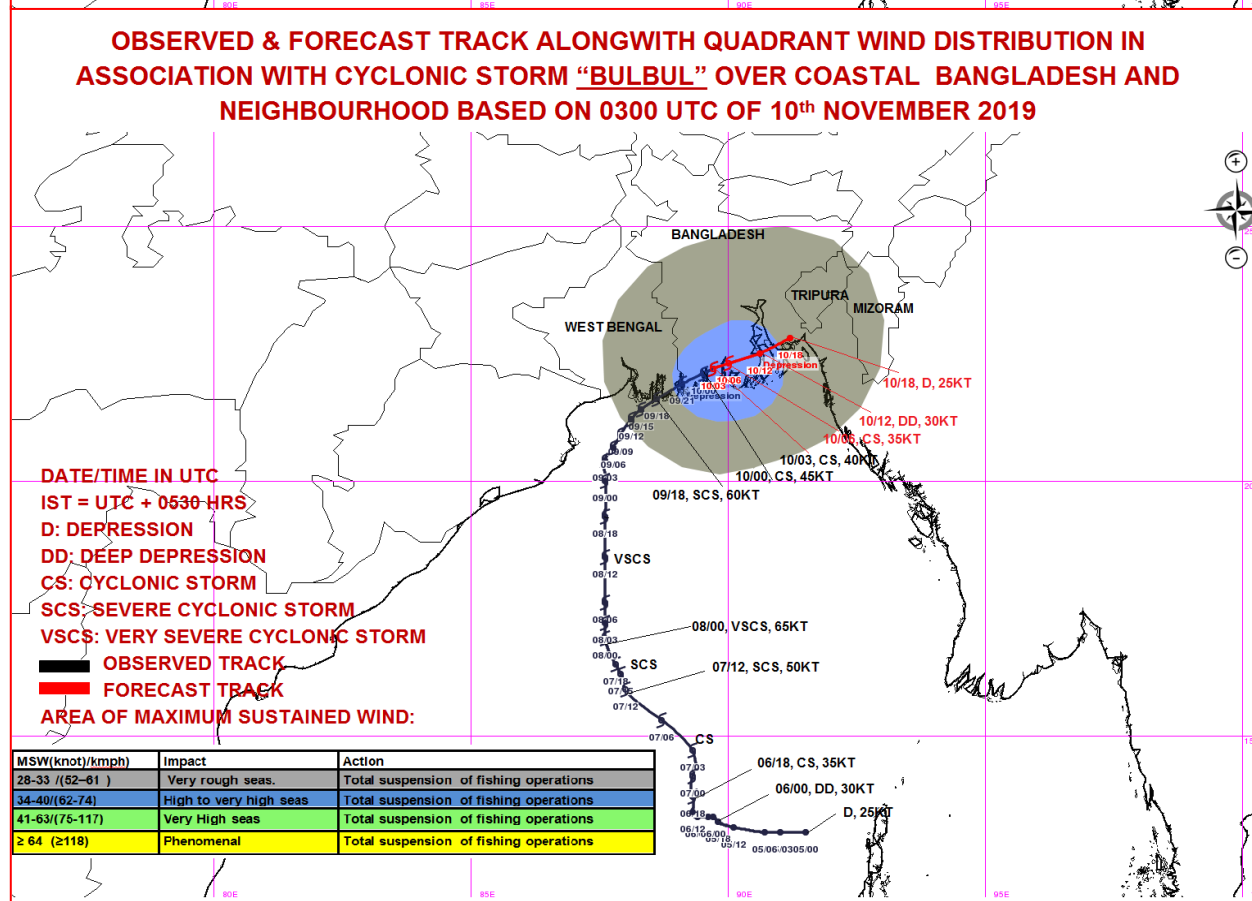
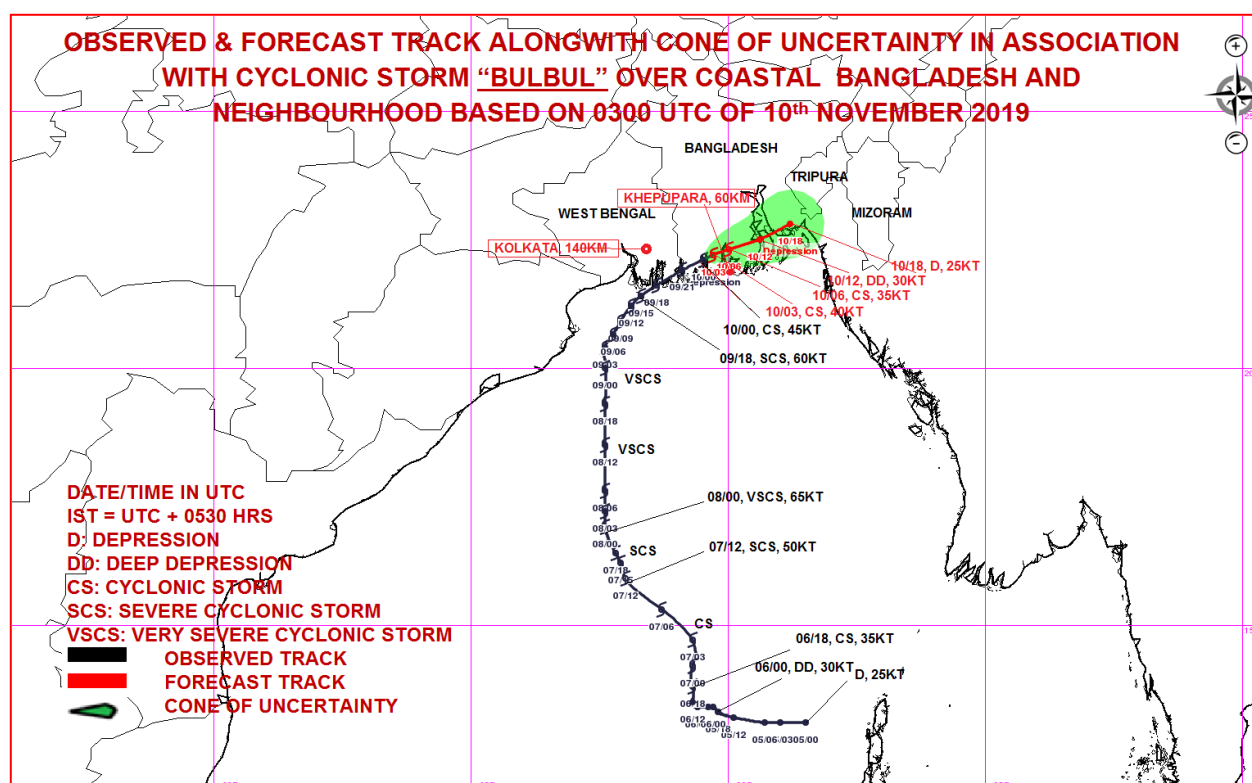
10-11-2019/(0830 to 0857) IST



Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 43 (BOB/04/2019)

TIME OF ISSUE: 1315 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

Sub: Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal Bangladesh & neighbourhood.

The Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over coastal Bangladesh and neighbourhood moved east-northeastwards with a speed of 9 kmph during past 06 hours and lay centered at 1130 hrs IST of 10th November 2019 over coastal Bangladesh & neighbourhood, near Lat. 22.3°N and Long. 90.0°E, close to and to the northwest of Khepupara (Bangladesh), about 210 km east-northeast of Sagar Islands (West Bengal), 120 km east-northeast of Sunderban National Park and 170 km east-southeast of Kolkata. It is very likely to move east-northeastwards and weaken into a Deep Depression over coastal Bangladesh and neighbourhood during next 03 hours and into a Depression during subsequent 06 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/1130	22.3	90.0	70-80 gusting to 90	Cyclonic Storm
10.11.19/1730	22.5	90.6	50-60 gusting to 70	Deep Depression
10.11.19/2330	22.8	91.2	40-50 gusting to 60	Depression

Warnings:

(i) Rainfall:

West Bengal:

- Light to moderate rainfall at many places very likely over North & South 24 Parganas, East Medinipur and Nadiya districts during next 06 hours.

Northeastern States:

- Light to moderate rainfall at many places very likely over South Assam & Meghalaya, Tripura, and Mizoram during next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- Gale wind, speed reaching 70-80 kmph gusting to 90 kmph, prevailing around the system centre. It will decrease becoming 50- 60 kmph gusting to 70 kmph over coastal Bangladesh and adjoining North Bay of Bengal, during next 06 hours.
- Squally wind speed reaching 40-50 kmph gusting to 60 kmph likely along & off south & north 24 Parganas during next 06 hours and decrease thereafter.
- Strong wind speed reaching 30-40 Kmph gusting to 50 Kmph likely to prevail over Mizoram and Tripura during next 12 hours.

(iii) Sea condition

- Sea condition will be high over North Bay of Bengal along & off Bangladesh coast and very rough over northwest Bay of Bengal along & off West Bengal coast during next 03 hours. It will be rough to very rough over North Bay of Bengal along & off Bangladesh coast and rough along & off West Bengal coast during subsequent 06 hours.

(iv) Fishermen Warning

- Fishermen are advised not to venture into North Bay of Bengal along & off West Bengal - Bangladesh coasts during next 12 hours.

The next bulletin will be issued at 1430 hrs IST of today, the 10th November, 2019.

**(R K Jenamani)
Scientist-F, RSMC, New Delhi**

Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MC Agartala.

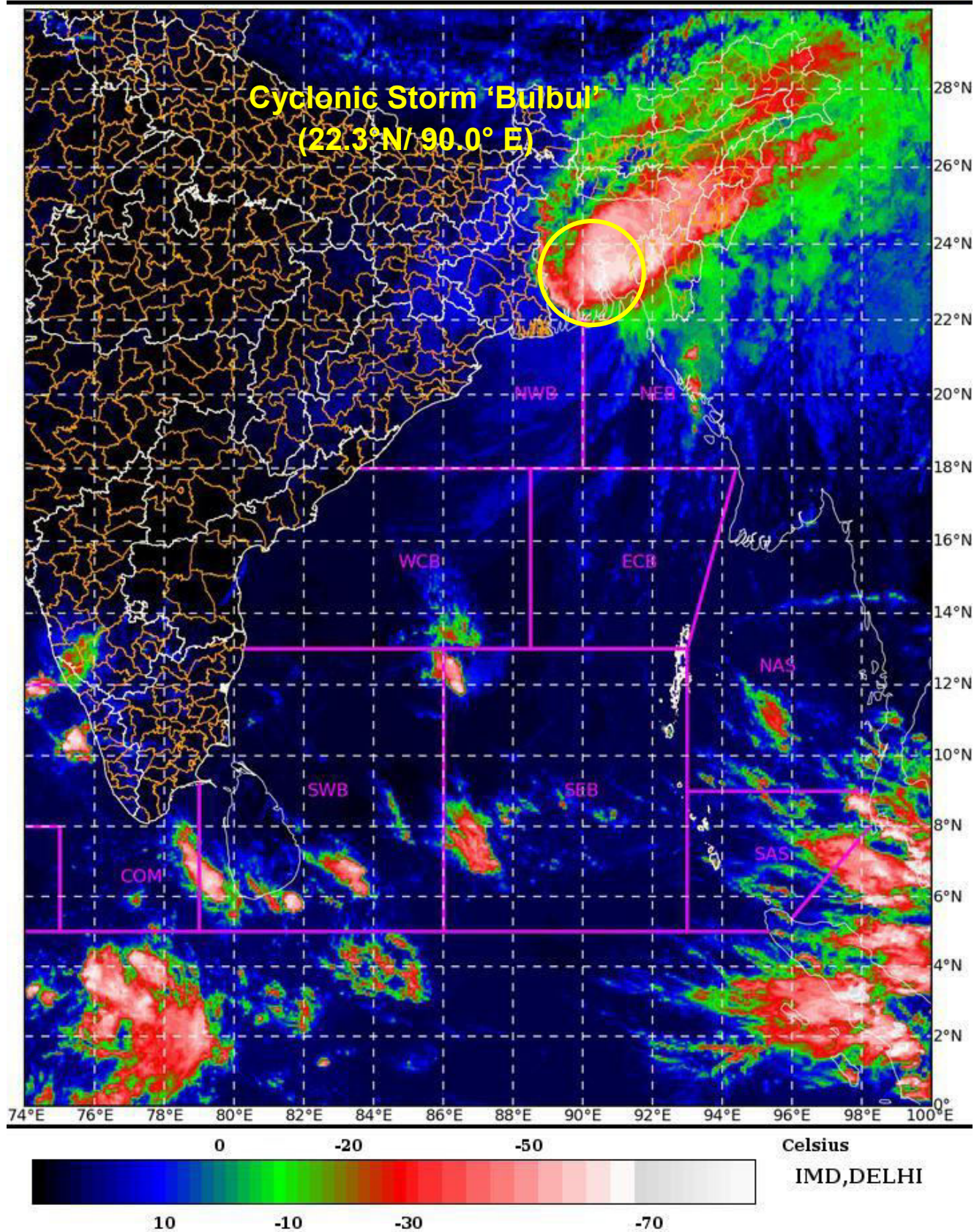
SAT : INSAT-3D IMG

10-11-2019/(0630 to 0657) GMT

IMG_TIR1_TEMP 10.8 um

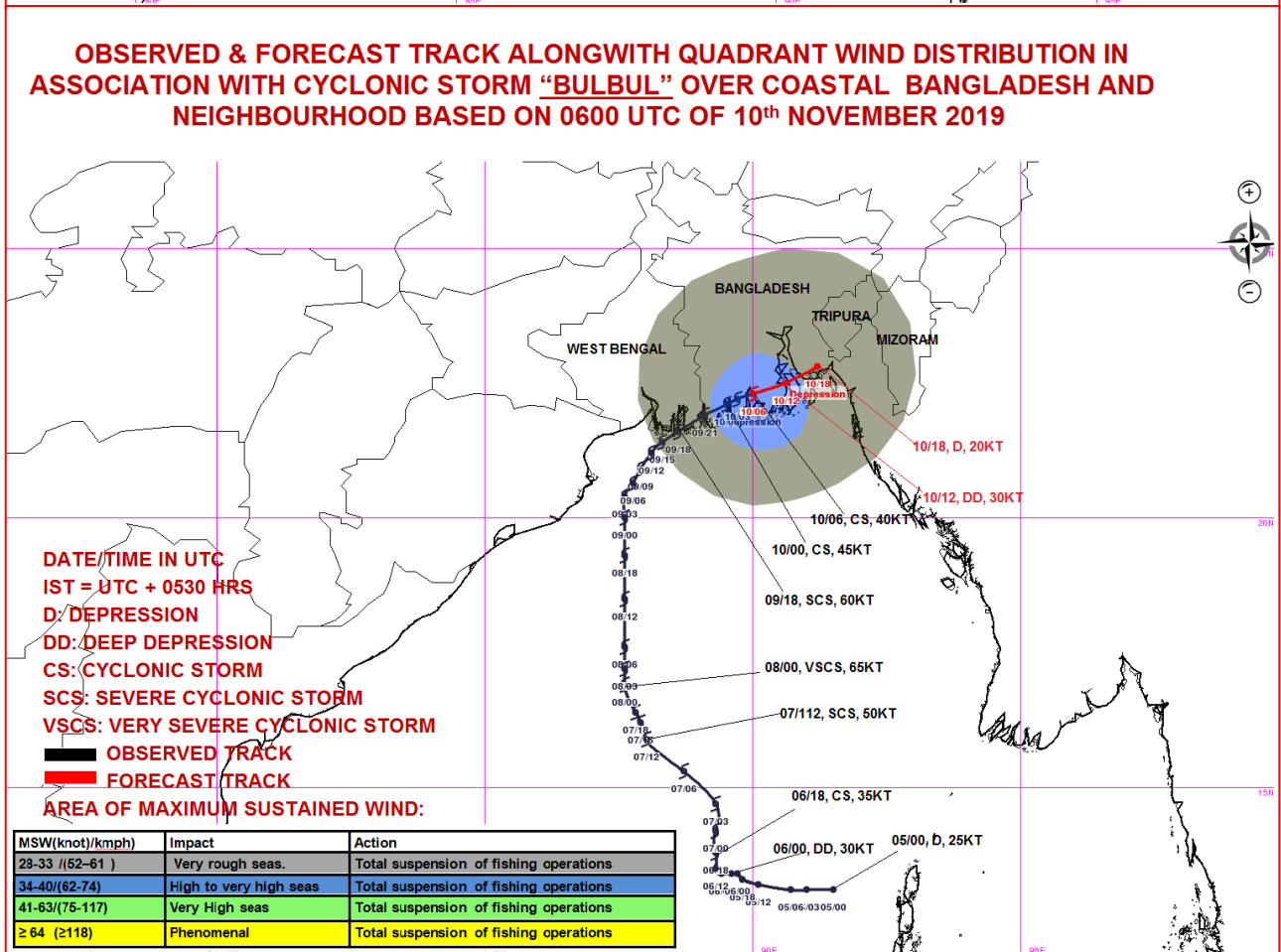
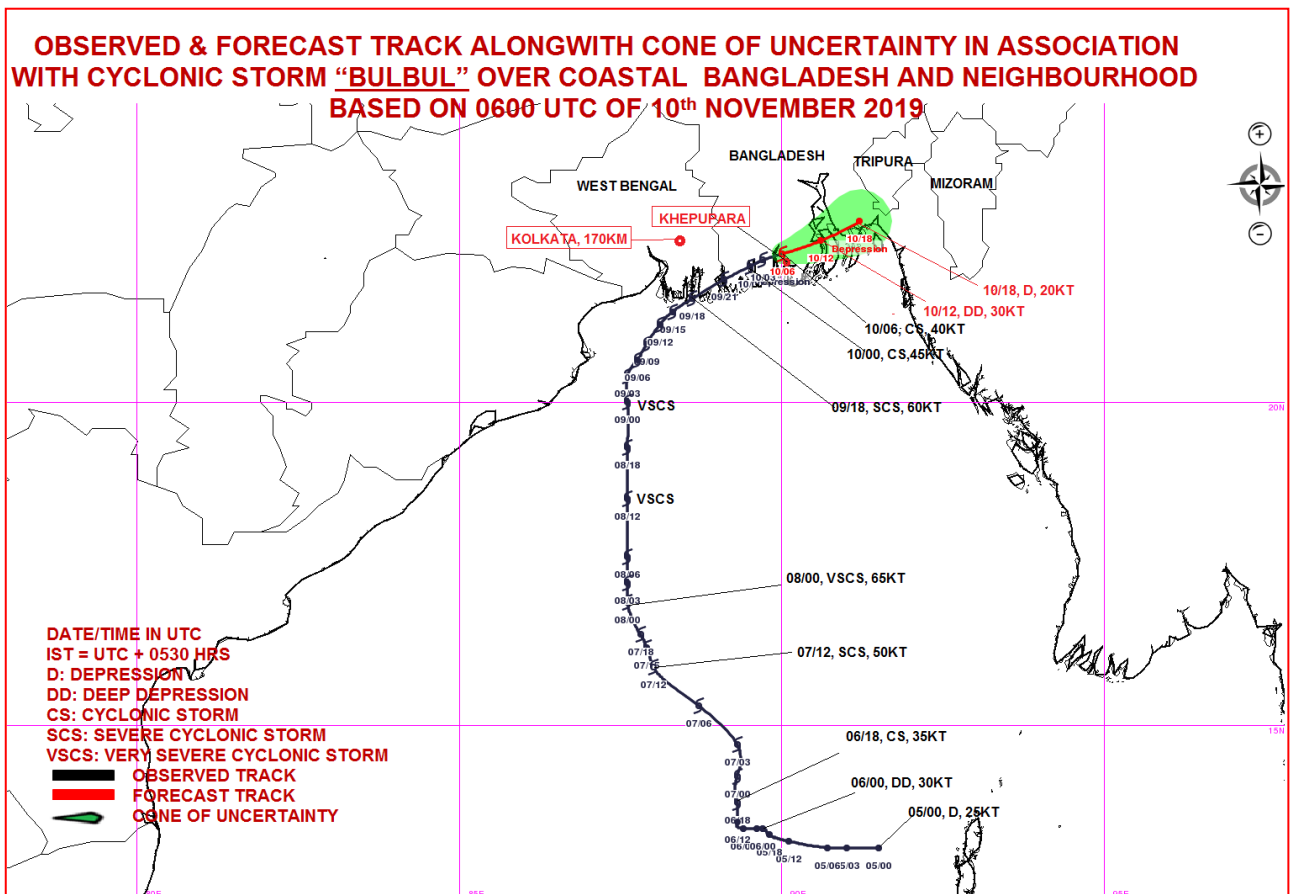
10-11-2019/(1200 to 1227) IST

L1C Mercator



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 44 (BOB/04/2019)

TIME OF ISSUE: 1650 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

Sub: Cyclonic Storm 'Bulbul' (Pronounced as Bul bul) over coastal Bangladesh & neighbourhood weakened into a Deep Depression.

The Cyclonic Storm '**Bulbul**' (Pronounced as **Bul bul**) over coastal Bangladesh and neighbourhood moved east-northeastwards with a speed of 8 kmph during past 06 hours; weakened into a **Deep Depression** over the same area and lay centered at 1430 hrs IST of 10th November 2019 over coastal Bangladesh & neighbourhood, near Lat. 22.4°N and Long. 90.1°E, about 50 km north-northwest of Khepupara (Bangladesh), about 220 km east-northeast of Sagar Islands (West Bengal), 140 km east-northeast of Sunderban National Park and 180 km to the east of Kolkata. It is very likely to continue to move east-northeastwards and weaken into a Depression over coastal Bangladesh and neighbourhood during next 09 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/1430	22.4	90.1	55-65 gusting to 75	Deep Depression
10.11.19/1730	22.6	90.6	50-60 gusting to 70	Deep Depression
10.11.19/2330	22.8	91.2	40-50 gusting to 60	Depression
11.11.19/0530	23.0	91.8	30-40 gusting to 50	Depression

Warnings:

(i) Rainfall:

Northeastern States:

- Light to moderate rainfall at many places very likely over South Assam, Meghalaya, Tripura, and Mizoram during next 24 hours.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

(ii) Wind warning

- Squally wind, speed reaching 55-65 kmph gusting to 75 kmph, prevailing around the system centre and adjoining north Bay of Bengal. It will decrease becoming 50- 60 kmph gusting to 70 kmph over coastal Bangladesh and adjoining North Bay of Bengal, during next 03 hours.
- Strong wind speed reaching 30-40 Kmph gusting to 50 Kmph likely to prevail over Mizoram and Tripura during next 12 hours.

(iii) Sea condition

- Sea condition will be rough to very rough over North Bay of Bengal along & off West Bengal- Bangladesh coasts during next 12 hours.

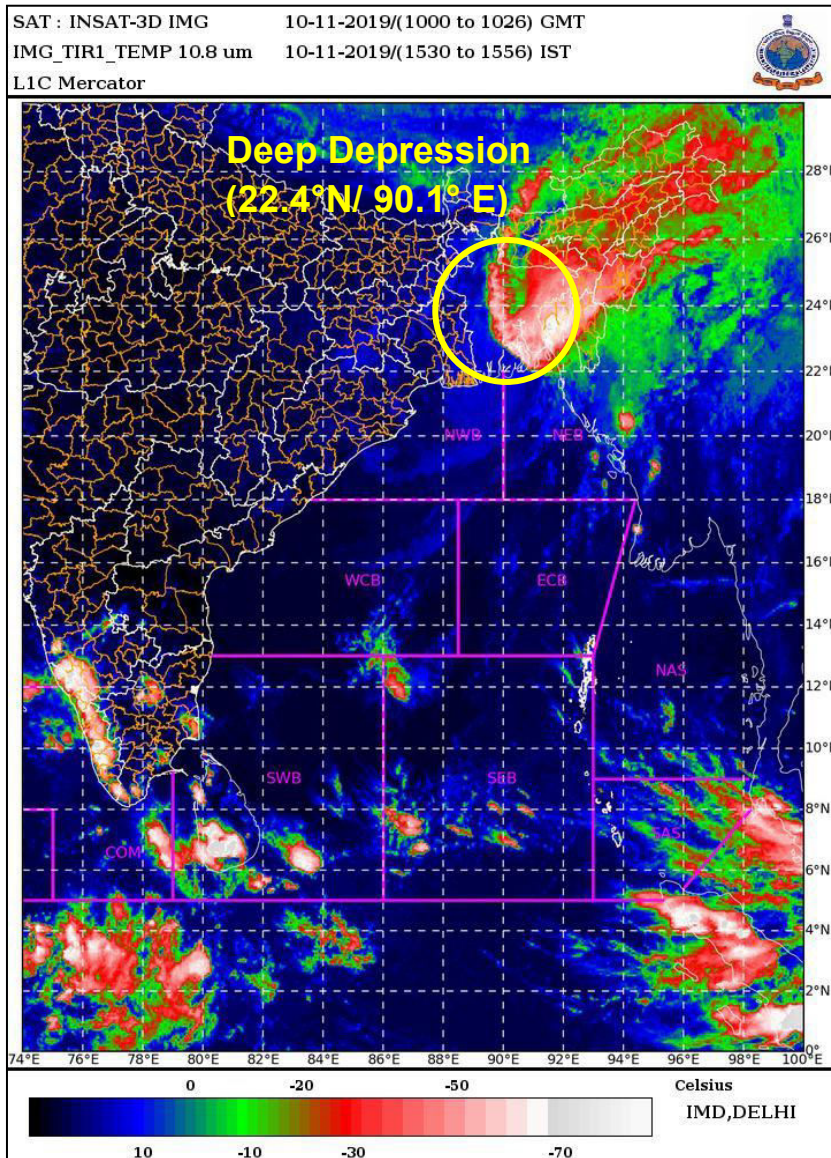
(iv) Fishermen Warning

- Fishermen are advised not to venture into North Bay of Bengal along & off West Bengal - Bangladesh coasts during next 12 hours.

The next bulletin will be issued at 2030 hrs IST of today, the 10th November, 2019.

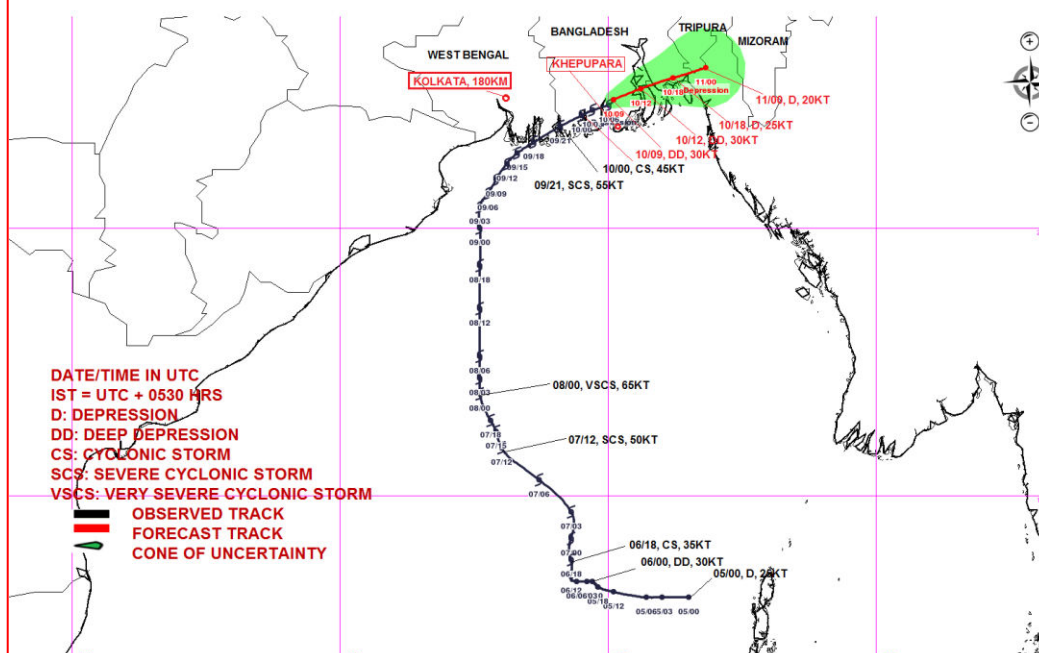
(Neetha K Gopal)
Scientist-E, RSMC, New Delhi

Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MC Agartala.

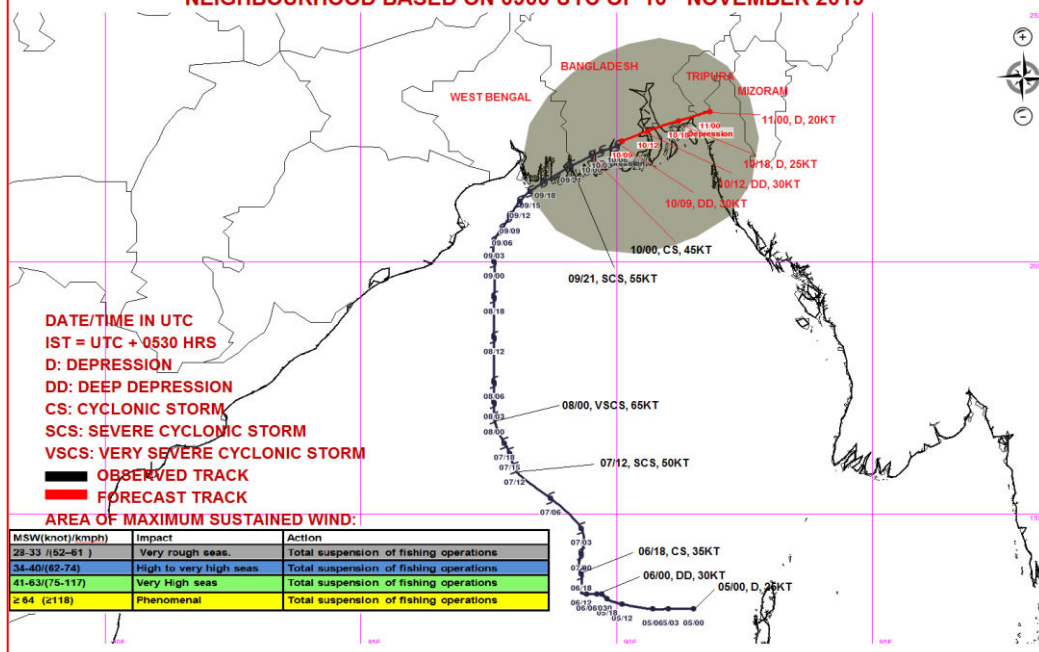


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

**OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH CYCLONIC STORM "BULBUL" OVER COASTAL BANGLADESH AND NEIGHBOURHOOD
BASED ON 0900 UTC OF 10th NOVEMBER 2019**



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH CYCLONIC STORM "BULBUL" OVER COASTAL BANGLADESH AND NEIGHBOURHOOD BASED ON 0900 UTC OF 10th NOVEMBER 2019



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 45 (BOB/04/2019)

TIME OF ISSUE: 2015 HOURS IST

DATED: 10.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

Sub: Deep Depression over coastal Bangladesh & neighbourhood

The **Deep Depression** over coastal Bangladesh and neighbourhood moved east-northeastwards with a speed of 08 kmph during past 06 hours; and lay centered at 1730 hrs IST of 10th November 2019 over coastal Bangladesh & neighbourhood, near Lat. 22.5°N and Long. 90.4°E, about 60 km north-northeast of Khepupara (Bangladesh), about 260 km east-northeast of Sagar Islands (West Bengal), 170 km east-northeast of Sunderban National Park and 210 km to the east of Kolkata. It is very likely to continue to move east-northeastwards and weaken into a Depression over coastal Bangladesh and neighbourhood during next 12 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/1730	22.5	90.4	50-60 gusting to 70	Deep Depression
10.11.19/2330	22.8	91.2	45-55 gusting to 65	Depression
11.11.19/0530	23.0	91.8	40-50 gusting to 60	Depression
11.11.19/1130	23.2	92.4	30-40 gusting to 50	Depression

Warnings:

(i) Rainfall:

Light to moderate rainfall at many places very likely over South Assam, Meghalaya, Tripura, and Mizoram during next 24 hours.

(ii) Wind warning

- Squally wind, speed reaching 50-60 kmph gusting to 70 kmph, prevailing around the system centre & adjoining north Bay of Bengal. It will decrease becoming 35- 45 kmph

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

gusting to 55 kmph over coastal Bangladesh and adjoining North Bay of Bengal by morning of tomorrow, 11th November.

- Strong wind speed reaching 30-40 Kmph gusting to 50 Kmph likely to prevail over Mizoram and Tripura during next 12 hours.

(iii) Sea condition

- Sea condition will be rough to very rough over North Bay of Bengal along & off West Bengal- Bangladesh coasts during next 12 hours.

(iv) Fishermen Warning

- Fishermen are advised not to venture into North Bay of Bengal along & off West Bengal - Bangladesh coasts during next 12 hours.

The next bulletin will be issued at 0230 hrs IST of tomorrow , the 11th November, 2019.

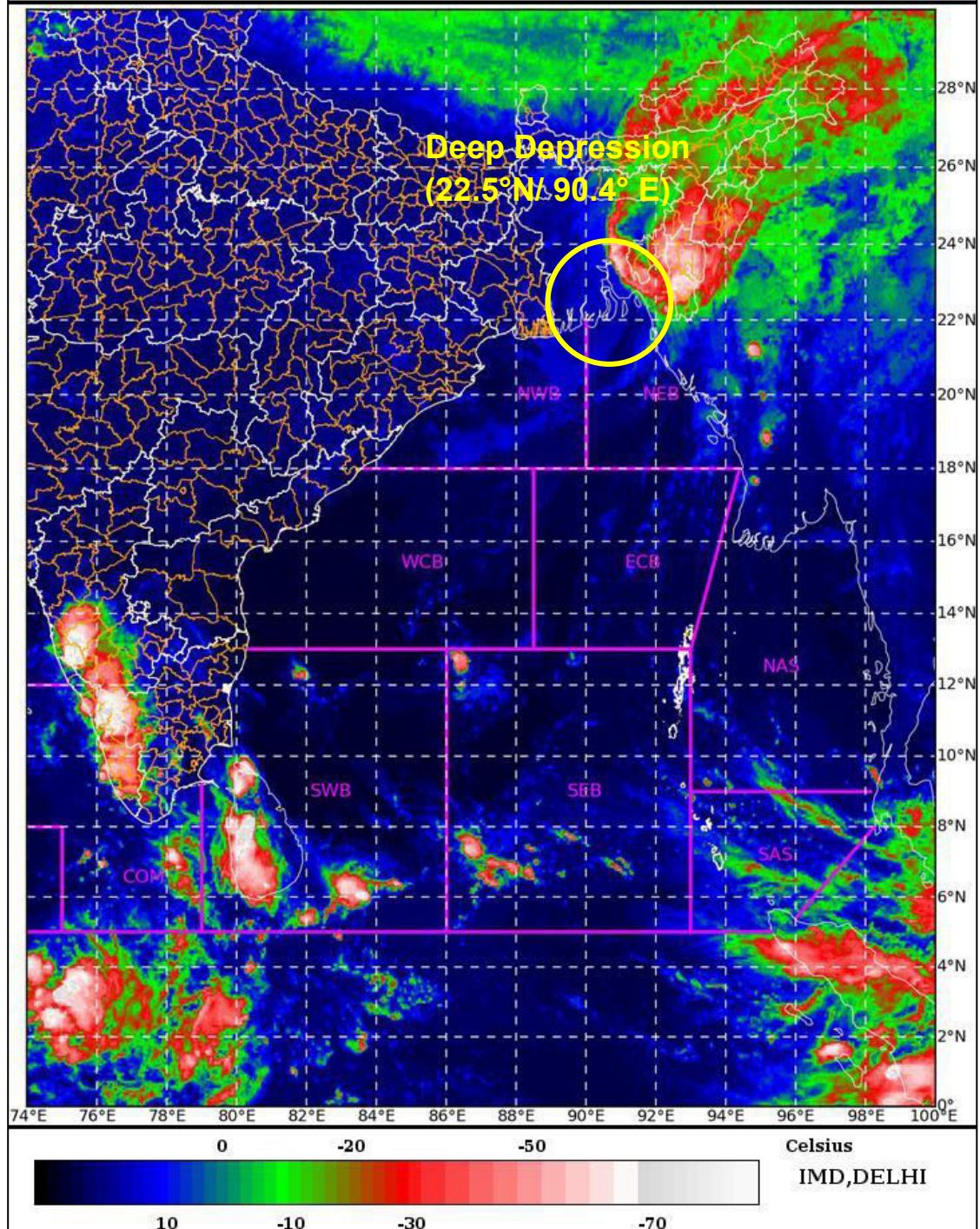
**(Naresh Kumar)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MC Agartala.

SAT : INSAT-3D IMG 10-11-2019/(1300 to 1326) GMT

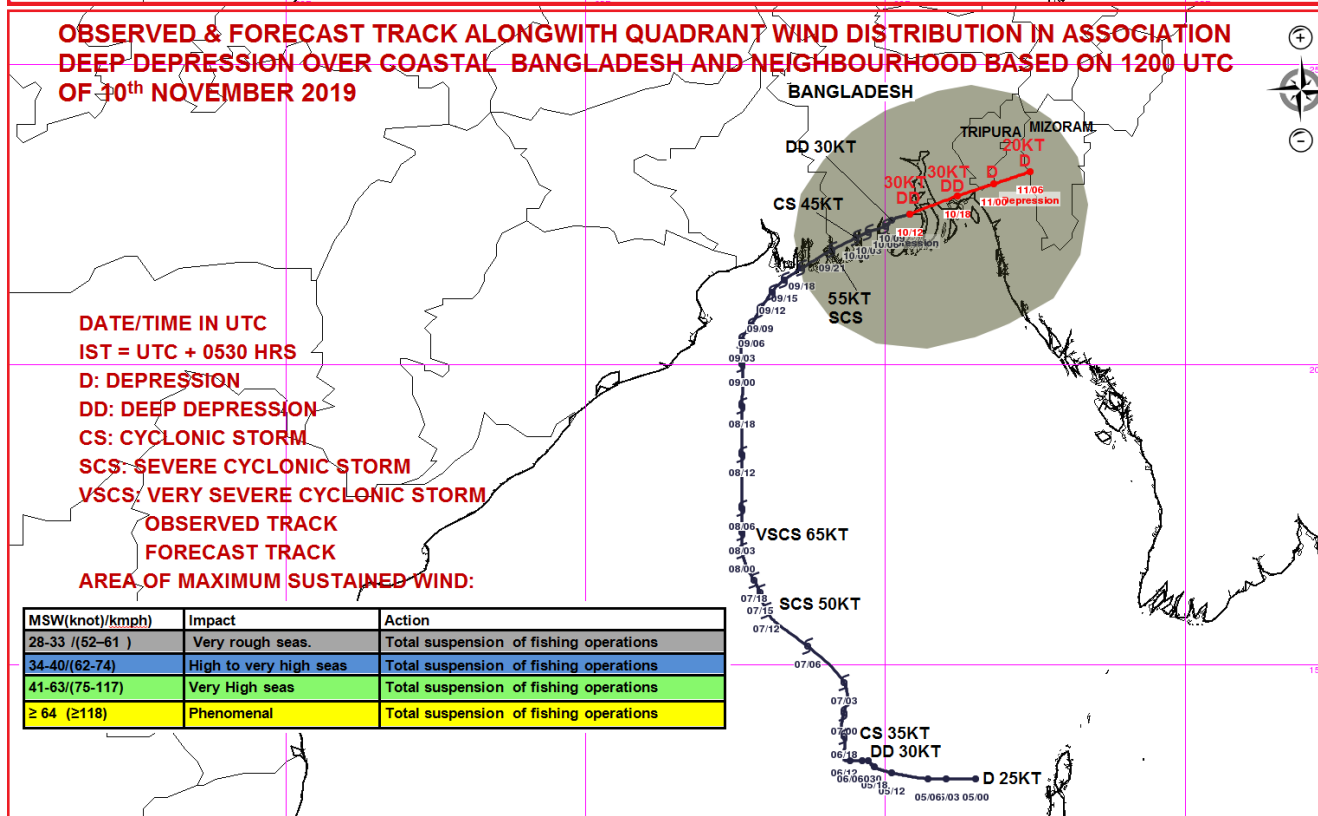
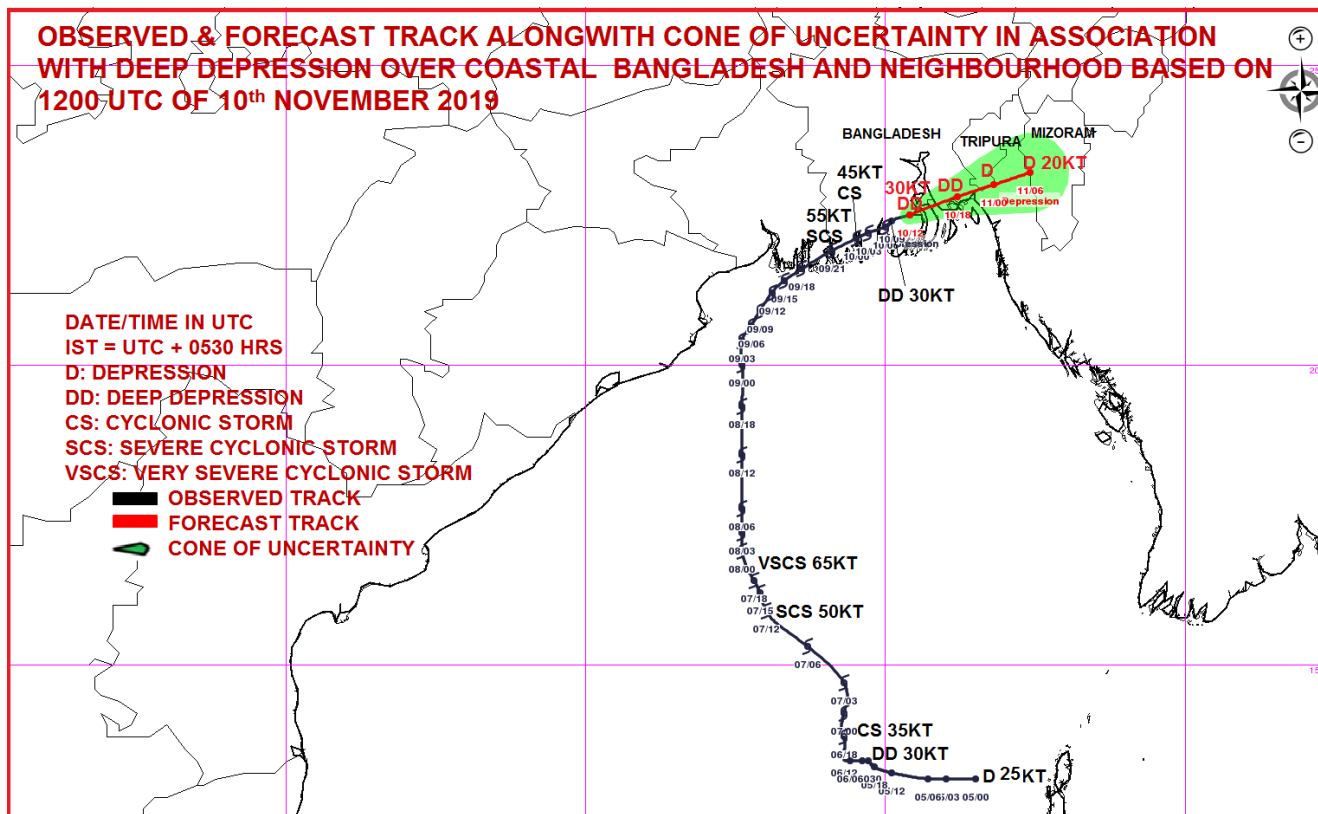
IMG_TIR1_TEMP 10.8 um 10-11-2019/(1830 to 1856) IST

L1C Mercator



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 46 (BOB/04/2019)

TIME OF ISSUE: 0130 HOURS IST

DATED: 11.11.2019

FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)

Sub: Deep Depression over south-east Bangladesh & neighbourhood

The **Deep Depression** over coastal Bangladesh and neighbourhood moved east-northeastwards with a speed of 14 kmph during past 06 hours; and lay centered at 2330 hrs IST of 10th November 2019 over south-east Bangladesh & neighbourhood, near Lat. 22.7°N and Long. 91.2°E, about 125 km north-northeast of Khepupara (Bangladesh), 255 km east-northeast of Sunderban National Park, 295km to the east of Kolkata and 130 km south of Agartala. It is very likely to continue to move east-northeastwards and weaken into a Depression over south-east Bangladesh & neighbourhood during next 06 hours.

Forecast track and intensity are given in the following table:

Date/Time (IST)	Position		Maximum sustained surface wind speed (kmph)	Category of cyclonic disturbance
	Lat. (°N)	Long. (°E)		
10.11.19/2330	22.7	91.2	50-60 gusting 70	Deep Depression
11.11.19/0530	22.9	91.8	40-50 gusting to 60	Depression
11.11.19/1130	23.1	92.4	30-40 gusting to 50	Depression

Warnings:

(i) Rainfall:

Light to moderate rainfall at many places very likely over South Assam, Meghalaya, Tripura, and Mizoram during next 24 hours.

(ii) Wind warning

- Squally wind, speed reaching 50-60 kmph gusting to 70 kmph, prevailing around the system centre & adjoining north Bay of Bengal. It will decrease becoming 40-50 kmph gusting to 60 kmph over south-eastern Bangladesh & neighbourhood and adjoining North Bay of Bengal by morning of 11th November.

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

- Strong wind speed reaching 30-40 Kmph gusting to 50 Kmph likely to prevail over Mizoram and Tripura during next 12 hours.

(iii) Sea condition

- Sea condition will be rough to very rough over North Bay of Bengal along & off West Bengal- Bangladesh coasts during next 12 hours.

(iv) Fishermen Warning

- Fishermen are advised not to venture into North Bay of Bengal along & off West Bengal - Bangladesh coasts during next 12 hours.

The next bulletin will be issued at 0830 hrs IST of tomorrow , the 11th November, 2019.

**(D R Pattanaik)
Scientist-E, RSMC, New Delhi**

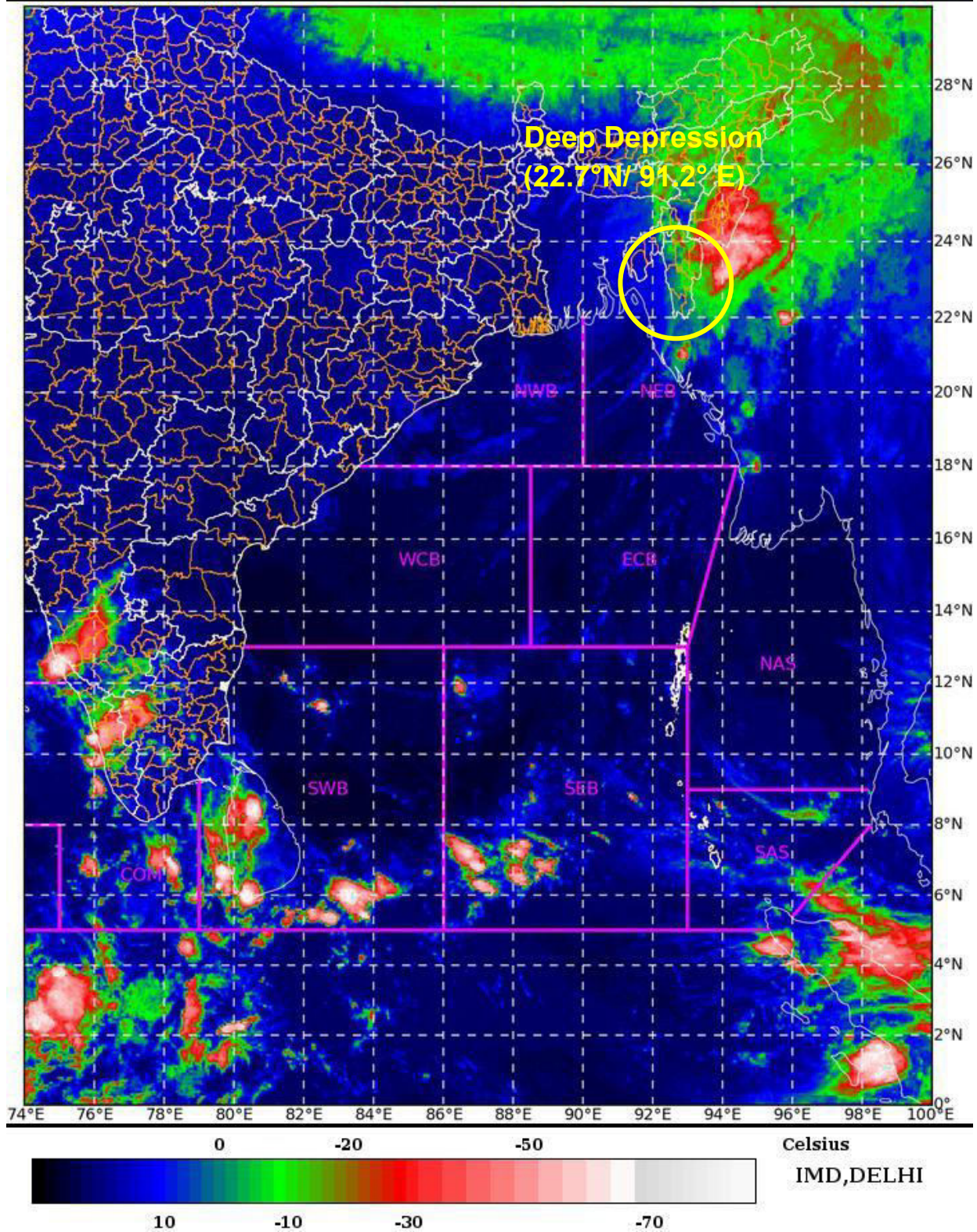
Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MC Agartala.

SAT : INSAT-3D IMG 10-11-2019/(1630 to 1656) GMT

IMG_TIR1_TEMP 10.8 um 10-11-2019/(2200 to 2226) IST

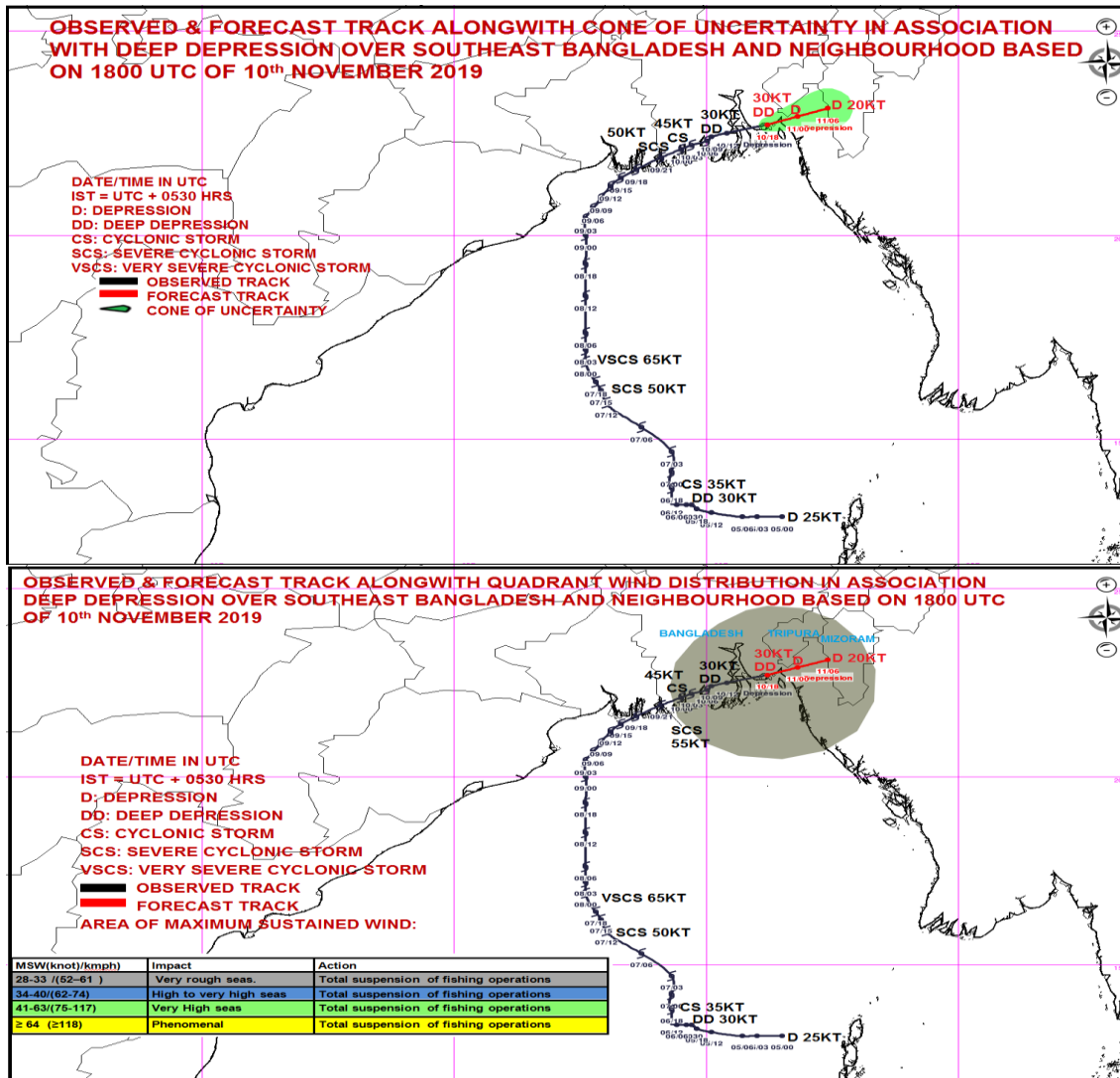


L1C Mercator



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Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
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**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 47 (BOB/04/2019)

TIME OF ISSUE: 0700 HOURS IST

DATED: 11.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
CONTROL ROOM NDMA (FAX.NO. 26701729)
JS NDMA (FAX.NO. 26701864)
CABINET SECRETARIAT (FAX.NO.23012284, 23018638)
PS TO HON'BLE MINISTER FOR S & T AND EARTH SCIENCES (FAX NO.23316745)
SECRETARY, MOES, (FAX NO. 24629777)
H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)
DIRECTOR GENERAL, DOORDARSHAN (23385843)
DIRECTOR GENERAL, AIR (23421101, 23421105, 23421219)
PIB MOES (FAX NO. 23389042)
UNI (FAX NO. 23355841)
D.G. NATIONAL DISASTER RESPONSE FORCE (NDRF) (FAX NO. 26105912, 2436 3260)
DIRECTOR, PUNCTUALITY, INDIAN RAILWAYS (FAX NO. 23388503)
CHIEF SECRETARY, TRIPURA (FAX NO.0381-2413200)
CHIEF SECRETARY, MIZORAM (FAX NO. 0389- 2322745)
CHIEF SECRETARY, GOVT. OF ODISHA (FAX NO. 0674-2536660)
CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)**

Sub: Depression over south-east Bangladesh & adjoining south Tripura

The Deep Depression over south-east Bangladesh & neighbourhood moved east-northeastwards with a speed of 14 kmph during past 06 hours; weakened further into a Depression and lay centered at 0530 hrs IST of today, the 11th November 2019 over south-east Bangladesh & adjoining south Tripura, near Lat. 23.1°N and Long. 91.9°E, about 210 km north-northeast of Khepupara (Bangladesh) and 110 km south-east of Agartala. It is very likely to continue to move east-northeastwards and weaken into a low pressure area during next 06 hours.

Warnings:

(i) Rainfall:

Light to moderate rainfall at many places very likely over South Assam, Meghalaya, Tripura and Mizoram during next 24 hours.

(ii) Wind warning

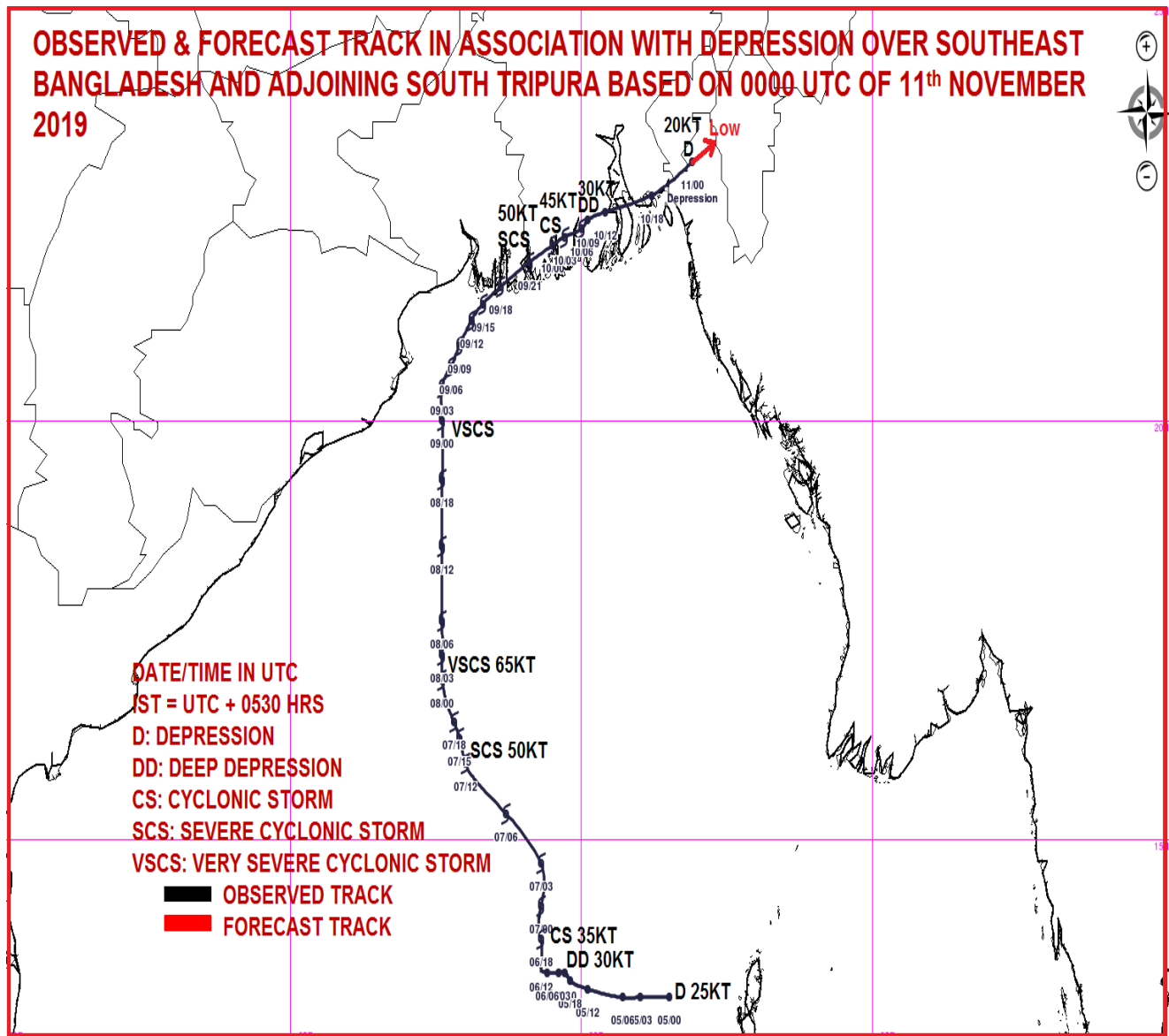
- Squally wind, speed reaching 40-50 kmph gusting to 60 kmph, prevailing around the system centre & neighbourhood. It will decrease becoming 20-30 kmph gusting to 40 kmph over south-east Bangladesh and adjoining Tripura & Mizoram during next 06 hours

The next bulletin will be issued at 1130 hrs IST of 11th November, 2019.

**(D R Pattanaik)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Kolkata/ RMC Guwahati / CWC Visakhapatnam/ CWC Bhubaneswar/ MC Agartala.

**Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.**



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



**India Meteorological Department
Earth System Science Organisation
(Ministry of Earth Sciences)**

BULLETIN NO.: 48 (BOB/04/2019)

TIME OF ISSUE: 1100 HOURS IST

DATED: 11.11.2019

**FROM: INDIA METEOROLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)
TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 23092398/23093750)
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CHIEF SECRETARY, WEST BENGAL (FAX NO. 033-22144328)
CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029)**

Sub: Depression over south-east Bangladesh & adjoining south Tripura weakened into a Low pressure area over southern parts of Tripura and neighbourhood.

The Depression over south-east Bangladesh & adjoining south Tripura moved slightly east-northeastwards, weakened into a Low Pressure area and lay centered at 0830 hrs IST of today, the 11th November 2019 over southern parts of Tripura & neighbourhood.

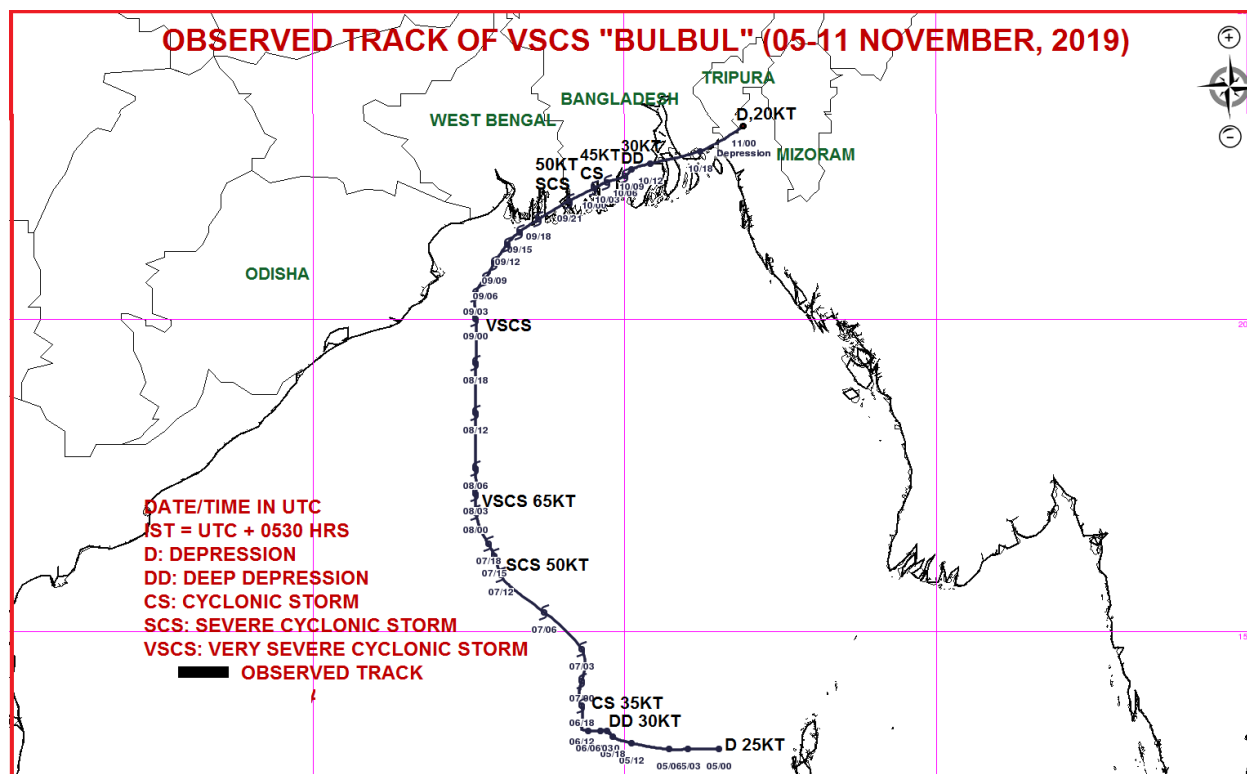
(i) Rainfall:

Light to moderate rainfall at many places very likely over South Assam, Meghalaya, Tripura and Mizoram during next 24 hours.

This is the last bulletin regarding this system. However, routine weather Bulletins will continue from Meteorological Centre Agartala, Regional Meteorological Centre Guwahati as well as from National Weather Forecasting Centre, New Delhi.

**(Sunitha Devi.S)
Scientist-E, RSMC, New Delhi**

Copy to: ACWC Kolkata/ RMC Guwahati / MC Agartala.



Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.