



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

INFORMATORY MESSAGE: 01 (BOB 01/2020)

TIME OF ISSUE: 1330 HOURS IST

DATED: 13.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575)

CHIEF SECRETARY, KERALA (FAX NO. 0413-2337575, 2327176)

CHIEF SECRETARY, LAKSHADWEEP ISLANDS (FAX NO. 0413-262184)

Sub: Formation of a Low Pressure area over southeast Bay of Bengal and adjoining south Andaman Sea and its likely intensification into a Cyclonic Storm by 16th May, evening.

A Low Pressure Area has formed over **southeast Bay of Bengal and adjoining south Andaman Sea, in the morning of today, the 13th May 2020.**

It is very likely to concentrate into a Depression over central parts of south Bay of Bengal on 15th and further intensify into a Cyclonic Storm over southwest and adjoining west-central Bay of Bengal by 16th evening. It is very likely to move northwestwards initially till 17th May and then re-curve north-northeastwards.

In association with the above system, the conditions will become favourable for advance of southwest monsoon over south Bay of Bengal, Andaman Sea and Andaman & Nicobar islands around 16th May 2020.

Under its influence, the following adverse weather is likely over south & central Bay of Bengal and adjoining Andaman Sea from 15th May onwards.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places very likely over Andaman & Nicobar Islands on 15th & 16th May. Andaman Islands are also likely to experience heavy rainfall at a few places on these two days.

(ii) Wind warning

- Squally winds, speed reaching 45-55 kmph gusting to 65 kmph is likely to prevail over south and adjoining central Bay of Bengal on 15th May 2020, 55-65 kmph gusting to 75 kmph over the same region on 16th May. Wind speed is likely to increase further becoming Gale force winds speed reaching 65-75 kmph gusting to 85 kmph over southwest and adjoining westcentral Bay of Bengal from the evening of 16th May. Squally winds, speed reaching 45-55 kmph are likely to prevail over Andaman Sea on 15th & 16th May.

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 rough to very rough over south and adjoining central Bay of Bengal and Andaman Sea on 15th May- 16th May afternoon and very rough to High over southwest and adjoining westcentral Bay of Bengal from the evening of 16th May.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south and central Bay of Bengal from 15th May 2020. Those who are out at Sea over these regions are advised to return to coasts by tomorrow.

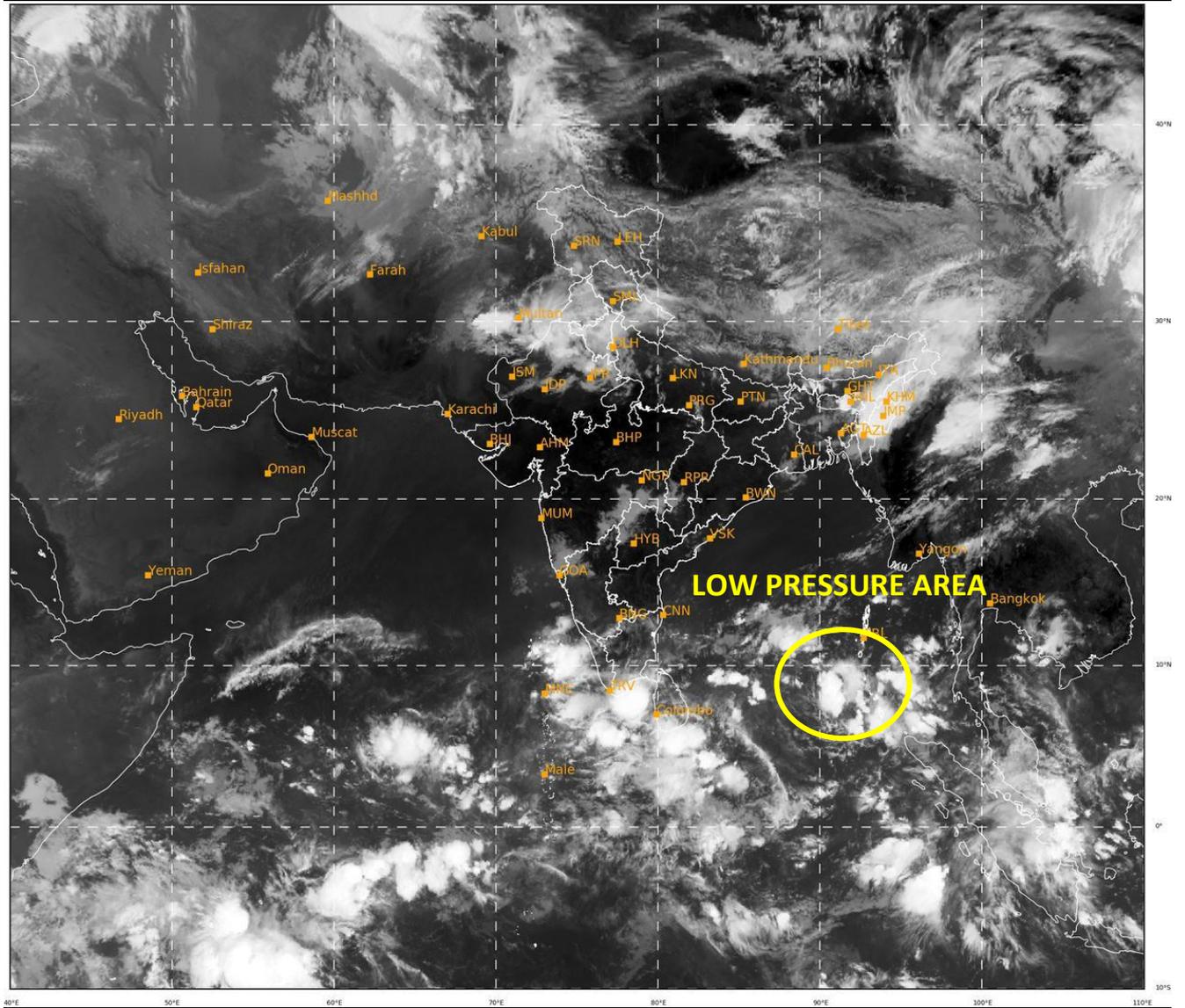
The system is under continuous surveillance and the concerned state governments are being informed regularly.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next update will be issued at 1330 hours IST of tomorrow, the 14th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

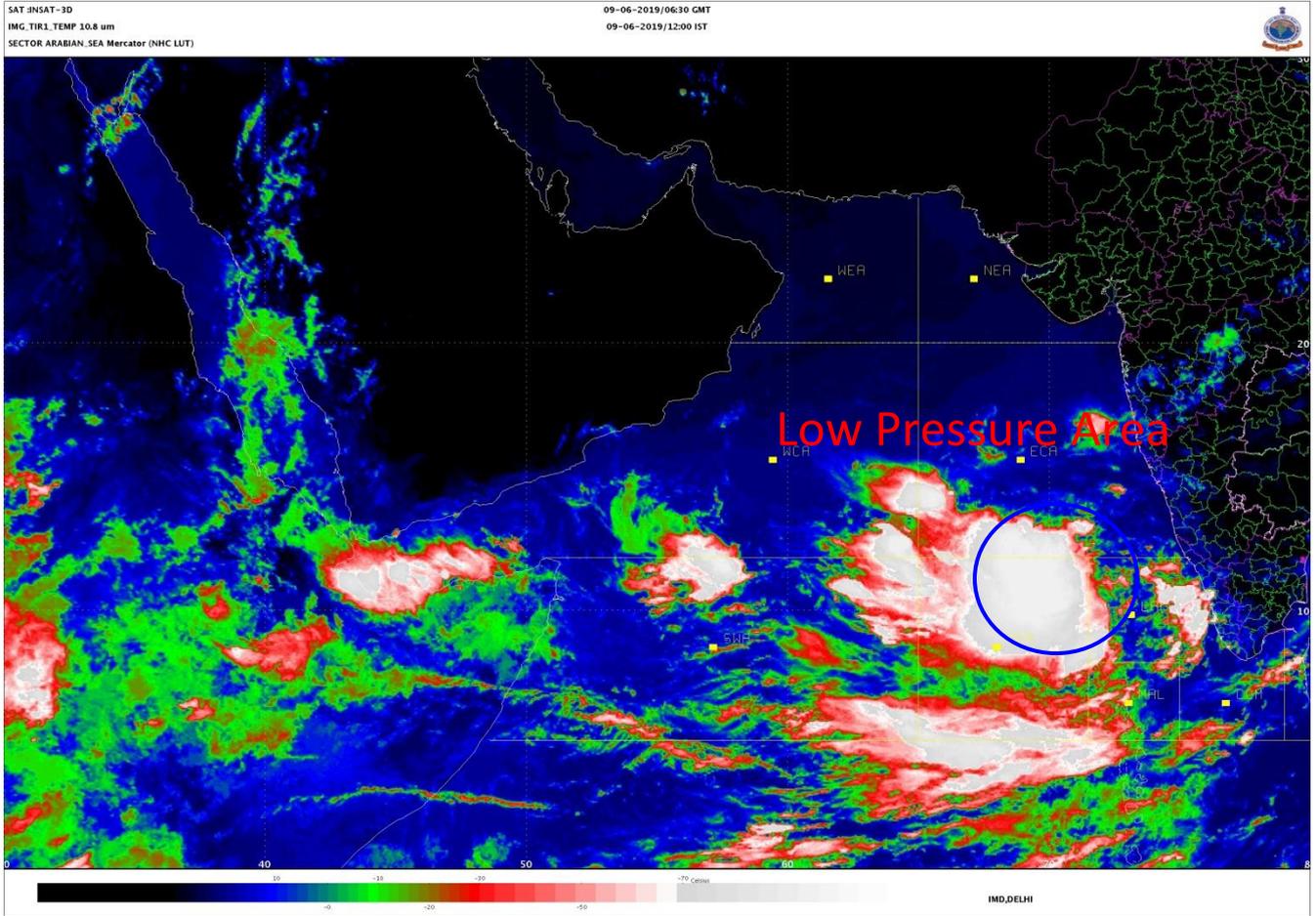


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938

IMD, DELHI

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)

INFORMATORY MESSAGE: 02 (BOB 01/2020)

TIME OF ISSUE: 1400 HOURS IST

DATED: 14.05.2020

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

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

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

CHIEF SECRETARY, KERALA (FAX NO. 0413-2337575, 2327176, 2327395)

CHIEF SECRETARY, LAKSHADWEEP ISLANDS (FAX NO. 0413-262184)

Sub: Well marked Low Pressure area over southeast Bay of Bengal and neighbourhood and its likely intensification into a Cyclonic Storm by 16th May, evening.

Yesterday's Low Pressure Area over southeast Bay of Bengal (BoB) and adjoining south Andaman Sea, lay as a well marked low pressure area over southeast BoB in the morning of today, the 14th May 2020.

It is very likely to concentrate into a Depression over central parts of south BoB on tomorrow, the 15th May and further intensify into a Cyclonic Storm over the same region by 16th evening. It is very likely to move northwestwards initially till 17th May and then re-curve north-northeastwards towards north BoB on 18th & 19th May.

In association with the above system, the conditions are also becoming favourable for advance of southwest monsoon over south BoB, Andaman Sea and Andaman & Nicobar Islands around 16th May 2020.

Under the influence of the system, the following adverse weather is likely over south & central BoB and adjoining Andaman Sea from 15th May onwards.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places very likely over Andaman & Nicobar Islands on 15th & 16th May. Heavy rainfall at isolated places is also likely over Andaman & Nicobar Islands on these two days.

(ii) Rainfall (over Odisha & Gangetic West Bengal)

- Coastal Odisha is likely to experience light to moderate rainfall with heavy falls at a few places on 18th May and heavy to very heavy falls at a few places on 19th. Coastal districts of Gangetic West Bengal is likely to experience light to moderate rainfall with heavy falls at a few places on 19th May and heavy to very heavy falls at a few places over Gangetic West Bengal on 20th May.

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

Date	Sector of Sea / Area	Likely wind speed
15 th May 2020	Southeast and adjoining central and southwest BoB	Squally winds (45 to 55 kmph gusting to 65 kmph)
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
16 th May 2020	Central parts of south and adjoining central BoB	Squally winds (55 to 65 kmph gusting to 75 kmph)
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
17 th May 2020	Eastcentral & adjoining areas of westcentral and south BoB	Gale winds (70 to 80 kmph gusting to 90 kmph)
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
18 th May 2020	Westcentral and adjoining east central BoB	Gale winds (70 to 80 kmph gusting to 90 kmph)
	Along & off North Andhra Pradesh – south Odisha coasts	Squally winds (40 to 50 kmph gusting to 60 kmph)
19 th May 2020	North and adjoining west central BoB	Gale winds (80 to 90 kmph gusting to 100 kmph)
	Along & off Odisha- West Bengal coasts	Gale winds (60 to 70 kmph gusting to 80 kmph)

(iii) Sea condition

- Sea condition will be rough to very rough over south & adjoining central BoB and Andaman Sea on 15th - 16th May afternoon. It will be High to very High over southwest & adjoining westcentral BoB from the evening of 16th May to 17th May, over westcentral and adjoining eastcentral & northeast BoB on 18th May and over north and adjoining central BoB on 19th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south and central Bay of Bengal from 15th May 2020. Those who are out at Sea over these regions are advised to return to coasts by tomorrow.
- Also, fishermen are advised not to venture into westcentral BoB off North Andhra Pradesh coast on 18th and into north BoB along & off Odisha-West Bengal coasts from 18th May 2020 onwards. Those who are out at Sea over these regions are advised to return to coasts by 17th May.

The system is under continuous surveillance and the concerned state governments are being informed regularly.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next update will be issued at 1330 hours IST of tomorrow, the 15th May, 2020.

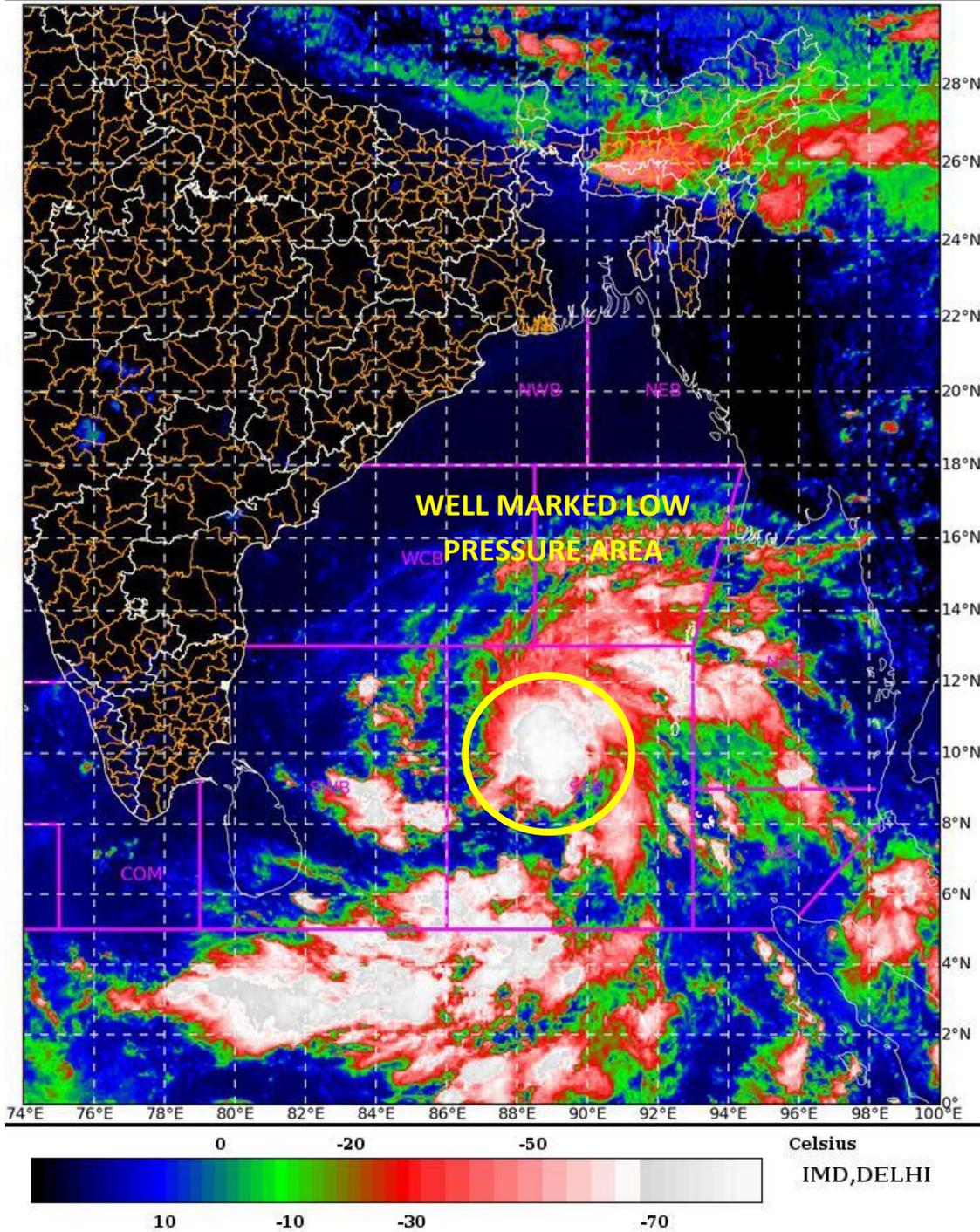


(Sunitha Devi)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam/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 14-05-2020/(0530 to 0557) GMT
IMG_TIR1_TEMP 10.8 um 14-05-2020/(1100 to 1127) IST
L1C Mercator

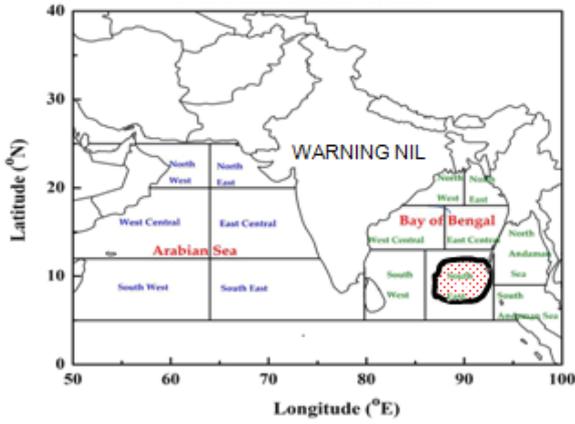


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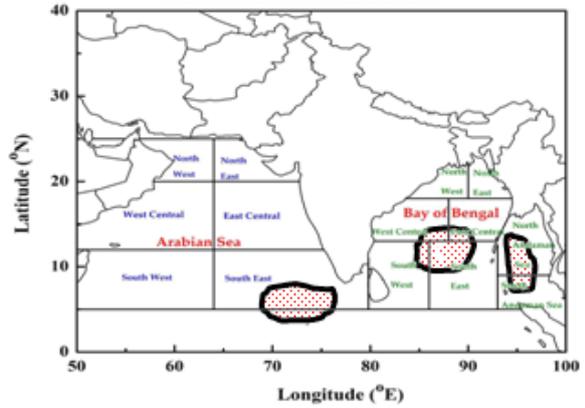
INDIA METEOROLOGICAL DEPARTMENT

FISHERMAN WARNING FOR BAY OF BENGAL AND ARABIAN SEA

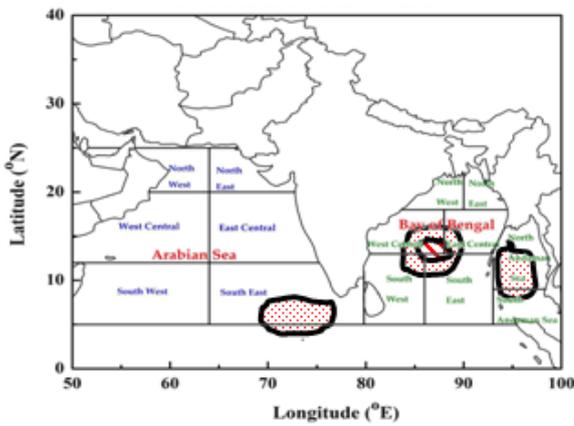
DAY-1: 14.05.2020/0600 UTC TO 15.05.2020/0600 UTC



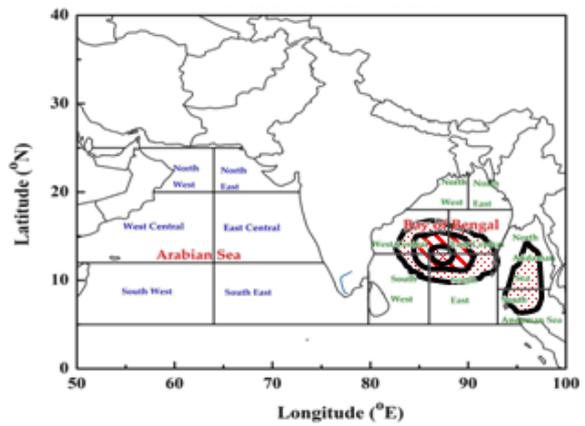
DAY-2: 15.05.2020/0600 UTC TO 16.05.2020/0600 UTC



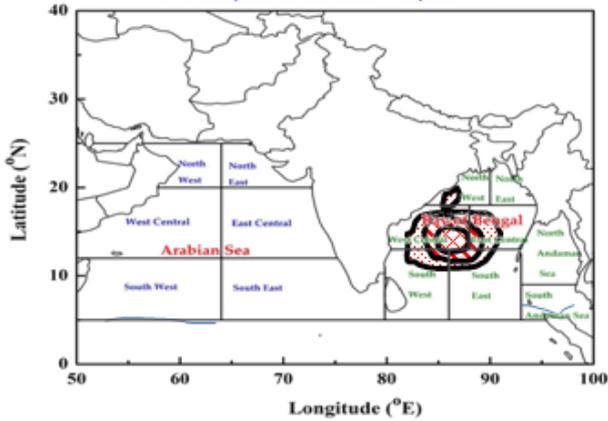
DAY-3: 16.05.2020/0600 UTC TO 17.05.2020/0600 UTC



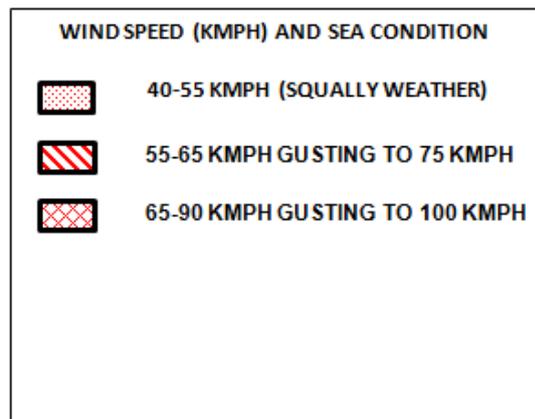
DAY-4: 17.05.2020/0600 UTC TO 18.05.2020/0600 UTC



DAY-5: 18.05.2020/0600 UTC TO 19.05.2020/0600 UTC



AREA UNDER 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.



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INFORMATORY MESSAGE: 03 (BOB 01/2020)

TIME OF ISSUE: 1330 HOURS IST

DATED: 15.05.2020

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CHIEF SECRETARY, KERALA (FAX NO. 0413-2337575, 2327176, 2327395)

CHIEF SECRETARY, LAKSHADWEEP ISLANDS (FAX NO. 0413-262184)

Sub: Well marked Low Pressure area over southeast Bay of Bengal and its likely intensification into a Cyclonic Storm by 16th May, evening.

Yesterday's well marked low pressure area over southeast Bay of Bengal persists over the same region, in the morning of today, the 15th May 2020.

It is very likely to concentrate into a Depression over the same region during next 12 hours and further intensify into a Cyclonic Storm over central parts of south BoB by the evening of 16th May. It is very likely to move northwestwards initially till 17th May and then re-curve north-northeastwards towards north BoB during 18th - 20th May.

In association with the above system, the conditions are also becoming favourable for **advance of southwest monsoon over south Bay of Bengal, Andaman Sea and Andaman & Nicobar Islands during next 48 hours.**

Under the influence of the system, adverse weather is likely over the BoB and adjoining Andaman Sea and along & off Andhra Pradesh, Odisha & West Bengal coasts during next 5-6 days.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places is very likely over Andaman & Nicobar Islands on 15th & 16th May. Heavy rainfall at isolated places is also likely over Andaman & Nicobar Islands on these two days.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall with heavy falls at isolated places on 18th May and heavy to very heavy falls at isolated places on 19th. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall with heavy falls at a few places on 19th May and heavy to very heavy falls at a few places over Gangetic West Bengal on 20th May.

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

Date	Sector of Sea / Area	Likely wind speed
15 th May 2020	Southeast and adjoining central and southwest BoB	Squally winds (45 to 55 kmph gusting to 65 kmph)
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
16 th May 2020	Central parts of south BoB and adjoining central BoB	Squally winds (55 to 65 kmph gusting to 75 kmph), becoming gale force winds (65 to 75 kmph gusting to 85 kmph) from the evening
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
17 th May 2020	Eastcentral and adjoining areas of westcentral & south BoB	Gale winds (75 to 85 kmph gusting to 95 kmph)
	Andaman Sea	Squally winds (40 to 50 kmph gusting to 60 kmph)
18 th May 2020	Westcentral and adjoining eastcentral BoB	Gale winds (80 to 90 kmph gusting to 100 kmph)
	Along & off North Andhra Pradesh – south Odisha coasts	Squally winds (45 to 55 kmph gusting to 65 kmph)
19 th May 2020	North and adjoining westcentral BoB	Gale winds (90 to 100 kmph gusting to 110 kmph)
	Along & off Odisha- West Bengal coasts	Gale winds (65 to 75 kmph gusting to 85 kmph)
20 th May 2020	North BoB	Gale winds (90 to 100 kmph gusting to 110 kmph)
	Along & off West Bengal - Bangladesh coasts	Gale winds (70 to 80 kmph gusting to 90 kmph)

(iii) Sea condition

- Sea condition will be rough to very rough over south & adjoining central BoB and Andaman Sea on 15th May- 16th May afternoon. It will be High to very High over southwest and adjoining westcentral BoB from the evening of 16th May to 17th May, over westcentral and adjoining eastcentral & northeast BoB on 18th May, over north & adjoining central BoB on 19th May and over north BoB on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south and central BoB from 15th May 2020. Those who are out at Sea over these regions are advised to return to coasts by today evening.
- Also, fishermen are advised not to venture into westcentral BoB off North Andhra Pradesh coast on 18th and into north BoB along & off Odisha-West Bengal coasts from 18th May 2020 onwards. Those who are out at Sea over these regions are advised to return to coasts by 17th May.

The system is under continuous surveillance and the concerned state governments are being regularly informed.

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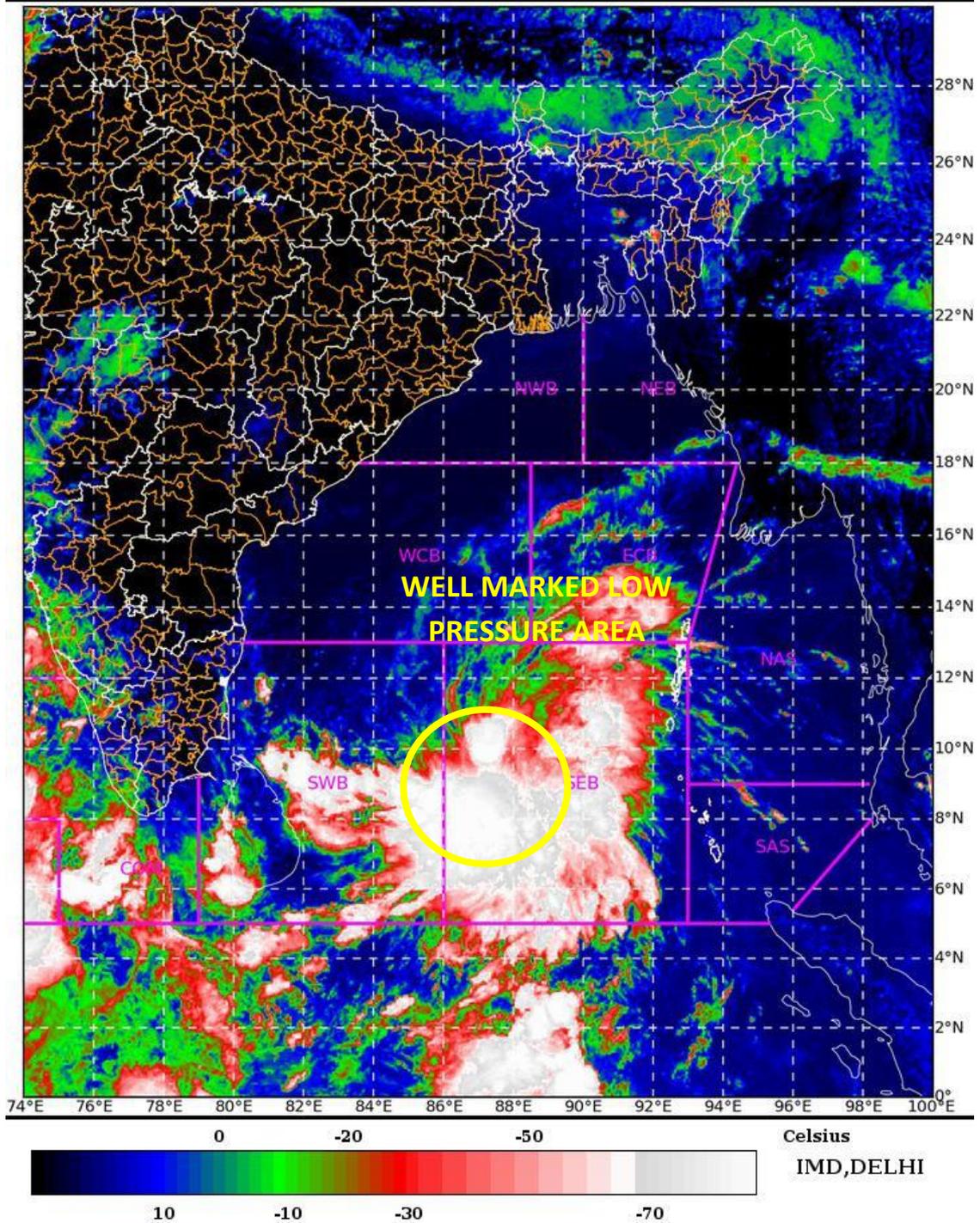
Next update will be issued at 1330 hours IST of tomorrow, the 14th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Mumbai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

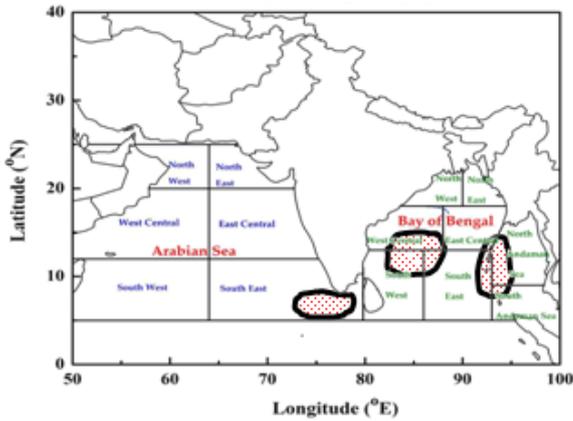
SAT : INSAT-3DR IMG 15-05-2020/(0515 to 0541) GMT
 IMG_TIR1_TEMP 10.8 um 15-05-2020/(1045 to 1111) IST
 L1C Mercator



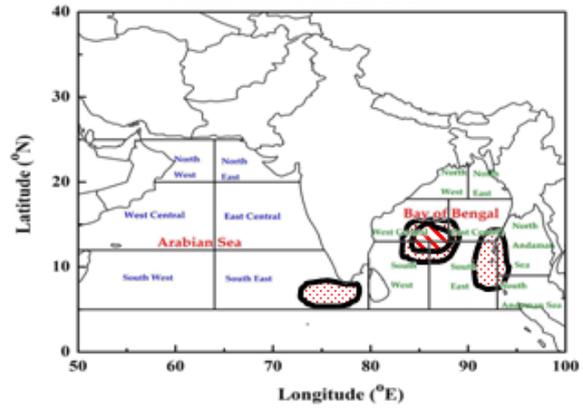
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INDIA METEOROLOGICAL DEPARTMENT FISHERMAN WARNING FOR BAY OF BENGAL AND ARABIAN SEA

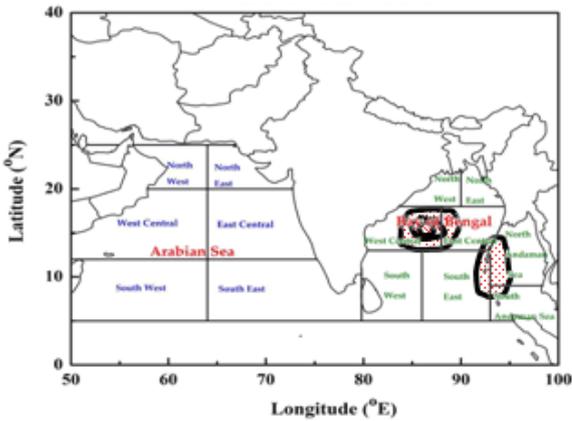
DAY-1: 15.05.2020/0600 UTC TO 16.05.2020/0600 UTC



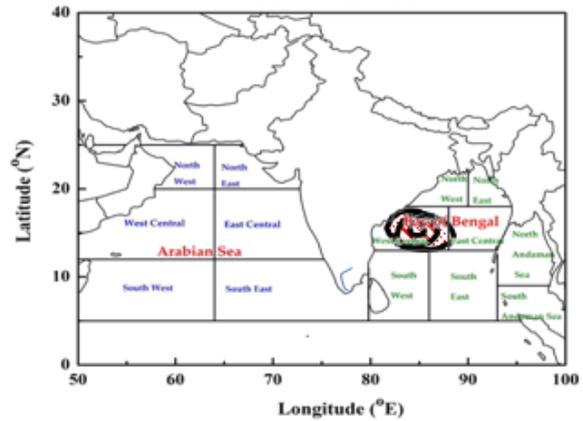
DAY-2: 16.05.2020/0600 UTC TO 17.05.2020/0600 UTC



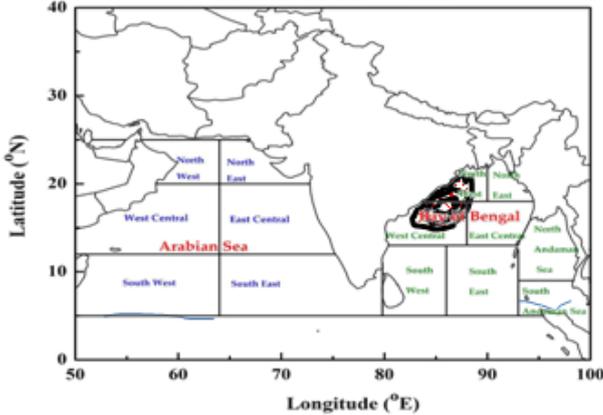
DAY-3: 17.05.2020/0600 UTC TO 18.05.2020/0600 UTC



DAY-4: 18.05.2020/0600 UTC TO 19.05.2020/0600 UTC



DAY-5: 19.05.2020/0600 UTC TO 20.05.2020/0600 UTC



AREA UNDER FISHERMEN WARNING

WIND SPEED (KMPH) AND SEA CONDITION

- 40-55 KMPH (SQUALLY WEATHER)
- 55-65 KMPH GUSTING TO 75 KMPH
- 65-90 KMPH GUSTING TO 100 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.



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

BULLETIN NO.: 01 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0845 HOURS IST

DATED: 16.05.2020

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

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

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CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Depression over southeast Bay of Bengal and its likely intensification into a Cyclonic Storm: Pre-cyclone Watch for West Bengal and North Odisha coasts (Yellow Message).

The well marked low pressure area over southeast Bay of Bengal concentrated into **depression** has formed over Southeast Bay of Bengal and lay centred at 0530 hrs IST of today, the 16th May, 2020 near latitude 10.4°N and longitude 87.0°E, about 1100 km south of Paradip (Odisha), 1250 km south of Digha (West Bengal) and 1330 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify rapidly into a Cyclonic Storm by today evening and further into a severe cyclonic storm during subsequent 24 hours. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal coast during 18th to 20th May 2020.

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
16.05.20/0530	10.4/87.0	40-50 gusting to 60	Depression
16.05.20/1130	10.7/86.9	50-60 gusting to 70	Deep Depression
16.05.20/1730	11.0/86.8	60-70 gusting to 80	Cyclonic Storm
16.05.20/2330	11.6/86.7	75-85 gusting to 95	Cyclonic Storm
17.05.20/0530	12.3/86.6	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	13.4/86.5	100-110 gusting to 120	Severe Cyclonic Storm
18.05.20/0530	14.3/86.4	120-130 gusting to 145	Very Severe Cyclonic Storm
18.05.20/1730	15.4/86.3	135-145 gusting to 160	Very Severe Cyclonic Storm
19.05.20/0530	16.6/86.4	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/1730	18.2/86.7	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.8/87.3	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/87.9	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	24.0/88.5	110-120 gusting to 135	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.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands on 16th May.
- **Rainfall (over Odisha & Gangetic West Bengal)**
Coastal Odisha is likely to experience light to moderate rainfall with heavy falls at isolated places from 18th May evening and heavy to very heavy rainfalls at a few places on 19th May and isolated heavy rainfall over northern Odisha coast on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall with heavy falls at a few places on 19th May and heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely along and off Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 65 to 75 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 48 hours.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th morning, 120-130 gusting to 145 kmph over southern parts of central Bay of Bengal by 18th morning, 155-165 gusting to 180 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 160-170 gusting to 190 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be rough to very rough over south & adjoining central Bay of Bengal and Andaman Sea till 16th May afternoon. It will be High over southwest and adjoining central Bay of Bengal from the 16th May evening, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal from 16th to 17th May, to central Bay of Bengal 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of 16th May, 2020.

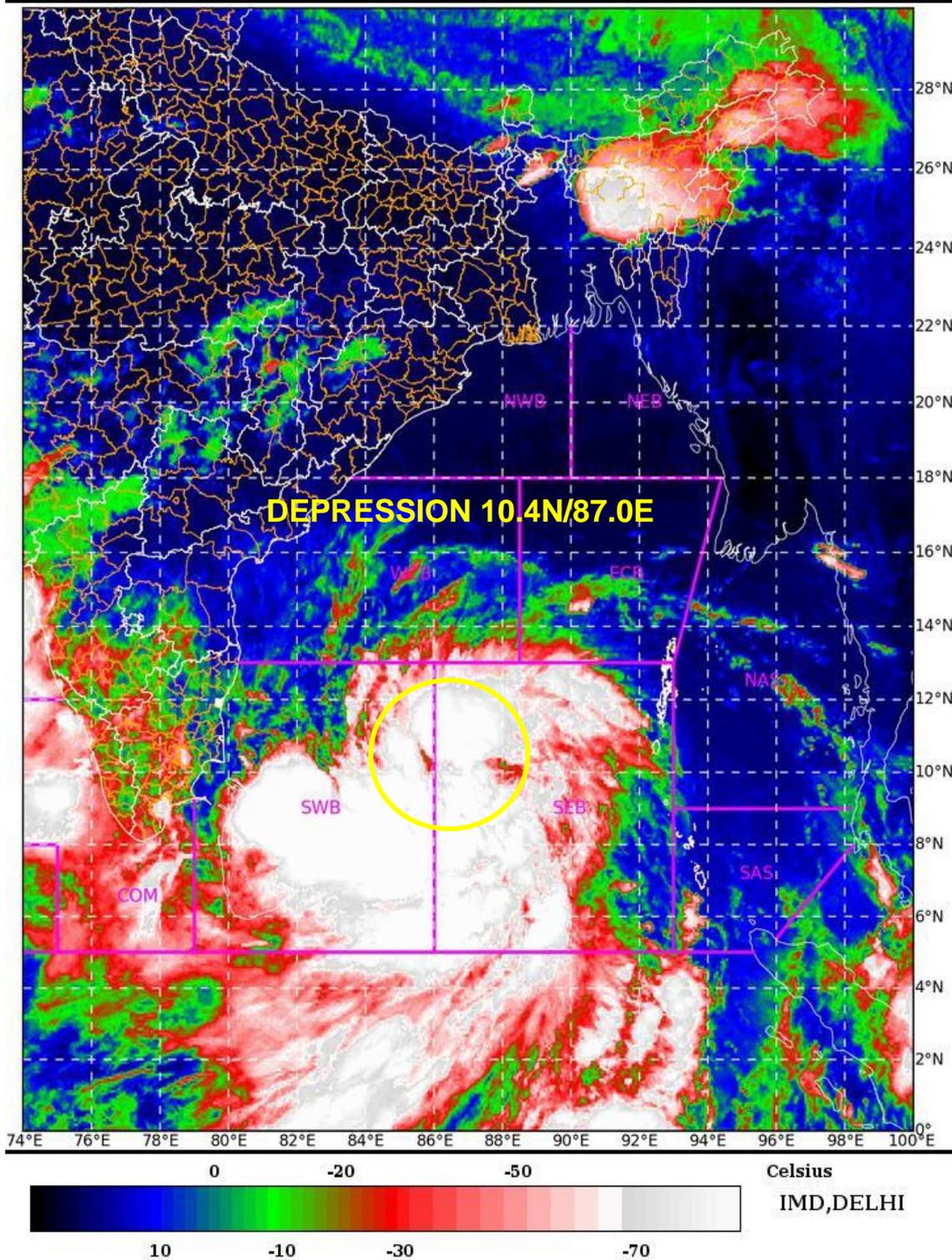
**(Ananda Kumar Das)
Scientist-E, RSMC, New Delhi**

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

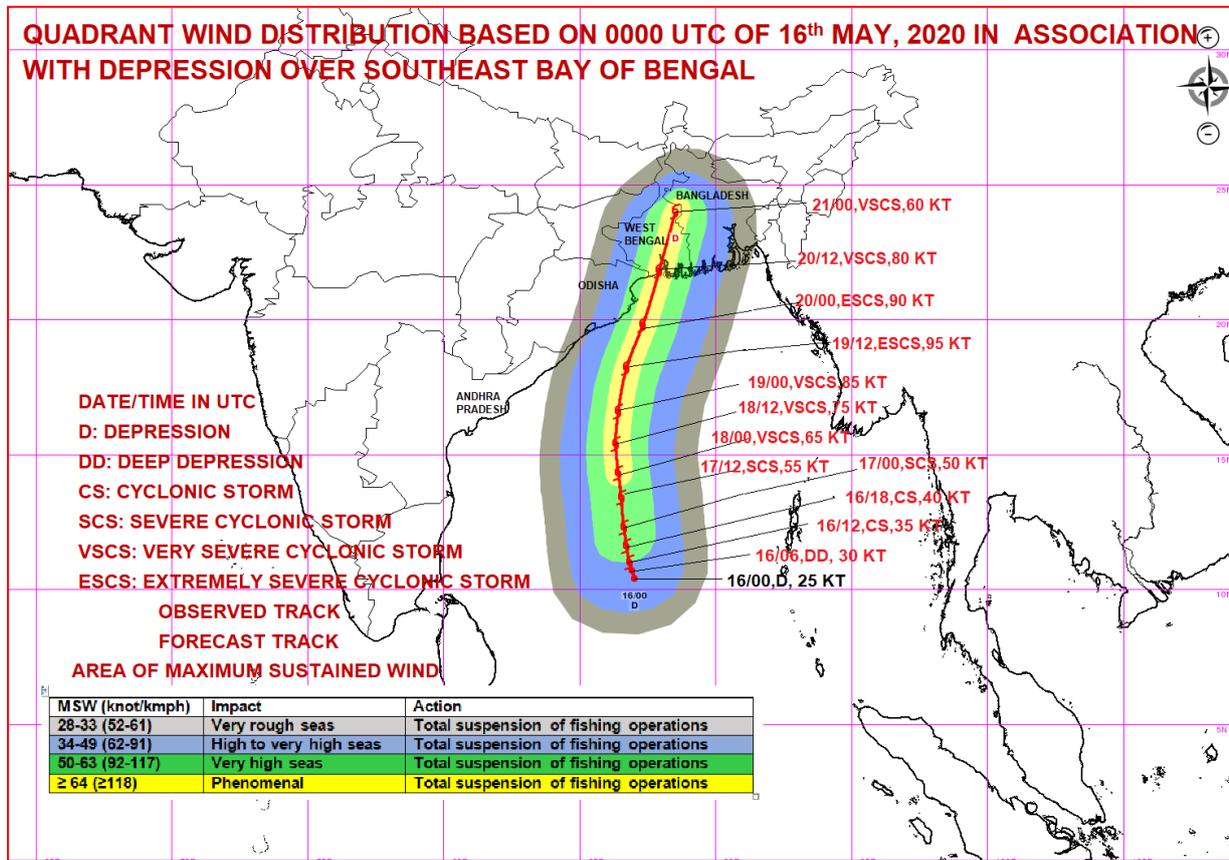
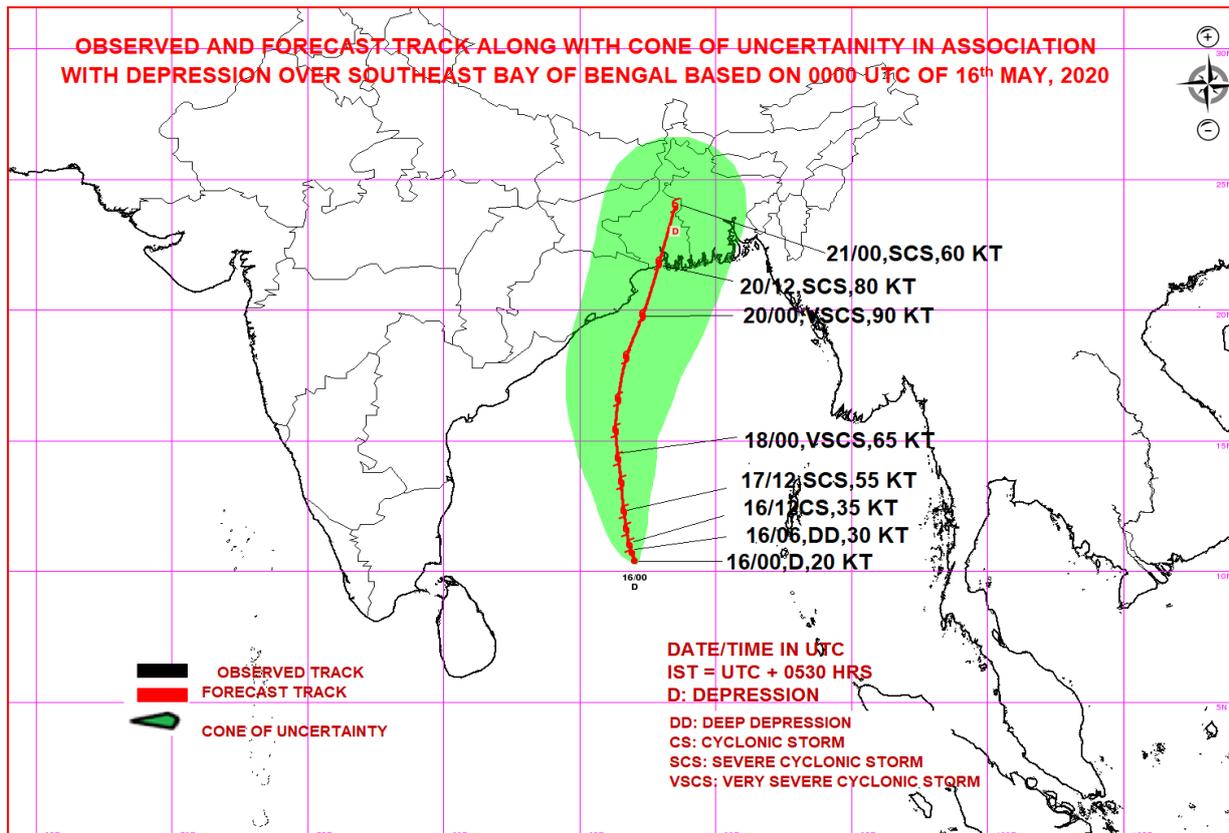
SAT : INSAT-3D IMG 16-05-2020/(0130 to 0156) GMT

IMG_TIR1_TEMP 10.8 um 16-05-2020/(0700 to 0726) 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.: 02 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1140 HOURS IST

DATED: 16.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Depression over southeast Bay of Bengal and its likely intensification into a Cyclonic Storm: Pre-cyclone Watch for West Bengal and North Odisha coasts (Yellow Message).

The **depression** over Southeast Bay of Bengal and neighbourhood moved northwestwards with a speed of 20 kmph during past 03 hours and lay centred at 0830 hrs IST of today, the 16th May, 2020 near latitude 10.7°N and longitude 86.5°E, about 1060 km south of Paradip (Odisha), 1220 km south-southwest of Digha (West Bengal) and 1310 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify rapidly into a Cyclonic Storm during next 12 hours and further into a severe cyclonic storm during subsequent 24 hours. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal coast during 18th to 20th May 2020.

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
16.05.20/0830	10.7/86.5	45-55 gusting to 65	Depression
16.05.20/1130	10.9/86.3	50-60 gusting to 70	Deep Depression
16.05.20/1730	11.2/86.2	60-70 gusting to 80	Cyclonic Storm
16.05.20/2330	11.8/86.1	75-85 gusting to 95	Cyclonic Storm
17.05.20/0530	12.3/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	13.4/86.0	100-110 gusting to 120	Severe Cyclonic Storm
18.05.20/0530	14.3/86.1	120-130 gusting to 145	Very Severe Cyclonic Storm
18.05.20/1730	15.4/86.2	135-145 gusting to 160	Very Severe Cyclonic Storm
19.05.20/0530	16.6/86.3	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/1730	18.2/86.7	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.8/87.3	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/87.9	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	24.0/88.5	110-120 gusting to 135	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.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands on 16th May.
- **Rainfall (over Odisha & Gangetic West Bengal)**
Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfalls at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely along and off Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 48 hours.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th morning, 120-130 gusting to 145 kmph over southern parts of central Bay of Bengal by 18th morning, 155-165 gusting to 180 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 160-170 gusting to 190 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be rough to very rough over south & adjoining central Bay of Bengal and Andaman Sea till 16th May afternoon. It will be High over southwest and adjoining central Bay of Bengal from the 16th May evening, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal from 16th to 17th May, to central Bay of Bengal 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1430 hours IST of 16th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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

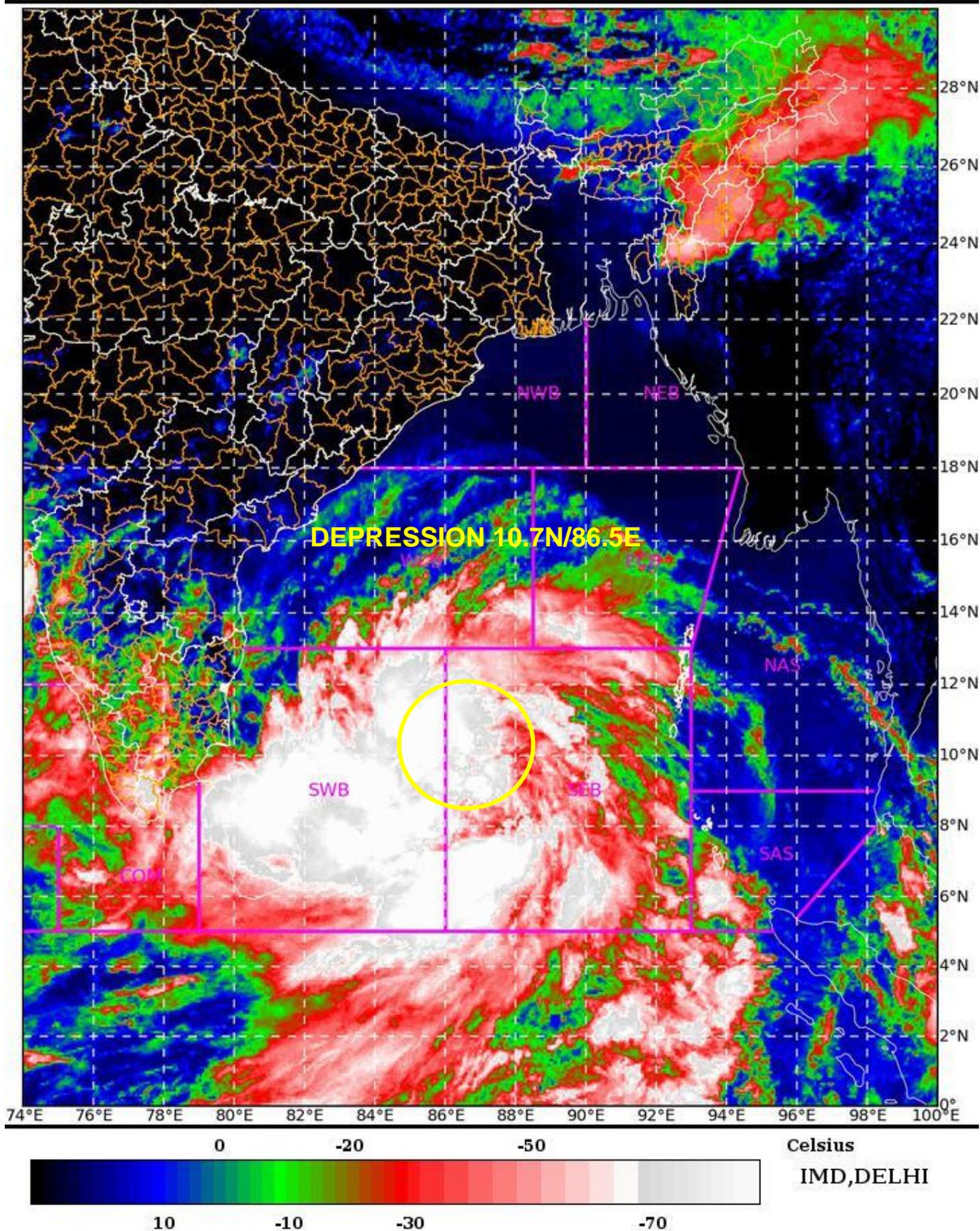
16-05-2020/(0500 to 0527) GMT

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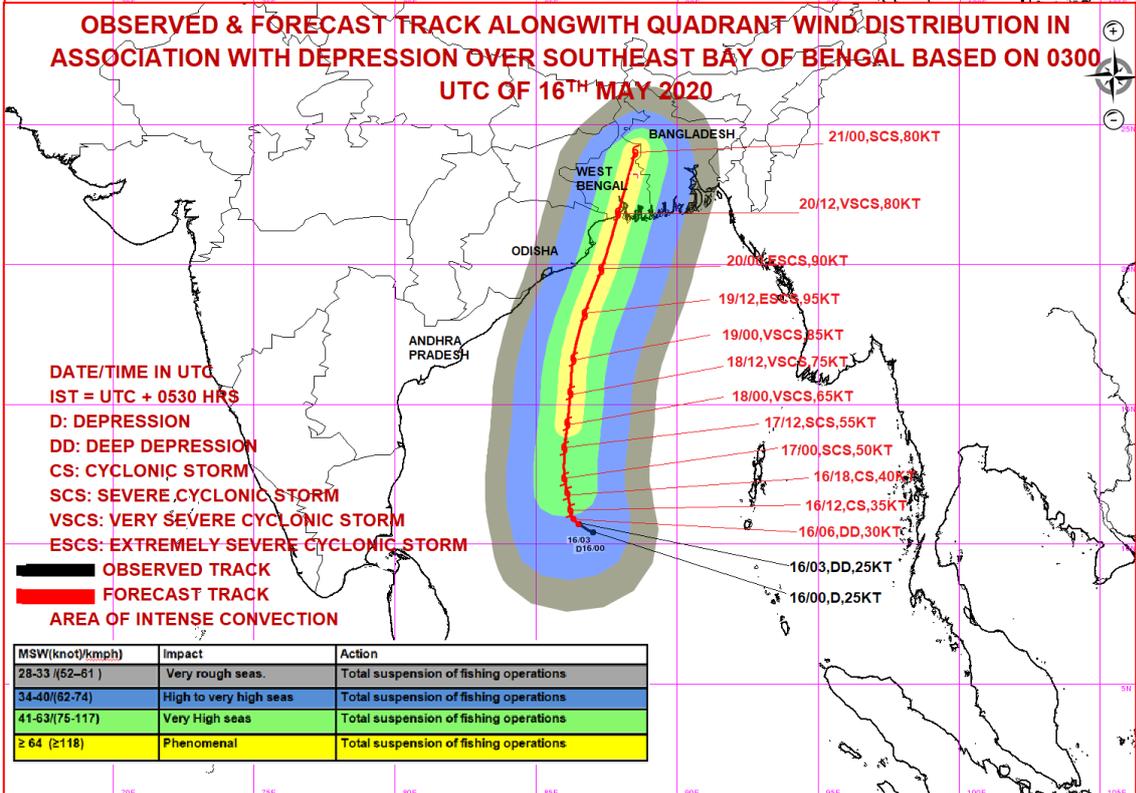
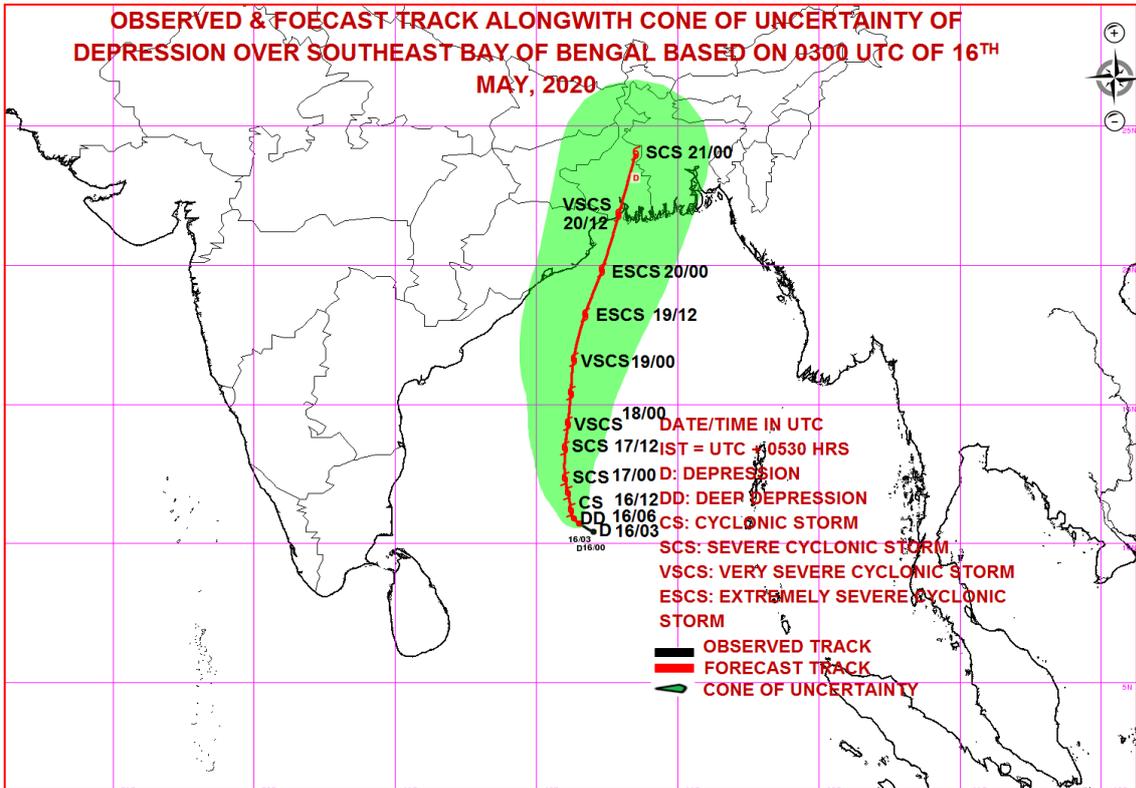
16-05-2020/(1030 to 1057) IST



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.: 03 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1500 HOURS IST

DATED: 16.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Depression over southeast Bay of Bengal and its likely intensification into a Cyclonic Storm: Pre-cyclone Watch for West Bengal and North Odisha coasts (Yellow Message).

The **depression** over Southeast Bay of Bengal and neighbourhood moved northwestwards with a speed of 16 kmph during past 06 hours and lay centred at 1130 hrs IST of today, the 16th May, 2020 near latitude 10.9°N and longitude 86.3°E, about 1040 km south of Paradip (Odisha), 1200 km south-southwest of Digha (West Bengal) and 1300 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify into a Cyclonic Storm during next 12 hours and further into a severe cyclonic storm during subsequent 24 hours. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining Odisha coasts during 18th to 20th May 2020.

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
16.05.20/1130	10.9/86.3	45-55 gusting to 65	Depression
16.05.20/1730	11.2/86.2	50-60 gusting to 70	Deep Depression
16.05.20/2330	11.8/86.1	60-70 gusting to 80	Cyclonic Storm
17.05.20/0530	12.3/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.8/86.0	100-110 gusting to 120	Severe Cyclonic Storm
17.05.20/2330	13.9/86.1	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/1130	14.9/86.1	120-130 gusting to 145	Very Severe Cyclonic Storm
18.05.20/2330	16.0/86.2	135-145 gusting to 160	Very Severe Cyclonic Storm
19.05.20/1130	17.4/86.5	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/2330	19.0/87.0	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.8/87.5	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/2330	22.9/88.2	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/1130	25.0/88.7	110-120 gusting to 135	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.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands on 16th May.
- **Rainfall (over Odisha & Gangetic West Bengal)**
Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfalls at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 48 hours.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th morning, 120-130 gusting to 145 kmph over southern parts of central Bay of Bengal by 18th morning, 155-165 gusting to 180 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 160-170 gusting to 190 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be rough to very rough over south & adjoining central Bay of Bengal and Andaman Sea till 16th May evening. It will be High over southwest and adjoining central Bay of Bengal from the 16th May night, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal from 16th to 17th May, to central Bay of Bengal 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of 16th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG

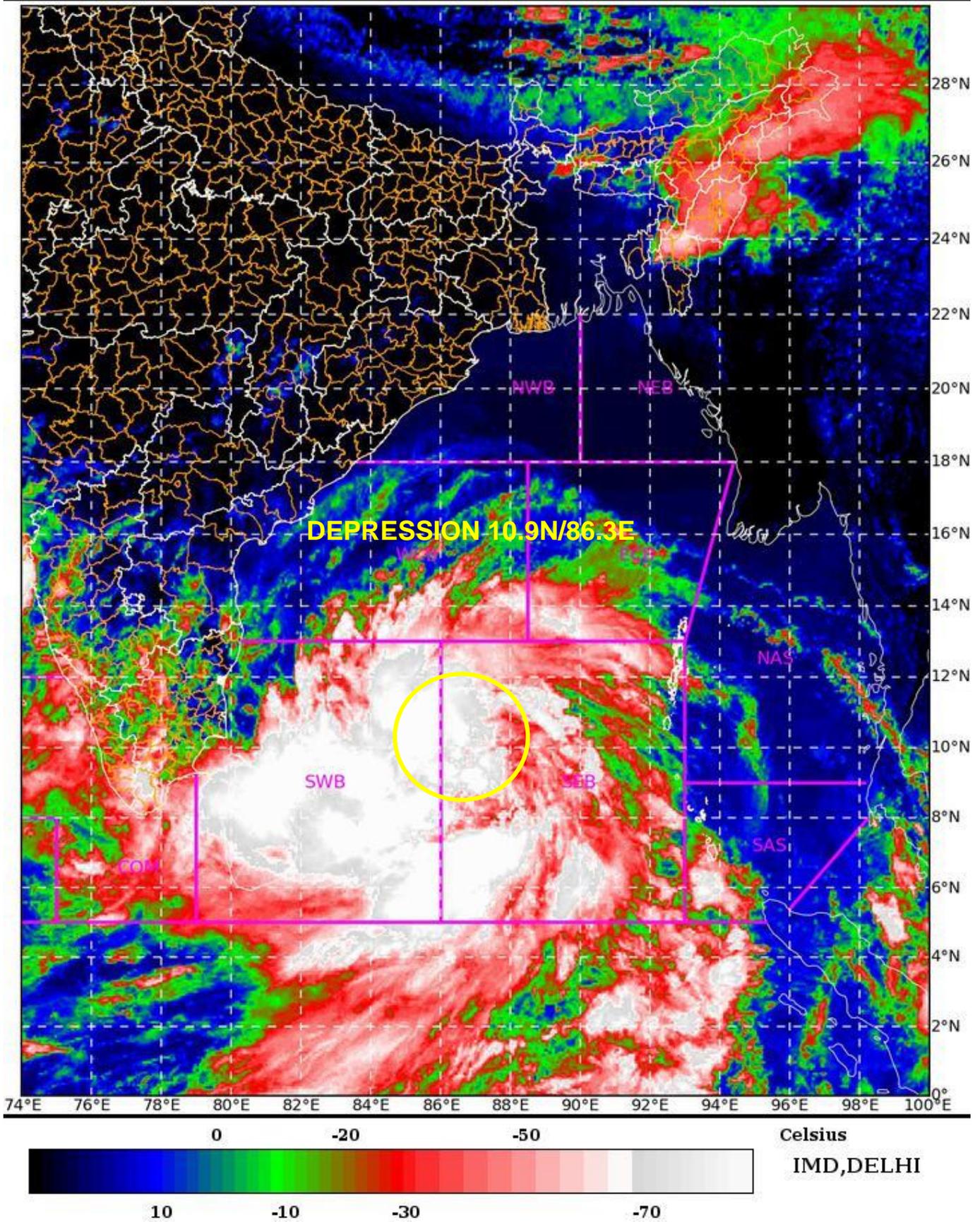
16-05-2020/(0500 to 0527) GMT

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16-05-2020/(1030 to 1057) IST

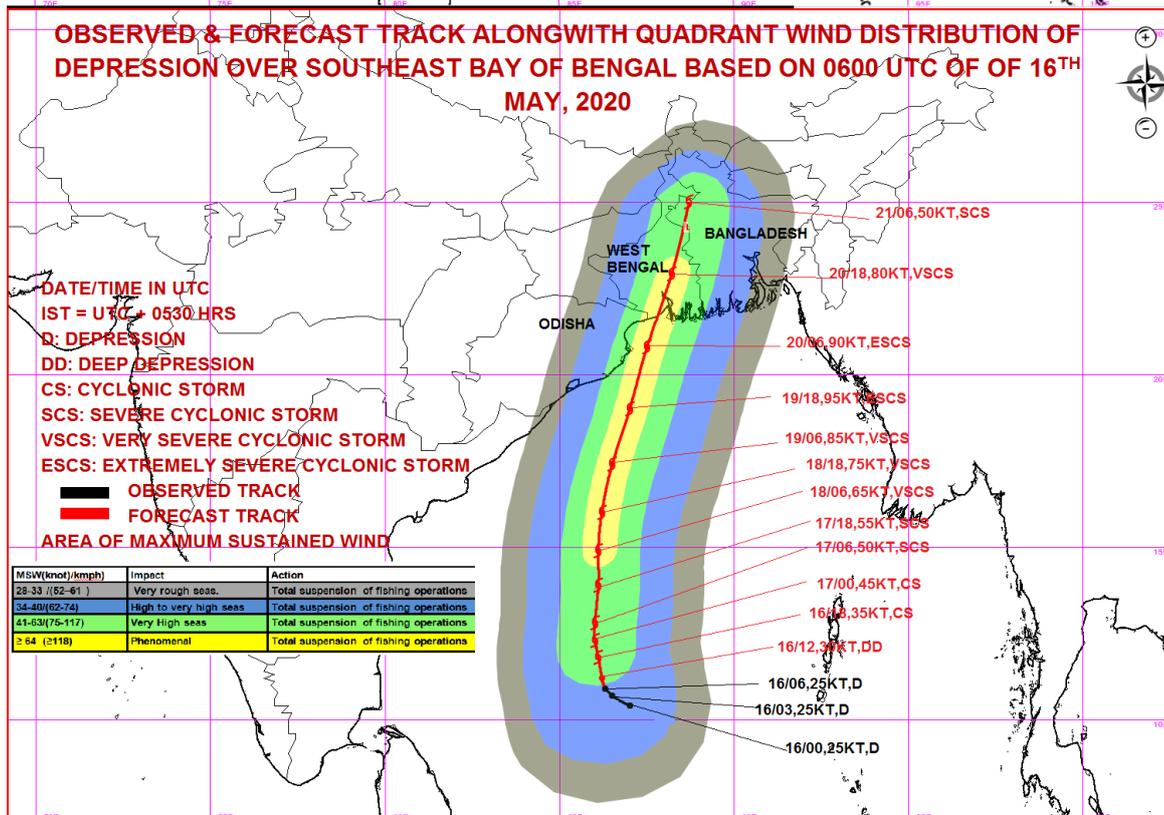
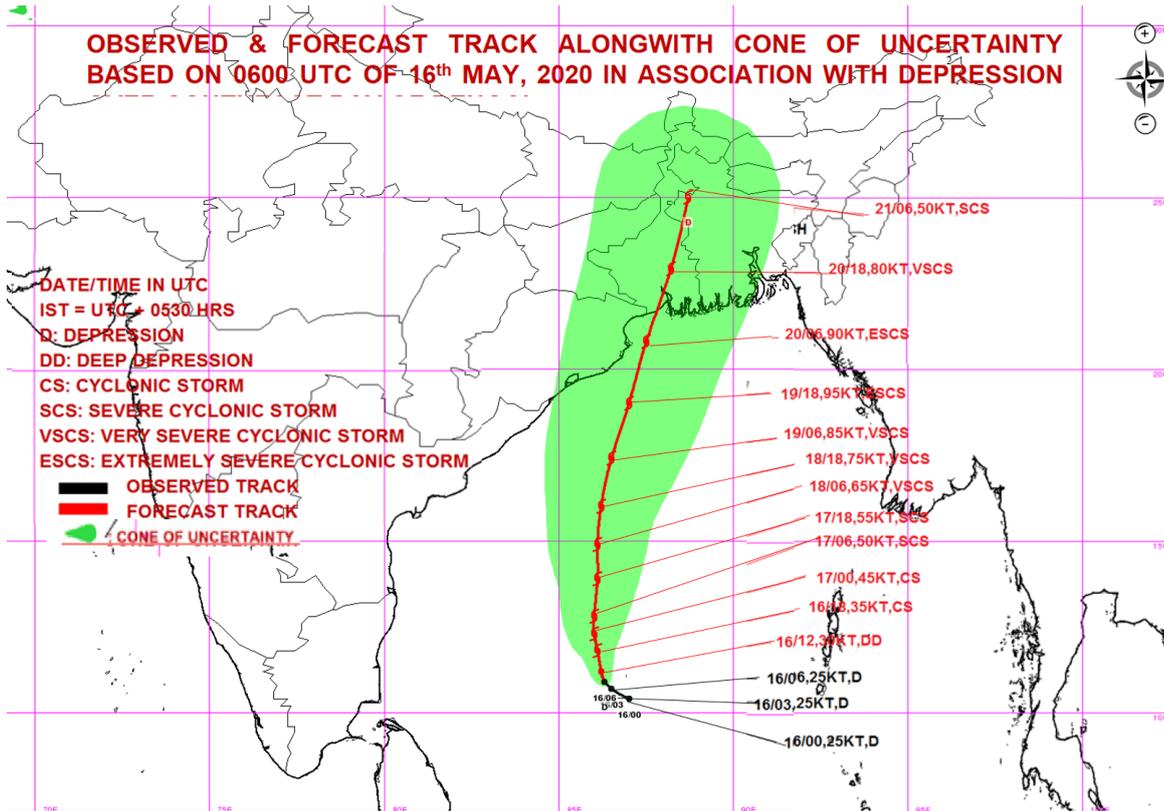


L1C Mercator



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.: 04 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1645 HOURS IST

DATED: 16.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Depression over southeast Bay of Bengal intensified into a Deep Depression over the same region. Likely to intensify into a Cyclonic Storm: Pre-cyclone Watch for West Bengal and North Odisha coasts (Yellow Message).

The **depression** over Southeast Bay of Bengal and neighbourhood moved northwestwards with a speed of 5 kmph during past 06 hours, intensified into a Deep Depression and lay centred over the same region at 1430 hrs IST of today, the 16th May, 2020 near latitude 10.9°N and longitude 86.3°E, about 1040 km south of Paradip (Odisha), 1200 km south-southwest of Digha (West Bengal) and 1300 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify into a Cyclonic Storm during next 12 hours and further into a Severe Cyclonic Storm during subsequent 24 hours and rapidly intensify into a Very Severe Cyclonic Storm by 18th morning. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining Odisha coasts during 18th to 20th May 2020.

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
16.05.20/1430	10.9/86.3	50-60 gusting to 70	Deep Depression
16.05.20/1730	11.2/86.2	55-65 gusting to 75	Deep Depression
16.05.20/2330	11.8/86.1	60-70 gusting to 80	Cyclonic Storm
17.05.20/0530	12.3/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.8/86.0	100-110 gusting to 120	Severe Cyclonic Storm
17.05.20/2330	13.9/86.1	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/1130	14.9/86.1	120-130 gusting to 145	Very Severe Cyclonic Storm
18.05.20/2330	16.0/86.2	135-145 gusting to 160	Very Severe Cyclonic Storm
19.05.20/1130	17.4/86.5	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/2330	19.0/87.0	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.8/87.5	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/2330	22.9/88.2	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/1130	25.0/88.7	110-120 gusting to 135	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.

Warnings:

(i) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands on 16th May.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfalls at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over to north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 48 hours.
- Squally wind speed reaching 50 to 60 kmph gusting to 70 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th morning, 120-130 gusting to 145 kmph over southern parts of central Bay of Bengal by 18th morning, 155-165 gusting to 180 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 160-170 gusting to 190 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be rough to very rough over south & adjoining central Bay of Bengal and Andaman Sea till 16th May evening. It will be High over southwest and adjoining central Bay of Bengal from the 16th May night, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal from 16th to 17th May, to central Bay of Bengal 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of 16th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

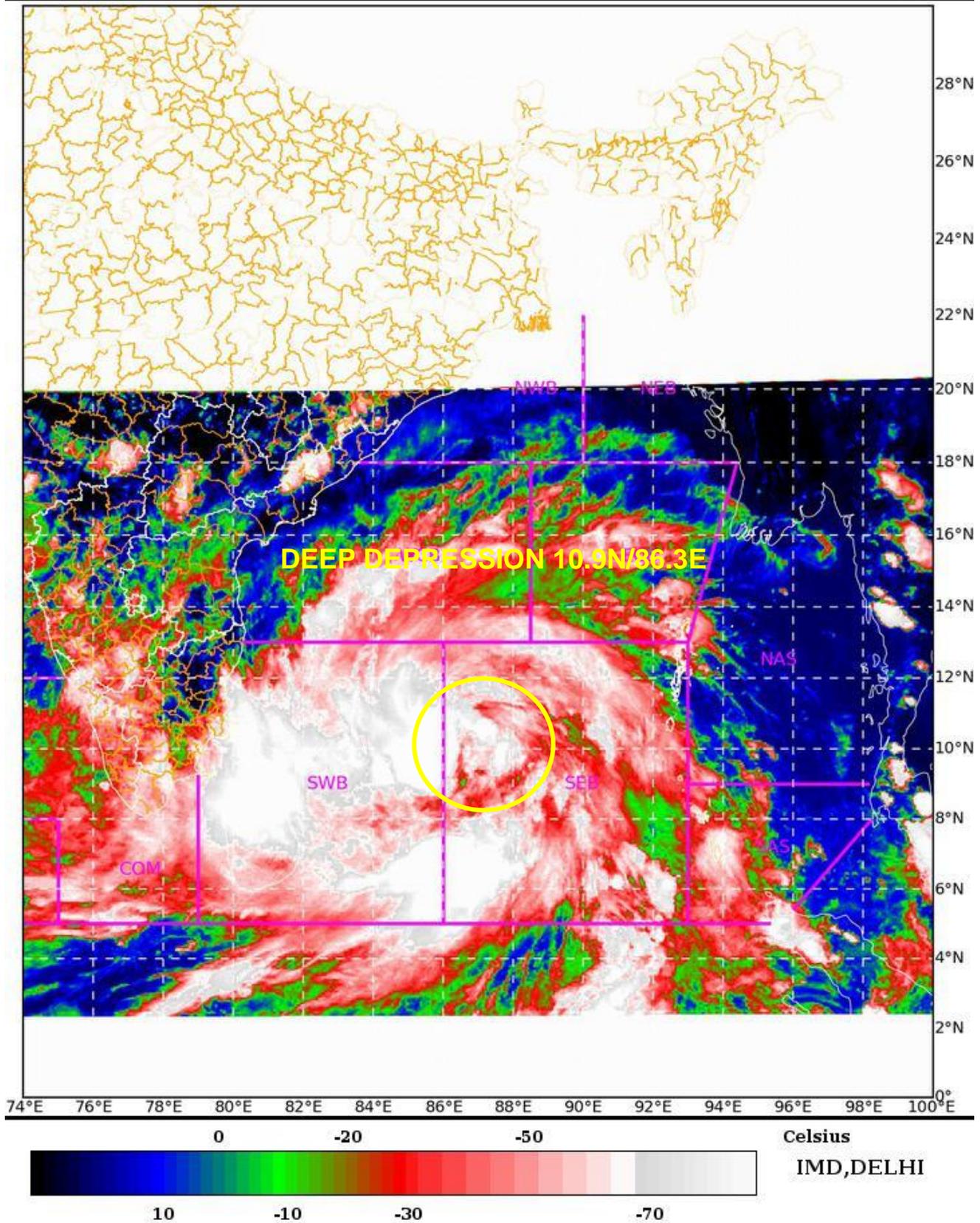
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3DR IMG 16-05-2020/(0949 to 0953) GMT

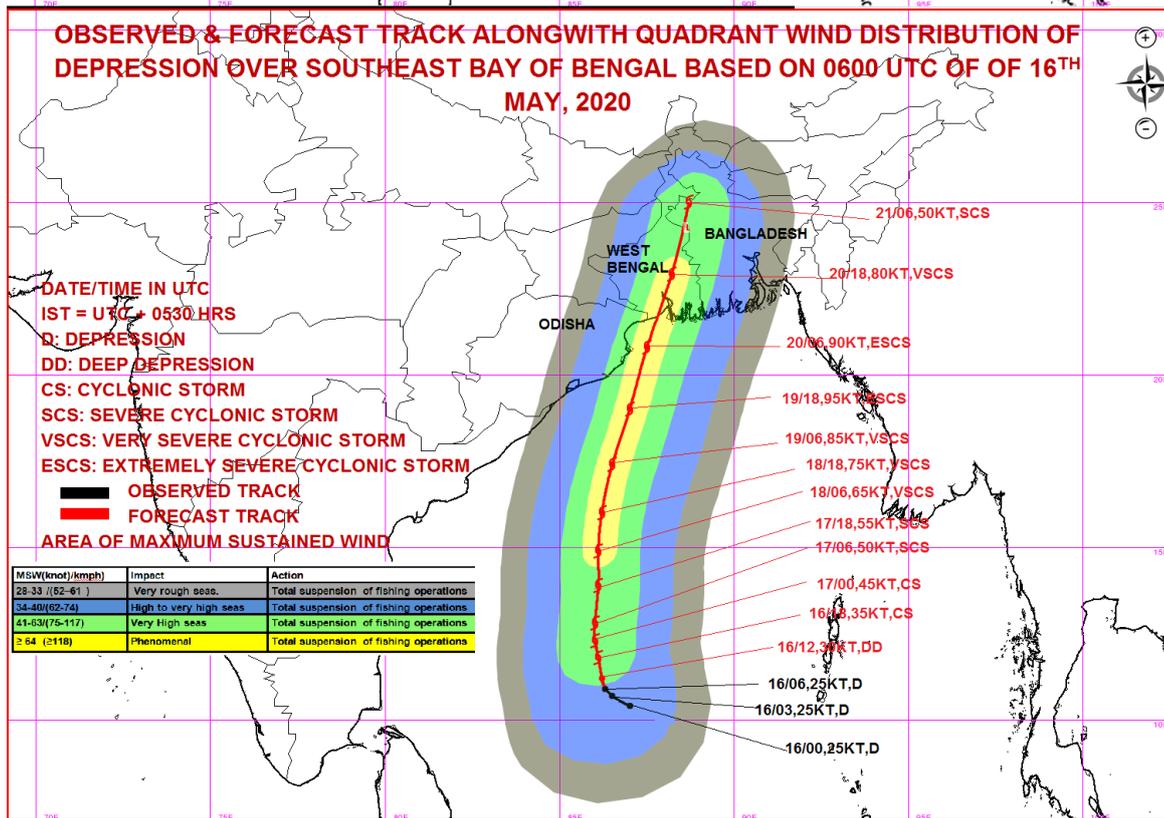
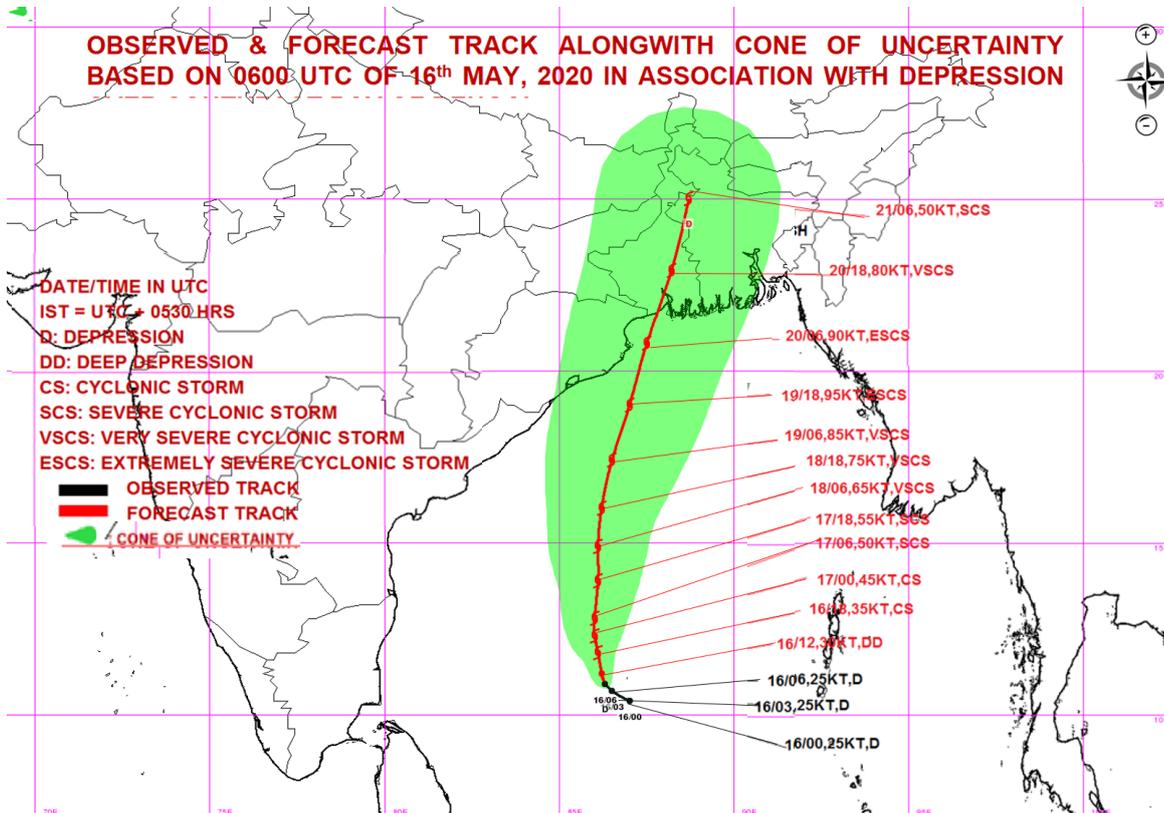
IMG_TIR1_TEMP 10.8 um 16-05-2020/(1519 to 1523) IST



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.: 05 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2030 HOURS IST

DATED: 16.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Deep Depression over southeast Bay of Bengal intensified into a Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN). Cyclone Watch for West Bengal and North Odisha Coasts: Yellow Message.

The deep depression over Southeast Bay of Bengal and neighbourhood remained practically stationary during past 06 hours and rapidly intensified into a **Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**). It lay centred over the same region at 1730 hrs IST of today, the 16th May, 2020 near latitude 10.9°N and longitude 86.3°E, about 1040 km south of Paradip (Odisha), 1200 km south-southwest of Digha (West Bengal) and 1300 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Severe Cyclonic Storm during next 12 hours and into a Very Severe Cyclonic Storm by 18th morning. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining North Odisha coasts during 18th to 20th May 2020.

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
16.05.20/1730	10.9/86.3	60-70 gusting to 80	Cyclonic Storm
16.05.20/2330	11.1/86.1	70-80 gusting to 90	Cyclonic Storm
17.05.20/0530	11.7/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.2/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	12.8/86.0	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/0530	14.0/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/1730	15.1/86.1	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/0530	16.7/86.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/1730	18.3/86.8	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/0530	20.1/87.4	155-165 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1730	22.2/88.0	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/0530	24.4/88.5	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	26.0/89.0	40-50 gusting to 100	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands during next 12 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over to north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 36 hours.
- Squally wind speed reaching 60 to 70 kmph gusting to 80 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th evening, 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be rough to very rough over south & adjoining central Bay of Bengal and Andaman Sea till 16th May evening. It will be High over southwest and adjoining central Bay of Bengal from the 16th May night, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal from 16th to 17th May, to central Bay of Bengal 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

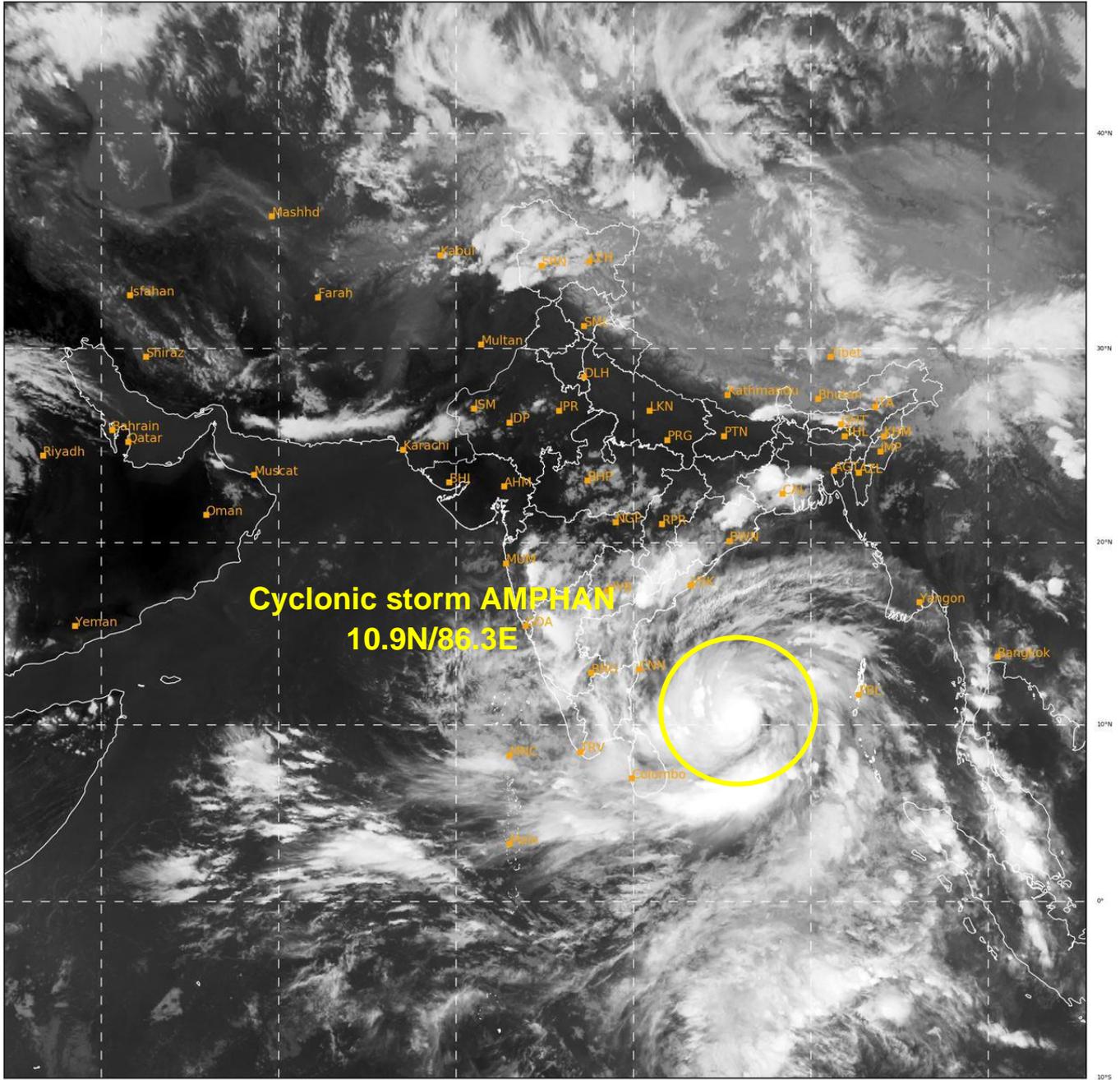
Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2330 hours IST of 16th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

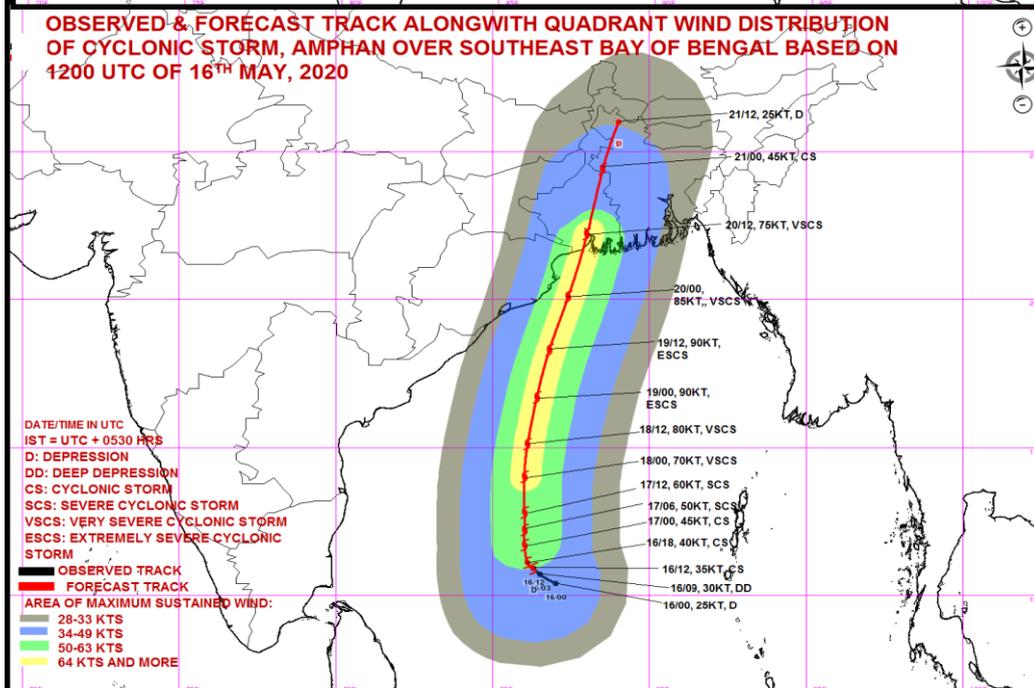
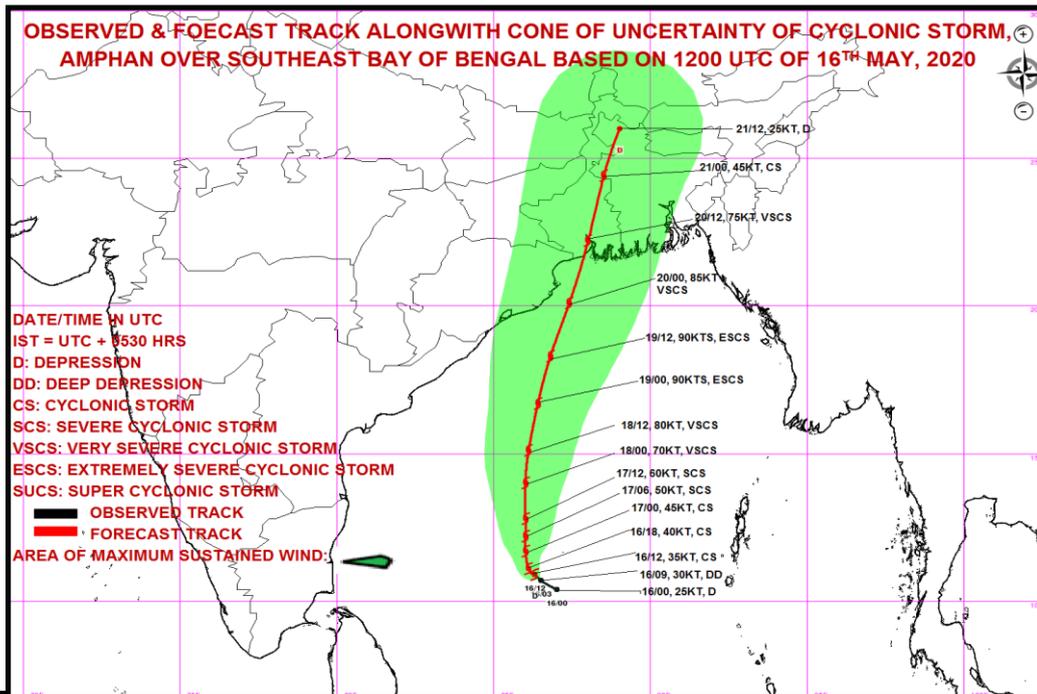


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IMD, DELHI

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.



MSW(knot)/kmph)	Impact	Action
28-33 / (52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 06 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2300 HOURS IST

DATED: 16.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: The Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Southeast Bay of Bengal and neighbourhood. Cyclone Watch for West Bengal and North Odisha Coasts: Yellow Message.

The Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved northwestwards slowly during past 06 hours and lay centred over the same region at 2030 hrs IST of today, the 16th May, 2020 near latitude 11.0°N and longitude 86.2°E, about 1030 km south of Paradip (Odisha), 1190 km south-southwest of Digha (West Bengal) and 1290 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Severe Cyclonic Storm during next 12 hours and into a Very Severe Cyclonic Storm by 18th morning. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining North Odisha coasts during 18th to 20th May 2020.

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
16.05.20/2030	11.0/86.2	65-75 gusting to 85	Cyclonic Storm
16.05.20/2330	11.1/86.1	70-80 gusting to 90	Cyclonic Storm
17.05.20/0530	11.7/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.2/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	12.8/86.0	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/0530	14.0/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/1730	15.1/86.1	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/0530	16.7/86.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/1730	18.3/86.8	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/0530	20.1/87.4	155-165 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1730	22.2/88.0	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/0530	24.4/88.5	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	26.0/89.0	40-50 gusting to 100	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands during next 12 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over to north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 36 hours.
- Squally wind speed reaching 65 to 75 kmph gusting to 85 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th evening, 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be high over southwest and adjoining central Bay of Bengal during next 12 hours, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal till 17th May, to central Bay of Bengal during 17th to 18th May and north Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0230 hours IST of 17th May, 2020.

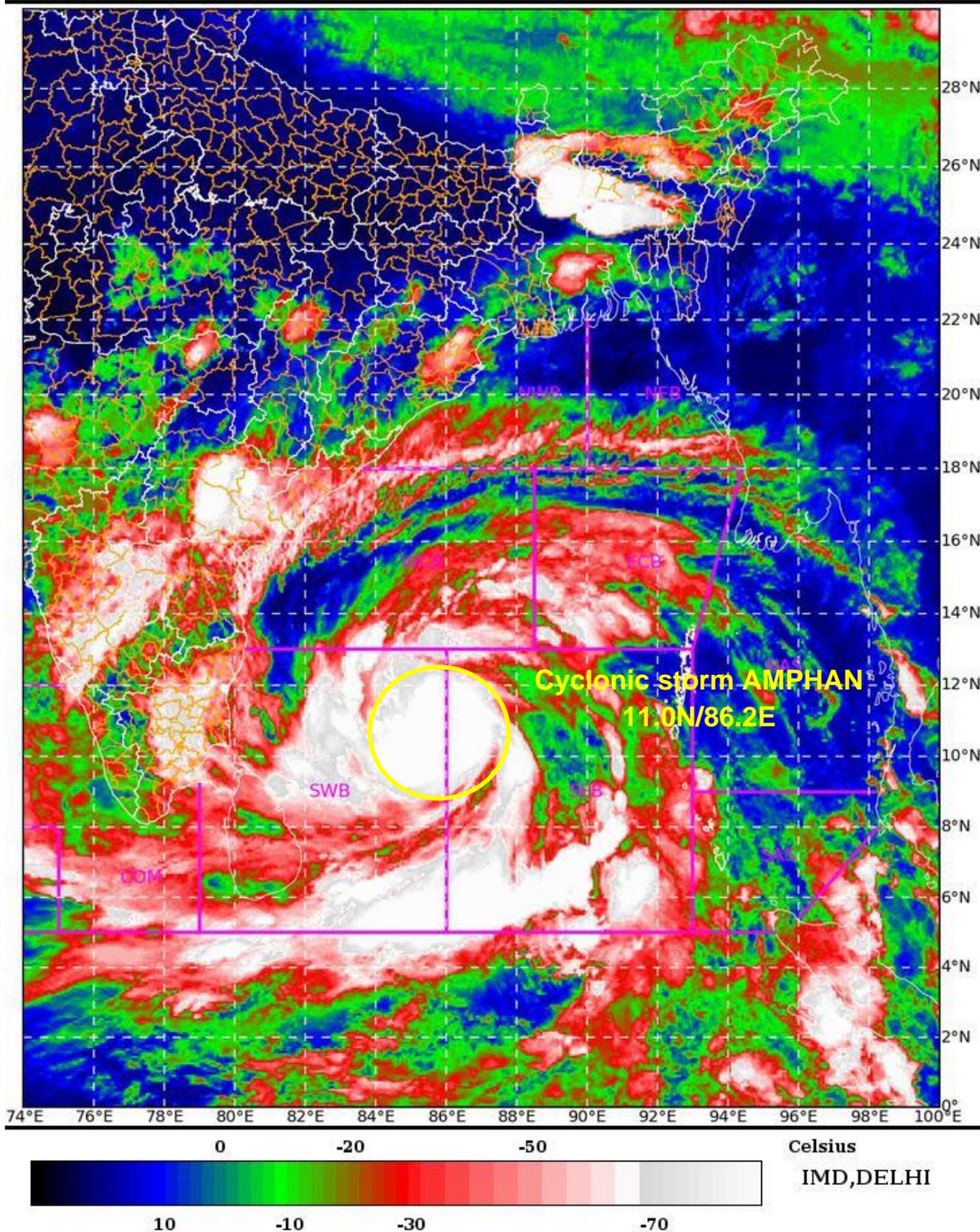
(D. R. Pattanaik)
Scientist-F, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

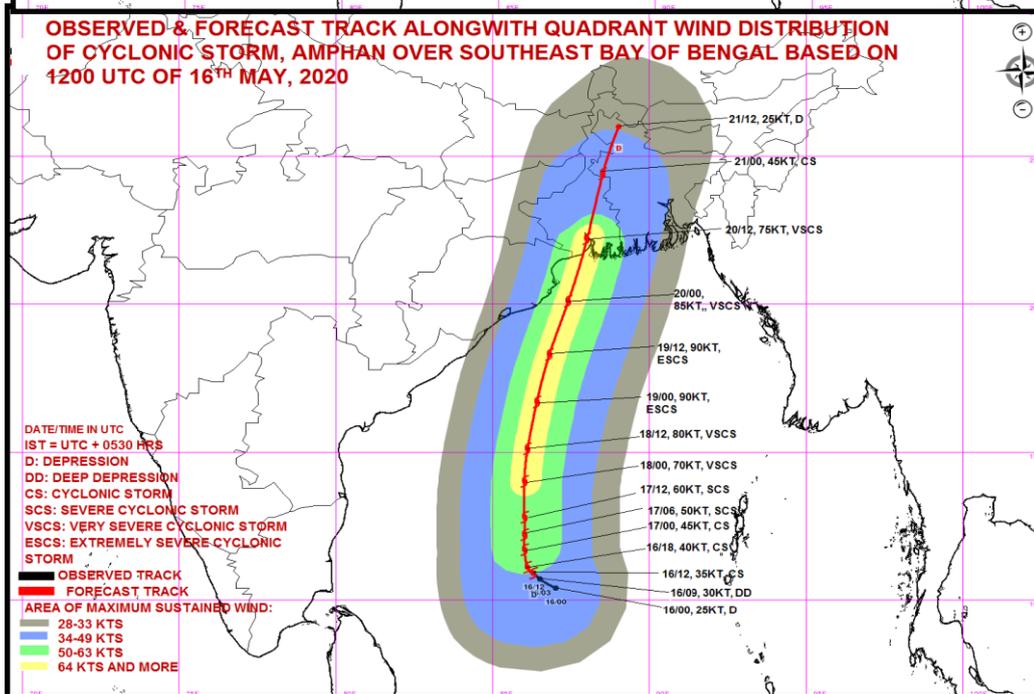
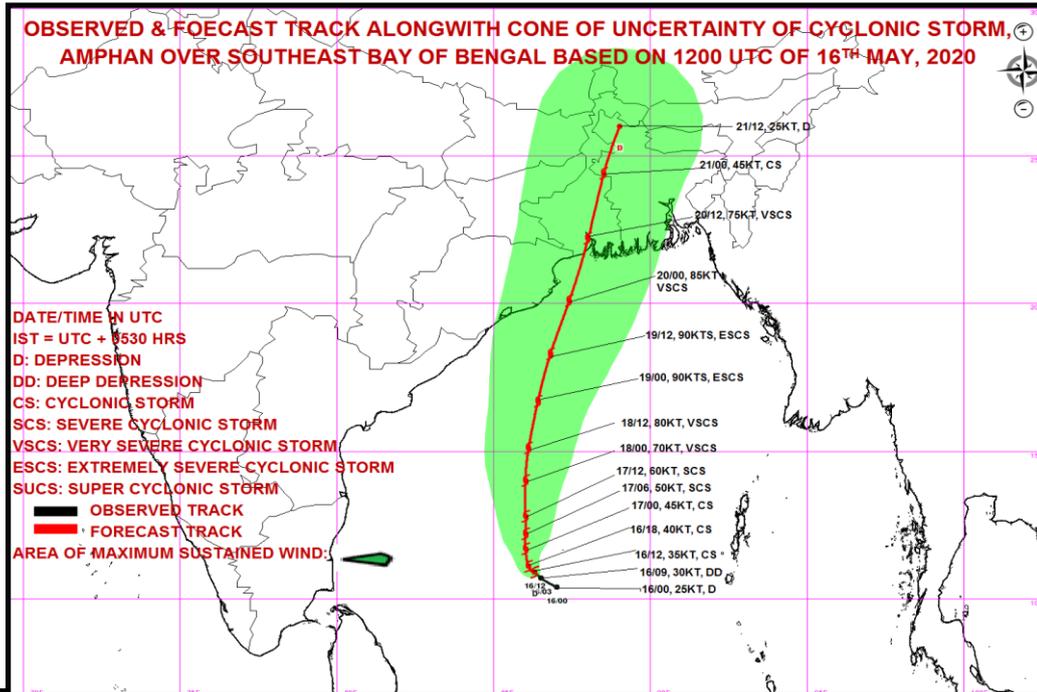
SAT : INSAT-3D IMG 16-05-2020/(1630 to 1656) GMT

IMG_TIR1_TEMP 10.8 um 16-05-2020/(2200 to 2226) 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.



MSW(knot)/kmph)	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 07 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0200 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: The Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Southeast Bay of Bengal and neighbourhood. Cyclone Watch for West Bengal and North Odisha Coasts: Yellow Message.

The Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved northwestwards with a speed of 05 Kmph during past 06 hours and lay centred over the same region at 2330 hrs IST of yesterday, the 16th May, 2020 near latitude 11.1°N and longitude 86.1°E, about 1020 km south of Paradip (Odisha), 1180 km south-southwest of Digha (West Bengal) and 1280 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Severe Cyclonic Storm during next 12 hours and into a Very Severe Cyclonic Storm by 18th morning. It is very likely to move north-northwestwards initially till 17th May and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining North Odisha coasts during 18th to 20th May 2020.

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
16.05.20/2330	11.1/86.1	70-80 gusting to 90	Cyclonic Storm
17.05.20/0530	11.7/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.2/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	12.8/86.0	105-115 gusting to 125	Severe Cyclonic Storm
17.05.20/2330	13.4/86.0	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/1130	14.5/86.1	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/2330	15.9/86.2	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/1130	17.5/86.6	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/2330	19.2/87.1	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1130	21.1/87.6	155-165 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.3/88.2	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/1130	25.2/88.7	80-90 gusting to 100	Cyclonic Storm
21.05.20/2330	26.2/89.1	40-50 gusting to 100	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands during next 12 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over to north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 36 hours.
- Squally wind speed reaching 70 to 80 kmph gusting to 90 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th evening, 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will be high over southwest and adjoining central Bay of Bengal during next 12 hours, very high over the same region from 17th morning. It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal till 17th May, to central Bay of Bengal during 17th to 18th May and North Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0530 hours IST of 17th May, 2020.

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

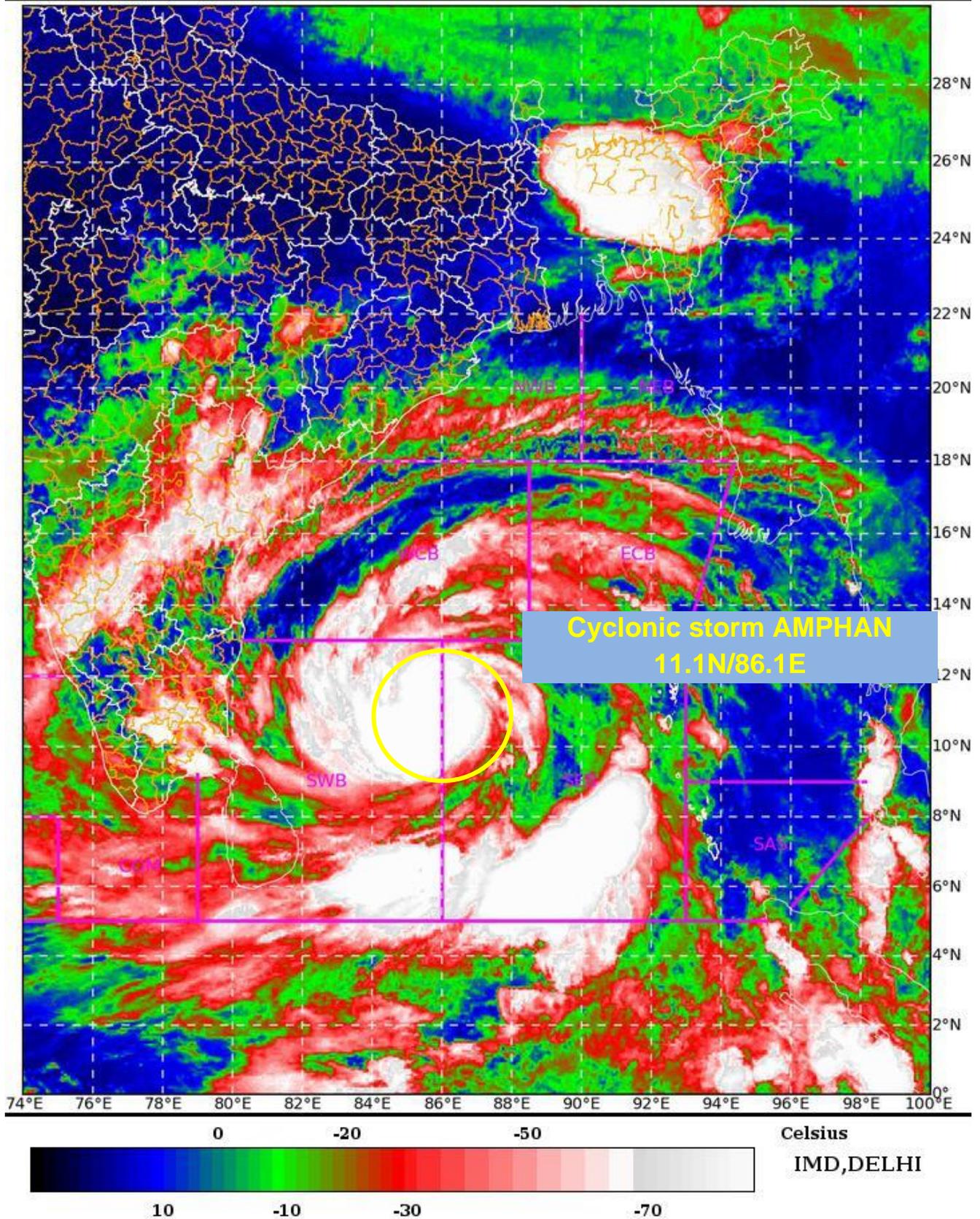
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 16-05-2020/(1900 to 1926) GMT

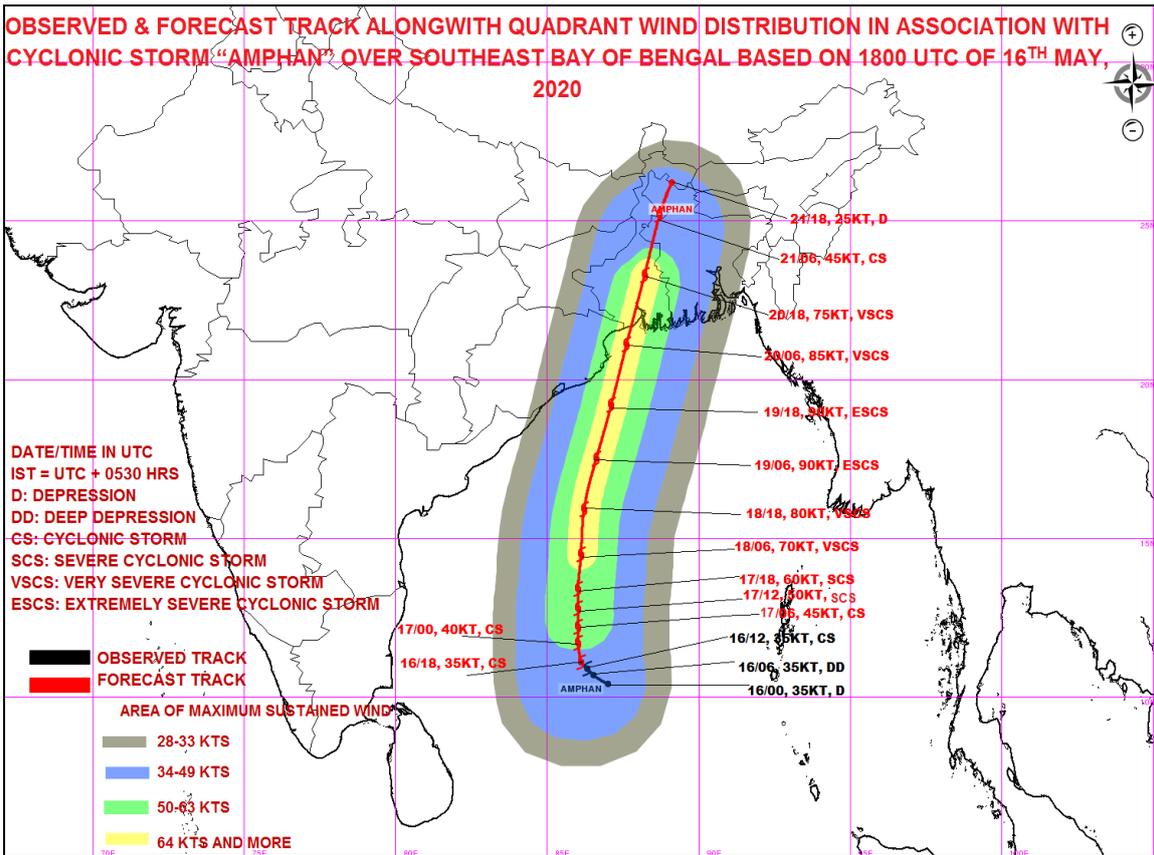
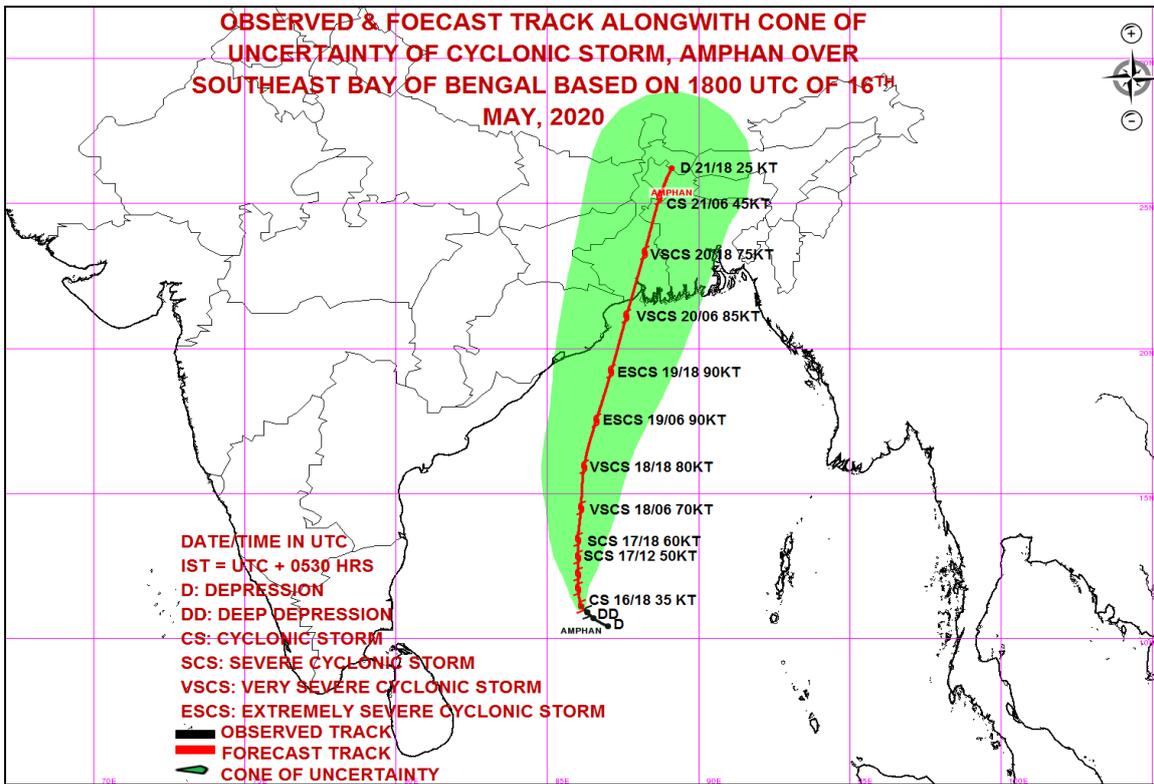
IMG_TIR1_TEMP 10.8 um 17-05-2020/(0030 to 0056) IST



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.



MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 08 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0530 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: The Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Southeast Bay of Bengal and neighbourhood. Cyclone Watch for West Bengal and North Odisha Coasts: Yellow Message.

The Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved north-northwestwards with a speed of 06 Kmph during past 06 hours and lay centred over the same region at 0230 hrs IST of today, the 17th May, 2020 near latitude 11.3°N and longitude 86.1°E, about 1000 km south of Paradip (Odisha), 1160 km south-southwest of Digha (West Bengal) and 1260 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Severe Cyclonic Storm during next 12 hours and into a Very Severe Cyclonic Storm by 18th morning. It is very likely to move north-northwestwards during next 24 hours and then re-curve north-northeastwards across northwest Bay of Bengal towards West Bengal and adjoining North Odisha coasts during 18th to 20th May 2020.

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
17.05.20/0230	11.3/86.1	75-85 gusting to 95	Cyclonic Storm
17.05.20/0530	11.7/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	12.2/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1730	12.8/86.0	105-115 gusting to 125	Severe Cyclonic Storm
17.05.20/2330	13.4/86.0	105-115 gusting to 125	Severe Cyclonic Storm
18.05.20/1130	14.5/86.1	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/2330	15.9/86.2	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/1130	17.5/86.6	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/2330	19.2/87.1	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1130	21.1/87.6	155-165 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.3/88.2	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/1130	25.2/88.7	80-90 gusting to 100	Cyclonic Storm
21.05.20/2330	26.2/89.1	40-50 gusting to 100	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places with heavy falls at isolated places is very likely over Andaman & Nicobar Islands during next 12 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening, heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over northeast Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at a few places on 19th May, heavy to very heavy falls at a few places with extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extent over to north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coast. It will gradually increase thereafter.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 36 hours.
- Squally wind speed reaching 75 to 85 kmph gusting to 95 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 90-100 gusting to 110 kmph over eastcentral and adjoining west central Bay of Bengal by 17th evening, 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal by 20th morning.

(iii) Sea condition

Sea condition will very high over southwest and adjoining central Bay of Bengal during next 24 hours It will become phenomenal over southern parts of central Bay of Bengal on 18th, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal till 17th May, to central Bay of Bengal during 17th to 18th May and North Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coast during 18th to 20th May 2020.

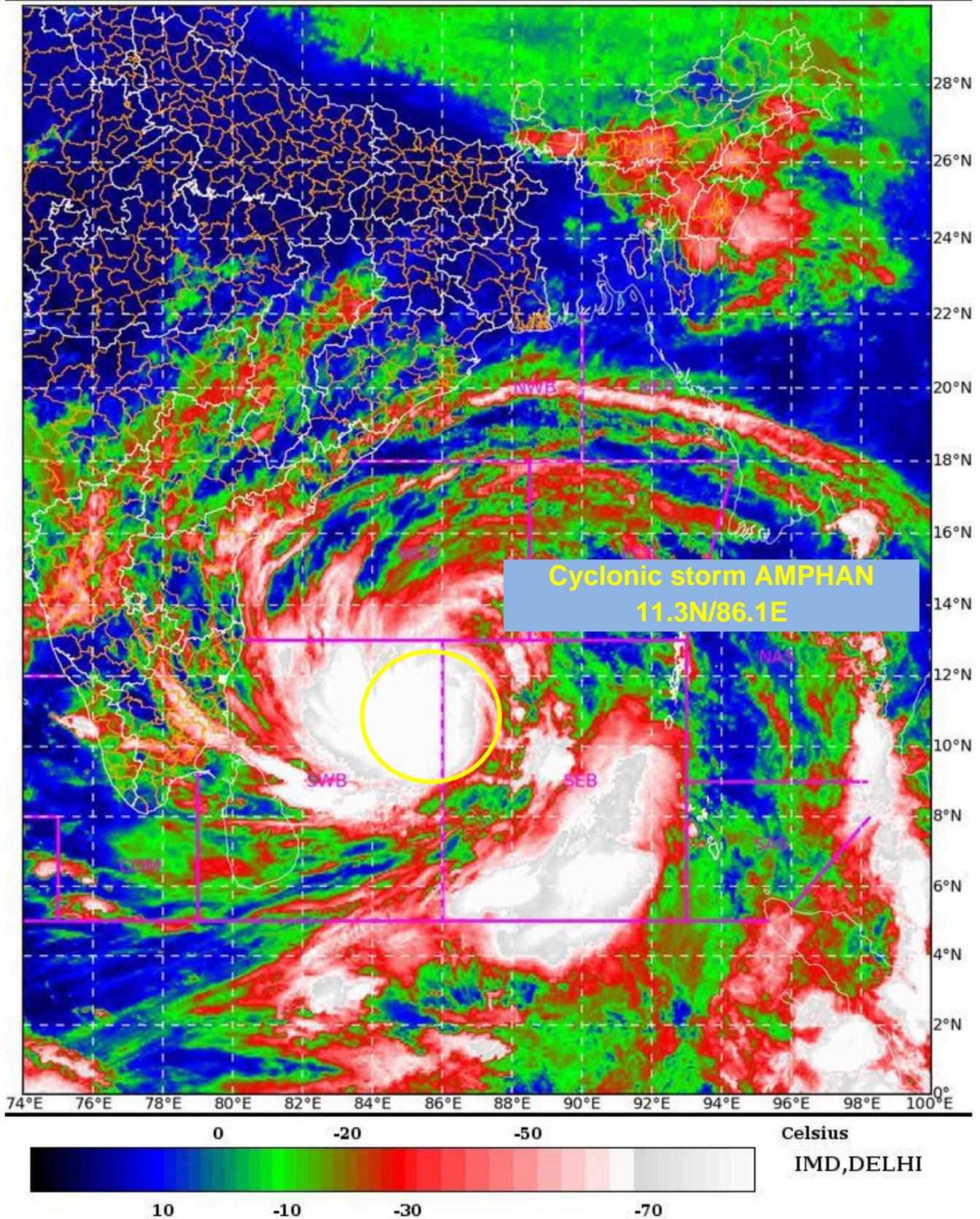
Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0830 hours IST of 17th May, 2020.

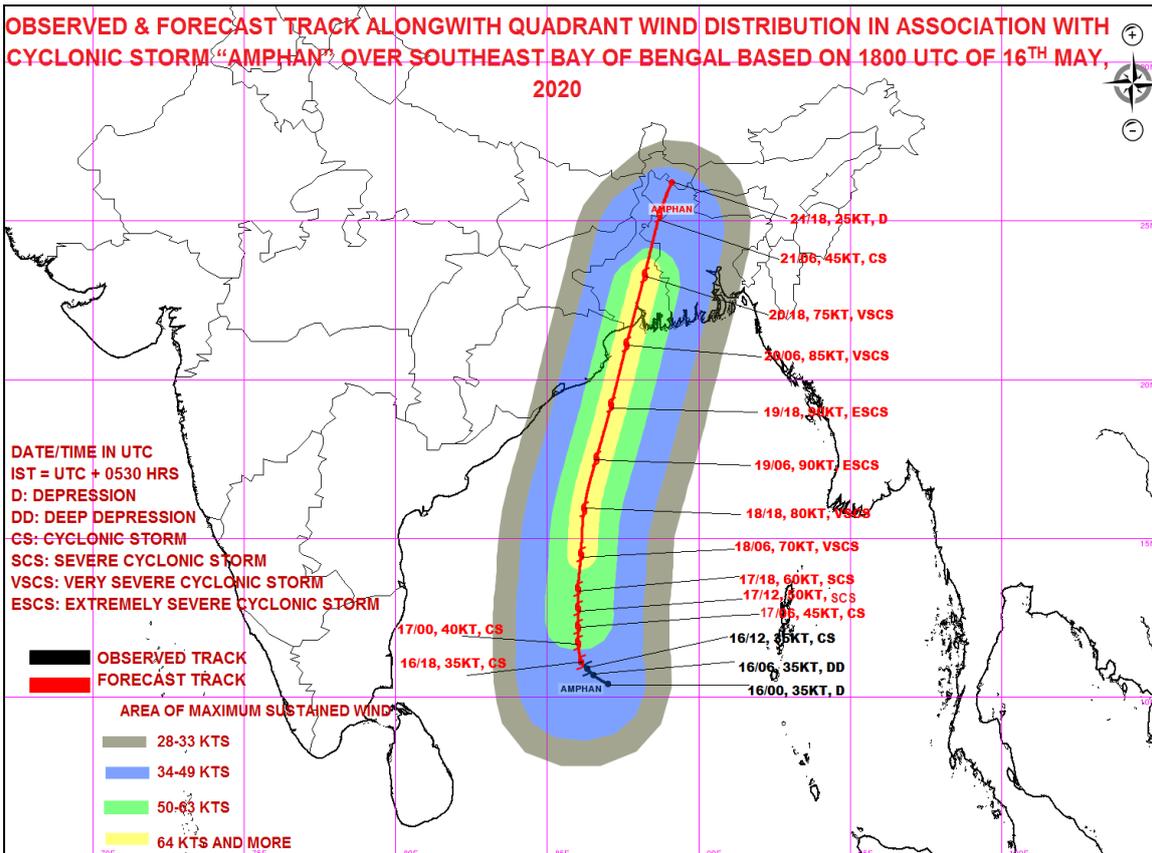
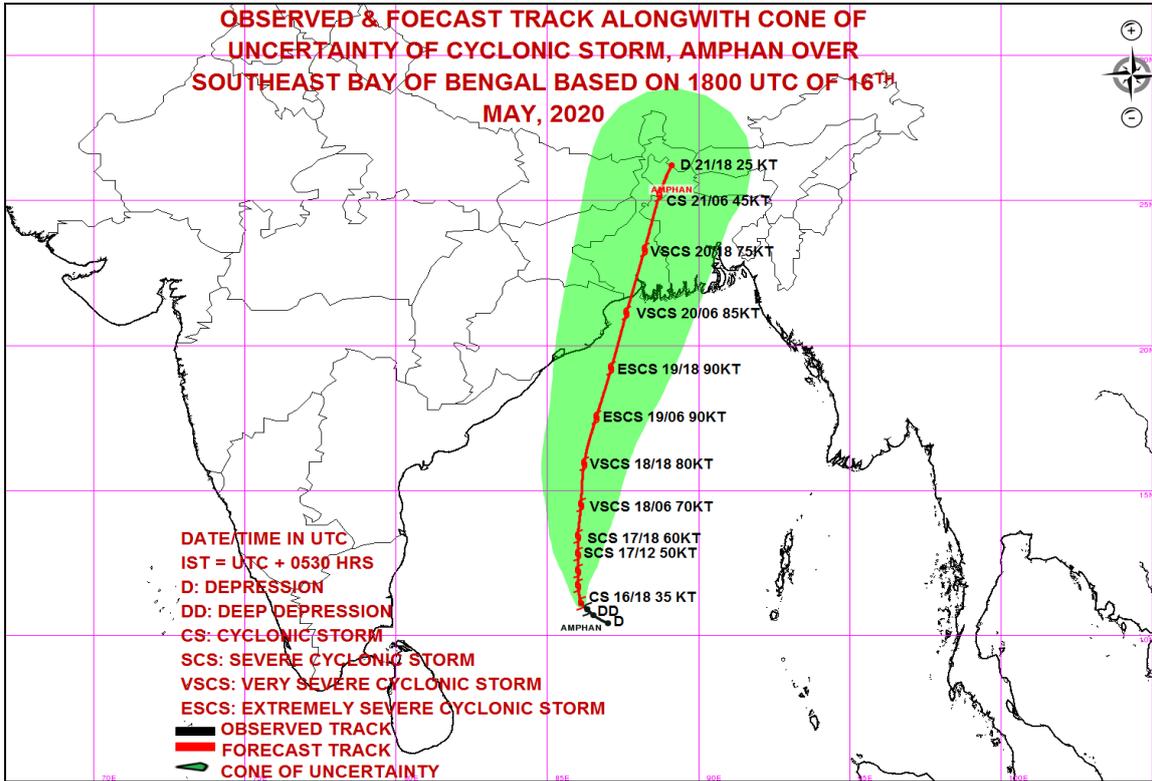
(D. R. Pattanaik)
Scientist-F, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 16-05-2020/(2300 to 2326) GMT
 IMG_TIR1_TEMP 10.8 um 17-05-2020/(0430 to 0456) 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.



MSW(knot)/kmph)	Impact	Action
28-33 /(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 09 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0840 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: The Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Southeast Bay of Bengal and neighbourhood. Cyclone Alert for West Bengal and Bangladesh Coasts: Yellow Message.

The Cyclonic Storm '**AMPHAN**' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved north-northwestwards with a speed of 06 kmph during past 06 hours, intensified slightly and lay centred over the same region at 0530 hrs IST of today, the 17th May, 2020 near latitude 11.4°N and longitude 86.0°E, about 990 km south of Paradip (Odisha), 1140 km south-southwest of Digha (West Bengal) and 1260 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Severe Cyclonic Storm during next 06 hours and into a Very Severe Cyclonic Storm during subsequent 12 hours. It is very likely to move nearly northwards during next 24 hours and then re-curve north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Sagar Islands (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm

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
17.05.20/0530	11.4/86.0	80-90 gusting to 100	Cyclonic Storm
17.05.20/1130	11.9/85.9	95-105 gusting to 115	Severe Cyclonic Storm
17.05.20/1730	12.5/85.8	105-115 gusting to 125	Severe Cyclonic Storm
17.05.20/2330	13.1/85.9	115-125 gusting to 140	Very Severe Cyclonic Storm
18.05.20/0530	13.7/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/1730	14.8/86.2	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/0530	16.1/86.6	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/1730	17.6/87.2	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/88.0	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1730	21.7/89.0	155-165 gusting to 180	Very Severe Cyclonic Storm
21.05.20/0530	23.5/89.7	95-105 gusting to 115	Severe Cyclonic Storm
21.05.20/1730	25.3/90.2	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places is very likely over Andaman & Nicobar Islands during next 24 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening. Rainfall at most places with heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over north coastal Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over coastal districts of West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coasts. It will gradually increase thereafter along & off West Bengal coast.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 24 hours.
- Squally wind speed reaching 80 to 90 kmph gusting to 100 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(iii) Sea condition

Sea condition will very high over southwest and adjoining central Bay of Bengal during next 24 hours. It will become phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal till 17th May, to central Bay of Bengal during 17th to 18th May and North Bay of Bengal during 19 to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

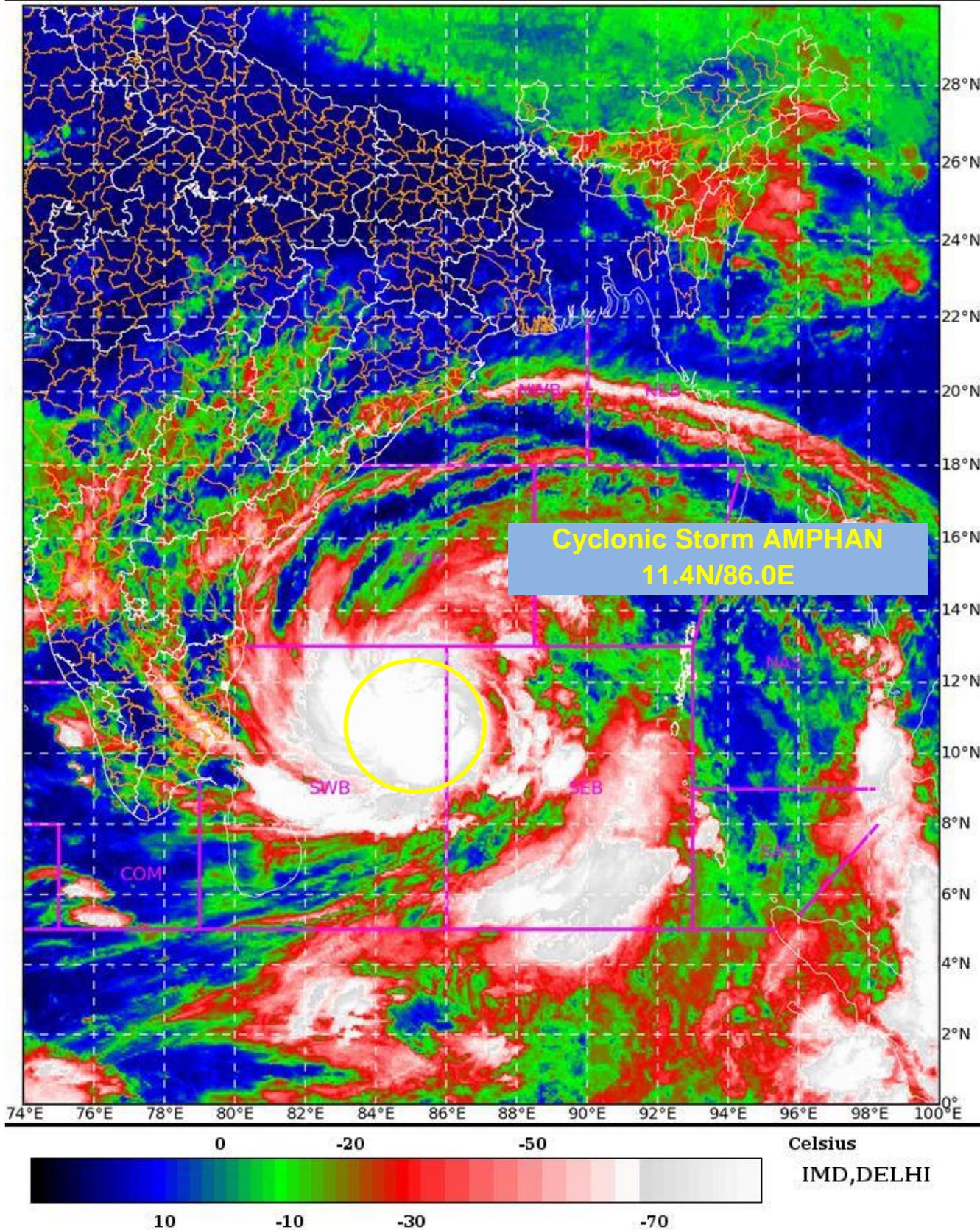
Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of 17th May, 2020.

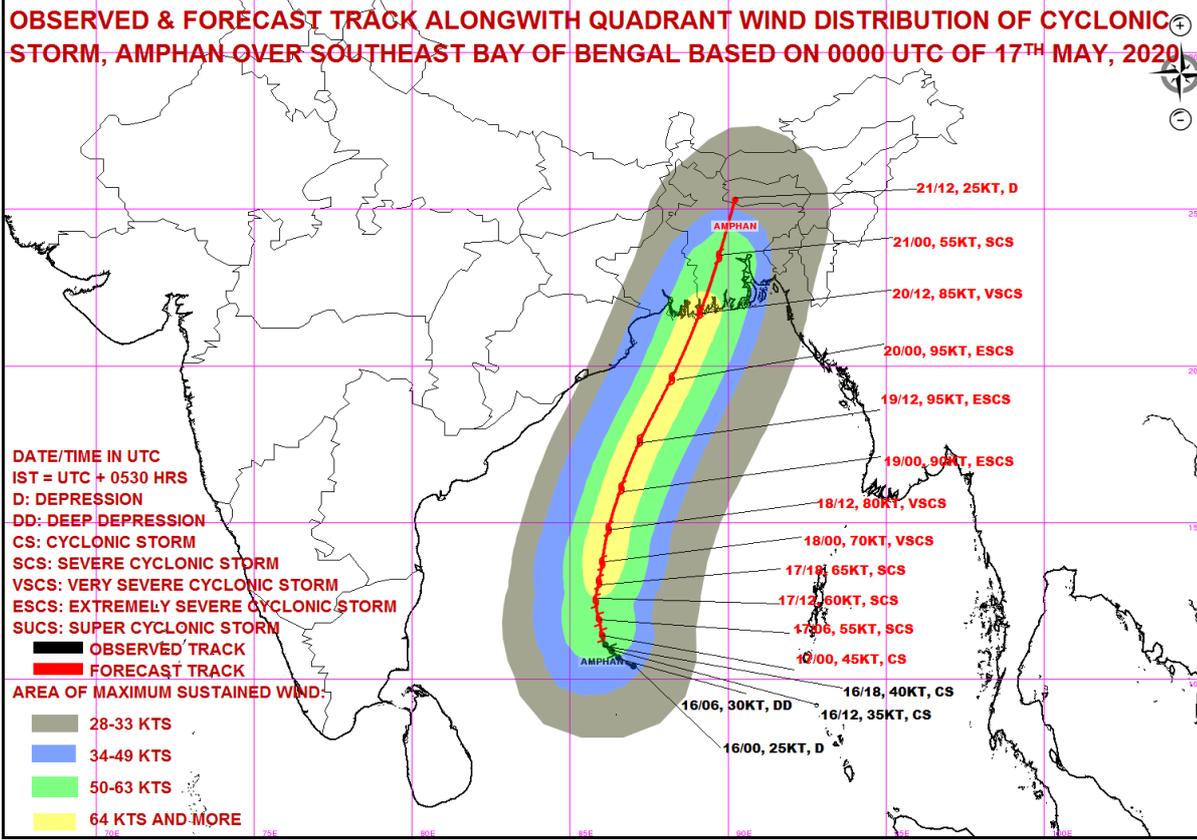
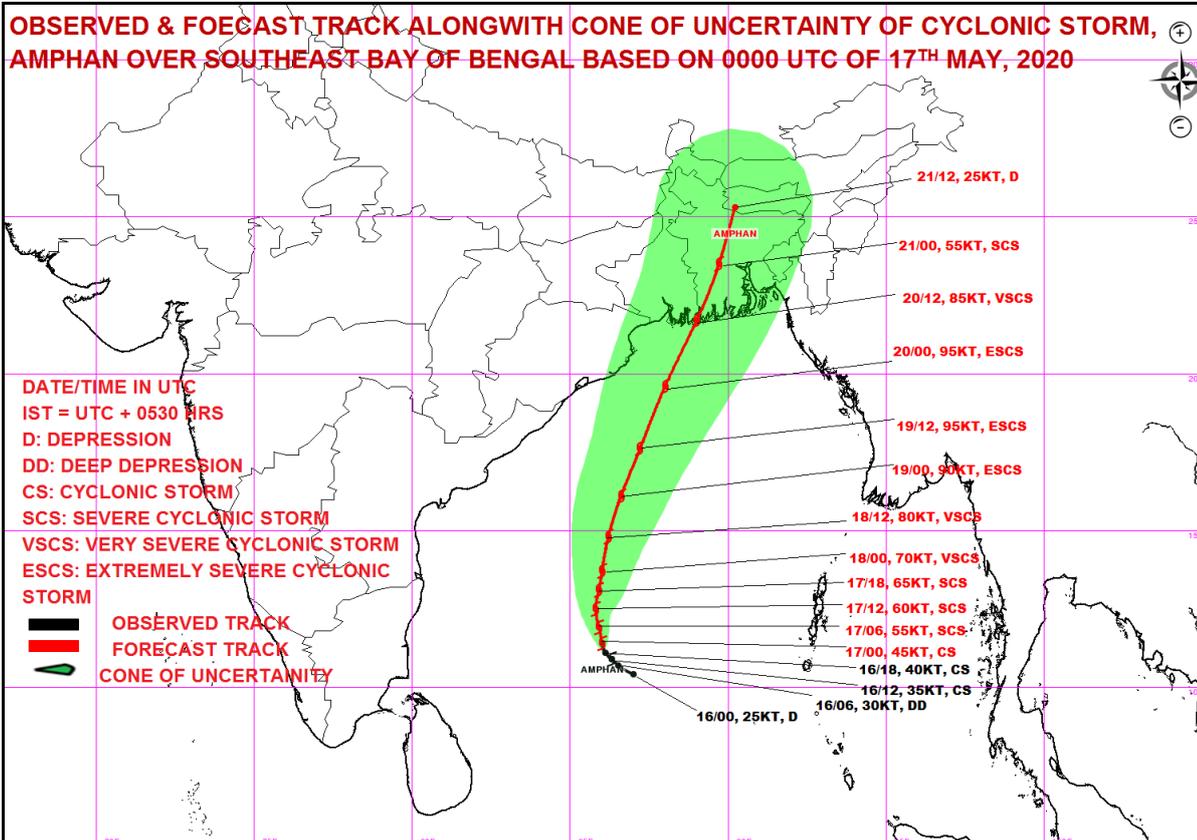
(D. R. Pattanaik)
Scientist-F, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 17-05-2020/(0000 to 0026) GMT
 IMG_TIR1_TEMP 10.8 um 17-05-2020/(0530 to 0556) 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.



MSW(knot)/kmph	Impact	Action
28-33 ((52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 10 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1100 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: The Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Southeast Bay of Bengal and neighbourhood intensified into a Severe Cyclonic Storm over the same region. Cyclone Alert for West Bengal Coast and Cyclone watch for Odisha coast: Yellow Message.

The Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved slowly northwestwards with a speed of 03 kmph during past 06 hours, intensified into a Severe Cyclonic Storm and lay centred over the same region at 0830 hrs IST of today, the 17th May, 2020 near latitude 11.4°N and longitude 86.0°E, about 990 km south of Paradip (Odisha), 1140 km south-southwest of Digha (West Bengal) and 1260 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Very Severe Cyclonic Storm during next 12 hours. It is very likely to move nearly northwards slowly during next 24 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Sagar Islands (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/0830	11.4/86.0	90-100 gusting to 110	Severe Cyclonic Storm
17.05.20/1130	11.7/85.9	95-105 gusting to 115	Severe Cyclonic Storm
17.05.20/1730	12.3/85.8	105-115 gusting to 125	Severe Cyclonic Storm
17.05.20/2330	13.1/85.9	115-125 gusting to 140	Very Severe Cyclonic Storm
18.05.20/0530	13.7/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/1730	14.8/86.2	145-155 gusting to 170	Very Severe Cyclonic Storm
19.05.20/0530	16.1/86.6	160-170 gusting to 190	Extremely Severe Cyclonic Storm
19.05.20/1730	17.6/87.2	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/88.0	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1730	21.7/89.0	155-165 gusting to 180	Very Severe Cyclonic Storm
21.05.20/0530	23.5/89.7	95-105 gusting to 115	Severe Cyclonic Storm
21.05.20/1730	25.3/90.2	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places is very likely over Andaman & Nicobar Islands during next 24 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening. Rainfall at most places with heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over north coastal Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over coastal districts of West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coasts. It will gradually increase thereafter along & off West Bengal coast.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 24 hours.
- Squally wind speed reaching 80 to 90 kmph gusting to 100 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(iii) Sea condition

Sea condition will very high over southwest and adjoining central Bay of Bengal during next 24 hours It will become phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal during 17th to 18th May and North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1430 hours IST of 17th May, 2020.

(Sunitha Devi)
Scientist-F, RSMC, New Delhi

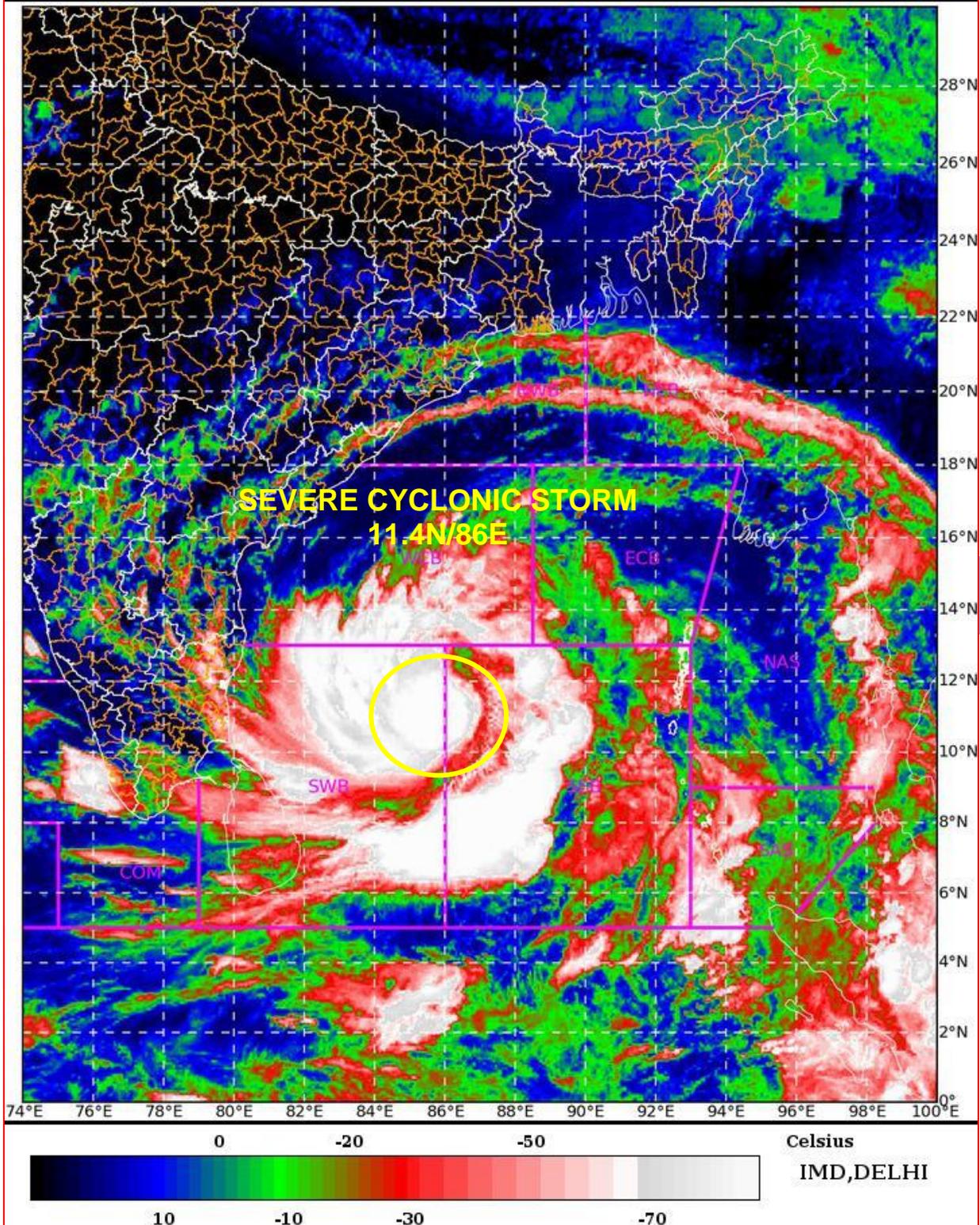
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 17-05-2020/(0400 to 0427) GMT

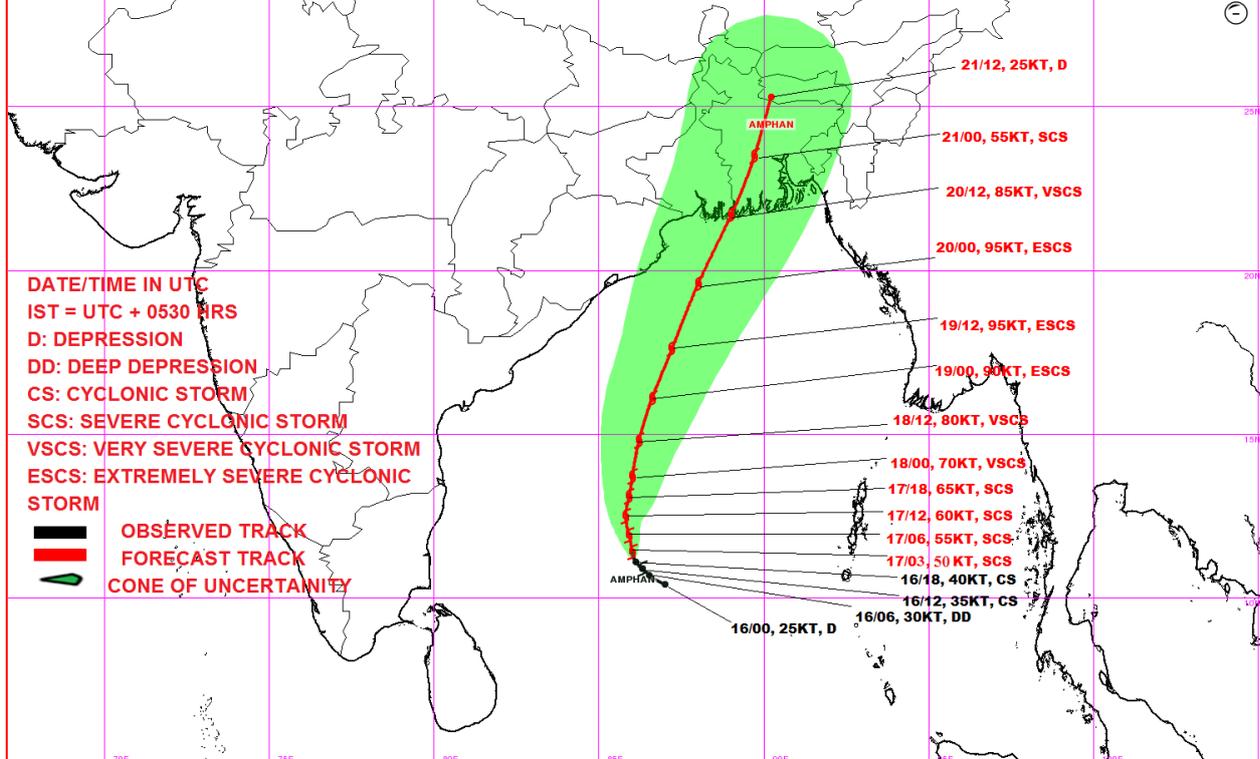
IMG_TIR1_TEMP 10.8 um 17-05-2020/(0930 to 0957) IST

L1C Mercator

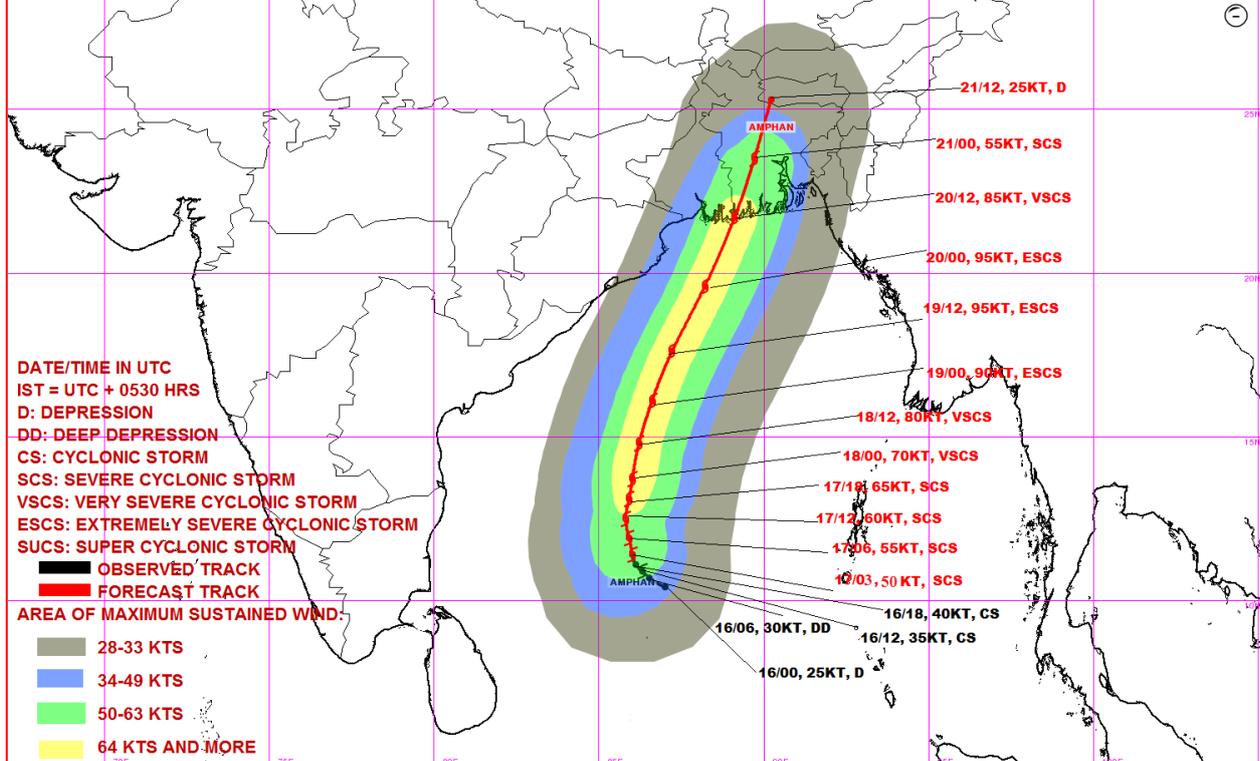


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF SEVERE CYCLONIC STORM, AMPHAN OVER SOUTHEAST BAY OF BENGAL BASED ON 0300 UTC OF 17TH MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF SEVERE CYCLONIC STORM, AMPHAN OVER SOUTHEAST BAY OF BENGAL BASED ON 0300 UTC OF 17TH MAY, 2020



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.: 11 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1400 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The Severe Cyclonic Storm '**AMPHAN**' (pronounced as **UM-PUN**) over Southeast Bay of Bengal and neighbourhood moved slowly northwestwards with a speed of 03 kmph during past 06 hours and lay centred over **central parts of South Bay of Bengal and neighbourhood** at 1130 hrs IST of today, the 17th May, 2020 near latitude 11.5°N and longitude 86.0°E, about 980 km south of Paradip (Odisha), 1130 km south-southwest of Digha (West Bengal) and 1250 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Very Severe Cyclonic Storm during next 12 hours. It is very likely to move nearly northwards slowly during next 24 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/1130	11.5/86.0	95-105 gusting to 115	Severe Cyclonic Storm
17.05.20/1730	12.2/86.0	105-115 gusting to 125	Severe Cyclonic Storm
17.05.20/2330	12.9/86.0	115-125 gusting to 140	Very Severe Cyclonic Storm
18.05.20/0530	13.5/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
18.05.20/1130	14.0/86.1	135-145 gusting to 160	Very Severe Cyclonic Storm
18.05.20/2330	15.2/86.3	155-165 gusting to 180	Very Severe Cyclonic Storm
19.05.20/1130	16.6/86.7	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/2330	18.4/87.2	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.4/87.7	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/2330	22.4/88.2	125-135 gusting to 150	Very Severe Cyclonic Storm
21.05.20/1130	24.2/88.7	70-80 gusting to 90	Cyclonic Storm
21.05.20/2330	26.0/89.2	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 (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places is very likely over Andaman & Nicobar Islands during next 24 hours.
- **Rainfall (over Odisha & Gangetic West Bengal)**

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening. Rainfall at most places with heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over north coastal Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(ii) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coasts. It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off North Odisha coast and 120 to 140 kmph gusting to 155 kmph along & off West Bengal coast from the afternoon of 20th May 2020.
- Gale wind speed reaching 95-105 gusting to 115 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 125-135 gusting to 150 kmph over southern parts of central Bay of Bengal by 18th morning, 160-170 gusting to 190 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 24 hours.

(iii) Sea condition

Sea condition will very high over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(iv) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal during 17th to 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1730 hours IST of 17th May, 2020.

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

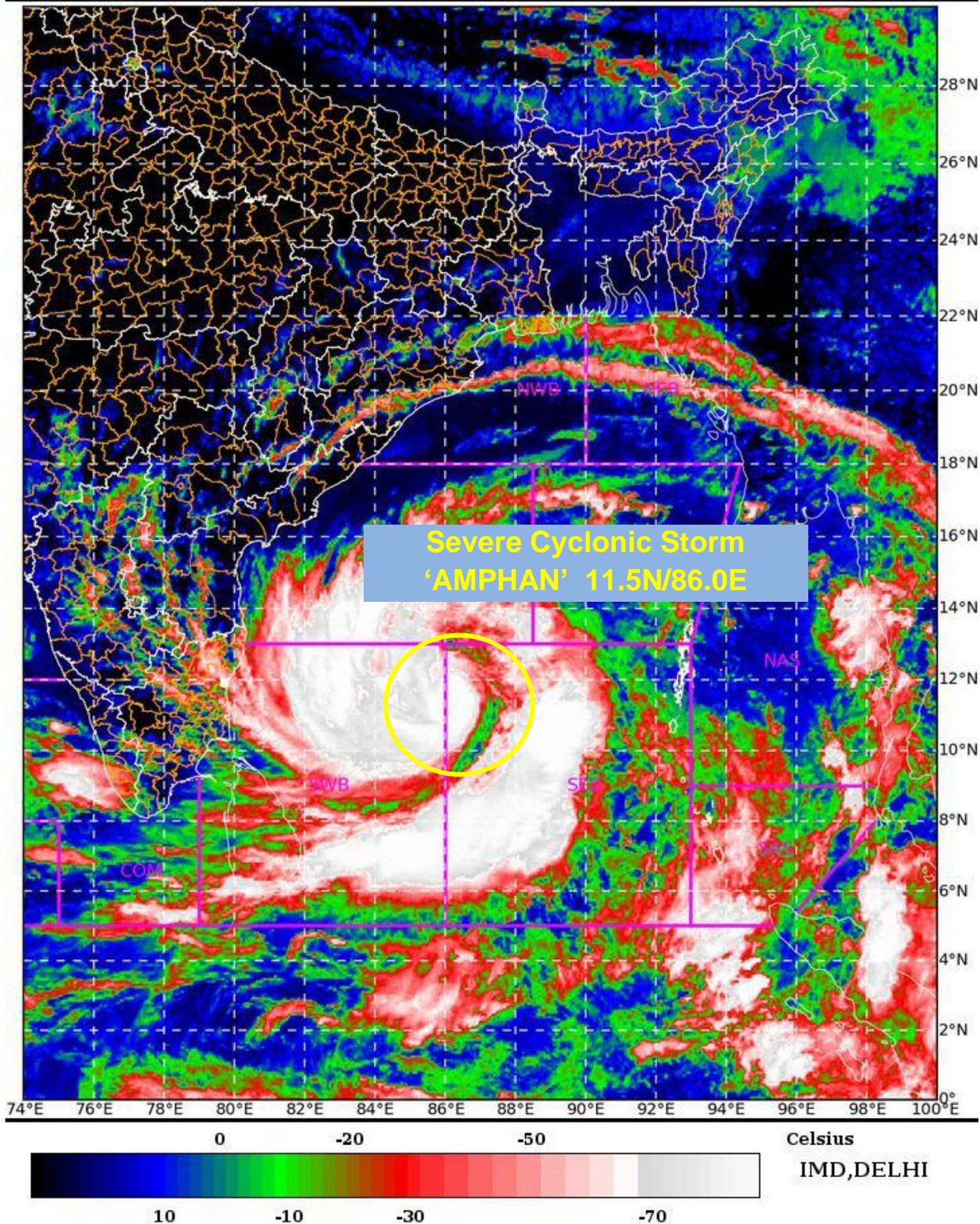
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

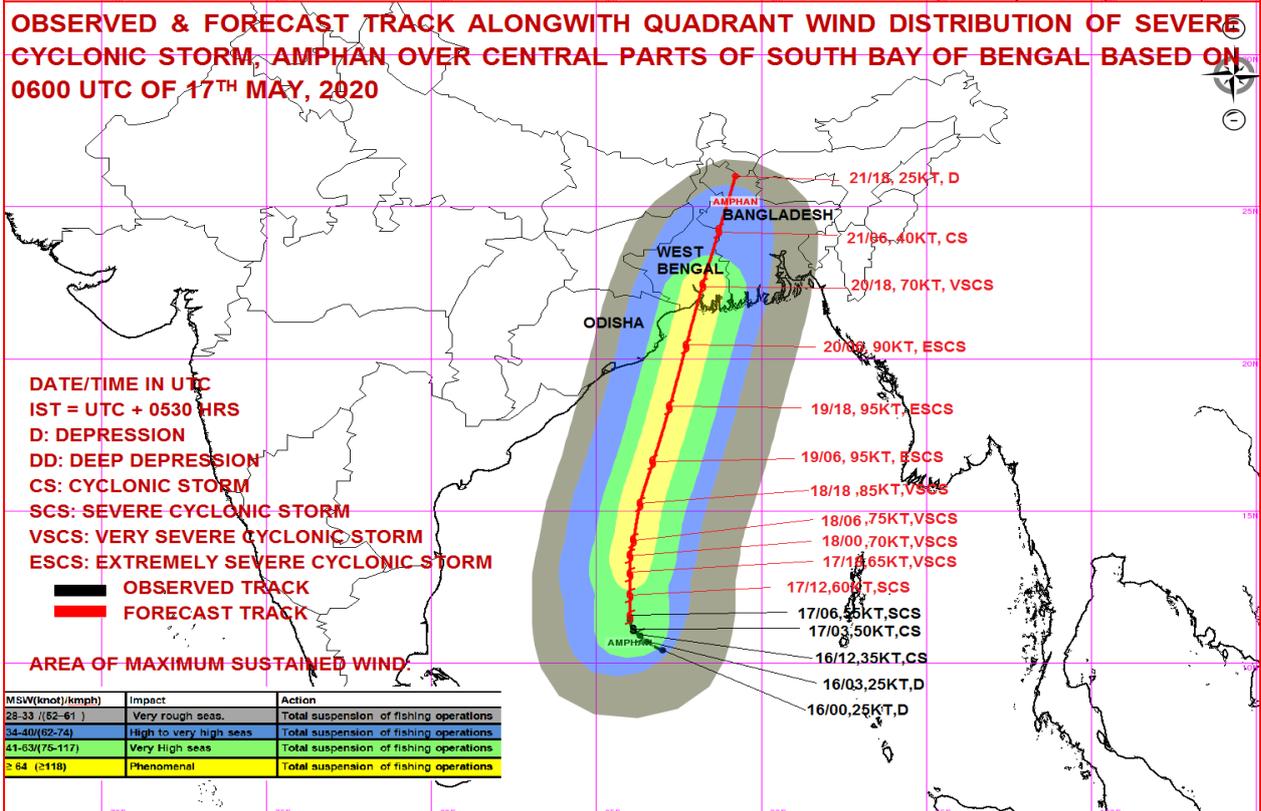
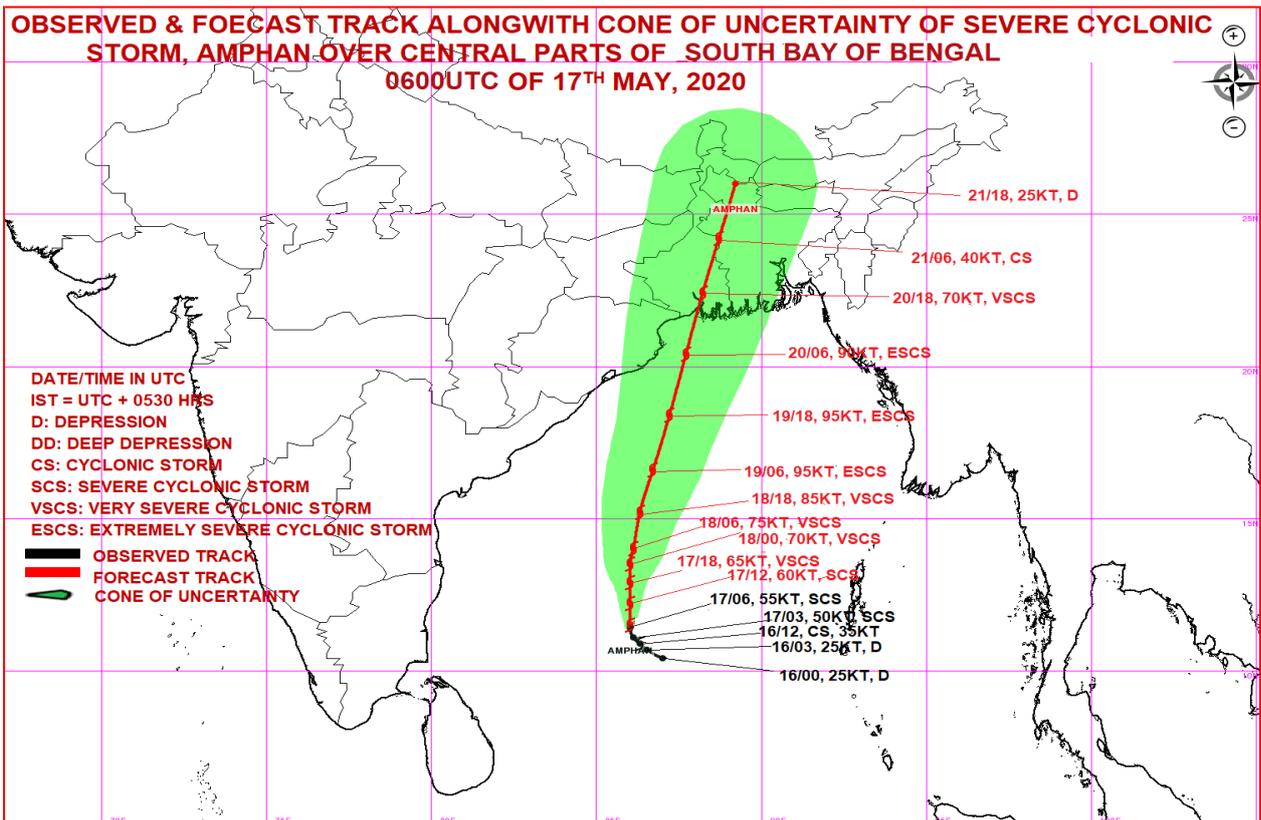
SAT : INSAT-3D IMG 17-05-2020/(0600 to 0627) GMT
IMG_TIR1_TEMP 10.8 um 17-05-2020/(1130 to 1157) IST



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.



MSW(knot)/kmph	Impact	Action
28-33 / (52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 12 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1715 HOURS IST

DATED: 17.05.2020

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

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

CONTROL ROOM NDMA (FAX.NO. 26701729)

CABINET SECRETARIAT (FAX.NO.23012284, 23018638)

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

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DIRECTOR GENERAL, AIR (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Very Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The Severe Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over central parts of South Bay of Bengal and neighbourhood moved slowly northwards with a speed of 05 kmph during past 06 hours, further intensified into a **Very Severe Cyclonic Storm** and lay centred at 1430 hrs IST of today, the 17th May, 2020 over **central parts of South Bay of Bengal** near latitude 11.7°N and longitude 86.0°E, about 960 km south of Paradip (Odisha), 1110 km south-southwest of Digha (West Bengal) and 1230 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into an Extremely Severe Cyclonic Storm during next 24 hours. It is very likely to move nearly northwards slowly during next 12 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/1430	11.7/86.0	120-130 gusting to 145	Very Severe Cyclonic Storm
17.05.20/1730	12.0/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
17.05.20/2330	12.7/86.0	130-140 gusting to 155	Very Severe Cyclonic Storm
18.05.20/0530	13.5/86.0	140-150 gusting to 165	Very Severe Cyclonic Storm
18.05.20/1130	14.0/86.1	150-160 gusting to 175	Very Severe Cyclonic Storm
18.05.20/2330	15.2/86.3	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/1130	16.6/86.7	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/2330	18.4/87.2	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.4/87.7	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/2330	22.4/88.2	120-130 gusting to 145	Very Severe Cyclonic Storm
21.05.20/1130	24.2/88.7	70-80 gusting to 90	Cyclonic Storm
21.05.20/2330	26.0/89.2	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:

(1) Rainfall (over Andaman & Nicobar Islands):

- Light to moderate rainfall at most places is very likely over Andaman & Nicobar Islands during next 24 hours.

• Rainfall (over Odisha & Gangetic West Bengal)

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening. Rainfall at most places with heavy to very heavy rainfall at a few places on 19th May and isolated heavy rainfall over north coastal Odisha on 20th May 2020. Coastal districts of Gangetic West Bengal are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places over Gangetic West Bengal on 20th May.

(2) Wind warning

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon. The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha and West Bengal coasts. It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off North Odisha coast and 120 to 140 kmph gusting to 155 kmph along & off West Bengal coast from the afternoon of 20th May 2020.
- Gale wind speed reaching 120-130 gusting to 145 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 140-150 gusting to 165 kmph over southern parts of central Bay of Bengal by 18th morning, 170-180 gusting to 200 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.
- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely over Andaman Sea during next 24 hours.

(3) Sea condition

Sea condition will be Phenomenal over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become Phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal during 17th to 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of 17th May, 2020.

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

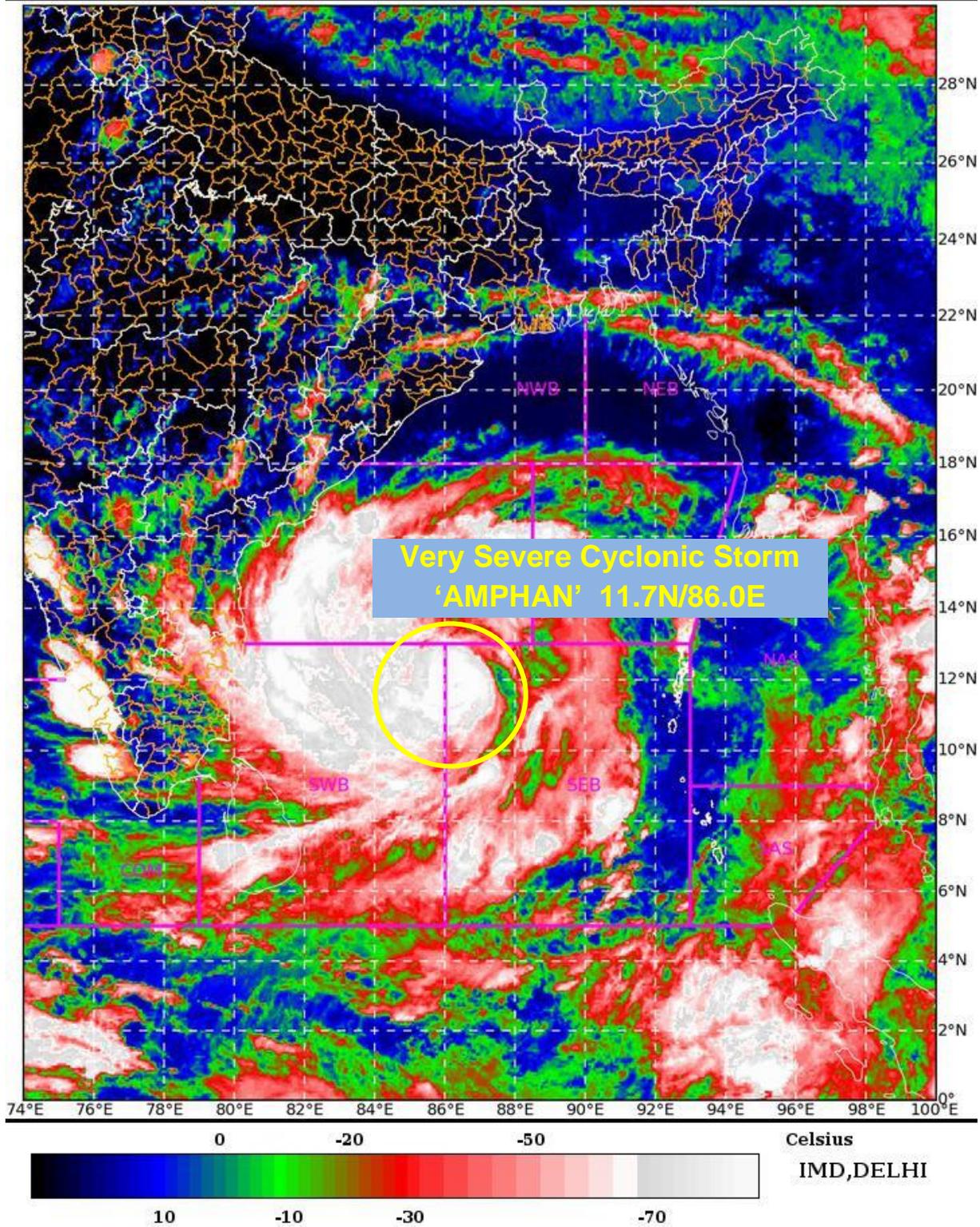
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 17-05-2020/(1030 to 1056) GMT

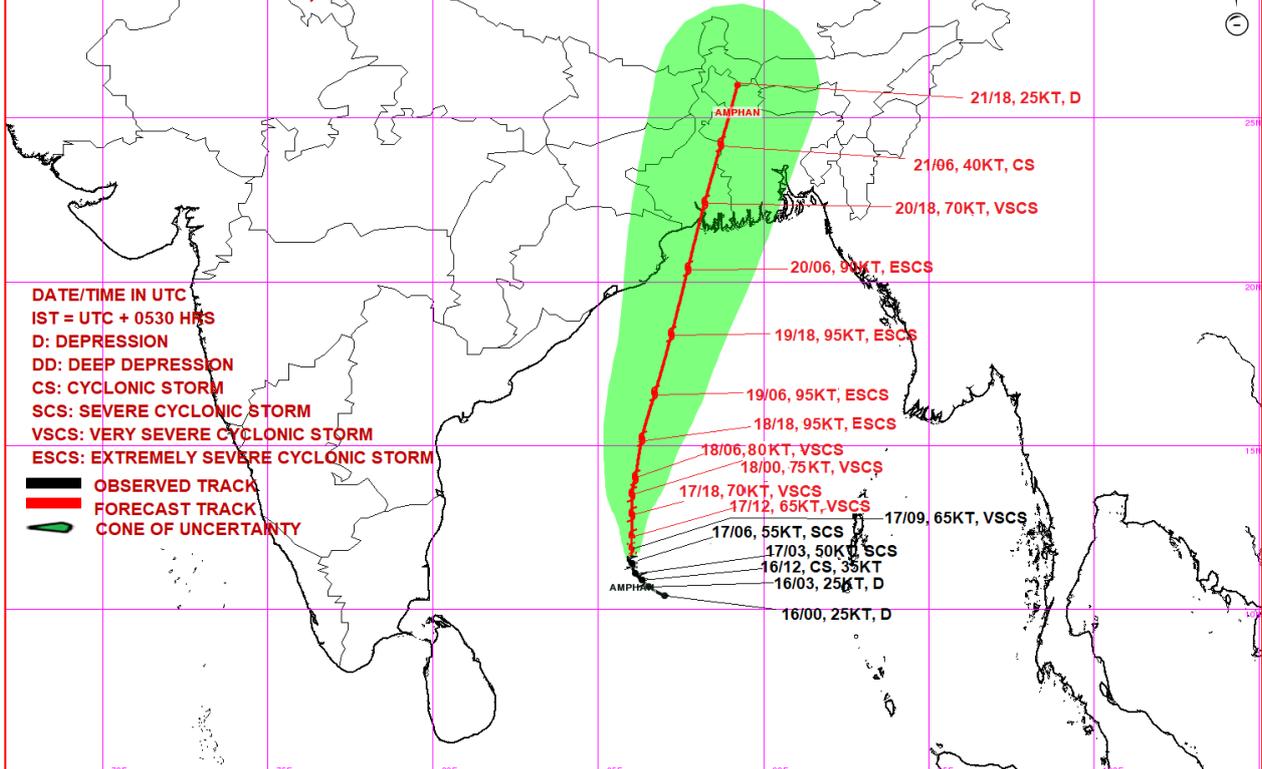
IMG_TIR1_TEMP 10.8 um 17-05-2020/(1600 to 1626) IST

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.

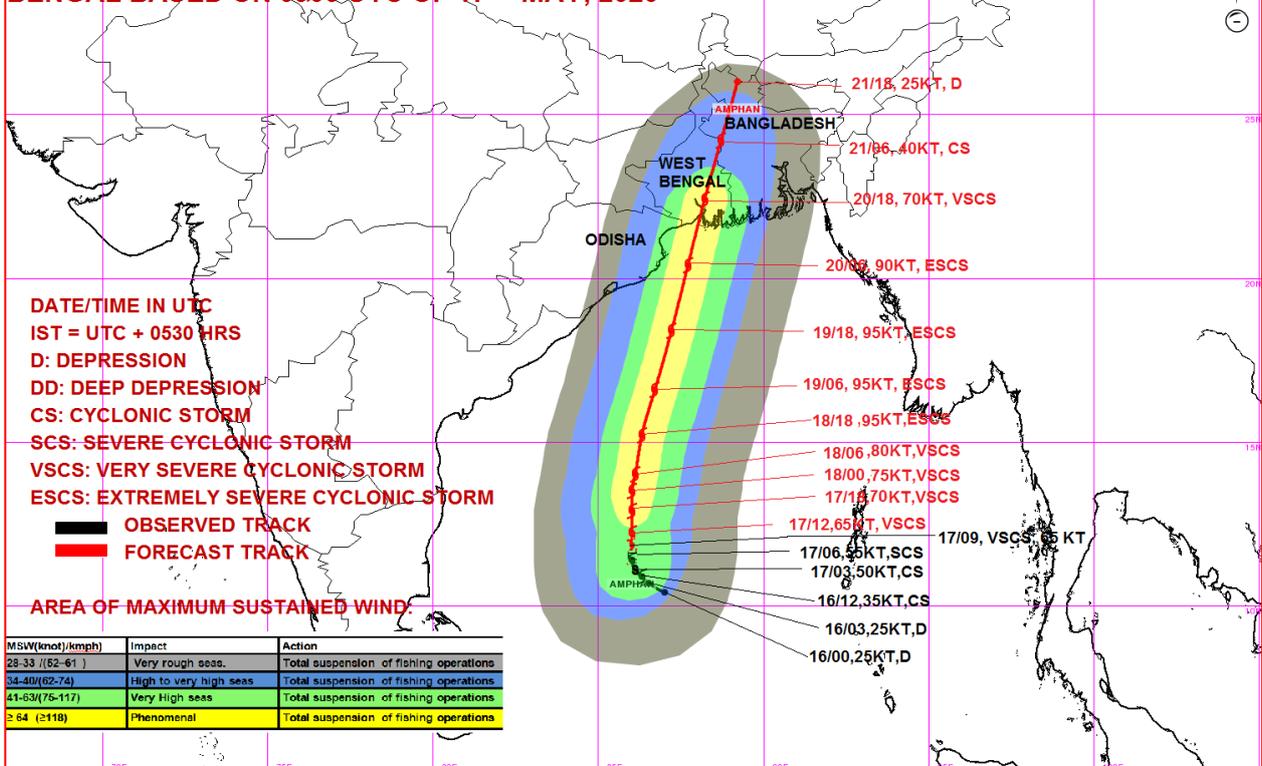
OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 0900 UTC OF 17TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM

OBSERVED TRACK
 FORECAST TRACK
 CONE OF UNCERTAINTY

OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 0900 UTC OF 17TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM

OBSERVED TRACK
 FORECAST TRACK

AREA OF MAXIMUM SUSTAINED WIND:

MSW(knot)/kmph	Impact	Action
28-33 / (52-61)	Very rough seas.	Total suspension of fishing operations
34-40 / (62-74)	High to very high seas	Total suspension of fishing operations
41-63 / (75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

MSW(knot)/kmph	Impact	Action
28-33 / (52-61)	Very rough seas.	Total suspension of fishing operations
34-40 / (62-74)	High to very high seas	Total suspension of fishing operations
41-63 / (75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 13 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2030 HOURS IST

DATED: 17.05.2020

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

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

CONTROL ROOM NDMA (FAX.NO. 26701729)

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Very Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The **Very Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over central parts of South Bay of Bengal moved northwards with a speed of 09 kmph during past 06 hours and lay centred at 1730 hrs IST of today, the 17th May, 2020 over **central parts of South Bay of Bengal** near latitude 12.0°N and longitude 86.0°E, about 930 km south of Paradip (Odisha), 1080 km south-southwest of Digha (West Bengal) and 1200 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into an Extremely Severe Cyclonic Storm during next 24 hours. It is very likely to move nearly northwards slowly during next 12 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/1730	12.0/86.0	125-135 gusting to 150	Very Severe Cyclonic Storm
17.05.20/2330	12.9/86.0	135-145 gusting to 160	Very Severe Cyclonic Storm
18.05.20/0530	13.5/86.0	140-150 gusting to 165	Very Severe Cyclonic Storm
18.05.20/1130	14.0/86.1	150-160 gusting to 170	Very Severe Cyclonic Storm
18.05.20/1730	14.6/86.2	160-170 gusting to 185	Extremely Severe Cyclonic Storm
19.05.20/0530	15.9/86.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/1730	17.5/86.9	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/88.0	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	23.4/88.4	95-105 gusting to 115	Severe Cyclonic Storm
21.05.20/1730	25.2/88.9	60-70 gusting to 80	Cyclonic Storm
22.05.20/0530	26.8/89.4	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places with heavy falls at isolated places from 18th May evening. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore & Mayurbhanj Districts) on 19th May and isolated heavy rainfall over north coastal Odisha (Bhadrak, Balasore & Mayurbhanj Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha and 120 to 140 kmph gusting to 155 kmph along & off the above districts of West Bengal from the afternoon of 20th May 2020.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 125-135 gusting to 150 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 140-150 gusting to 165 kmph over southern parts of central Bay of Bengal by 18th morning, 170-180 gusting to 200 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(3) Sea condition

Sea condition will be Phenomenal over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become Phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal during 17th to 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

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.

(5) Storm Surge expected

- Storm Surge of about 3-4 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and 2-3 meters over the low lying areas of East Medinipur District of West Bengal around the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Some damage to pucca houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2330 hours IST of 17th May, 2020.

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

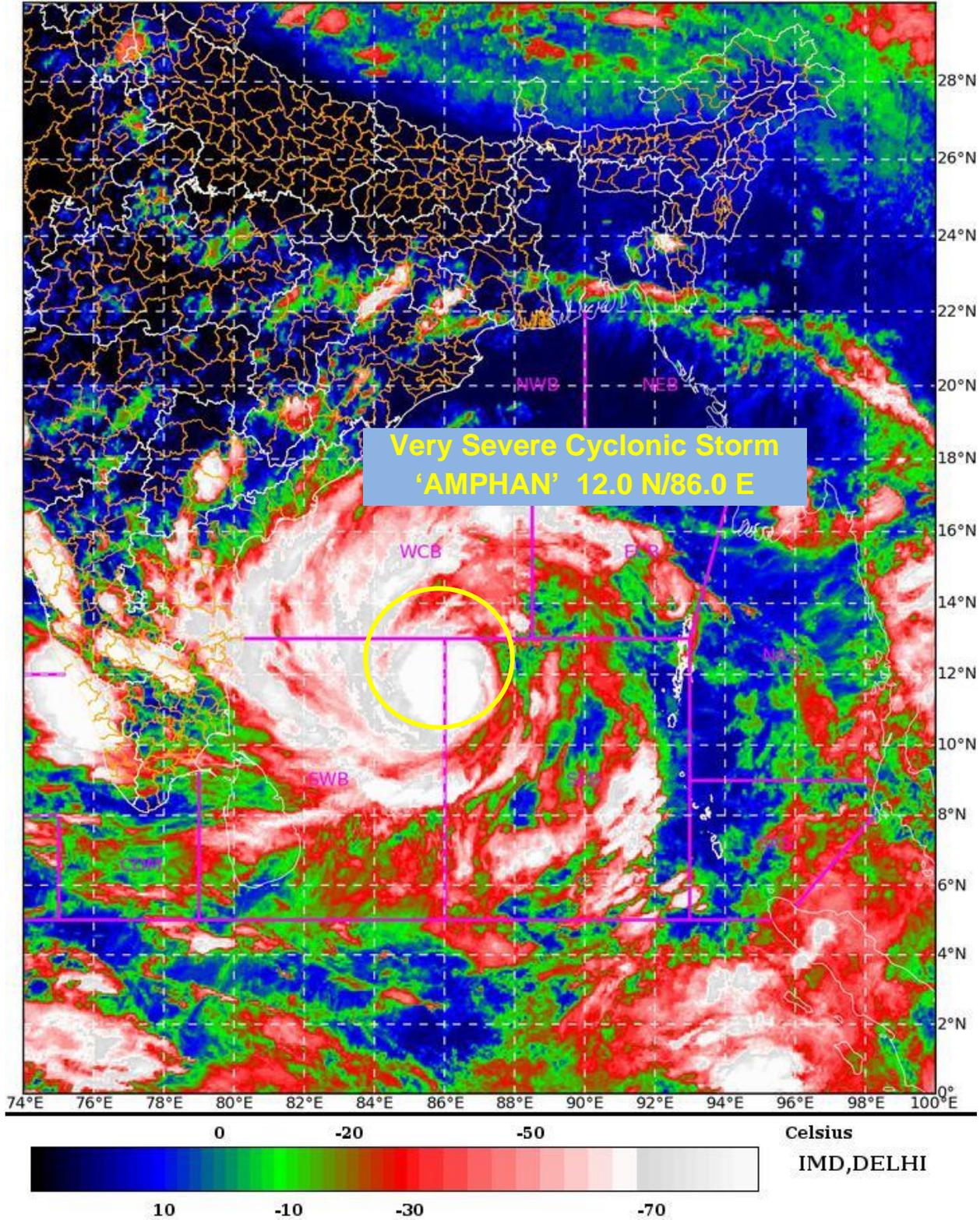
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 17-05-2020/(1200 to 1226) GMT

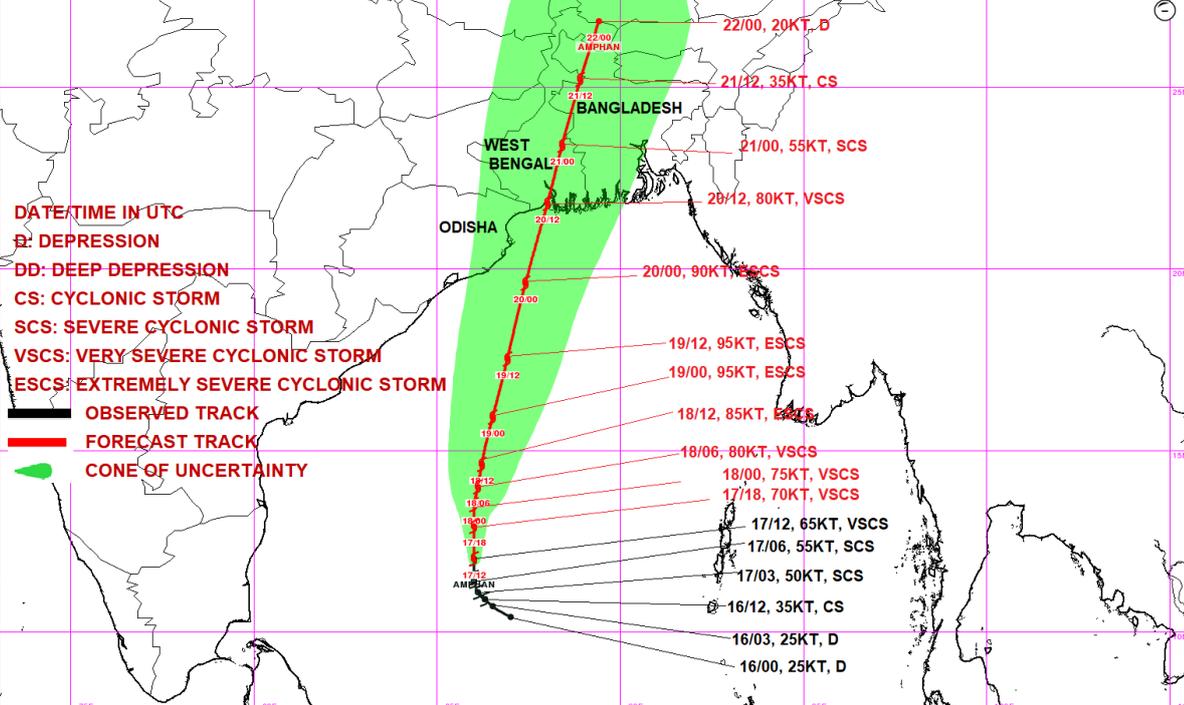
IMG_TIR1_TEMP 10.8 um 17-05-2020/(1730 to 1756) IST

L1C Mercator

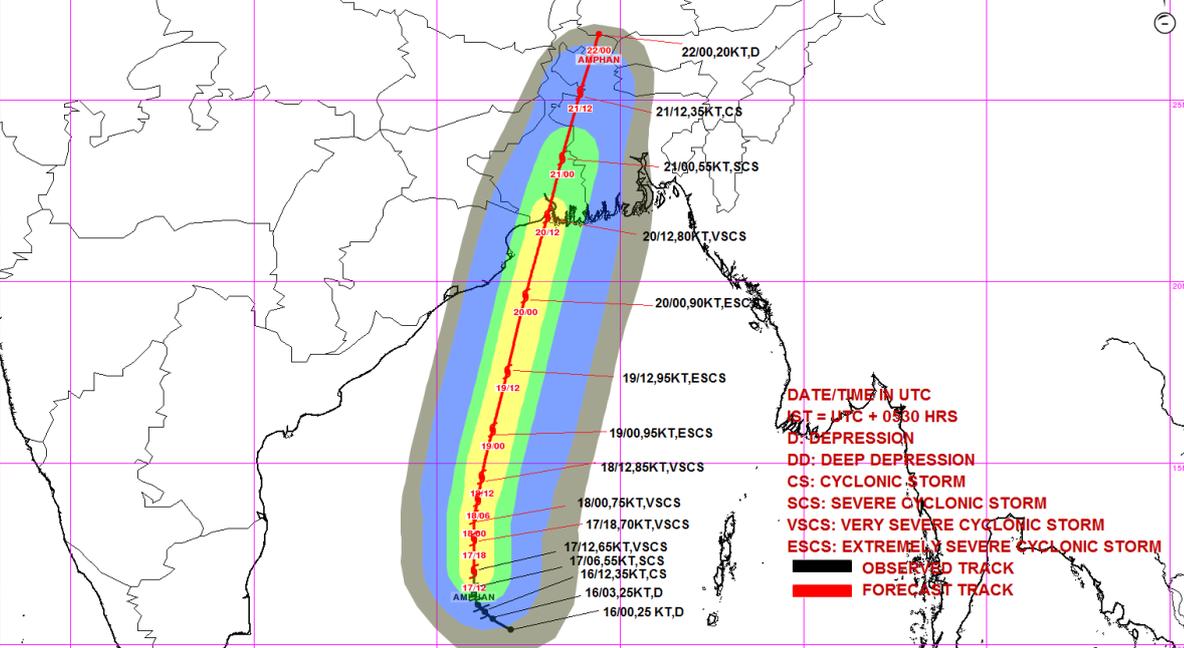


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH VERY SEVERE CYCLONIC STORM "AMPHAN" OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 1200 UTC OF 17th MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 1200 UTC OF 17th MAY, 2020



MSW(knot)/kmph	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 14 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2315 HOURS IST

DATED: 17.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Very Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal and adjoining central Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The **Very Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over central parts of South Bay of Bengal moved north-northeastwards with a speed of 10 kmph during past 06 hours and lay centred at 2030 hrs IST of today, the 17th May, 2020 over **central parts of South Bay of Bengal and adjoining central Bay of Bengal** near latitude 12.2°N and longitude 86.2°E, about 900 km south of Paradip (Odisha), 1060 km south-southwest of Digha (West Bengal) and 1170 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into an Extremely Severe Cyclonic Storm during next 24 hours. It is very likely to move nearly northwards slowly during next 12 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/2030	12.2/86.2	135-145 gusting to 160	Very Severe Cyclonic Storm
17.05.20/2330	12.7/86.3	145-155 gusting to 170	Very Severe Cyclonic Storm
18.05.20/0530	13.5/86.3	150-160 gusting to 175	Very Severe Cyclonic Storm
18.05.20/1130	14.0/86.4	160-170 gusting to 185	Extremely Severe Cyclonic Storm
18.05.20/1730	14.6/86.4	160-170 gusting to 185	Extremely Severe Cyclonic Storm
19.05.20/0530	15.9/86.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
19.05.20/1730	17.5/86.9	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/88.0	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	23.4/88.4	95-105 gusting to 115	Severe Cyclonic Storm
21.05.20/1730	25.2/88.9	60-70 gusting to 80	Cyclonic Storm
22.05.20/0530	26.8/89.4	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from 18th May evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore & Mayurbhanj Districts) on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha and 120 to 140 kmph gusting to 155 kmph along & off the above districts of West Bengal from the afternoon of 20th May 2020.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 125-135 gusting to 150 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 140-150 gusting to 165 kmph over southern parts of central Bay of Bengal by 18th morning, 170-180 gusting to 200 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(3) Sea condition

Sea condition will be Phenomenal over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become Phenomenal over southern parts of central Bay of Bengal from tonight, over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal during 17th to 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into north Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

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.

(5) Storm Surge expected

- Storm Surge of about 3-4 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and 2-3 meters over the low lying areas of East Medinipur District of West Bengal around the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Some damage to pucca houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

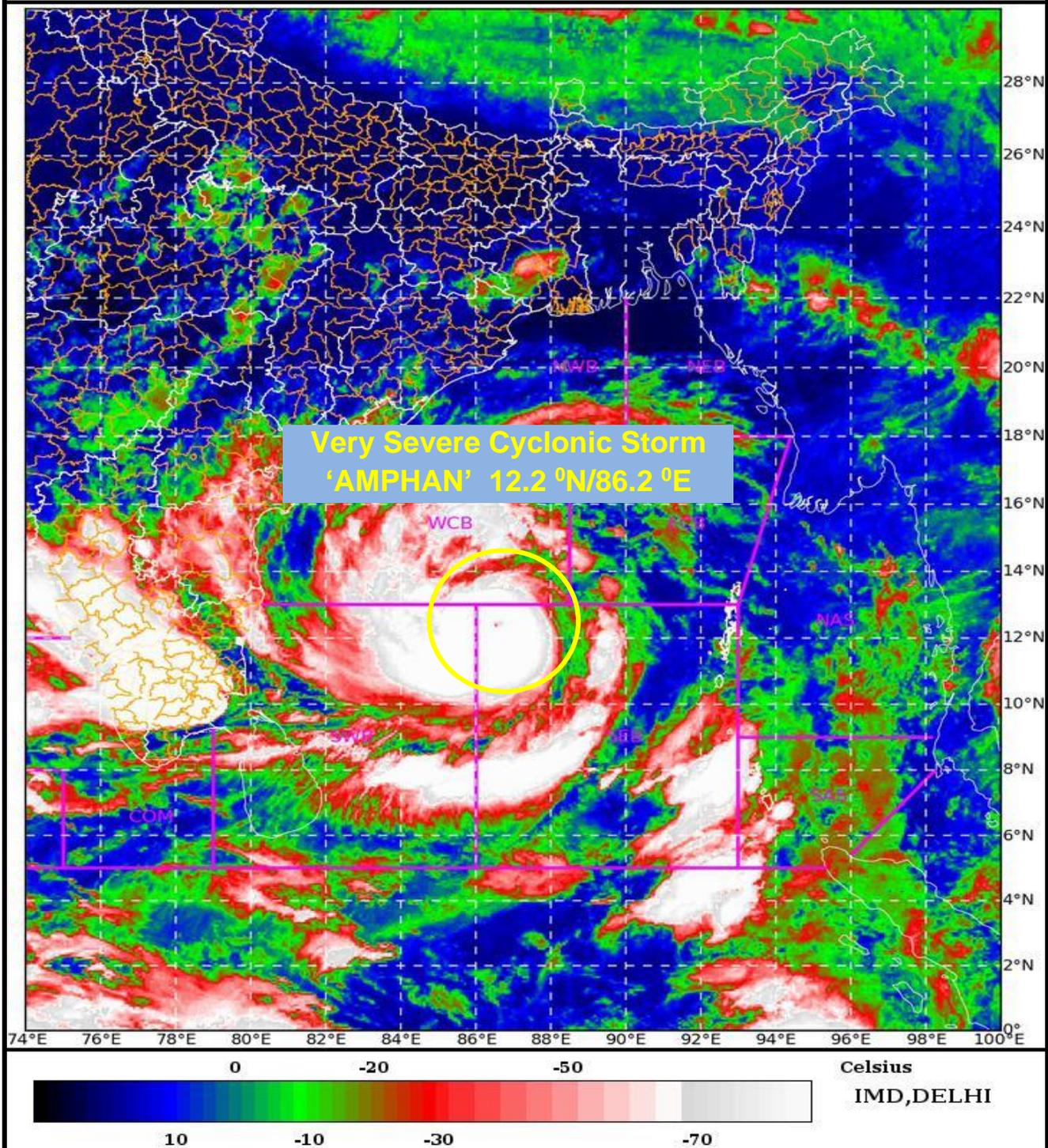
Next Bulletin will be issued at 0230 hours IST of 18th May, 2020.

(V. R. Durai)
Scientist-E, RSMC, New Delhi

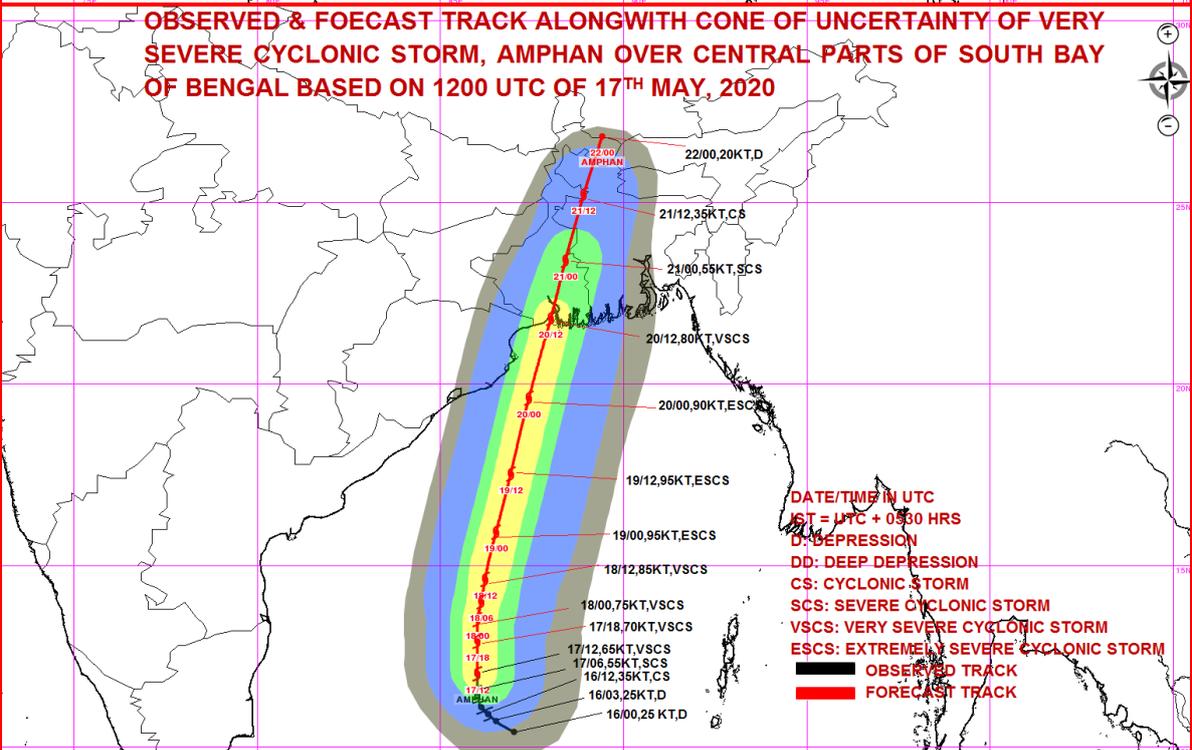
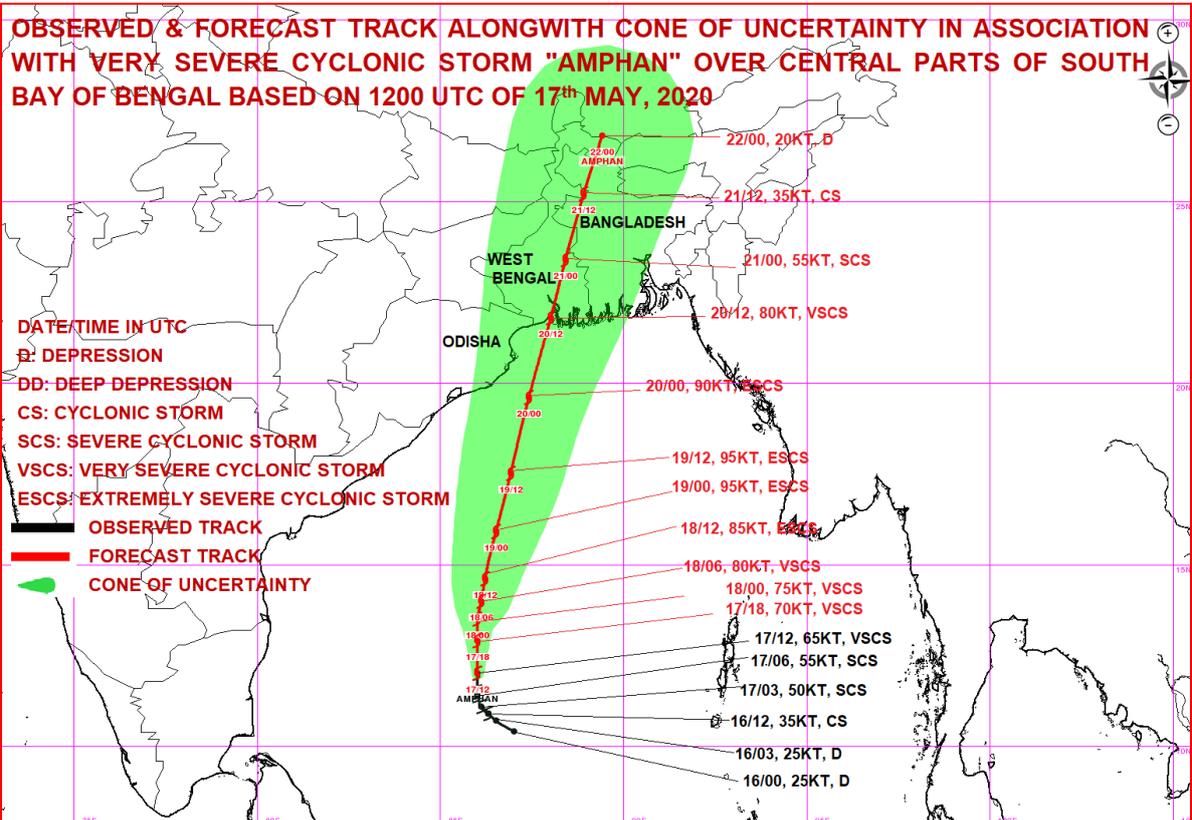
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 17-05-2020/(1630 to 1656) GMT
IMG_TIR1_TEMP 10.8 um 17-05-2020/(2200 to 2226) 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.



MSW(knot)/kmph)	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.: 15 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0145 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Very Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal and adjoining central Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The **Very Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over central parts of South Bay of Bengal moved north-northeastwards with a speed of 11 kmph during past 06 hours and lay centred at 2330 hrs IST of today, the 17th May, 2020 over **central parts of South Bay of Bengal and adjoining central Bay of Bengal** near latitude 12.5°N and longitude 86.4°E, about 870 km nearly south of Paradip (Odisha), 1020 km south-southwest of Digha (West Bengal) and 1130 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into an Extremely Severe Cyclonic Storm during next 06 hours. It is very likely to move nearly northwards during next 06 hours and then re-curve north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
17.05.20/2330	12.5/86.4	145-155 gusting to 170	Very Severe Cyclonic Storm
18.05.20/0530	13.5/86.5	160-170 gusting to 185	Extremely Severe Cyclonic Storm
18.05.20/1130	14.0/86.6	170-180 gusting to 200	Extremely Severe Cyclonic Storm
18.05.20/1730	14.6/86.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
18.05.20/2330	15.2/86.8	190-200 gusting to 220	Extremely Severe Cyclonic Storm
19.05.20/1130	16.7/87.2	190-200 gusting to 220	Extremely Severe Cyclonic Storm
19.05.20/2330	18.5/87.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1130	21.7/88.3	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/2330	22.6/88.7	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/1130	23.8/88.9	85-95 gusting to 105	Severe Cyclonic Storm
21.05.20/2330	26.0/89.3	50-60 gusting to 70	Deep 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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from 18th May evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore & Mayurbhanj Districts) on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha and 120 to 140 kmph gusting to 155 kmph along & off the above districts of West Bengal from the afternoon of 20th May 2020.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 125-135 gusting to 150 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 140-150 gusting to 165 kmph over southern parts of central Bay of Bengal by 18th morning, 170-180 gusting to 200 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(3) Sea condition

Sea condition will be Phenomenal over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal on 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

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.

(5) Storm Surge expected

- Storm Surge of about 3 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and 2-3 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Some damage to pucca houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

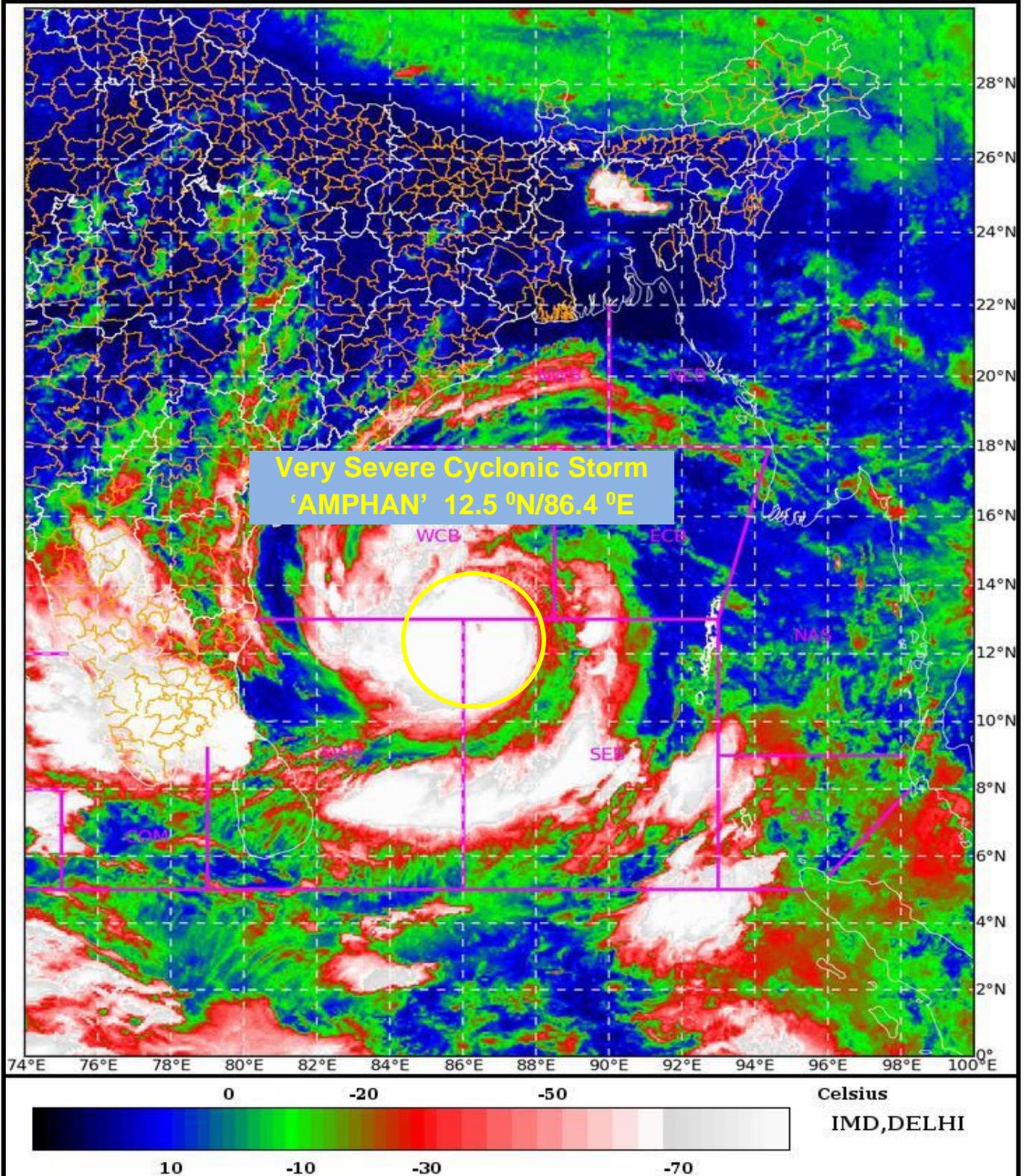
Next Bulletin will be issued at 0530 hours IST of 18th May, 2020.

(V. R. Durai)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

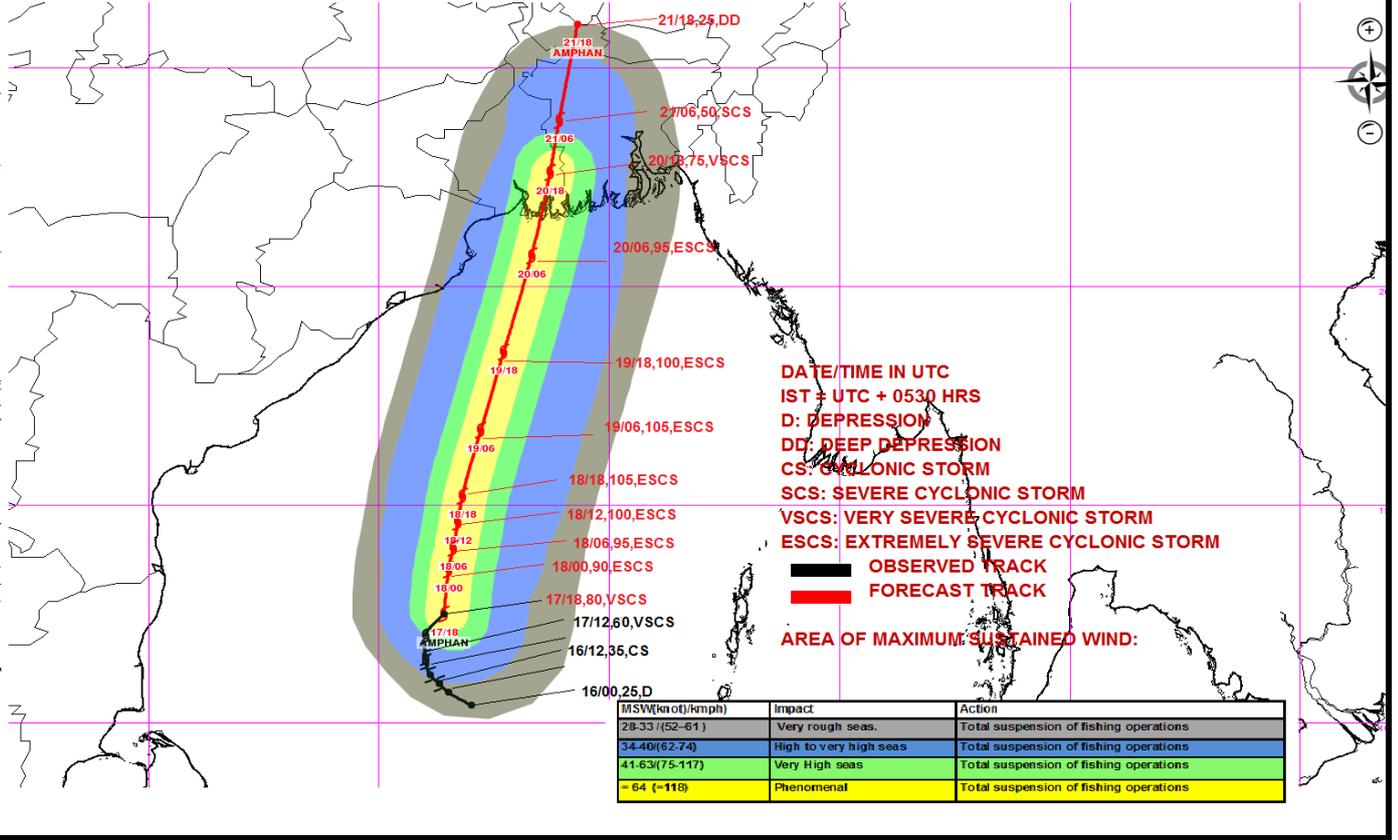
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 17-05-2020/(1900 to 1926) GMT
 IMG_TIR1_TEMP 10.8 um 18-05-2020/(0030 to 0056) IST
 L1C Mercator

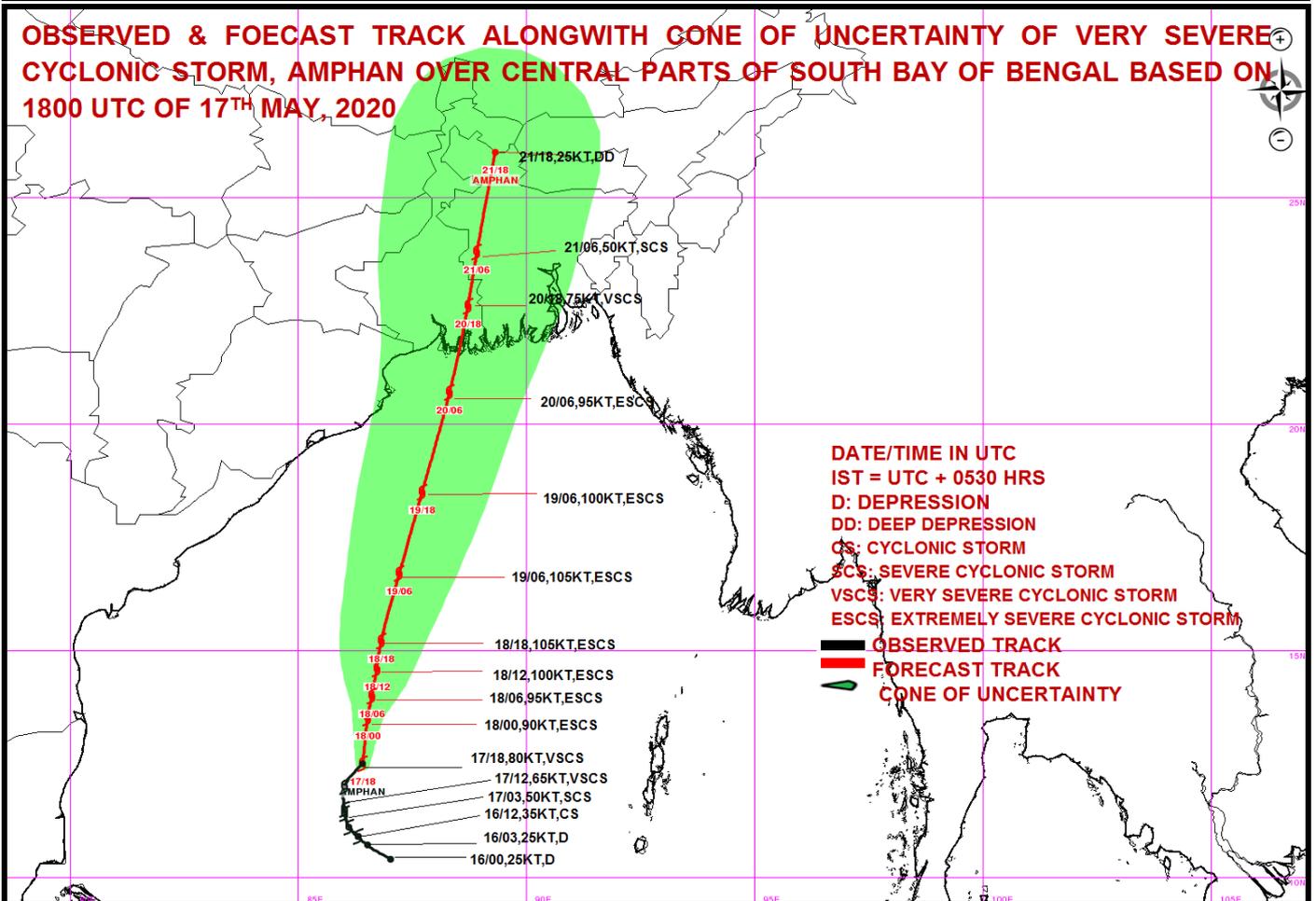


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 1800 UTC OF 17TH MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 1800 UTC OF 17TH MAY, 2020



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.: 16 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0630 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Extremely Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over central parts of South Bay of Bengal and adjoining central Bay of Bengal: Cyclone Alert for West Bengal and north Odisha coasts: Yellow Message.

The **Very Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over central parts of South Bay of Bengal moved north-northeastwards with a speed of 13 kmph during past 06 hours, intensified into an **Extremely Severe Cyclonic Storm** and lay centred at 0230 hrs IST of today, the 18th May, 2020 over **central parts of South Bay of Bengal and adjoining central Bay of Bengal** near latitude 12.9°N and longitude 86.4°E, about 820 km nearly south of Paradip (Odisha), 980 km south-southwest of Digha (West Bengal) and 1090 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further during next 06 hours. It is very likely to move north-northeastwards and move fast across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm.

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
18.05.20/0230	12.9/86.4	160-170 gusting to 190	Extremely Severe Cyclonic Storm
18.05.20/0530	13.5/86.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
18.05.20/1130	14.0/86.6	180-190 gusting to 210	Extremely Severe Cyclonic Storm
18.05.20/1730	14.6/86.7	190-200 gusting to 220	Extremely Severe Cyclonic Storm
18.05.20/2330	15.2/86.8	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/1130	16.7/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/2330	18.5/87.7	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/1130	21.7/88.3	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/2330	22.6/88.7	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/1130	23.8/88.9	85-95 gusting to 105	Severe Cyclonic Storm
21.05.20/2330	26.0/89.3	50-60 gusting to 70	Deep 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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from 18th May evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore & Mayurbhanj Districts) on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha and 120 to 140 kmph gusting to 155 kmph along & off the above districts of West Bengal from the afternoon of 20th May 2020.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 125-135 gusting to 150 kmph is prevailing over southeast and adjoining southwest Bay of Bengal. It is likely to increase becoming 140-150 gusting to 165 kmph over southern parts of central Bay of Bengal by 18th morning, 170-180 gusting to 200 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal on 19th, and 155-165 gusting to 180 kmph over north Bay of Bengal during 20th May.

(3) Sea condition

Sea condition will be Phenomenal over central parts of south Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into south Bay of Bengal during next 24 hours, to central Bay of Bengal on 18th May and into North Bay of Bengal during 18th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

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.

(5) Storm Surge expected

- Storm Surge of about 3 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and 2-3 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Some damage to pucca houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0830 hours IST of 18th May, 2020.

(V. R. Durai)
Scientist-E, RSMC, New Delhi

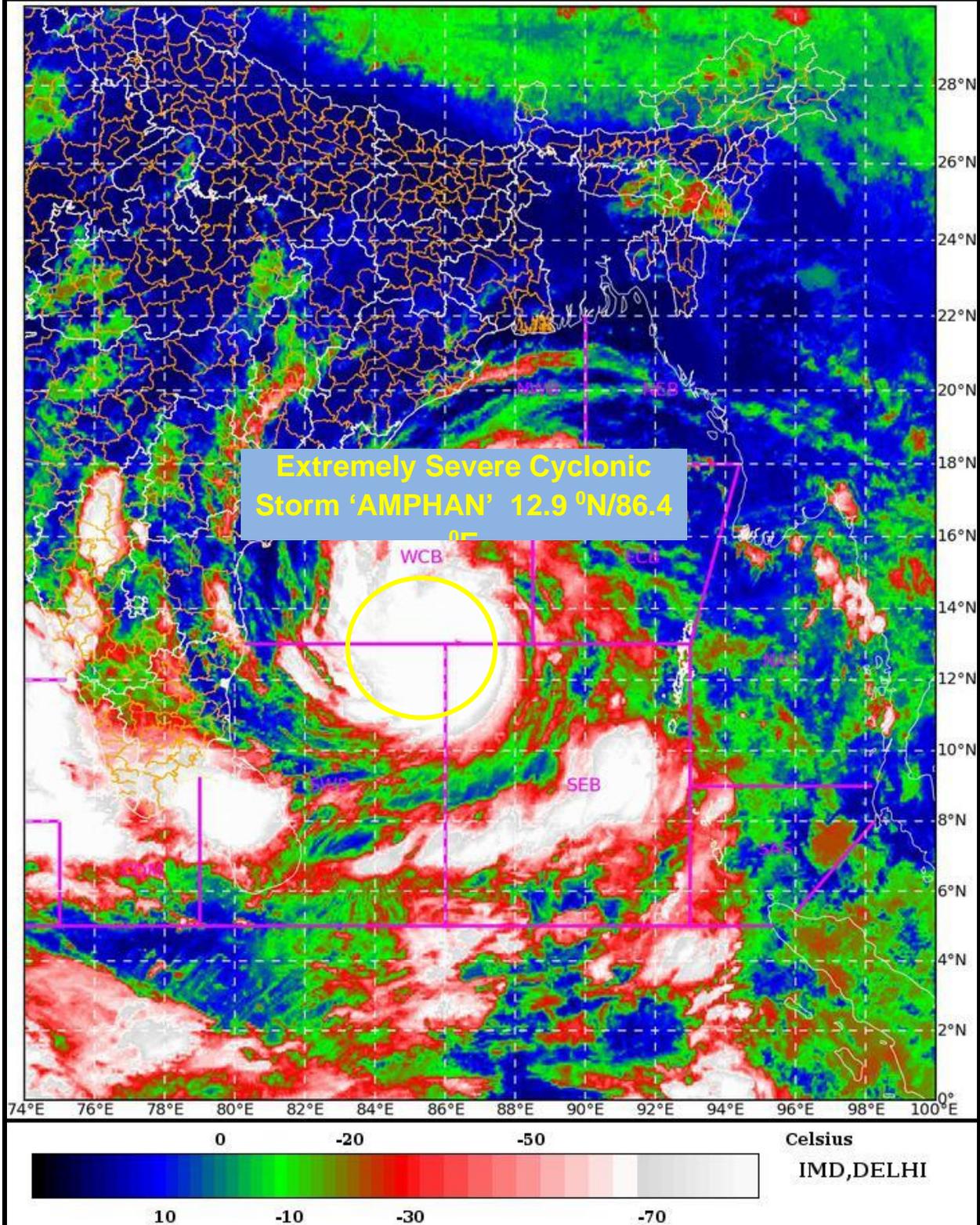
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 17-05-2020/(2230 to 2256) GMT

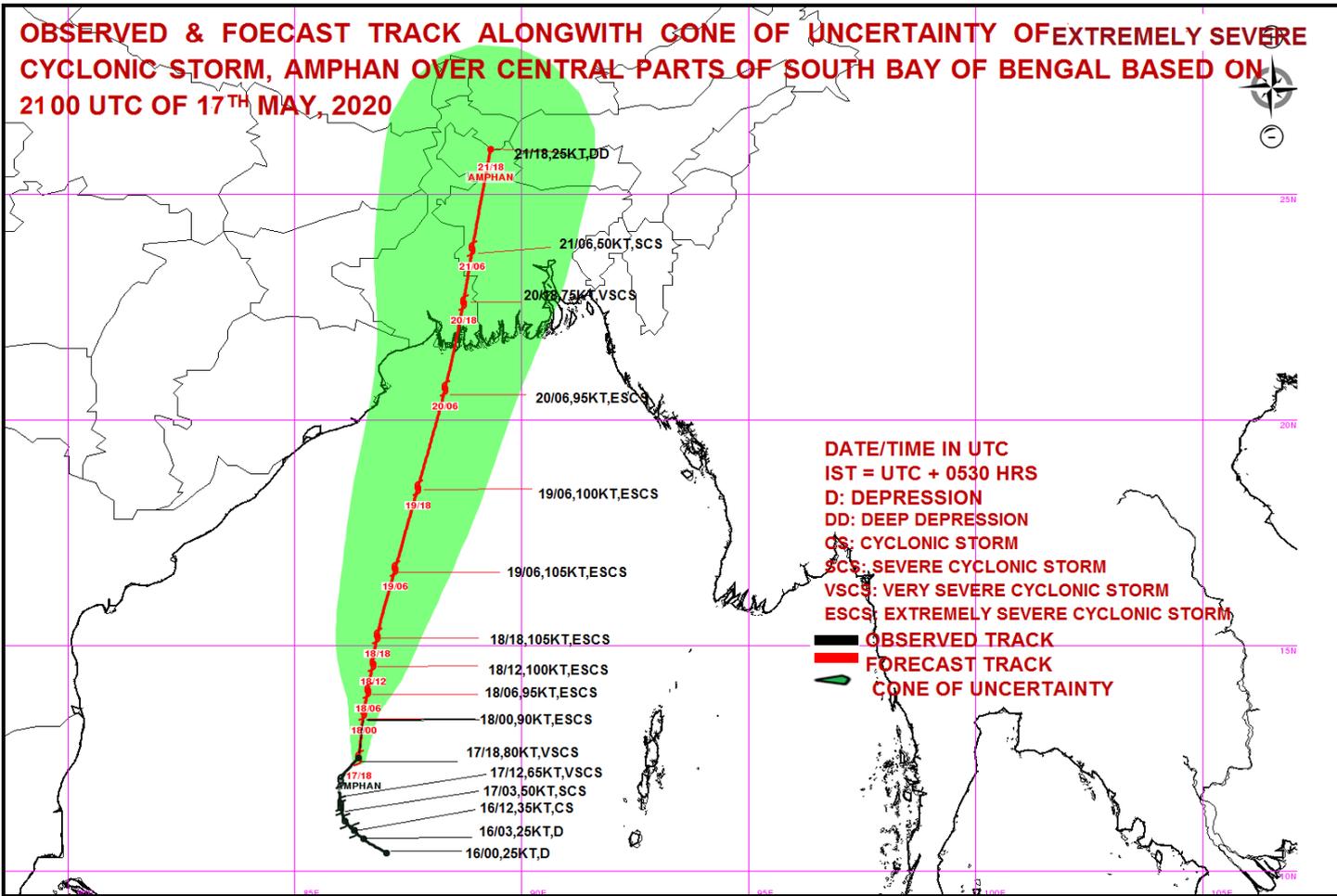
IMG_TIR1_TEMP 10.8 um 18-05-2020/(0400 to 0426) IST

L1C Mercator

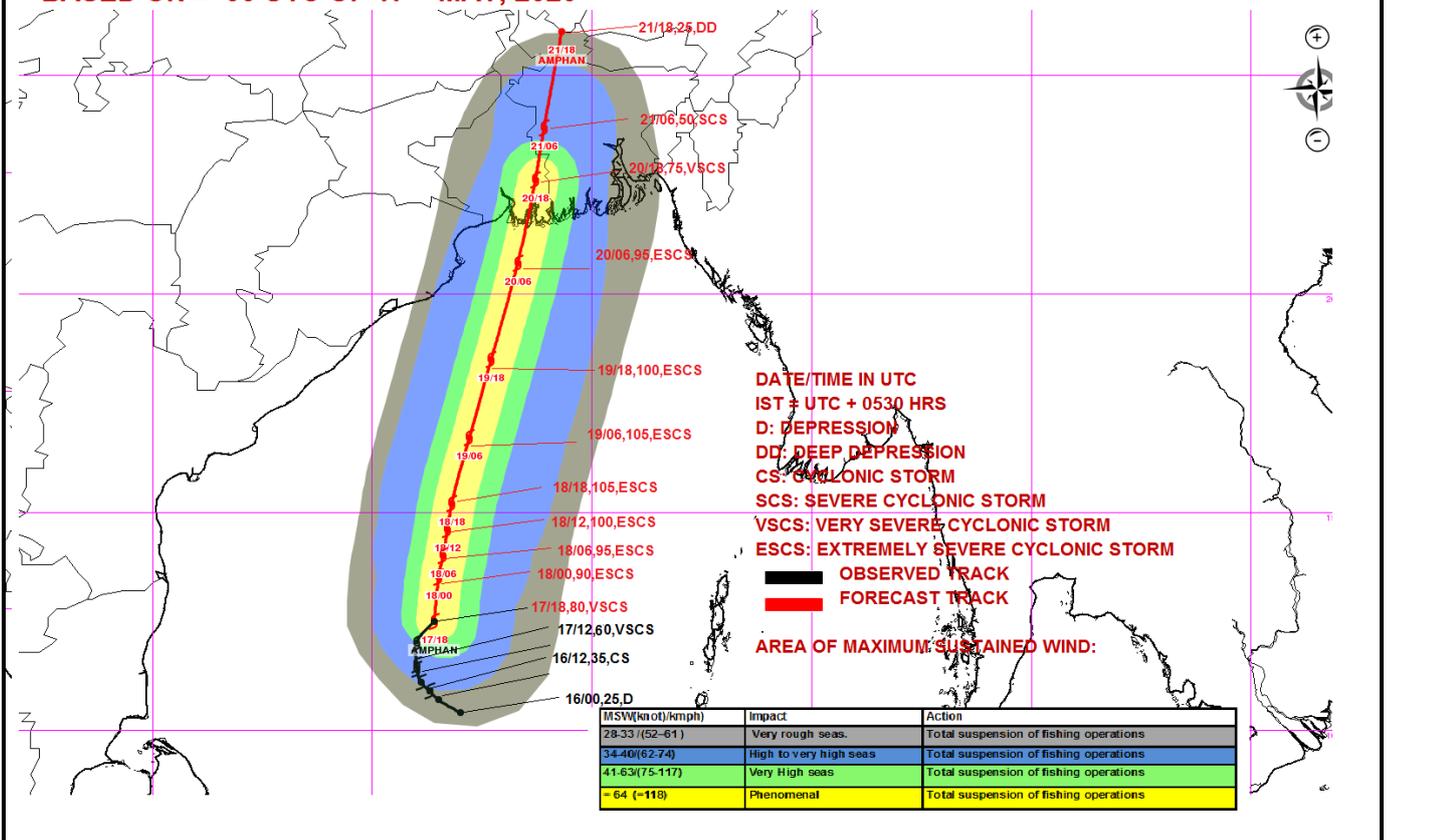


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 2100 UTC OF 17TH MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 2100 UTC OF 17TH MAY, 2020



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.: 17 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0845 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Extremely Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over west-central and adjoining central parts of South Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Extremely Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over central parts of South Bay of Bengal and adjoining central 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 18th May, 2020 over **west-central and adjoining central parts of South Bay of Bengal** near latitude 13.2°N and longitude 86.3°E, about 790 km nearly south of Paradip (Odisha), 940 km south-southwest of Digha (West Bengal) and 1060 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Super Cyclonic Storm during next 12 hours. It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

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
18.05.20/0530	13.2/86.3	180-190 gusting to 210	Extremely Severe Cyclonic Storm
18.05.20/1130	14.0/86.4	200-210 gusting to 230	Extremely Severe Cyclonic Storm
18.05.20/1730	14.6/86.5	220-230 gusting to 255	Super Cyclonic Storm
18.05.20/2330	15.2/86.6	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/0530	15.9/86.8	220-230 gusting to 255	Super Cyclonic Storm
19.05.20/1730	17.6/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/0530	19.9/87.8	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1730	22.1/88.6	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	24.0/89.3	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/90.0	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from 18th May evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Bhadrak, Balasore & Mayurbhanj Districts) on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and heavy to very heavy rain over these districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha and 120 to 140 kmph gusting to 155 kmph along & off the above districts of West Bengal from the afternoon of 20th May 2020.
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 180-190 gusting to 210 kmph is prevailing over west-central and adjoining central parts of south Bay of Bengal. It is likely to increase becoming 220-230 gusting to 250 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning, likely to increase further becoming 230-240 gusting to 255 kmph by tonight.
- Gale wind speed reaching 220-230 gusting to 255 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 155- 165 kmph gusting to 180 kmph by 20th evening.

(3) Sea condition

Sea condition will be Phenomenal over west-central and adjoining central parts of south Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) 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.

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of 18th May, 2020.

(V. R. Durai)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

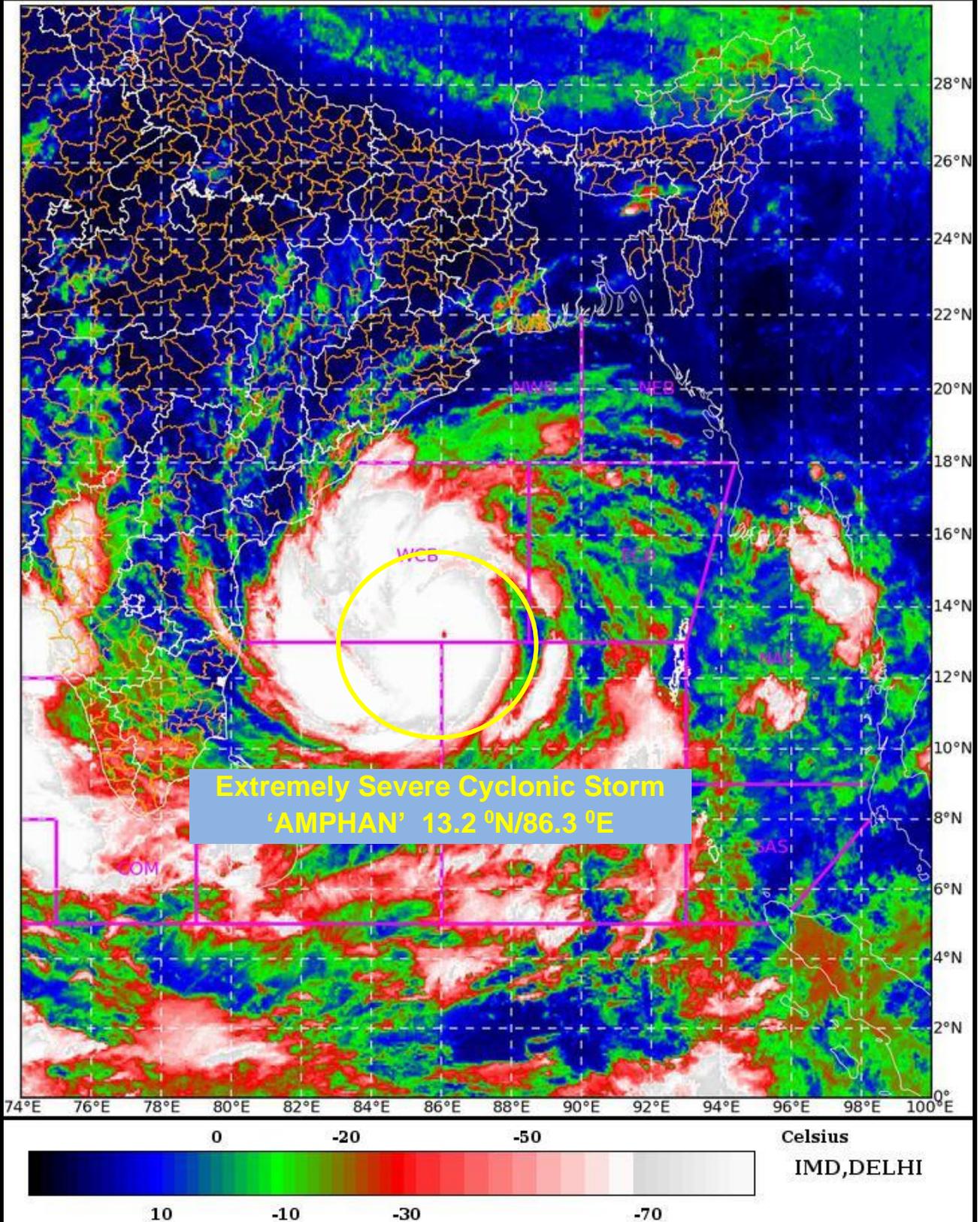
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 18-05-2020/(0130 to 0156) GMT

IMG_TIR1_TEMP 10.8 um 18-05-2020/(0700 to 0726) IST

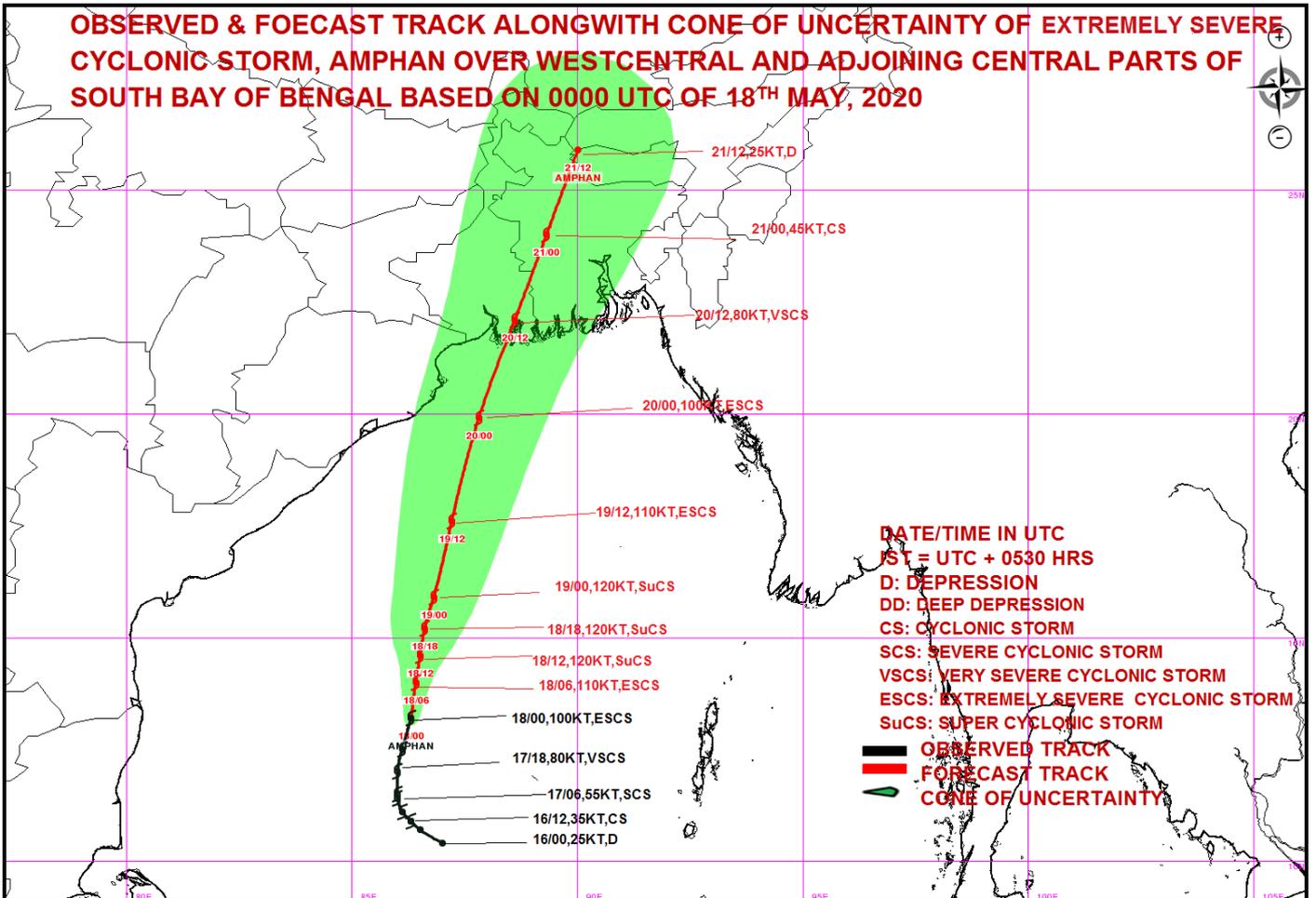


L1C Mercator

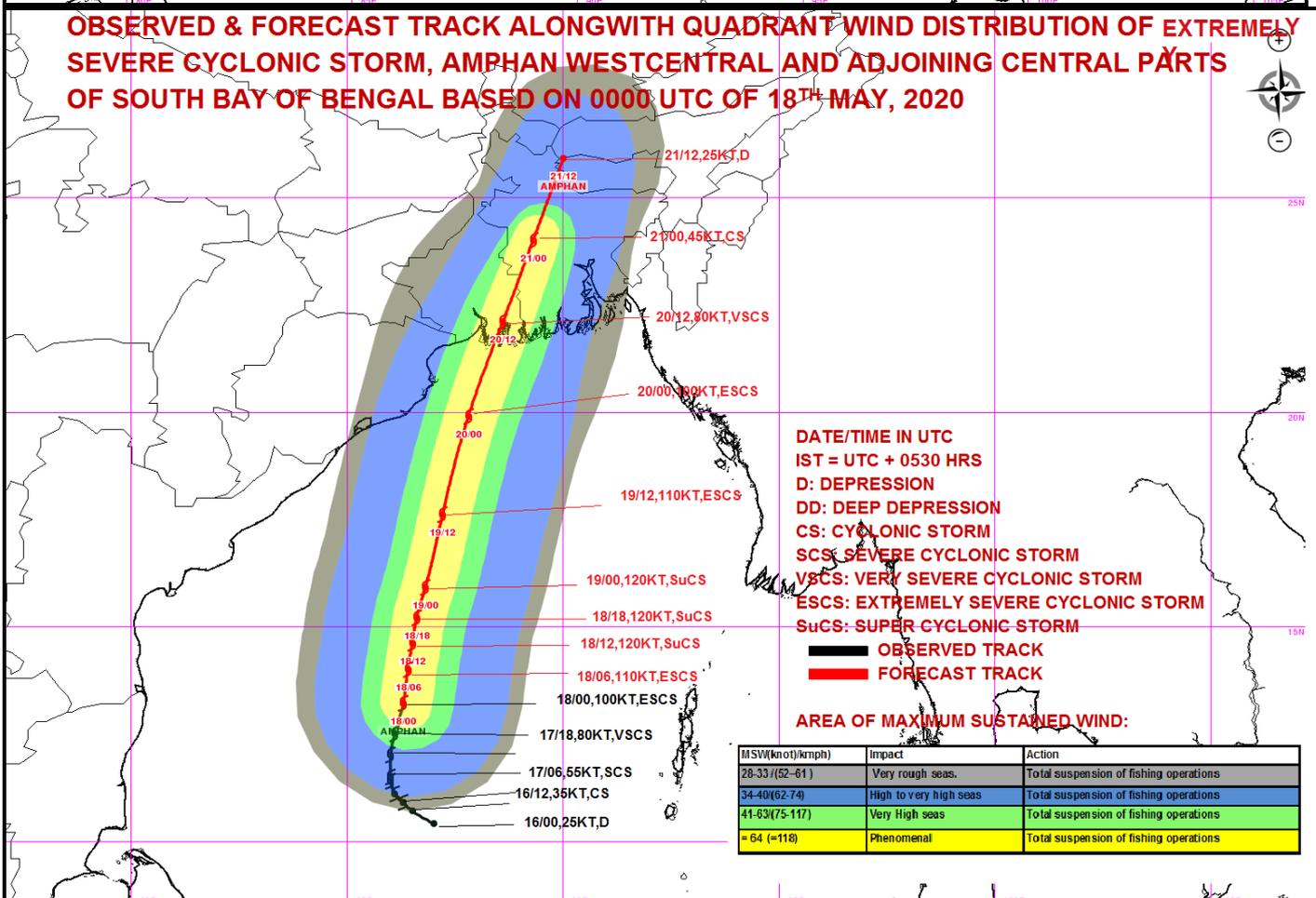


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FOECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN OVER WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 0000 UTC OF 18TH MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM, AMPHAN WESTCENTRAL AND ADJOINING CENTRAL PARTS OF SOUTH BAY OF BENGAL BASED ON 0000 UTC OF 18TH MAY, 2020



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.: 18 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1130 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Extremely Severe Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over west-central and adjoining central parts of South Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Extremely Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over west-central and adjoining central parts of South Bay of Bengal moved north-northwestwards with a speed of 8 kmph during past 06 hours and lay centred at 0830 hrs IST of today, the 18th May, 2020 over **west-central and adjoining central parts of South Bay of Bengal** near latitude 13.3°N and longitude 86.3°E, about 780 km nearly south of Paradip (Odisha), 930 km south-southwest of Digha (West Bengal) and 1050 km south-southwest of Khepupara (Bangladesh). It is very likely to intensify further into a Super Cyclonic Storm during next 6 hours. It is very likely to move nearly northwards for some time and then north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) during the Afternoon / Evening of 20th May 2020 as a Very Severe Cyclonic Storm with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

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
18.05.20/0830	13.3/86.3	210-220 gusting to 240	Extremely Severe Cyclonic Storm
18.05.20/1130	14.0/86.4	220-230 gusting to 255	Super Cyclonic Storm
18.05.20/1730	14.6/86.5	230-240 gusting to 265	Super Cyclonic Storm
18.05.20/2330	15.2/86.6	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/0530	15.9/86.8	220-230 gusting to 255	Super Cyclonic Storm
19.05.20/1730	17.6/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/0530	19.9/87.8	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1730	22.1/88.6	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	24.0/89.3	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/90.0	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from today evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, increase becoming 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 100-110 kmph gusting to 120 kmph over Kolkata, Hoogli, Howrah and West Mednipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 210-220 gusting to 240 kmph is prevailing over west-central and adjoining central parts of south Bay of Bengal. It is likely to increase becoming 220-230 gusting to 250 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning, likely to increase further becoming 230-240 gusting to 255 kmph by tonight.
- Gale wind speed reaching 220-230 gusting to 255 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 155- 165 kmph gusting to 180 kmph by 20th 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.

(3) Sea condition

Sea condition will be Phenomenal over west-central and adjoining central parts of south Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations along & off Odisha coast during 18th to 20th May 2020.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.
- Small Fishing Boats may get detached and damaged from their moorings.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1430 hours IST of 18th May, 2020.

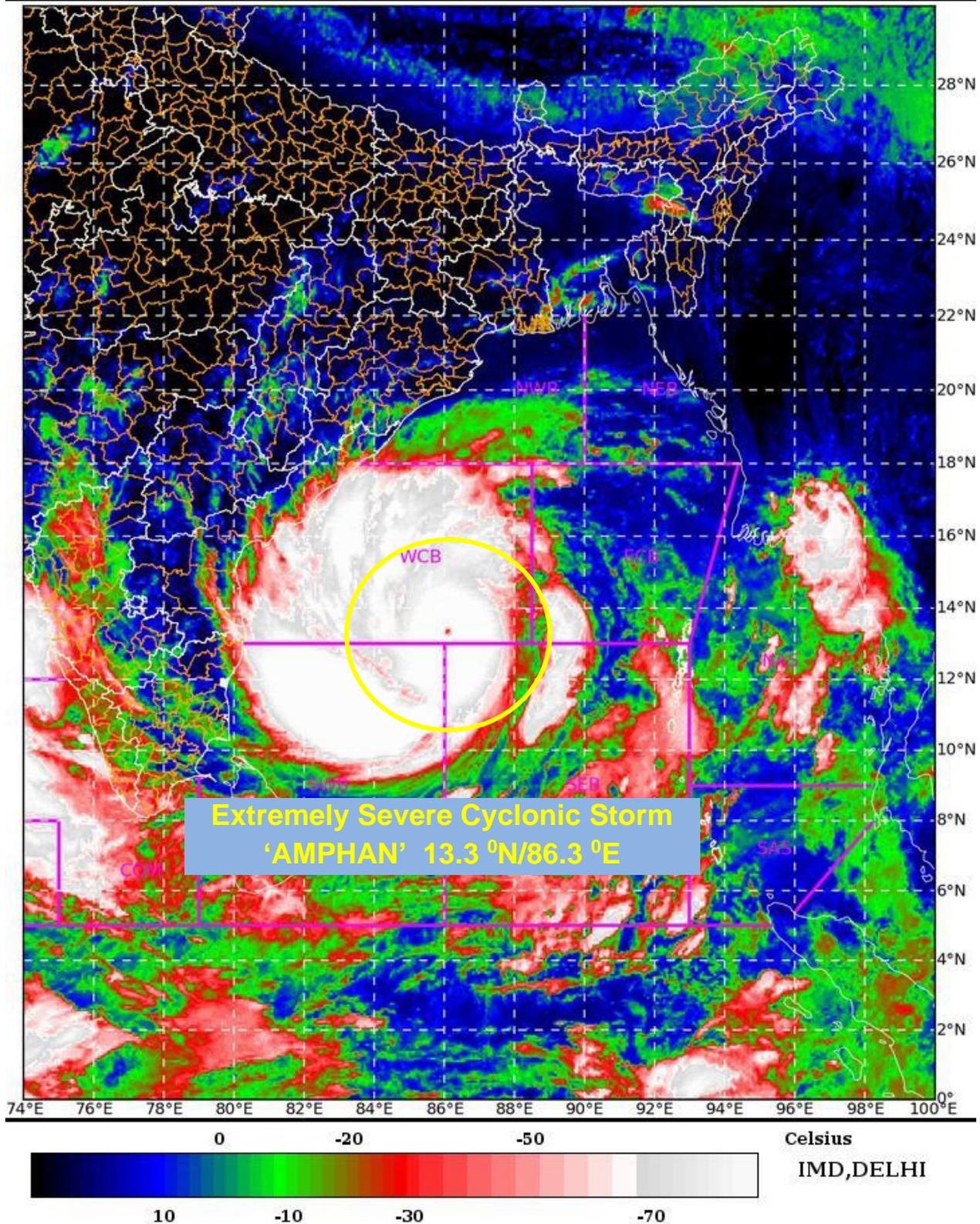
(Sunitha Devi)
Scientist-E, RSMC, New Delhi

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.

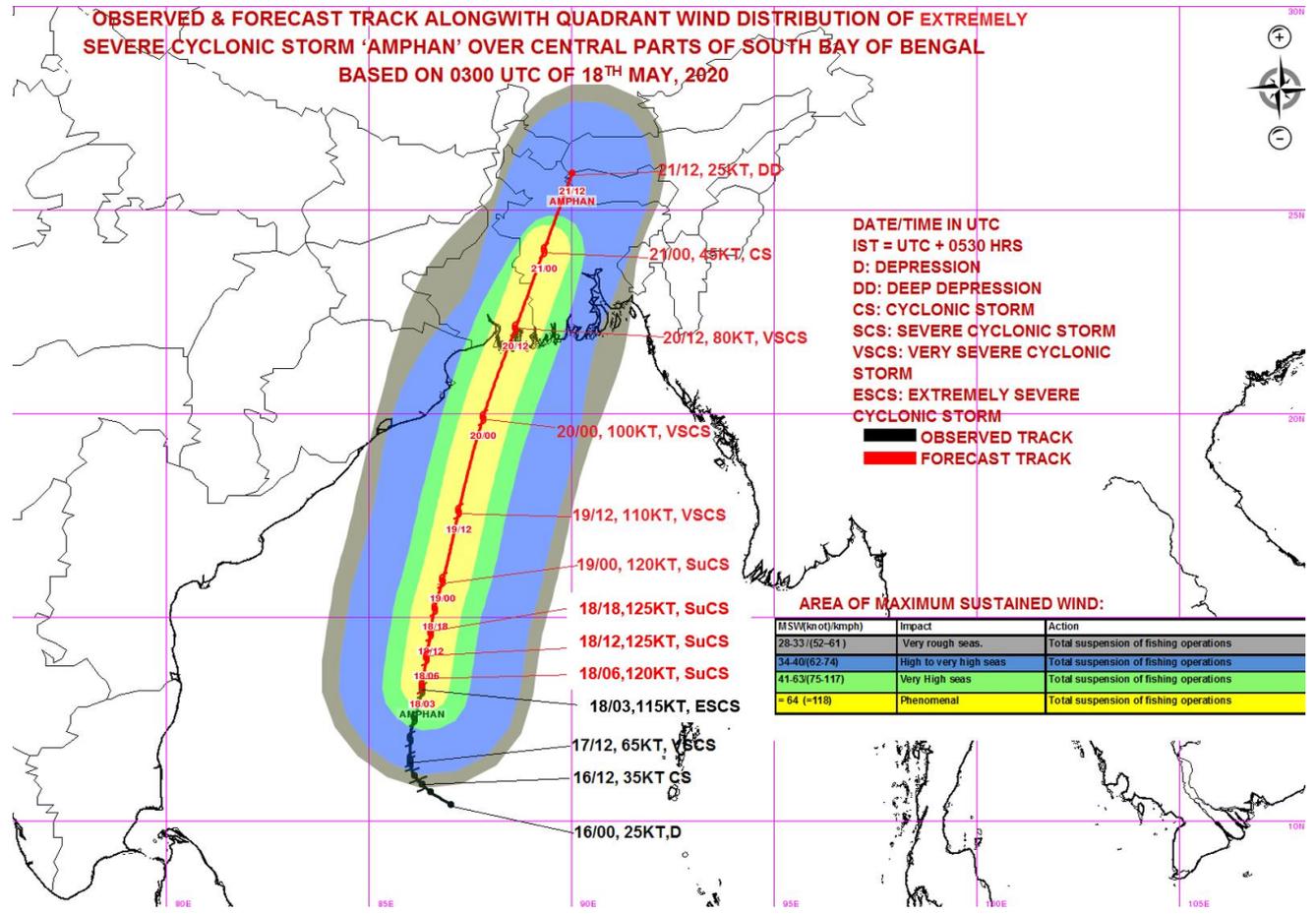
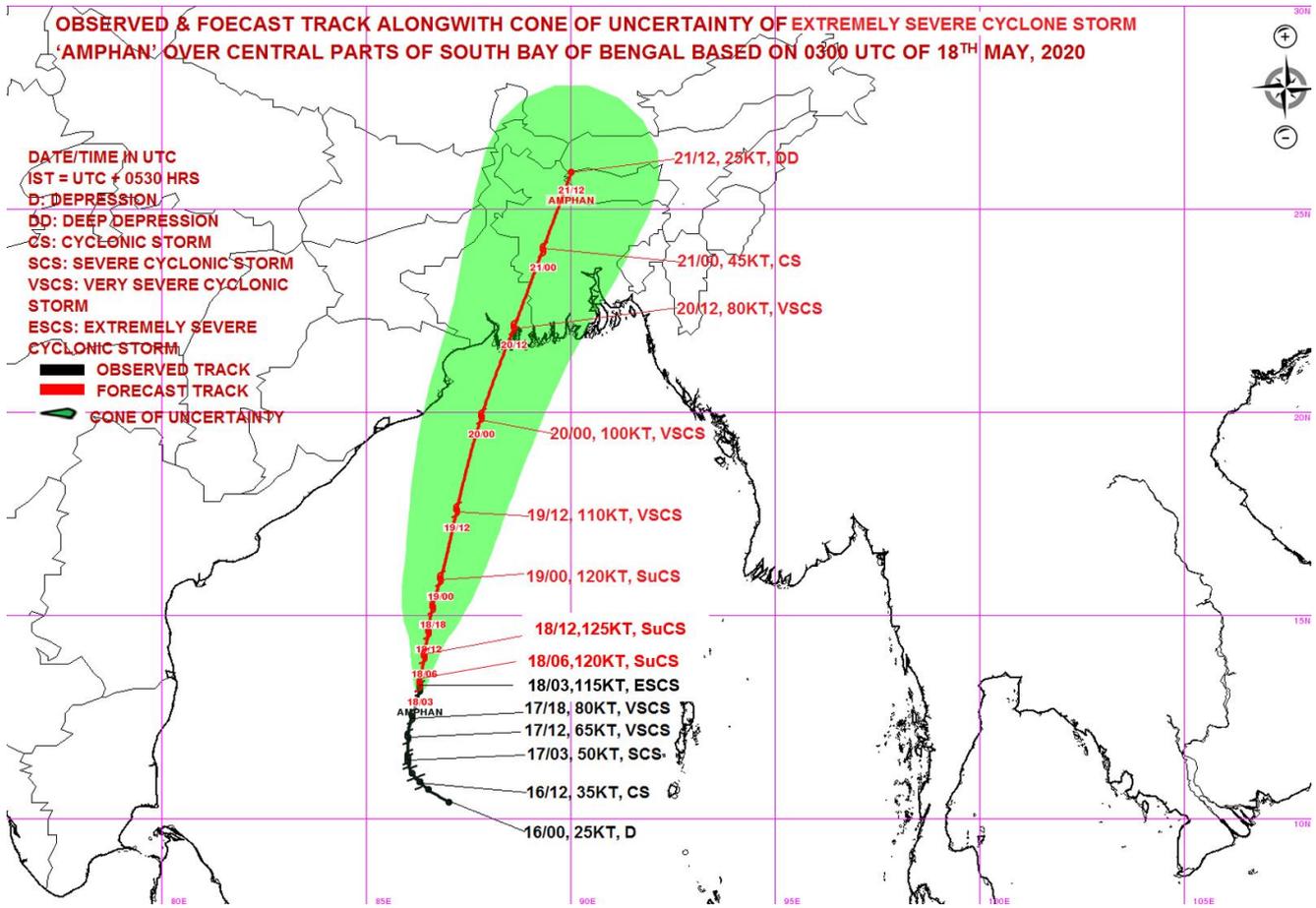
SAT : INSAT-3D IMG 18-05-2020/(0330 to 0357) GMT

IMG_TIR1_TEMP 10.8 um 18-05-2020/(0900 to 0927) 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.: 19 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1445 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over west-central and adjoining central parts of South Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Extremely Severe Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over west-central and adjoining central parts of South Bay of Bengal moved nearly northwards with a speed of 04 kmph during past 06 hours, intensified further into a **Super Cyclonic Storm** and lay centred at 1130 hrs IST of today, the 18th May, 2020 over **west-central and adjoining central parts of South Bay of Bengal** near latitude 13.4°N and longitude 86.2 °E, about 770 km nearly south of Paradip (Odisha), 920 km south-southwest of Digha (West Bengal) and 1040 km south-southwest of Khepupara (Bangladesh).

It is very likely to move nearly northwards for some more time and then north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 185 kmph.

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
18.05.20/1130	13.4/86.2	220-230 gusting to 255	Super Cyclonic Storm
18.05.20/1730	14.6/86.4	230-240 gusting to 265	Super Cyclonic Storm
18.05.20/2330	15.2/86.5	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	220-230 gusting to 255	Super Cyclonic Storm
19.05.20/2330	18.3/87.3	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/1130	20.8/88.1	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/2330	22.8/88.8	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/1130	24.8/89.4	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/89.8	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from today evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, increase becoming 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 100-110 kmph gusting to 120 kmph over Kolkata, Hoogli, Howrah and West Mednipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 220-230 gusting to 255 kmph is prevailing over west-central and adjoining central parts of south Bay of Bengal. It is likely to increase becoming 220-230 gusting to 255 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning, likely to increase further becoming 230-240 gusting to 265 kmph by tonight.
- Gale wind speed reaching 220-230 gusting to 255 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 155- 165 kmph gusting to 180 kmph by 20th evening.

(3) Sea condition: Sea condition will be Phenomenal over west-central and adjoining central parts of south Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1730 hours IST of 18th May, 2020.

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

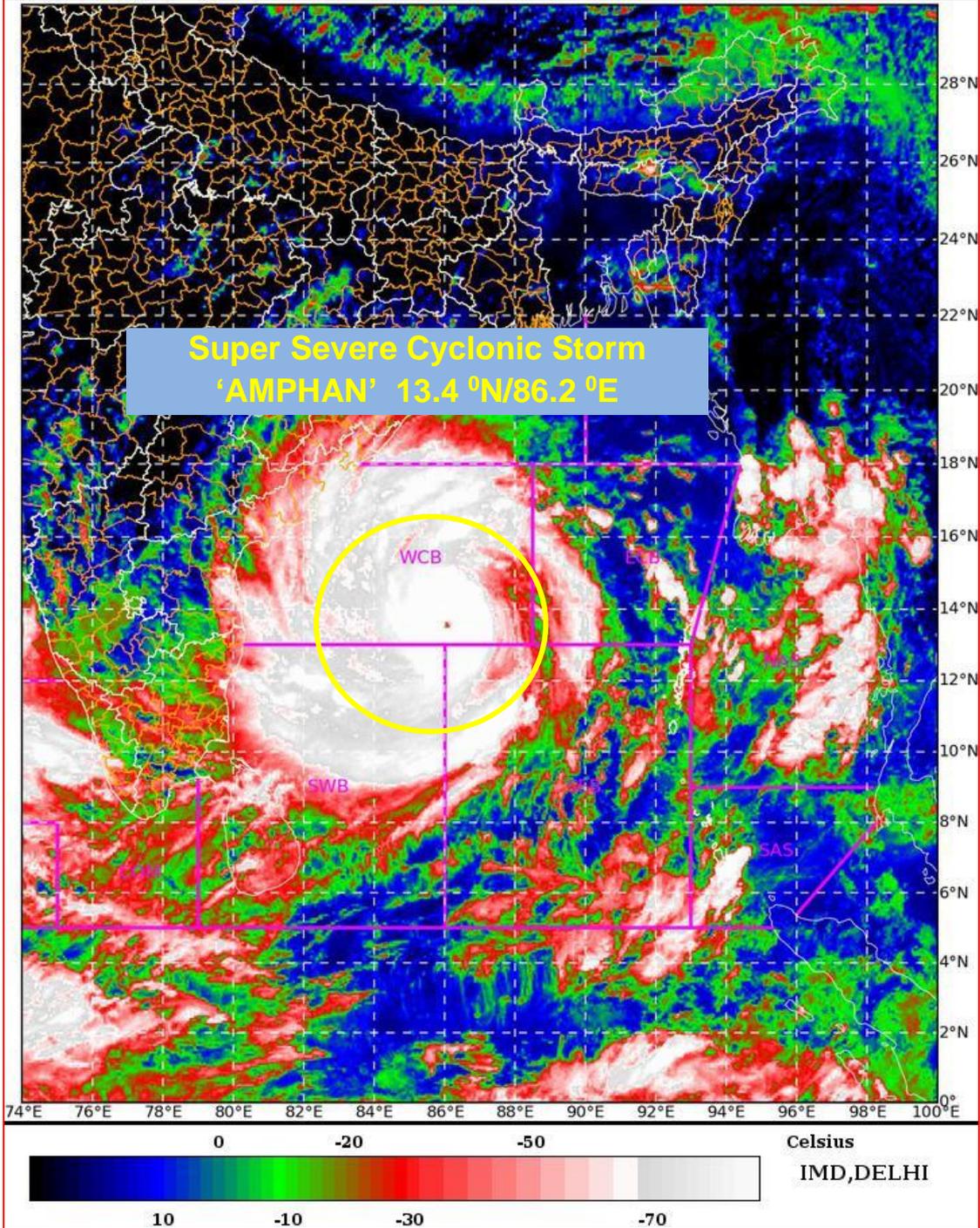
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

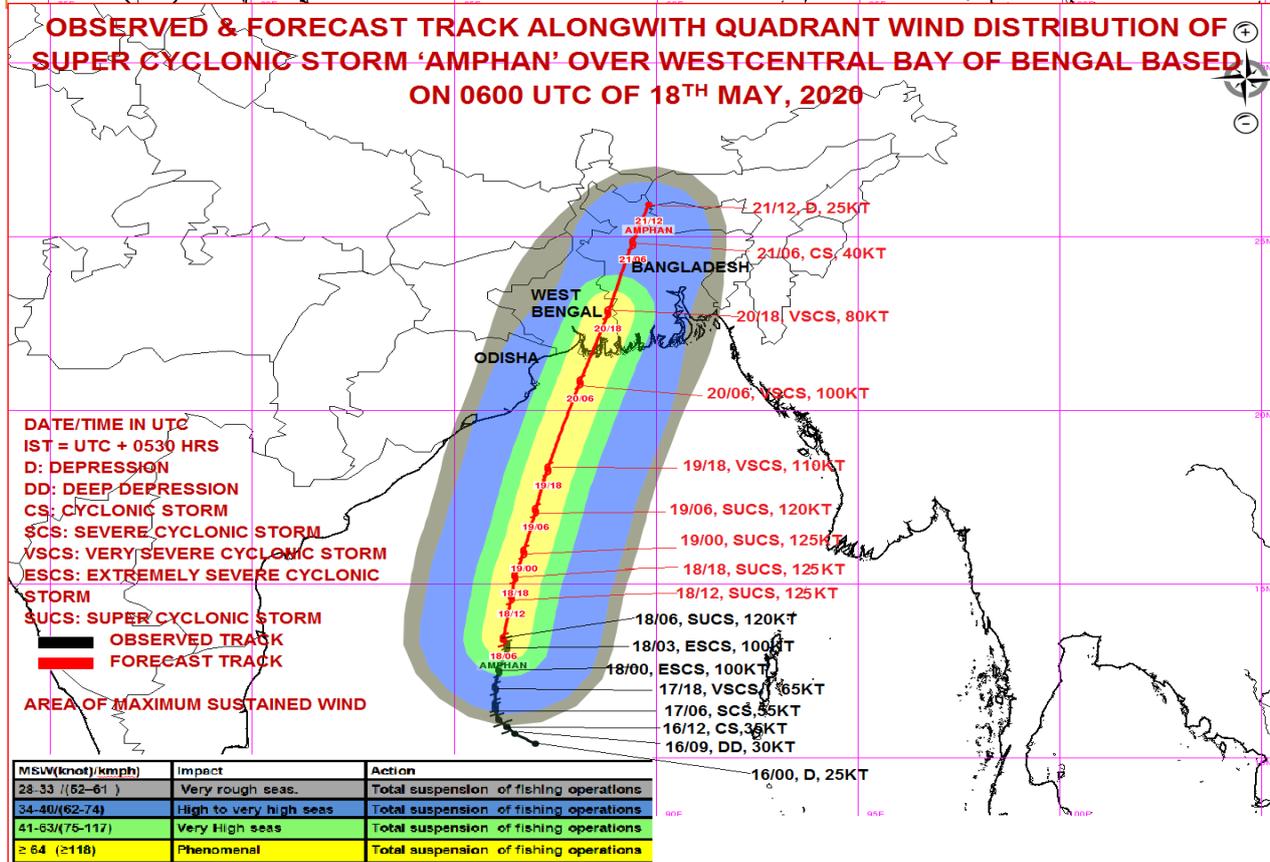
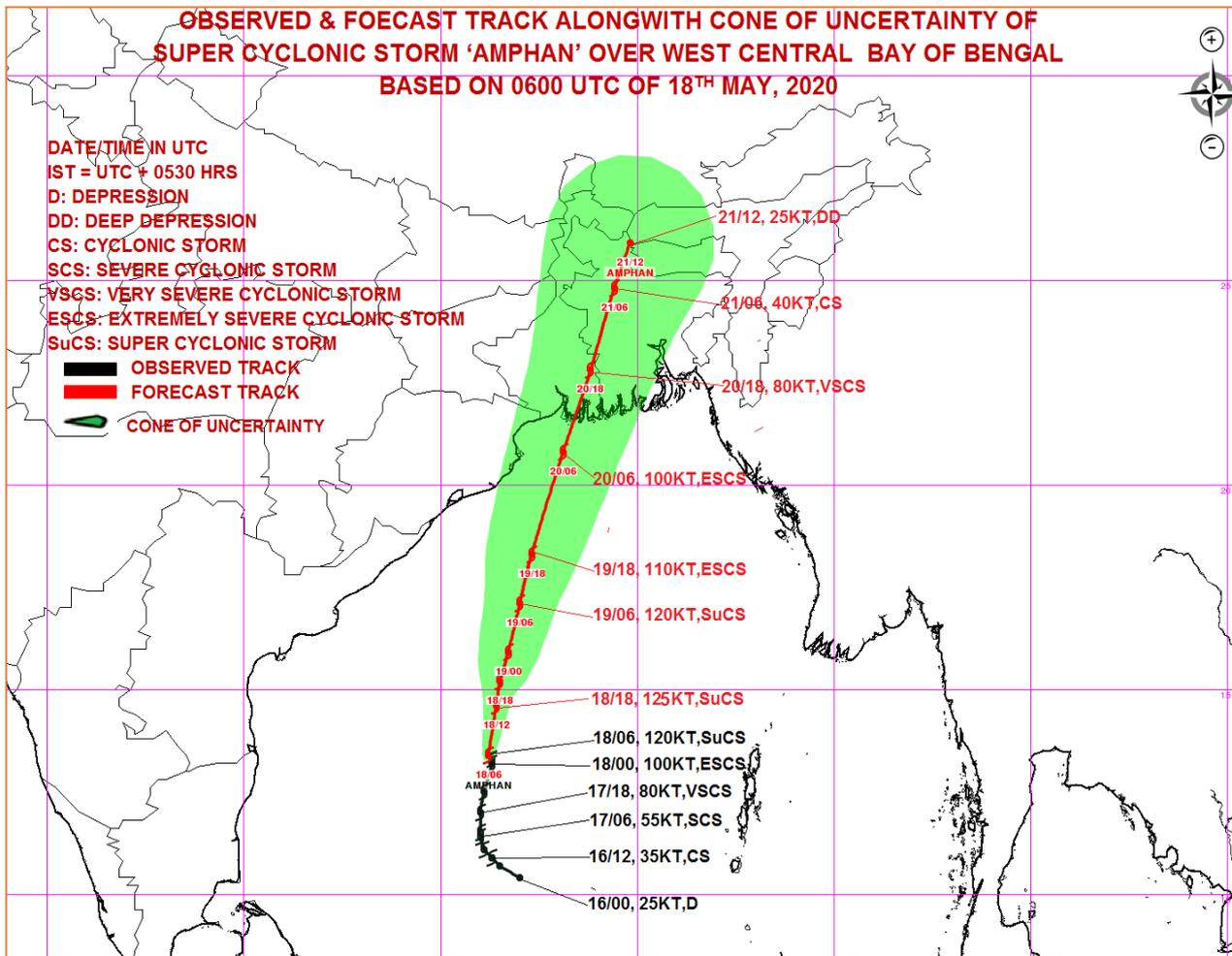
SAT : INSAT-3D IMG 18-05-2020/(0700 to 0727) GMT

IMG_TIR1_TEMP 10.8 um 18-05-2020/(1230 to 1257) 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.



MSW(knot)/kmph	Impact	Action
28-33 (62-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.

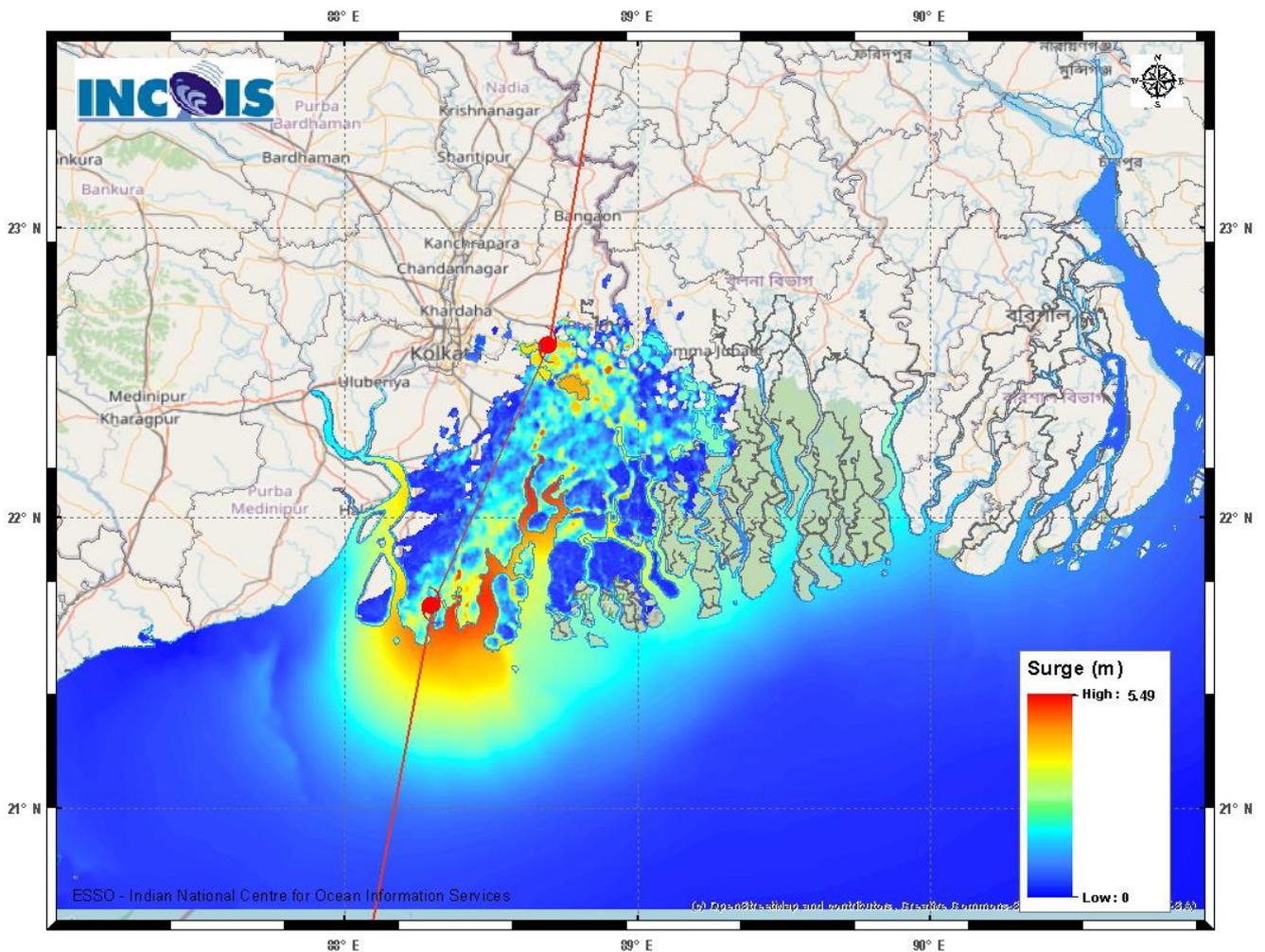


Figure: Storm Surge forecast from INCOIS

time of Landfall.

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1730 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over west-central and adjoining central parts of South Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over west-central and adjoining central parts of South Bay of Bengal moved nearly northwards with a speed of 07 kmph during past 06 hours and lay centred at 1430 hrs IST of today, the 18th May, 2020 over **Westcentral and adjoining central parts of South Bay of Bengal** near latitude 13.7°N and longitude 86.2 °E, about 730 km nearly south of Paradip (Odisha), 890 km south-southwest of Digha (West Bengal) and 1010 km south-southwest of Khepupara (Bangladesh).

It is very likely to move nearly northwards for some more time and then north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 195 kmph.

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
18.05.20/1430	13.7/86.2	220-230 gusting to 255	Super Cyclonic Storm
18.05.20/1730	14.6/86.4	230-240 gusting to 265	Super Cyclonic Storm
18.05.20/2330	15.2/86.5	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	220-230 gusting to 255	Super Cyclonic Storm
19.05.20/2330	18.3/87.3	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/1130	20.8/88.1	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/2330	22.8/88.8	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/1130	24.8/89.4	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/89.8	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from today evening with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, increase becoming 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 100-110 kmph gusting to 120 kmph over Kolkata, Hoogli, Howrah and West Mednipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 220-230 gusting to 255 kmph is prevailing over west-central and adjoining central parts of south Bay of Bengal. It is likely to increase becoming 220-230 gusting to 255 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning, likely to increase further becoming 230-240 gusting to 265 kmph by tonight.
- Gale wind speed reaching 220-230 gusting to 255 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 155- 165 kmph gusting to 180 kmph by 20th 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.

(3) Sea condition: Sea condition will be Phenomenal over west-central and adjoining central parts of south Bay of Bengal during next 24 hours. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

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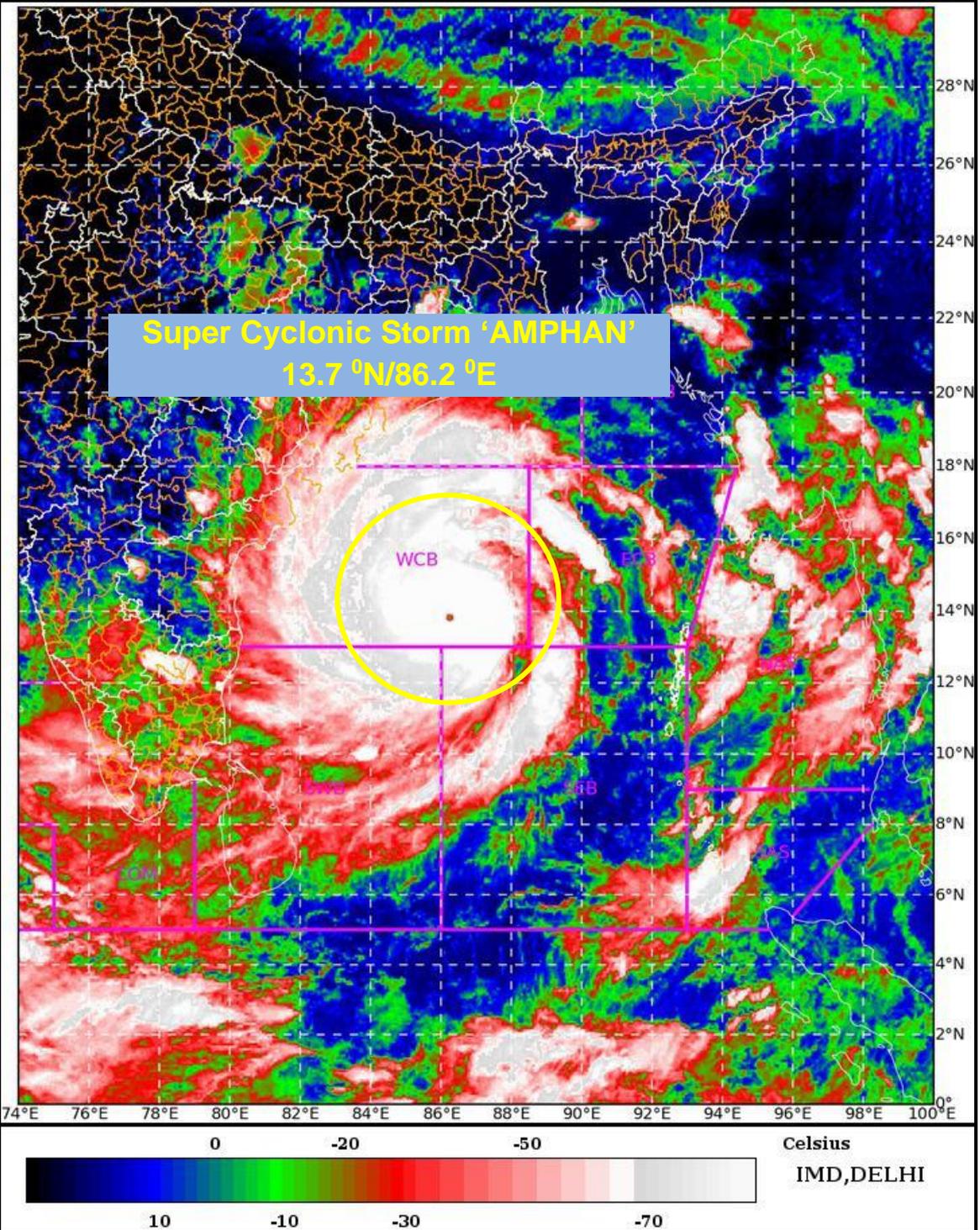
Next Bulletin will be issued at 2030 hours IST of 18th May, 2020.

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

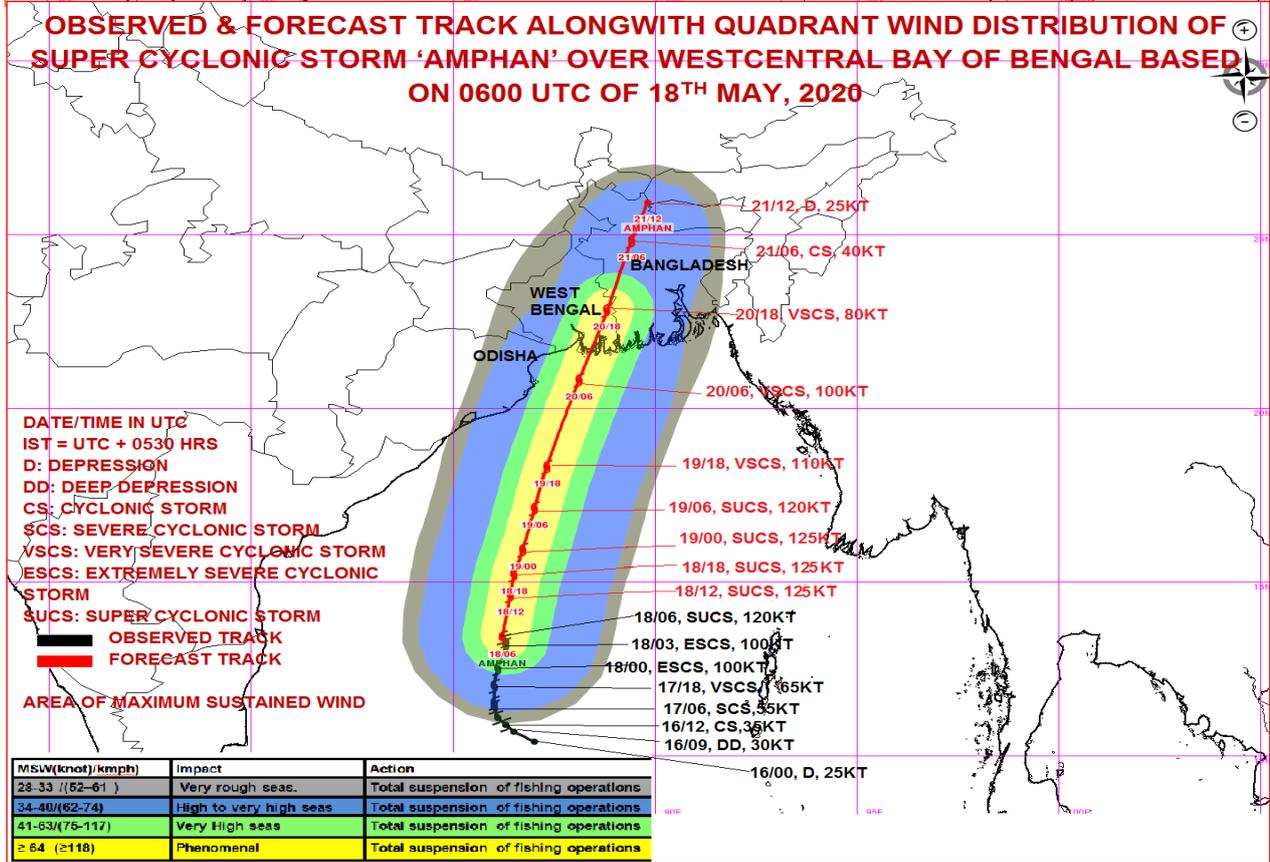
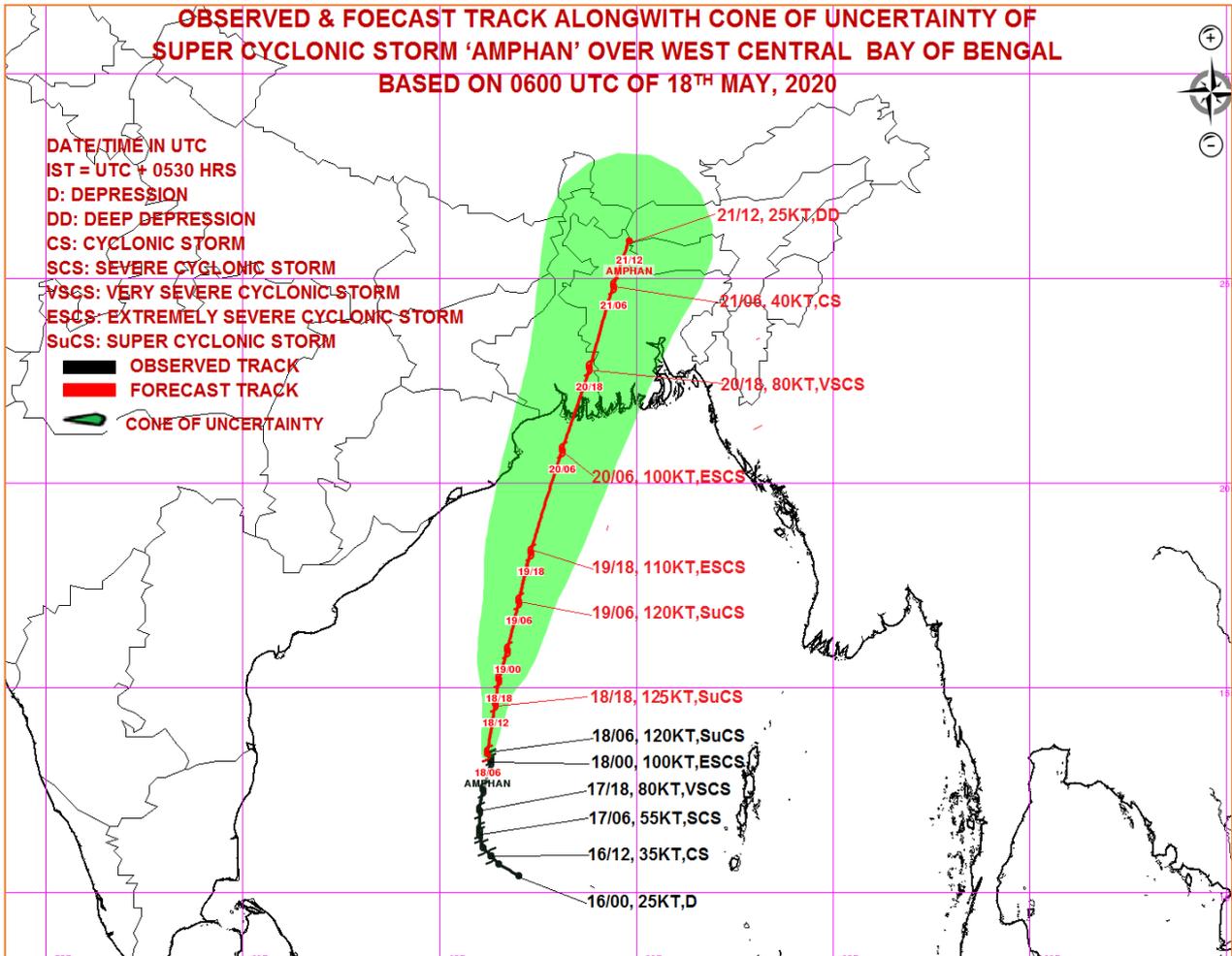
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 18-05-2020/(1000 to 1026) GMT
IMG_TIR1_TEMP 10.8 um 18-05-2020/(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.



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.

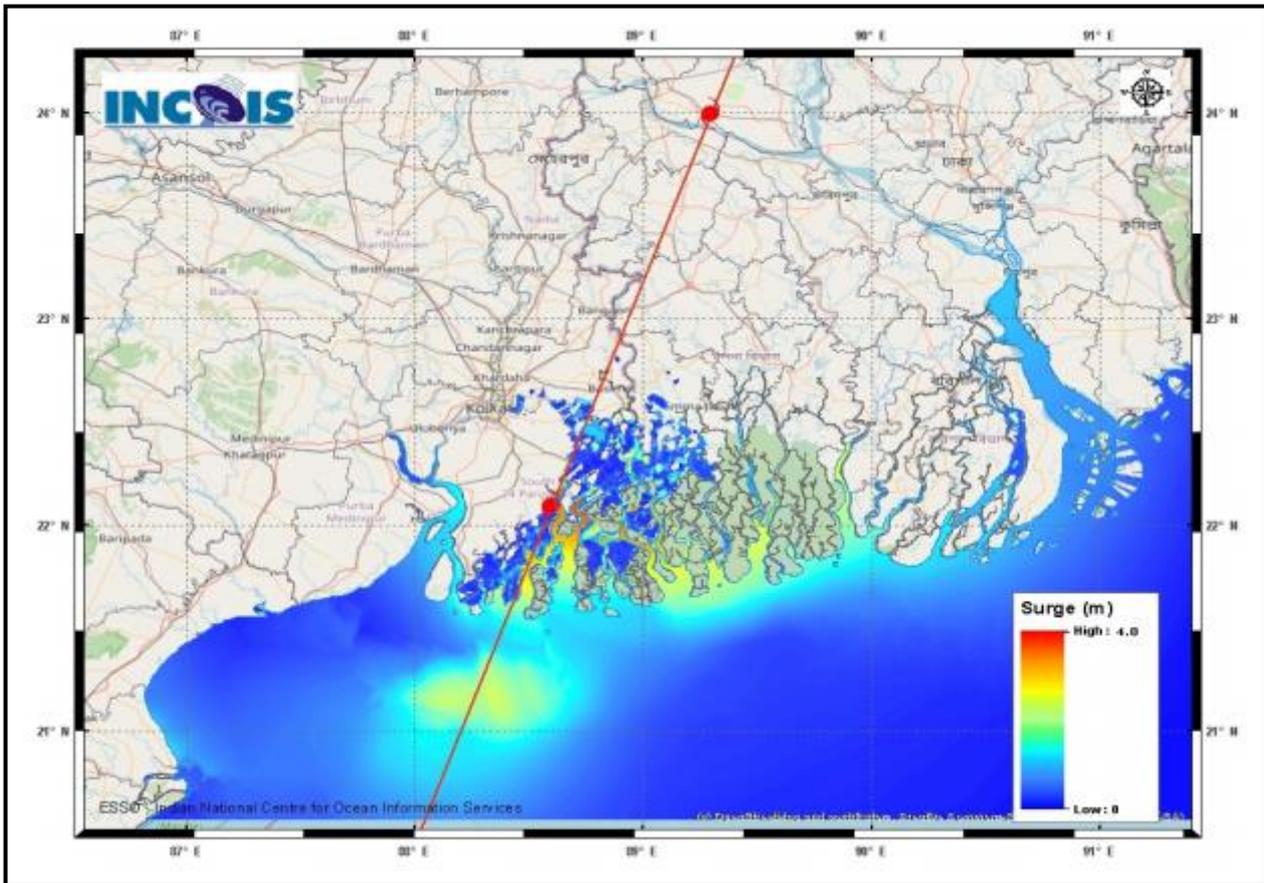


Figure: Storm Surge forecast from INCOIS

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2030 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over Westcentral and adjoining central parts of South Bay of Bengal moved nearly northwards with a speed of 11 kmph during past 06 hours and lay centred at 1730 hrs IST of today, the 18th May, 2020 near latitude 14.0°N and longitude 86.3 °E over **Westcentral Bay of Bengal** about 700 km nearly south of Paradip (Odisha), 860 km south-southwest of Digha (West Bengal) and 980 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 195 kmph.

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
18.05.20/1730	14.0/86.3	230-240 gusting to 265	Super Cyclonic Storm
18.05.20/2330	15.2/86.5	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/1730	17.7/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/88.5	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/0530	23.8/89.1	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/89.8	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from tonight with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) on 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, increase becoming 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 100-110 kmph gusting to 120 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 230-240 gusting to 265 kmph is prevailing over westcentral Bay of Bengal. It is likely to increase becoming 230-240 gusting to 265 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning.
- Gale wind speed reaching 200-210 gusting to 230 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th evening.

(3) Sea condition: Sea condition is Phenomenal and is likely to continue for next 24 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

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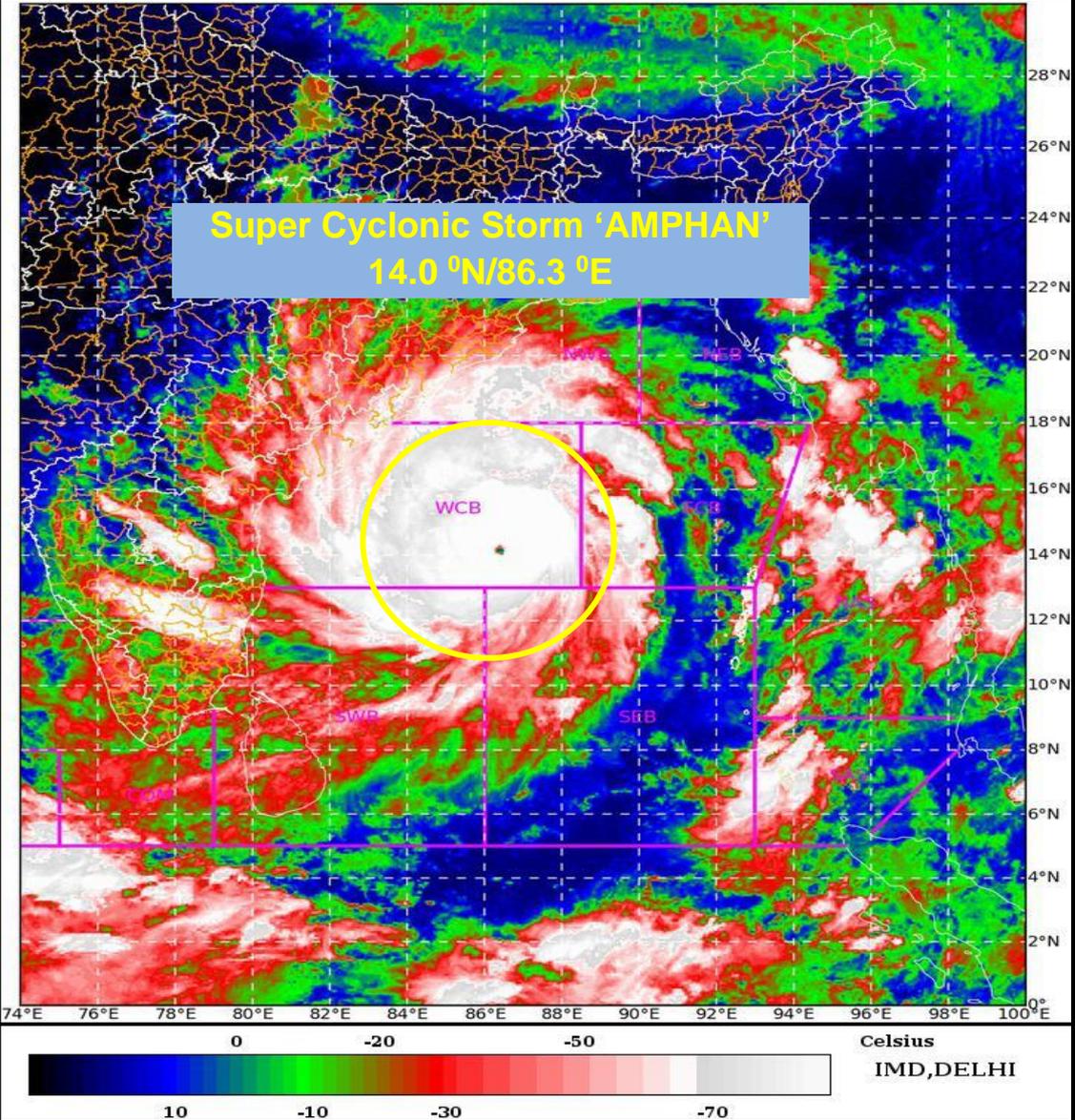
Next Bulletin will be issued at 2330 hours IST of 18th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

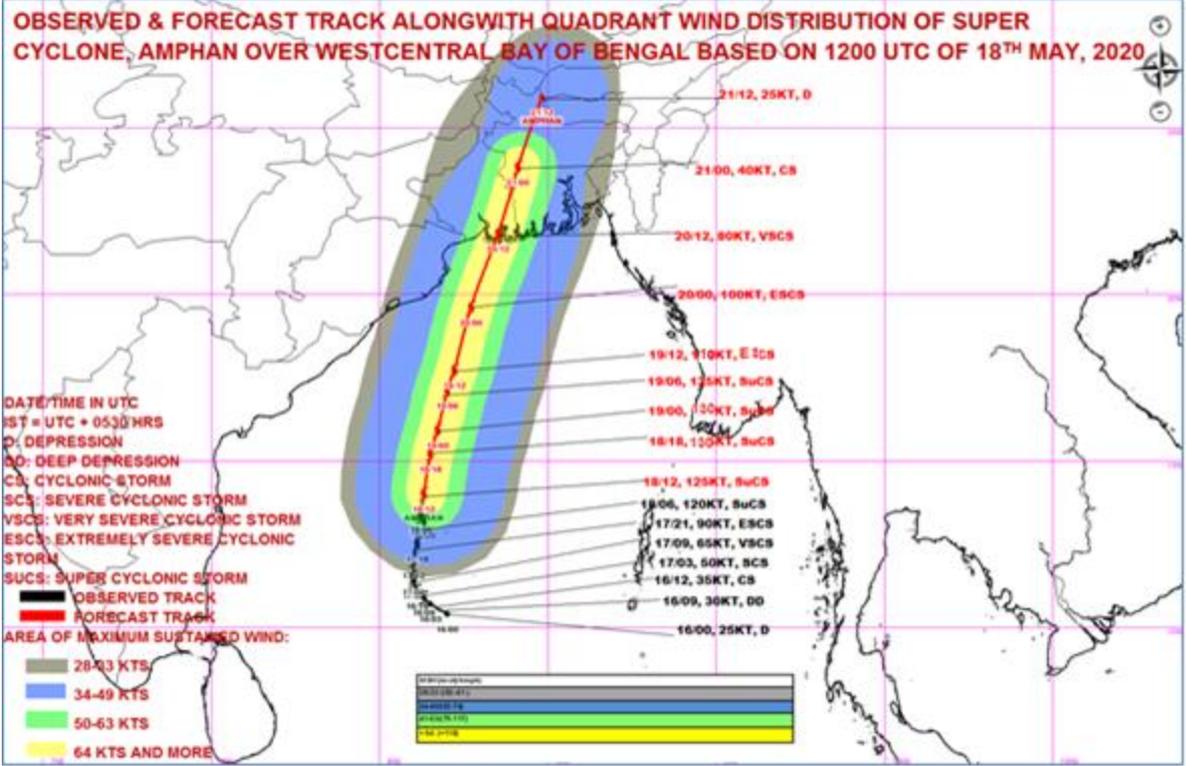
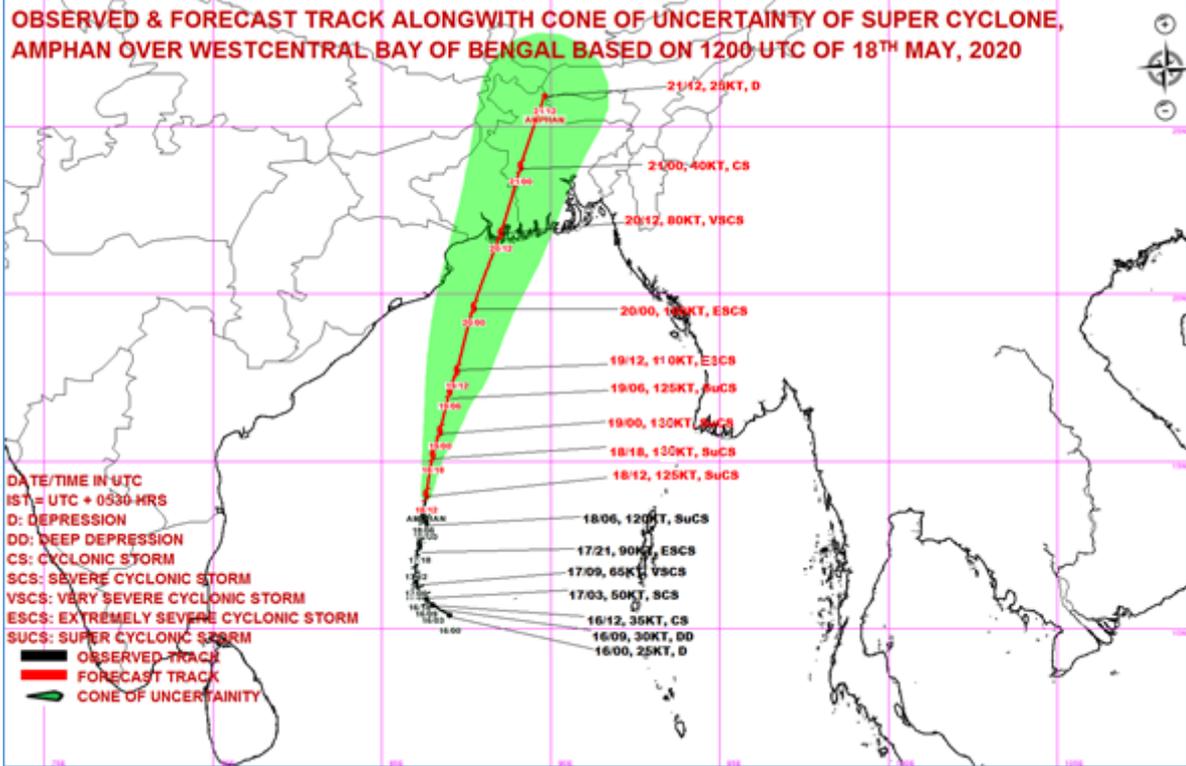
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 18-05-2020/(1230 to 1256) GMT
IMG_TIR1_TEMP 10.8 um 18-05-2020/(1800 to 1826) IST
L1C Mercator



Legend: WCB – West-central 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.

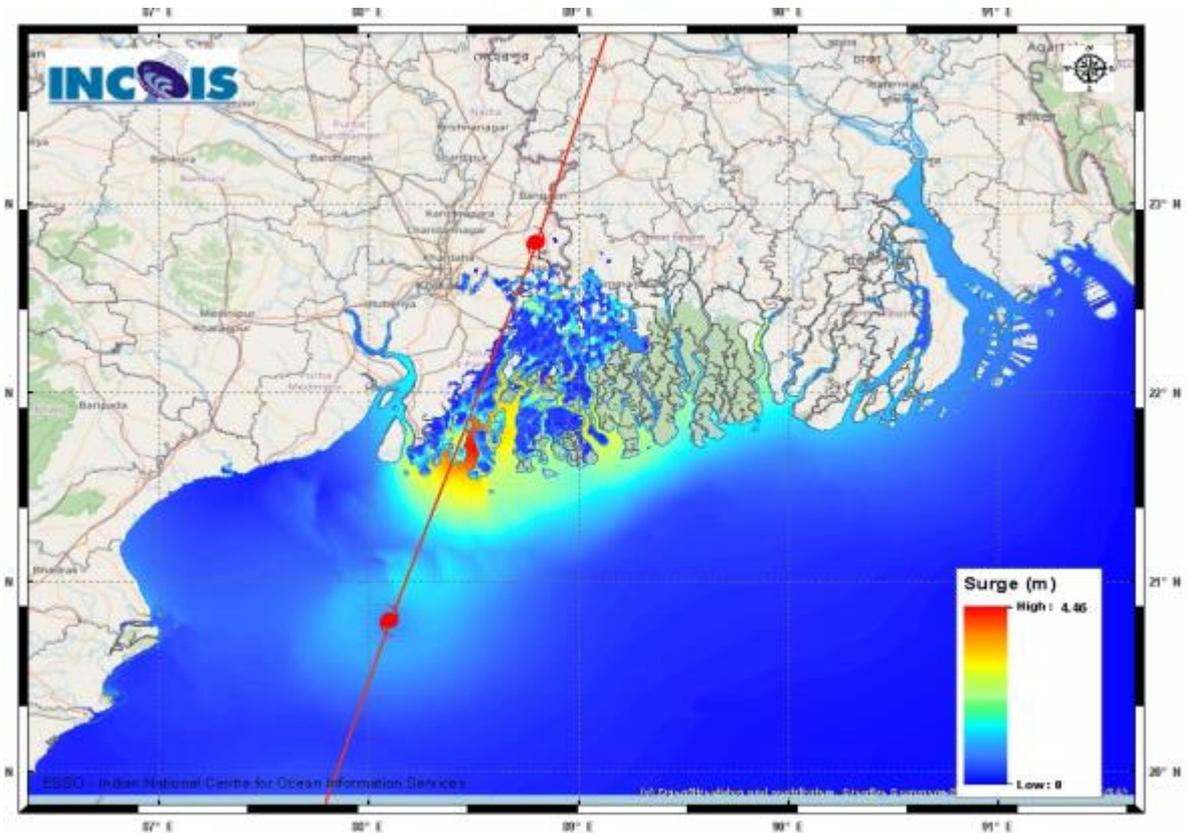


Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2230 HOURS IST

DATED: 18.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over Westcentral and adjoining central parts of South Bay of Bengal moved nearly northwards with a speed of 15 kmph during past 06 hours and lay centred at 2030 hrs IST of today, the 18th May, 2020 near latitude 14.5°N and longitude 86.4 °E over **Westcentral Bay of Bengal** about 640 km nearly south of Paradip (Odisha), 800 km south-southwest of Digha (West Bengal) and 920 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 195 kmph.

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
18.05.20/2030	14.5/86.4	230-240 gusting to 265	Super Cyclonic Storm
18.05.20/2330	15.2/86.5	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	230-240 gusting to 265	Super Cyclonic Storm
19.05.20/1730	17.7/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/88.5	135-145 gusting to 160	Very Severe Cyclonic Storm
21.05.20/0530	23.8/89.1	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.9/89.8	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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from tonight with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) during night of 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is likely to commence along and off south Odisha coast from 18th evening, increase becoming 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 230-240 gusting to 265 kmph is prevailing over westcentral Bay of Bengal. It is likely to increase becoming 230-240 gusting to 265 kmph over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from tonight to 19th May morning.
- Gale wind speed reaching 200-210 gusting to 230 kmph over north Bay of Bengal from 19th morning and gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th evening.

(3) Sea condition: Sea condition is Phenomenal and is likely to continue for next 24 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during 18th to 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0230 hours IST of 19th May, 2020.

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

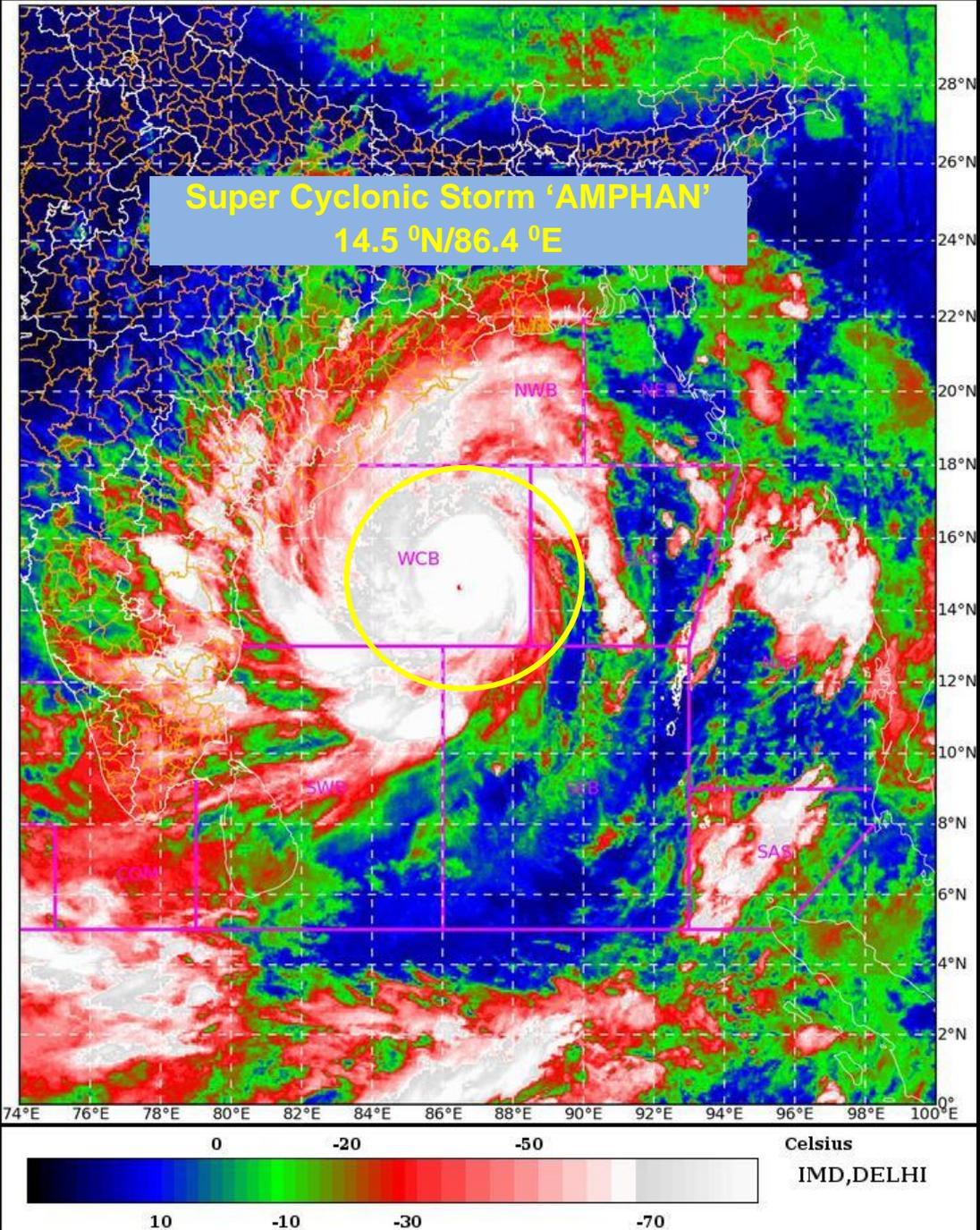
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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 18-05-2020/(1530 to 1556) GMT

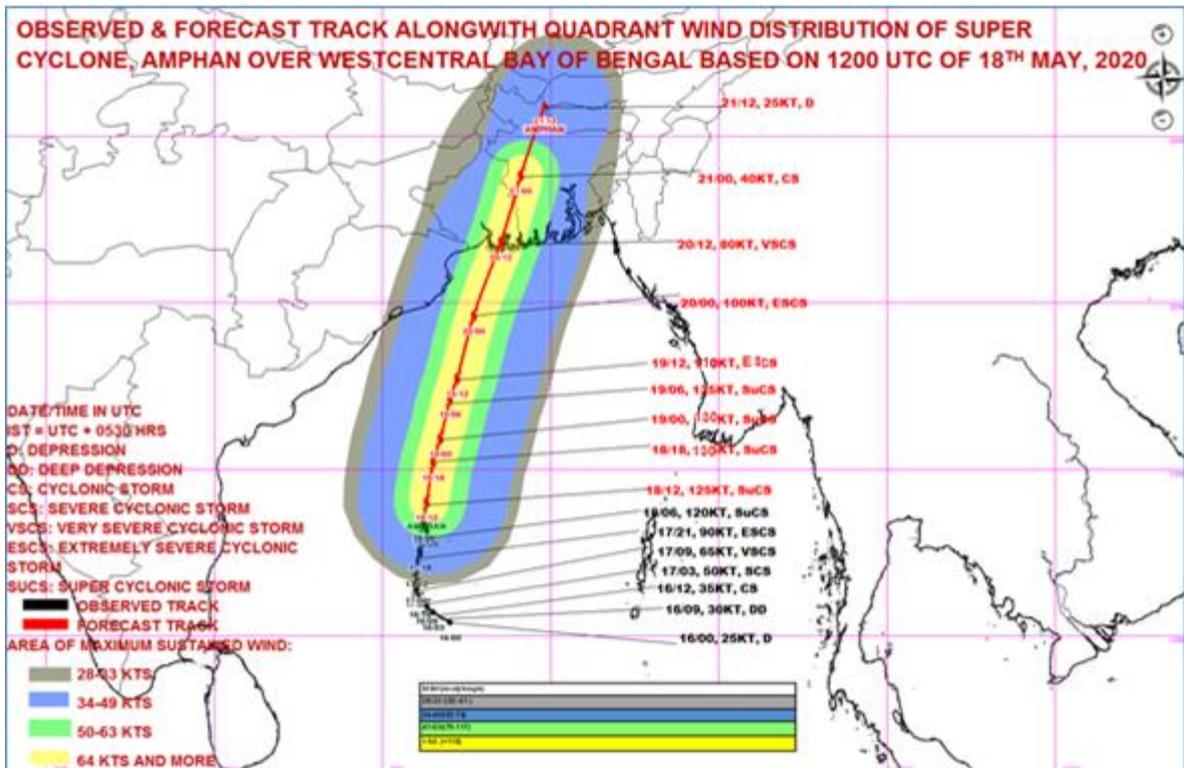
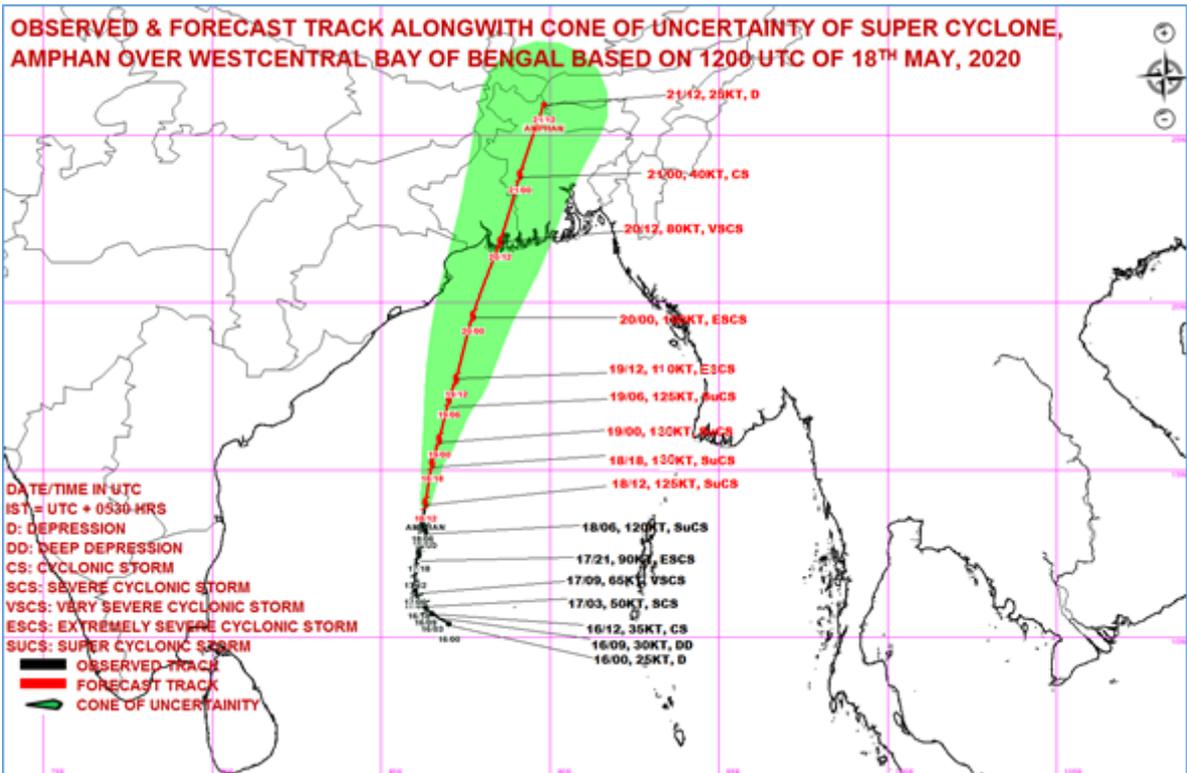
IMG_TIR1_TEMP 10.8 um 18-05-2020/(2100 to 2126) IST

L1C Mercator



Legend: WCB – Westcentral 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.

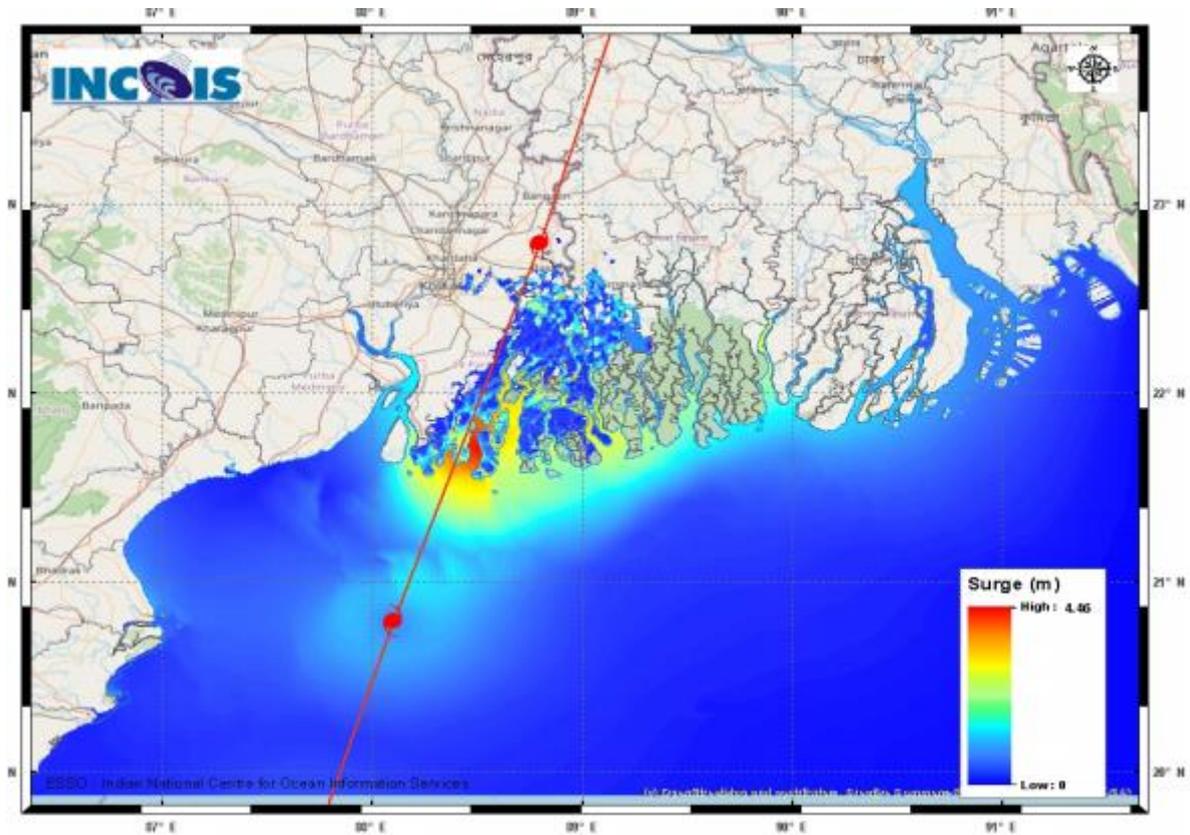


Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0230 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over Westcentral and adjoining central parts of South Bay of Bengal moved nearly north-northeastwards with a speed of 17 kmph during past 06 hours and lay centred at 2330 hrs IST of 18th May, 2020 near latitude 14.9°N and longitude 86.5°E over **Westcentral Bay of Bengal** about 600 km nearly south of Paradip (Odisha), 750 km south-southwest of Digha (West Bengal) and 880 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 195 kmph.

The super cyclone 'AMPHAN' is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
18.05.20/2330	14.9/86.5	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	225-235 gusting to 260	Super Cyclonic Storm
19.05.20/1730	17.7/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/2330	18.6/87.5	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1130	20.7/88.1	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/2330	22.8/88.8	100-110 gusting to 120	Severe Cyclonic Storm
21.05.20/1130	24.8/89.5	50-60 gusting to 70	Deep 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.

(1) Heavy rainfall Warning:

Odisha

Coastal Odisha is likely to experience light to moderate rainfall at many places from tonight with heavy falls at isolated places over coastal Odisha (Gajapati, Ganjam, Puri, Jagatsinghpur & Kendrapara Districts) during night of 18th May, 2020. Rainfall at most places with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 230-240 gusting to 265 kmph is prevailing over westcentral Bay of Bengal. It is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal during 19th May morning.
- Gale wind speed reaching 200-210 gusting to 230 kmph over north Bay of Bengal from 19th morning will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th evening.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 24 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, to central Bay of Bengal on 19th May and into North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations during 18th to 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
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- Total suspension of fishing operations till 20th May 2020.
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Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0530 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
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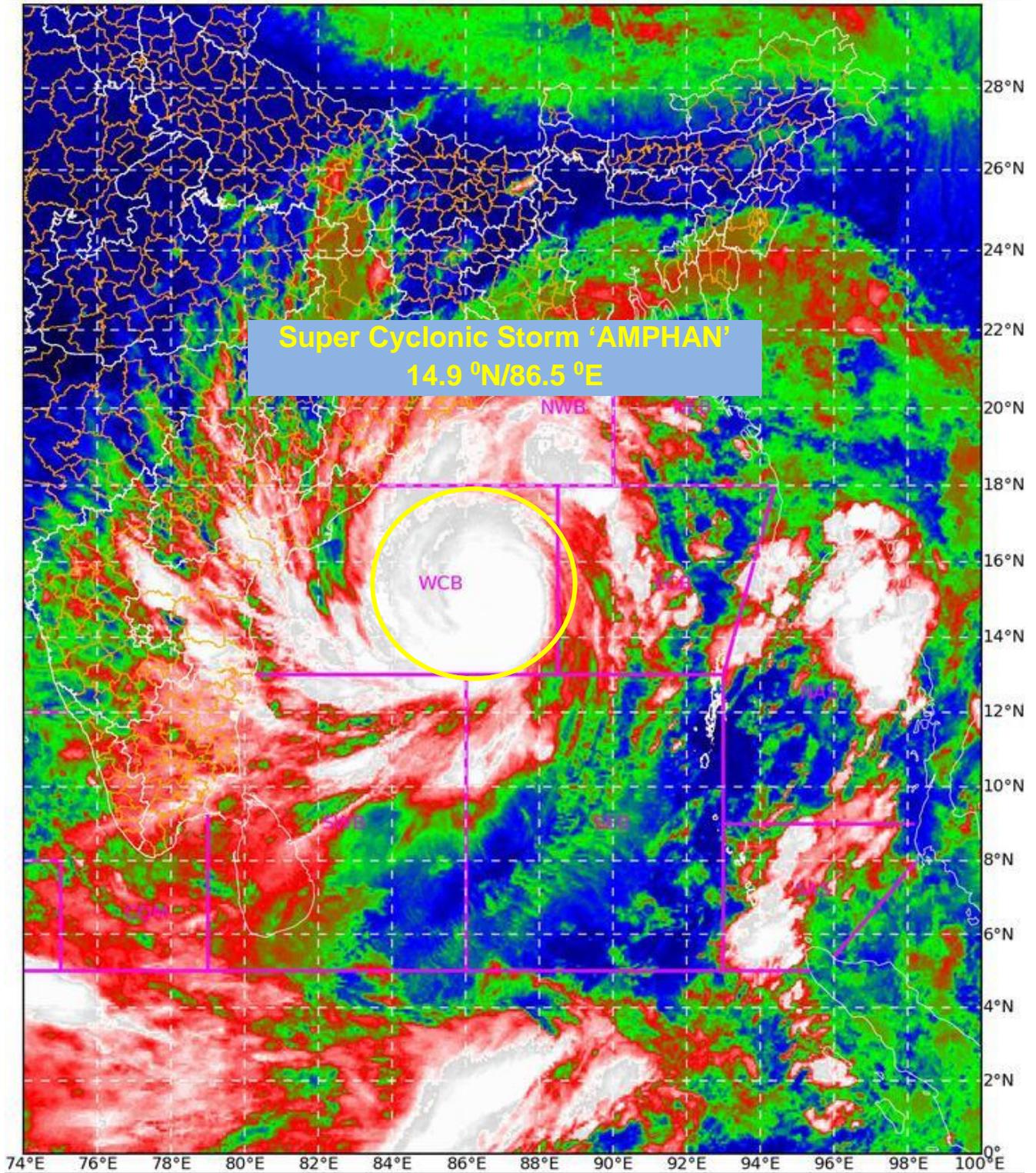
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18-05-2020/(1800 to 1826) GMT

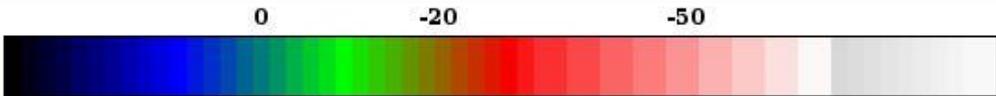
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18-05-2020/(2330 to 2356) IST

L1C Mercator



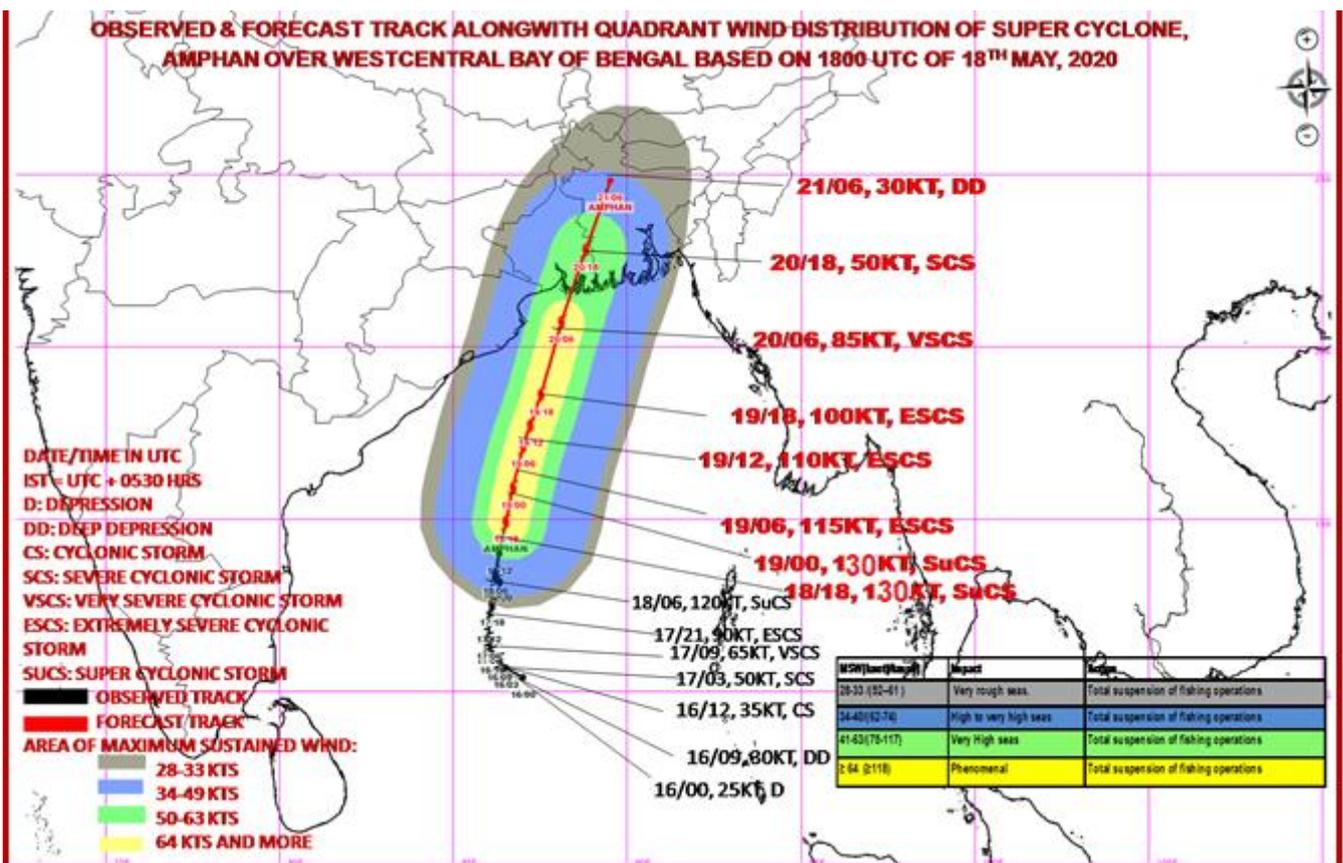
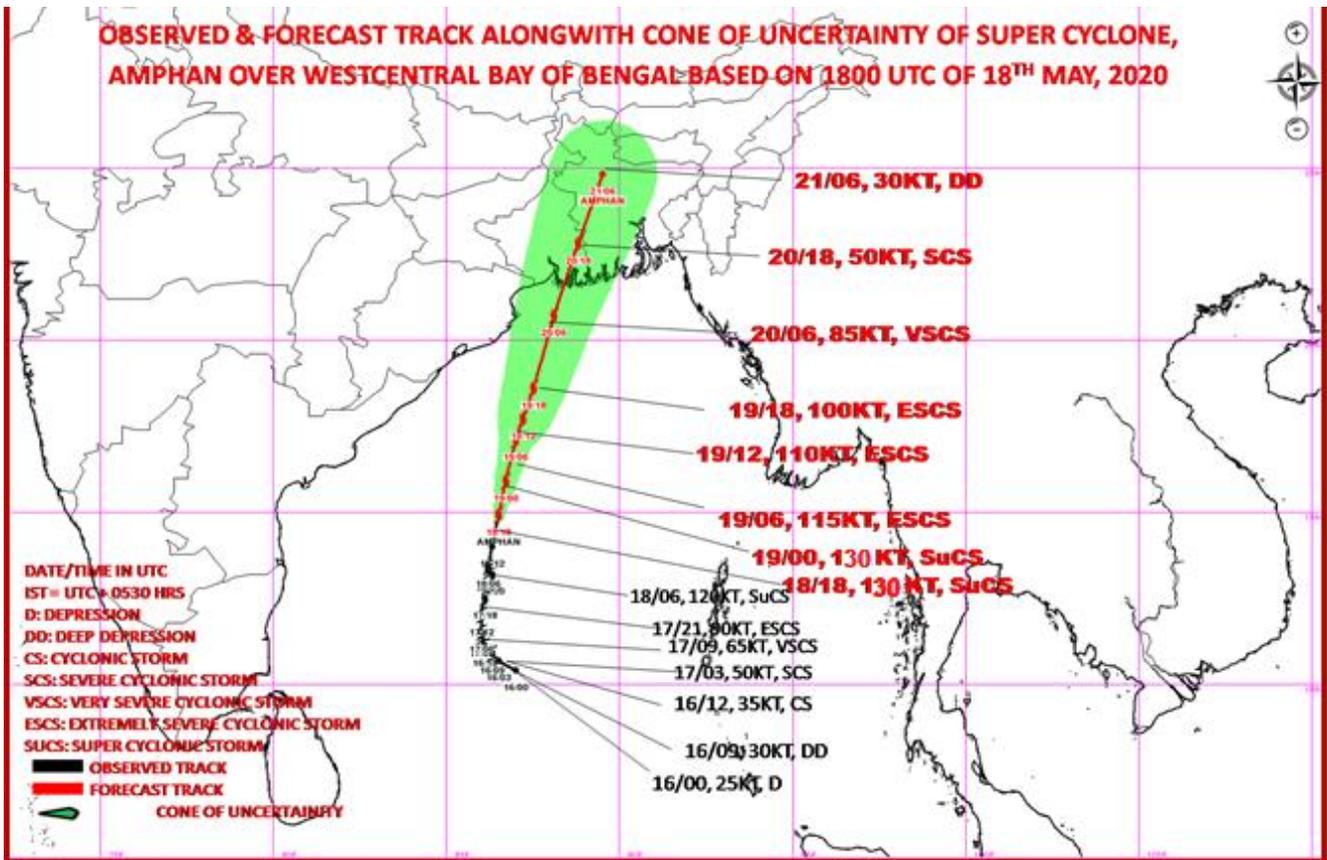
Super Cyclonic Storm 'AMPHAN'
14.9 °N/86.5 °E



Celsius
IMD, DELHI

Legend: WCB – Westcentral 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.

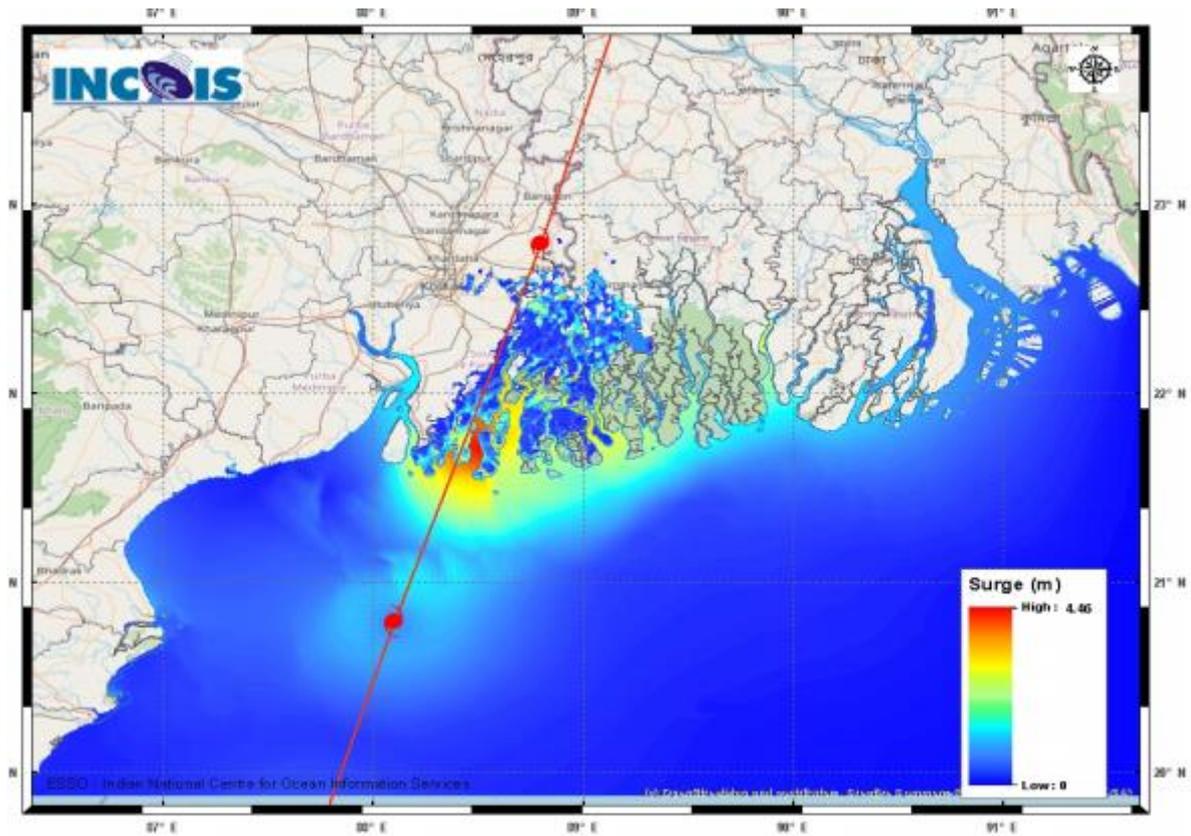


Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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.

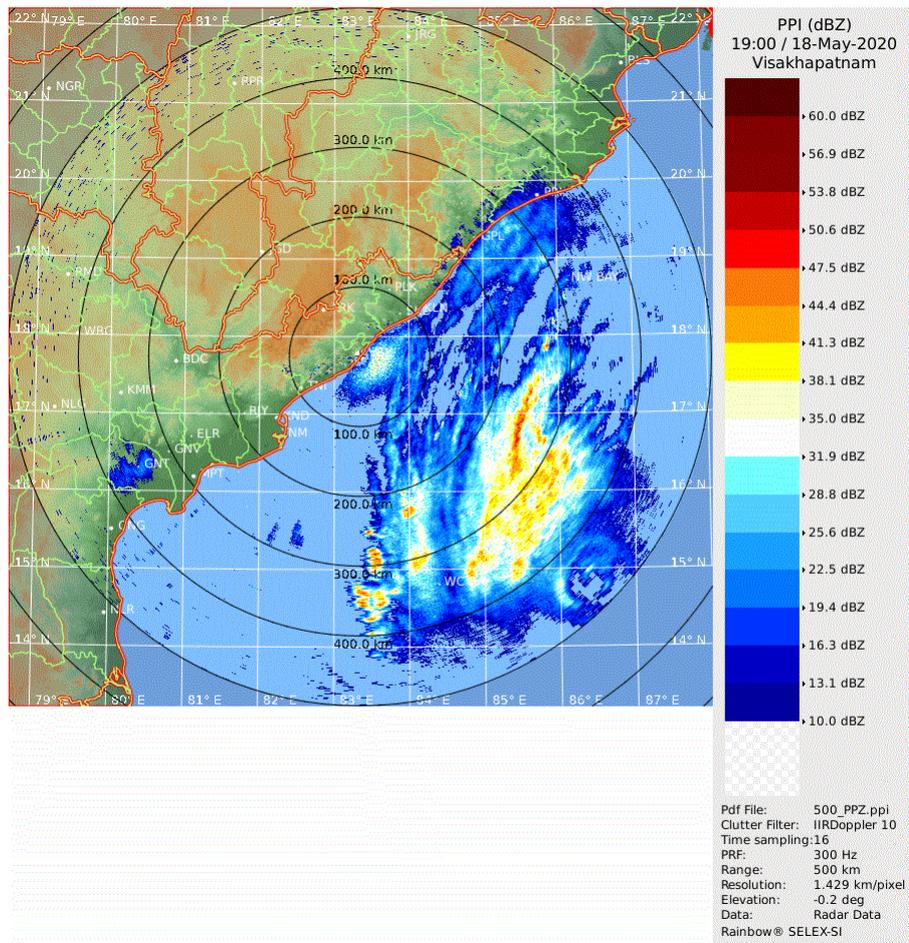


Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 00:30 IST of 19th May 2020

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0530 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over Westcentral and adjoining Eastcentral Bay of Bengal moved nearly north-northeastwards with a speed of 14 kmph during past 06 hours and lay centred at 0230 hrs IST of 19th May, 2020 near latitude 15.2°N and longitude 86.6°E over **Westcentral Bay of Bengal** about 570 km nearly south of Paradip (Odisha), 720 km south-southwest of Digha (West Bengal) and 840 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 as an Extremely Severe Cyclonic Storm with maximum sustained wind speed of 165-175 kmph gusting to 195 kmph.

The super cyclone 'AMPHAN' is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
19.05.20/0230	15.2/86.6	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/0530	15.9/86.7	240-250 gusting to 275	Super Cyclonic Storm
19.05.20/1130	17.1/87.0	225-235 gusting to 260	Super Cyclonic Storm
19.05.20/1730	17.7/87.2	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/2330	18.6/87.5	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1130	20.7/88.1	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/2330	22.8/88.8	100-110 gusting to 120	Severe Cyclonic Storm
21.05.20/1130	24.8/89.5	50-60 gusting to 70	Deep 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.

(1) Heavy rainfall Warning:

Odisha

The light to moderate rainfall is very likely at most places of south coastal Odisha with heavy to very heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places with heavy falls at isolated places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th morning and along and off West Bengal coast from 19th afternoon.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 110 to 120 kmph gusting to 135 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 165 to 175 kmph gusting to 195 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 230-240 gusting to 265 kmph is prevailing over westcentral Bay of Bengal. It is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal during 19th May morning.
- Gale wind speed reaching 200-210 gusting to 230 kmph over north Bay of Bengal from 19th morning will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th evening.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 24 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, into central Bay of Bengal and North Bay of Bengal during 19th to 20th May 2020.

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.

- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0830 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

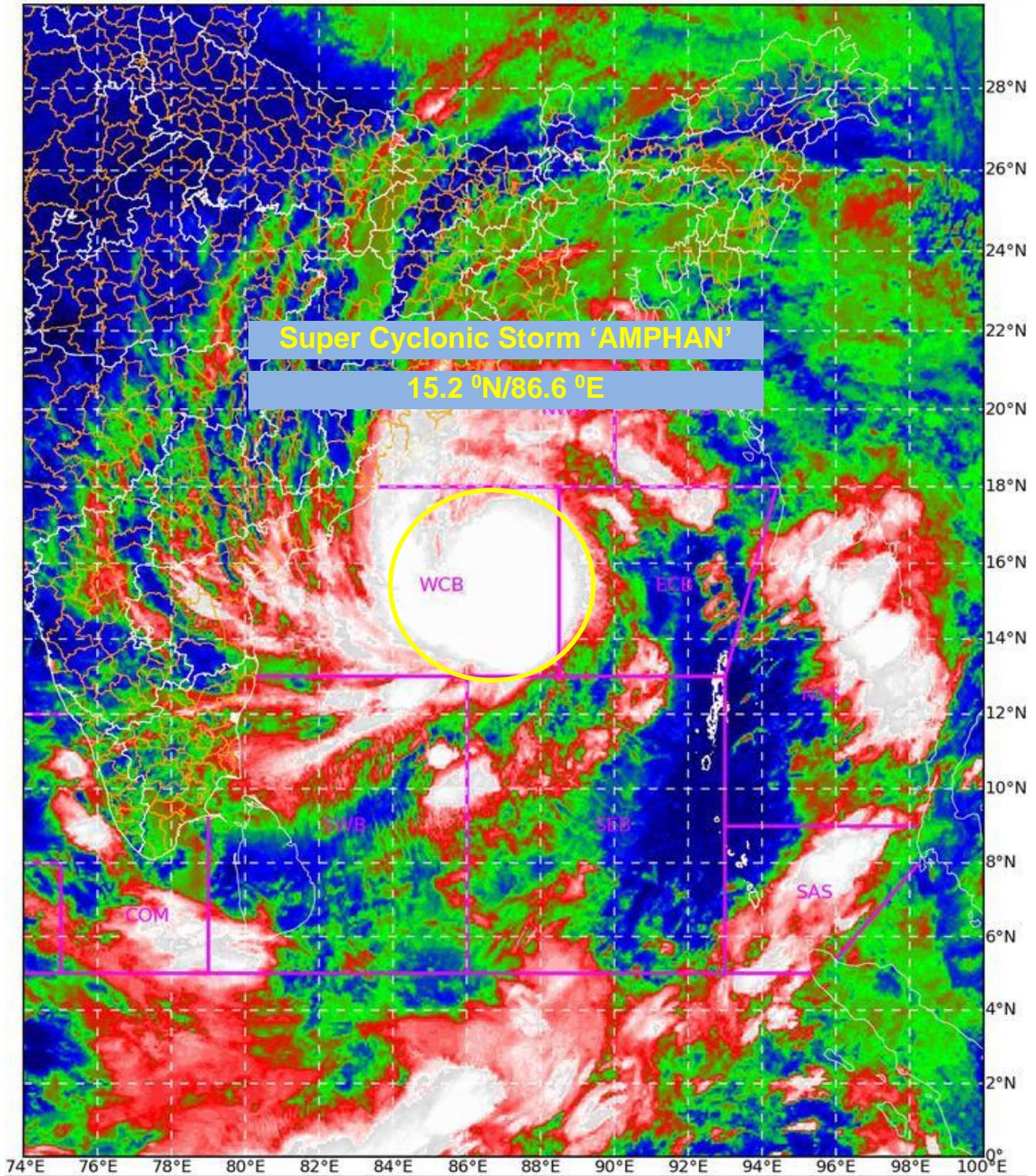
SAT : INSAT-3D IMG

18-05-2020/(2300 to 2326) GMT

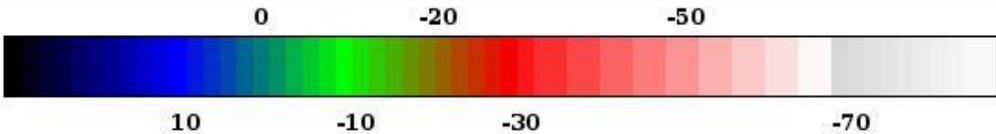
IMG_TIR1_TEMP 10.8 um

19-05-2020/(0430 to 0456) IST

L1C Mercator



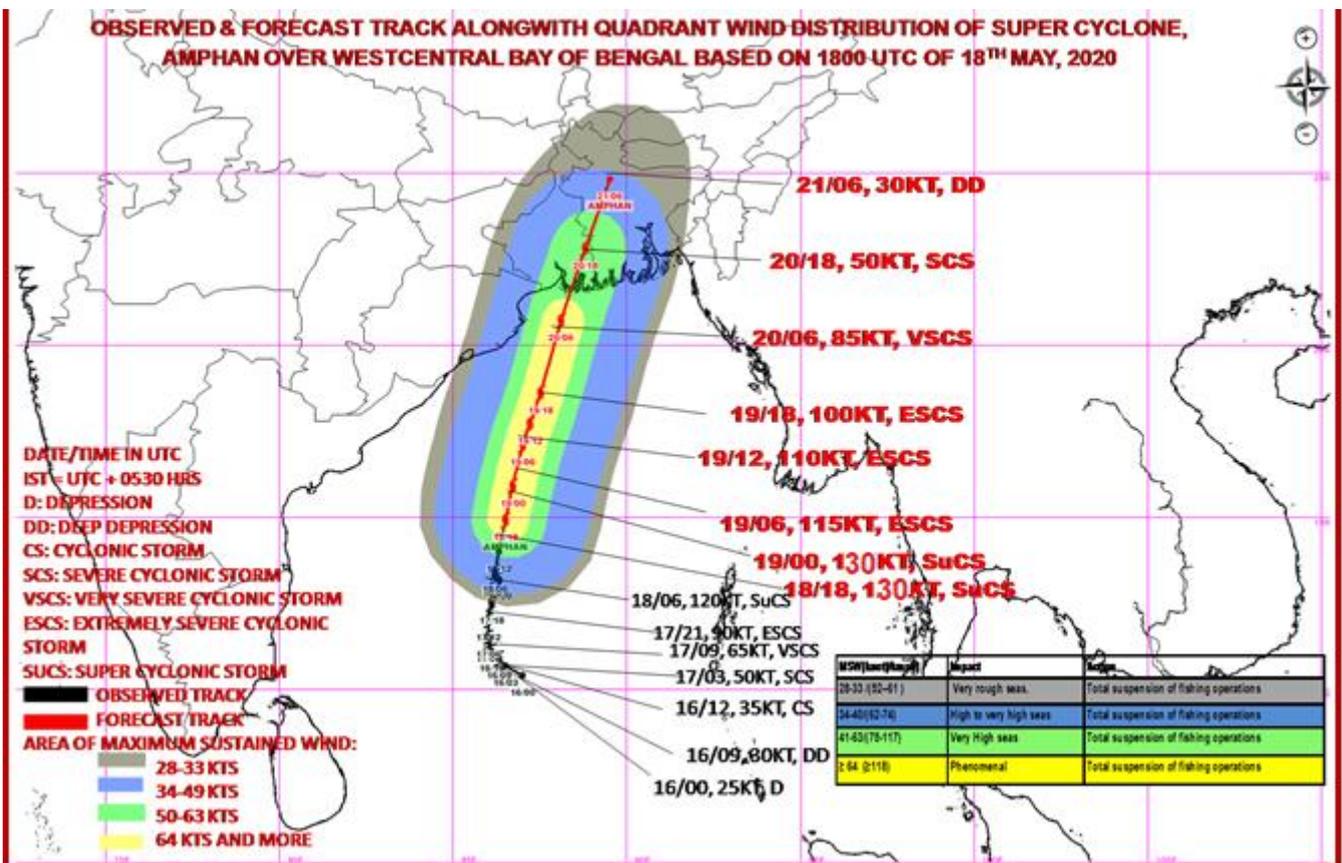
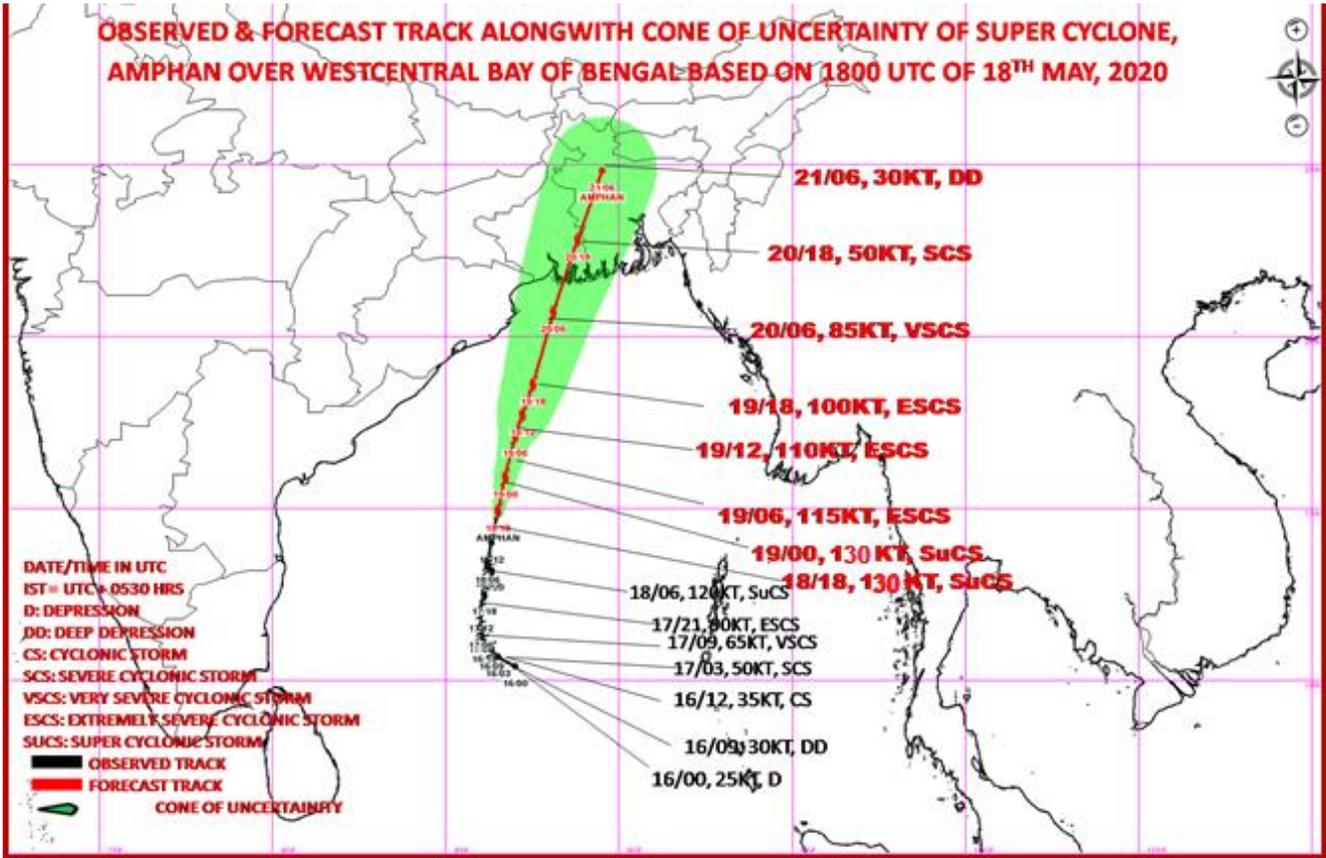
Super Cyclonic Storm 'AMPHAN'
15.2 °N/86.6 °E



Celsius
IMD,DELHI

Legend: WCB – Westcentral 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.

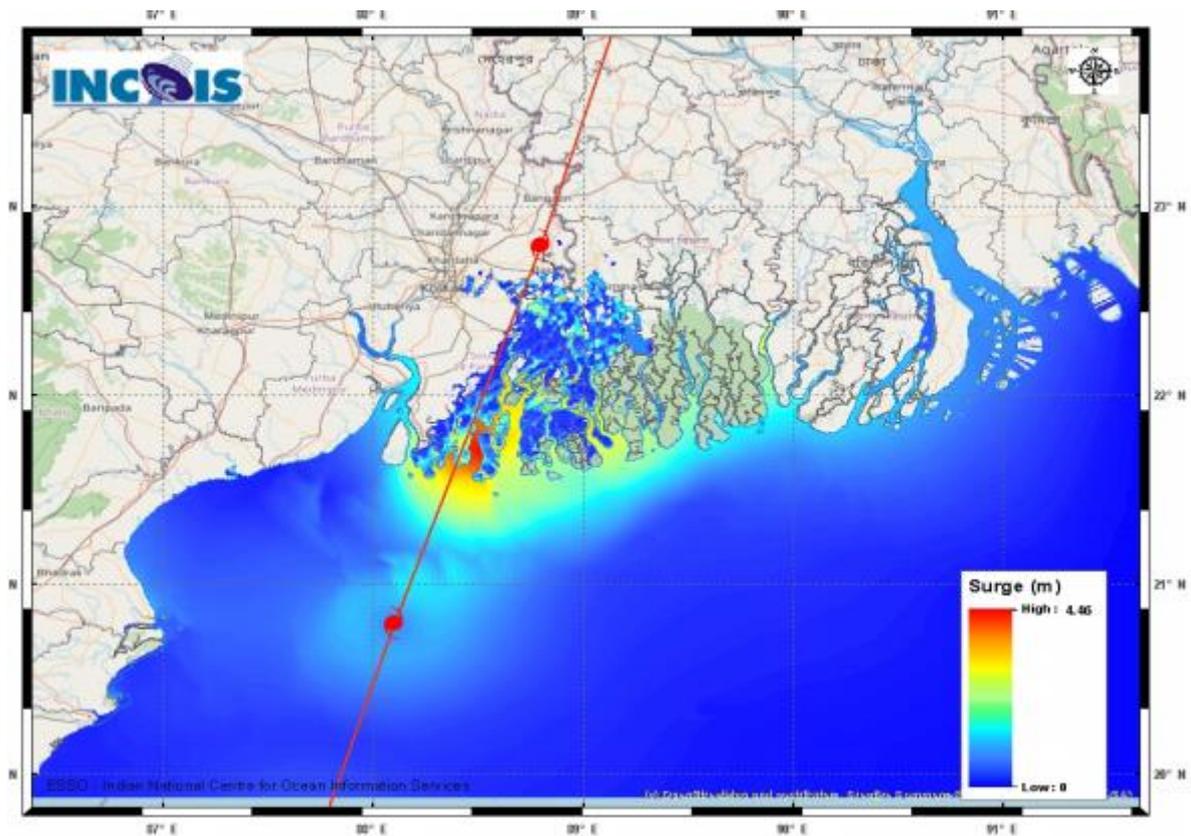


Figure: Storm Surge forecast from INCOIS issued at 1837 IST of 18th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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.

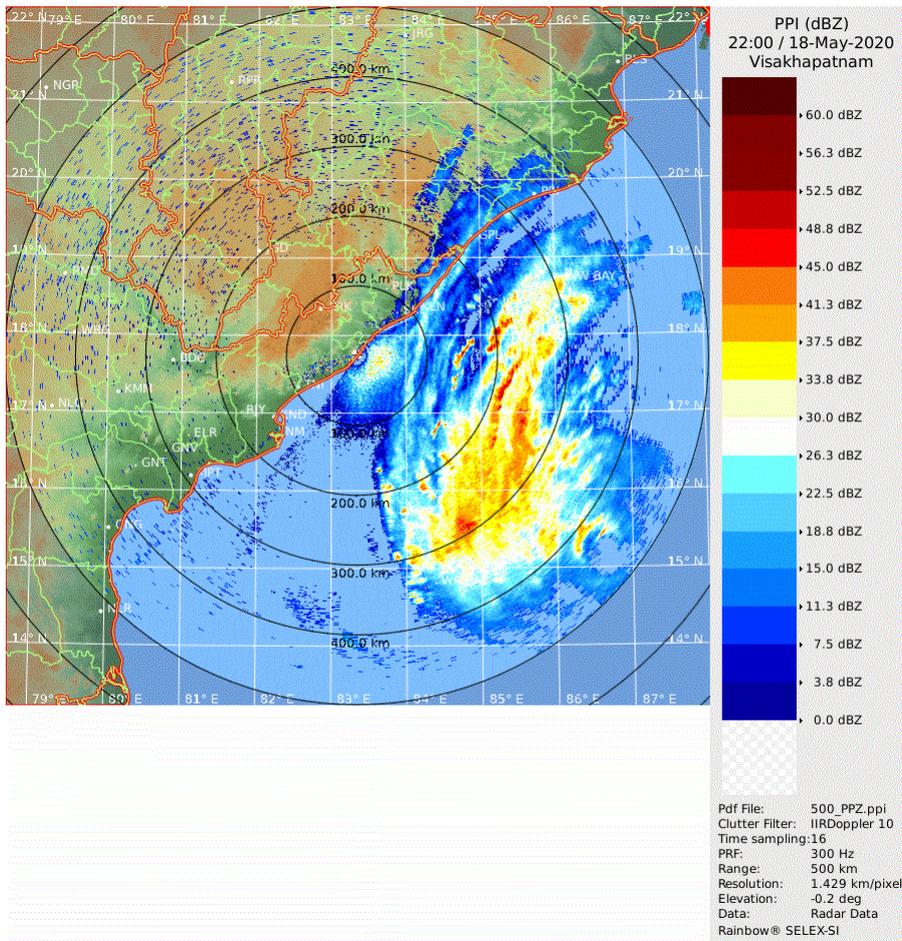


Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 03:30 IST of 19th May 2020

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0815 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The **Super Cyclonic Storm 'AMPHAN'** (pronounced as **UM-PUN**) over Westcentral and adjoining Eastcentral Bay of Bengal moved north-northeastwards with a speed of 14 kmph during past 06 hours and lay centred at 0530 hrs IST of 19th May, 2020 near latitude 15.6°N and longitude 86.7°E over **Westcentral Bay of Bengal** about 520 km nearly south of Paradip (Odisha), 670 km south-southwest of Digha (West Bengal) and 800 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The super cyclone 'AMPHAN' is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
19.05.20/0530	15.6/86.7	225-235 gusting to 255	Super Cyclonic Storm
19.05.20/1130	16.8/87.0	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/1730	17.4/87.1	190-200 gusting to 220	Extremely Severe Cyclonic Storm
19.05.20/2330	18.3/87.4	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.8	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1730	21.7/88.4	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	23.8/89.1	60-70 gusting to 80	Cyclone
21.05.20/1730	25.9/89.9	40-50 gusting to 60	Depression

(1) Heavy rainfall 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.

Odisha

The light to moderate rainfall is very likely at most places of coastal Odisha with heavy rainfall at a few places over north coastal Odisha (Jagatsinghpur, Kendrapara, Jajpur, Balasore, Bhadrak & Mayurbhanj Districts) and isolated heavy to very heavy falls over Khordha & Puri districts on 19th May and isolated heavy rainfall over north Odisha (Bhadrak, Balasore, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places on 19th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 55 to 65 kmph gusting to 75 kmph extend to along & off north Odisha coast from 19th afternoon and along and off West Bengal coast from 19th night.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 180 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 225-235 gusting to 255 kmph is prevailing over westcentral Bay of Bengal. It is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal during 19th May.
- Gale wind speed reaching 180-190 gusting 210 kmph over north Bay of Bengal from 19th afternoon, will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th afternoon.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 12 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, into central Bay of Bengal and North Bay of Bengal during 19th to 20th May 2020.

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.

- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

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- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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

19-05-2020/(0100 to 0127) GMT

IMG_TIR1_TEMP 10.8 um

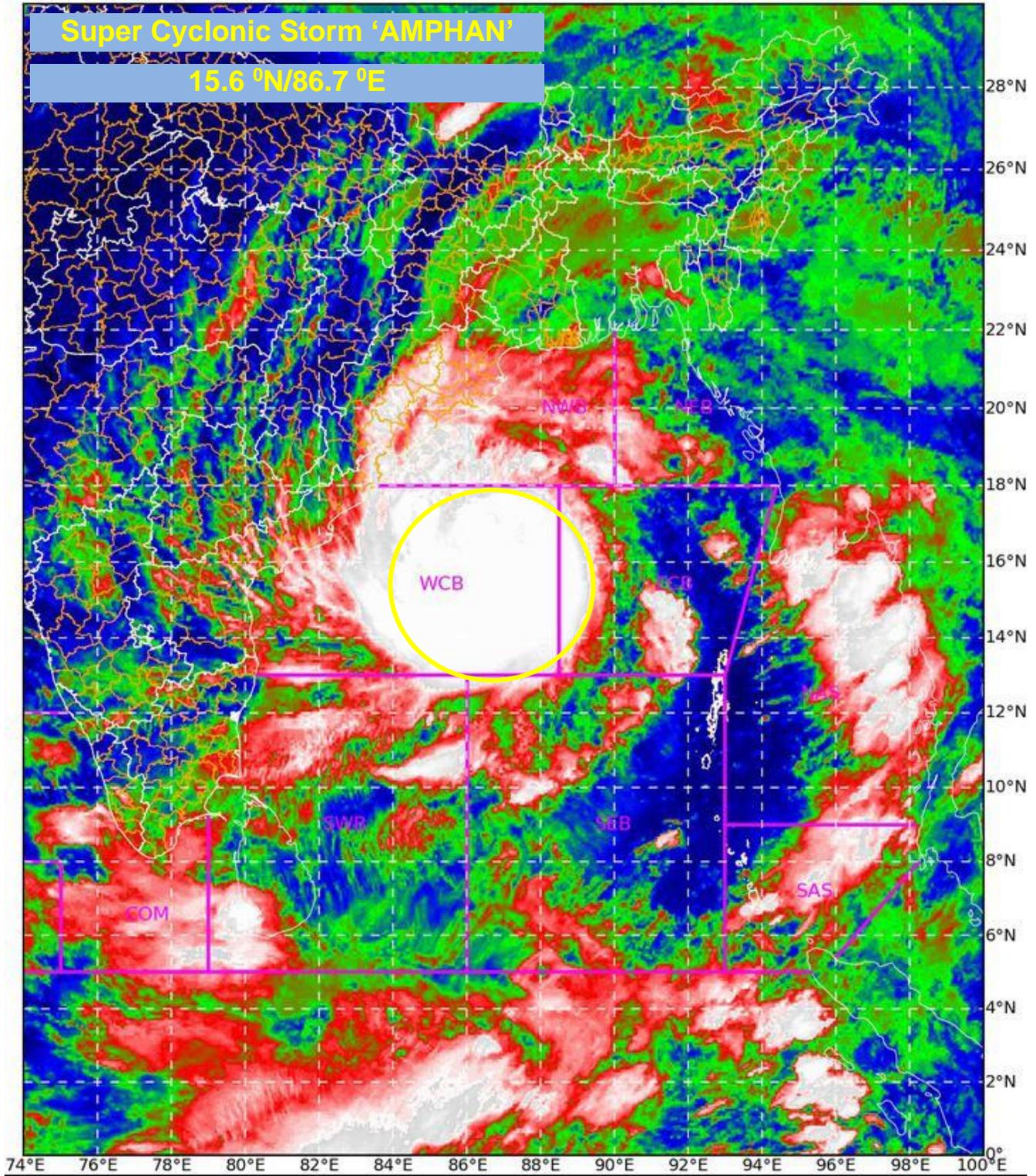
19-05-2020/(0630 to 0657) IST

L1C Mercator



Super Cyclonic Storm 'AMPHAN'

15.6 °N/86.7 °E



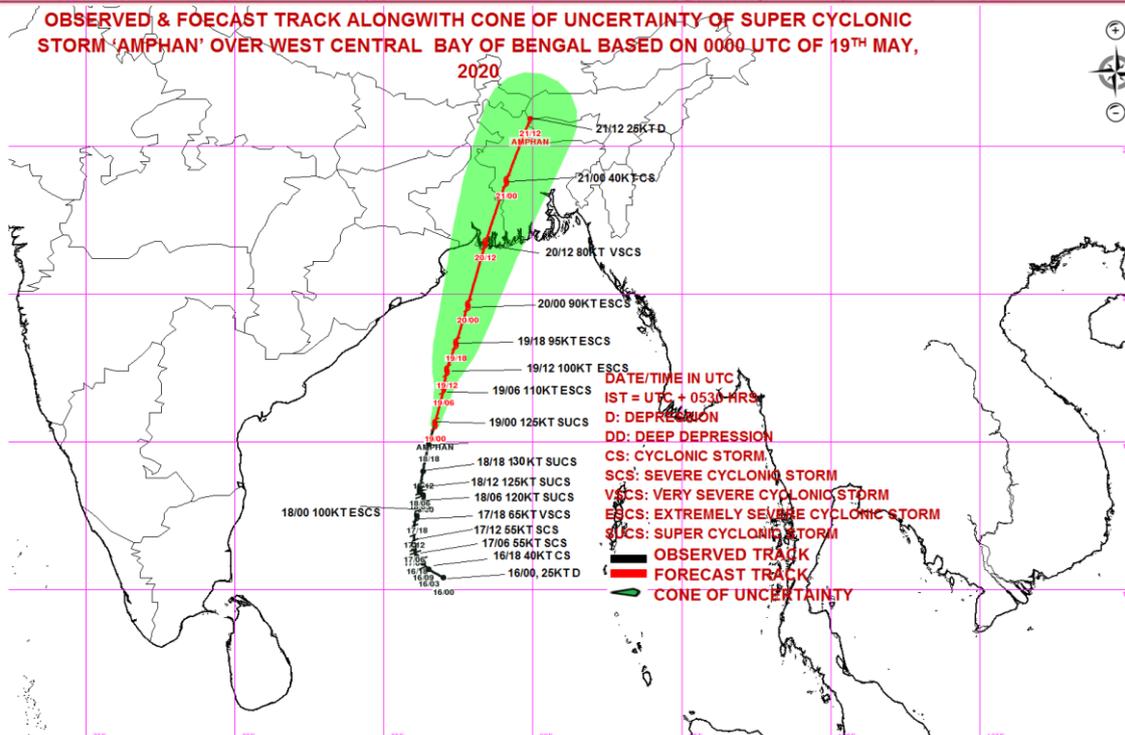
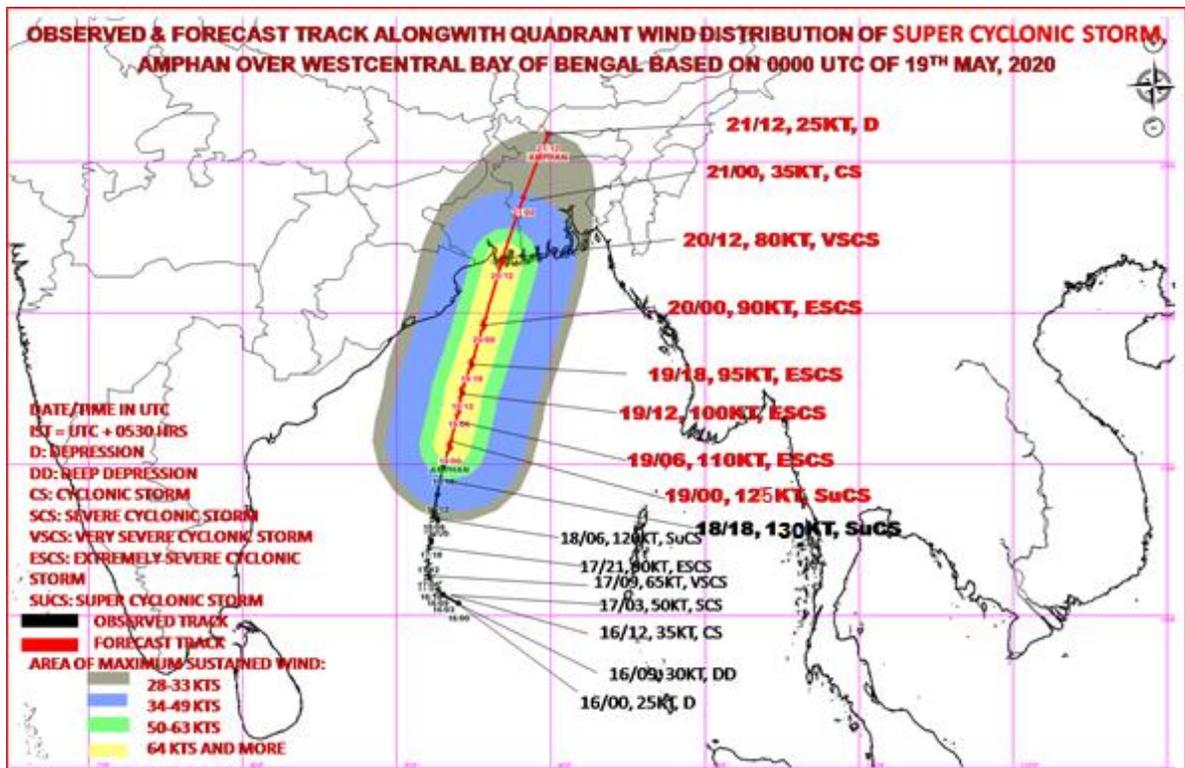
0 -20 -50 Celsius

IMD, DELHI

10 -10 -30 -70

Legend: WCB – Westcentral 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.



MSW(knot)/kmph)	Impact	Action
28-33/(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.

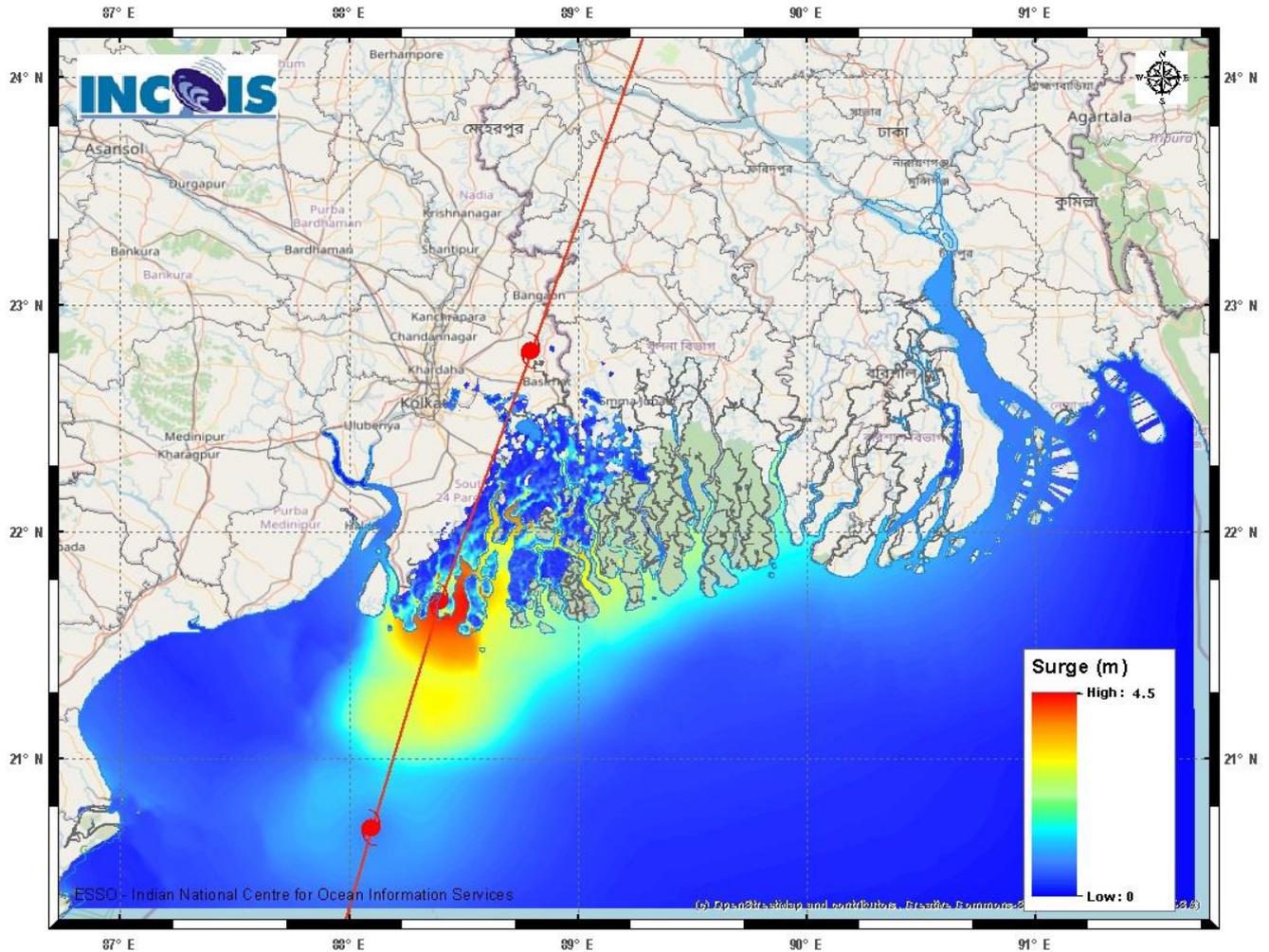


Figure: Storm Surge forecast from INCOIS issued at 0556 IST of 19th May 2020

Storm Surge of about 4-6 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

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.

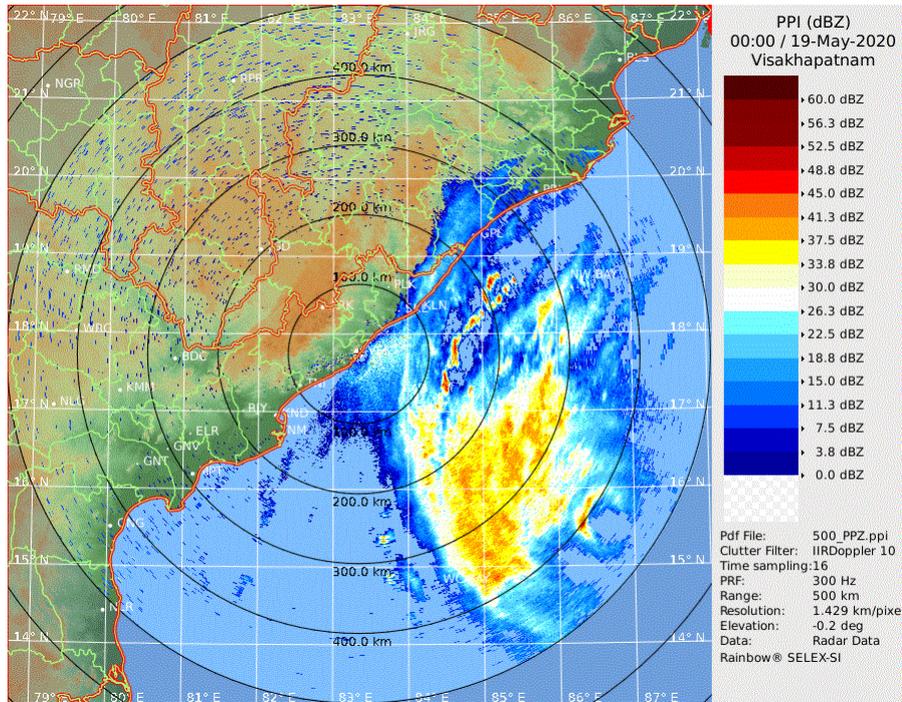


Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 05:30 IST of 19th May 2020

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1100 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal moved north-northeastwards with a speed of 15 kmph during past 06 hours and lay centred at 0830 hrs IST of 19th May, 2020 near latitude 16.0°N and longitude 86.8°E over **Westcentral Bay of Bengal** about 480 km nearly south of Paradip (Odisha), 630 km south-southwest of Digha (West Bengal) and 750 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during the Afternoon / Evening of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The Super Cyclone 'AMPHAN' is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
19.05.20/0830	16.0/86.8	215-225 gusting to 245	Super Cyclonic Storm
19.05.20/1130	16.8/87.0	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/1730	17.4/87.1	190-200 gusting to 220	Extremely Severe Cyclonic Storm
19.05.20/2330	18.3/87.4	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0530	19.6/87.8	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1730	21.7/88.4	145-155 gusting to 170	Very Severe Cyclonic Storm
21.05.20/0530	23.8/89.1	75-85 gusting to 95	Cyclone
21.05.20/1730	25.9/89.9	40-50 gusting to 60	Depression

(1) Heavy rainfall 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.

Odisha

Rainfall has commenced over coastal Odisha since early hours of today. Rainfall intensity is likely to increase gradually and become maximum during 19th night to 20th afternoon.

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Jagatsinghpur, Bhadrak and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May afternoon.

Rainfall intensity is likely to increase gradually and become maximum on 20th May. Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind speed reaching 45 to 55 kmph gusting to 65 kmph is prevailing along & off south Odisha coast. It is very likely to increase and extend northwards becoming 55 to 65 kmph gusting to 75 kmph northwards to north Odisha coast by today afternoon and along & off West Bengal coast by tonight.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) coast and West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts) coast. **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 225-235 gusting to 255 kmph is prevailing over westcentral Bay of Bengal. It is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal during 19th May.
- Gale wind speed reaching 180-190 gusting 210 kmph over north Bay of Bengal from 19th afternoon. It will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th afternoon.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 12 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal on 19th May and over north Bay of Bengal on 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, into central Bay of Bengal and North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1430 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

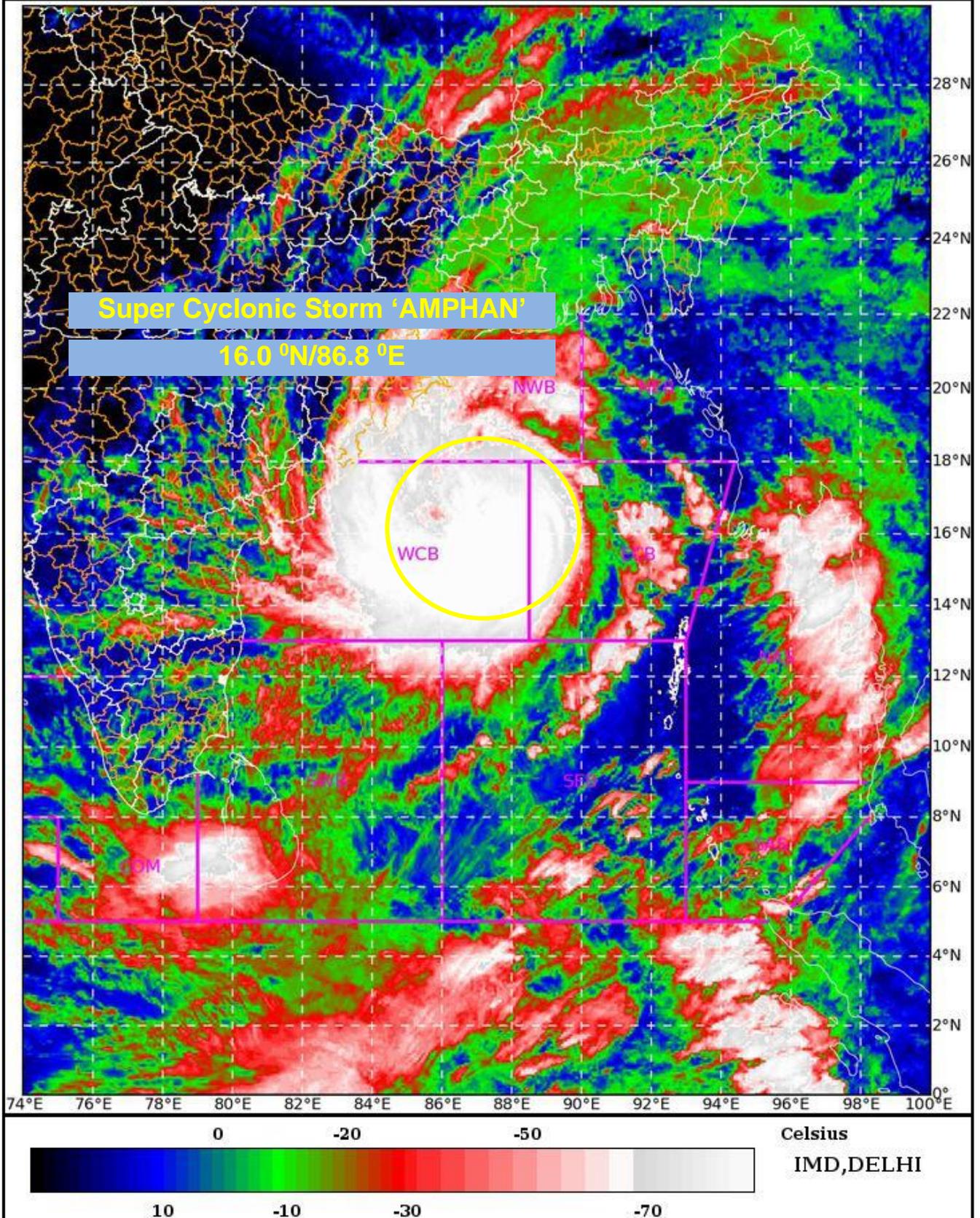
SAT : INSAT-3D IMG

19-05-2020/(0330 to 0357) GMT

IMG_TIR1_TEMP 10.8 um

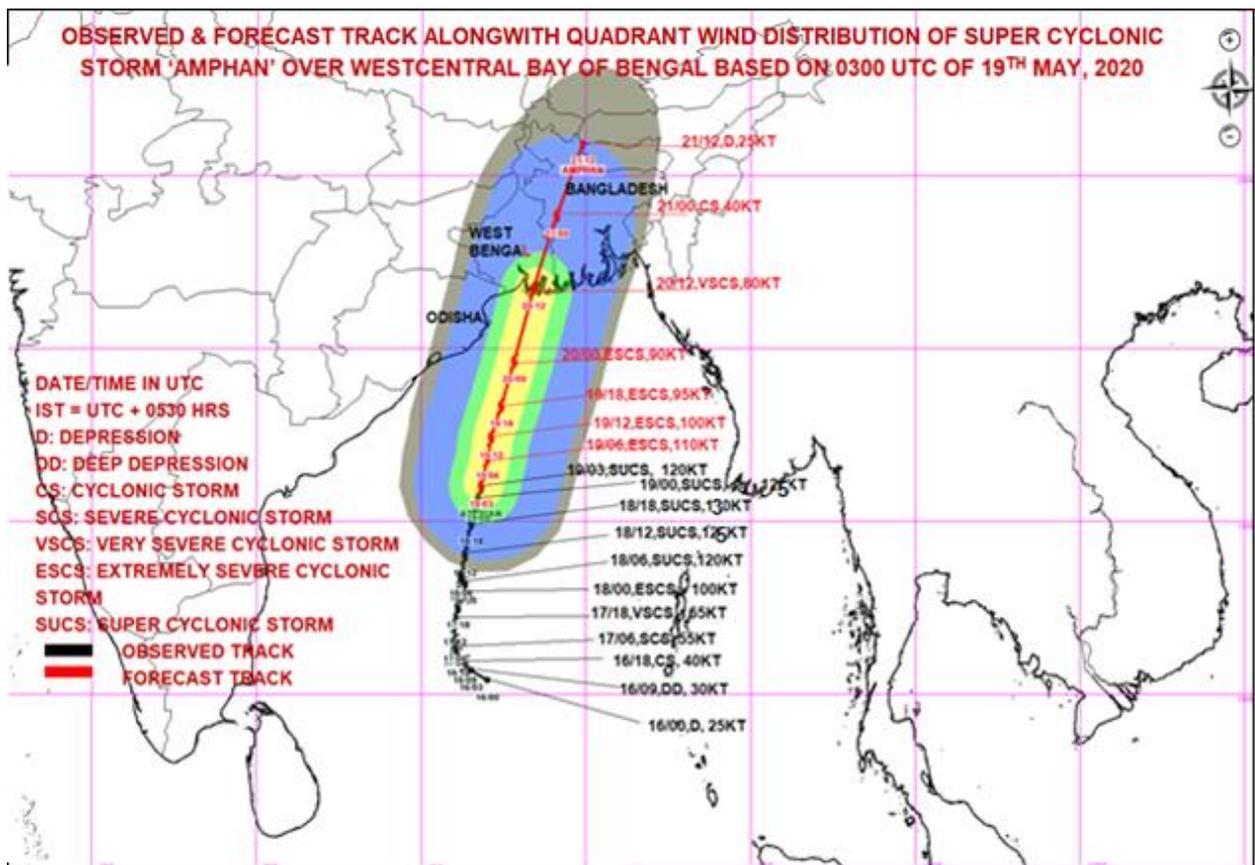
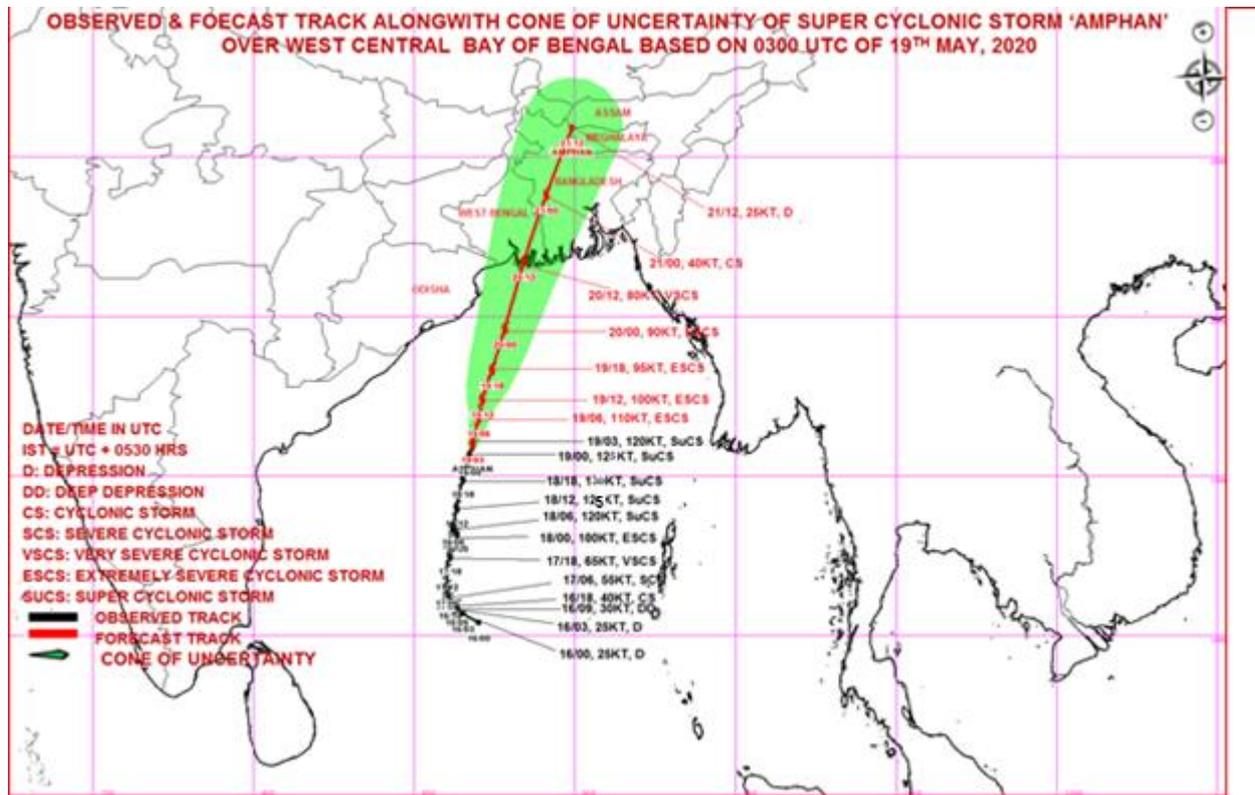
19-05-2020/(0900 to 0927) IST

L1C Mercator



Legend: WCB – Westcentral Bay of Bengal

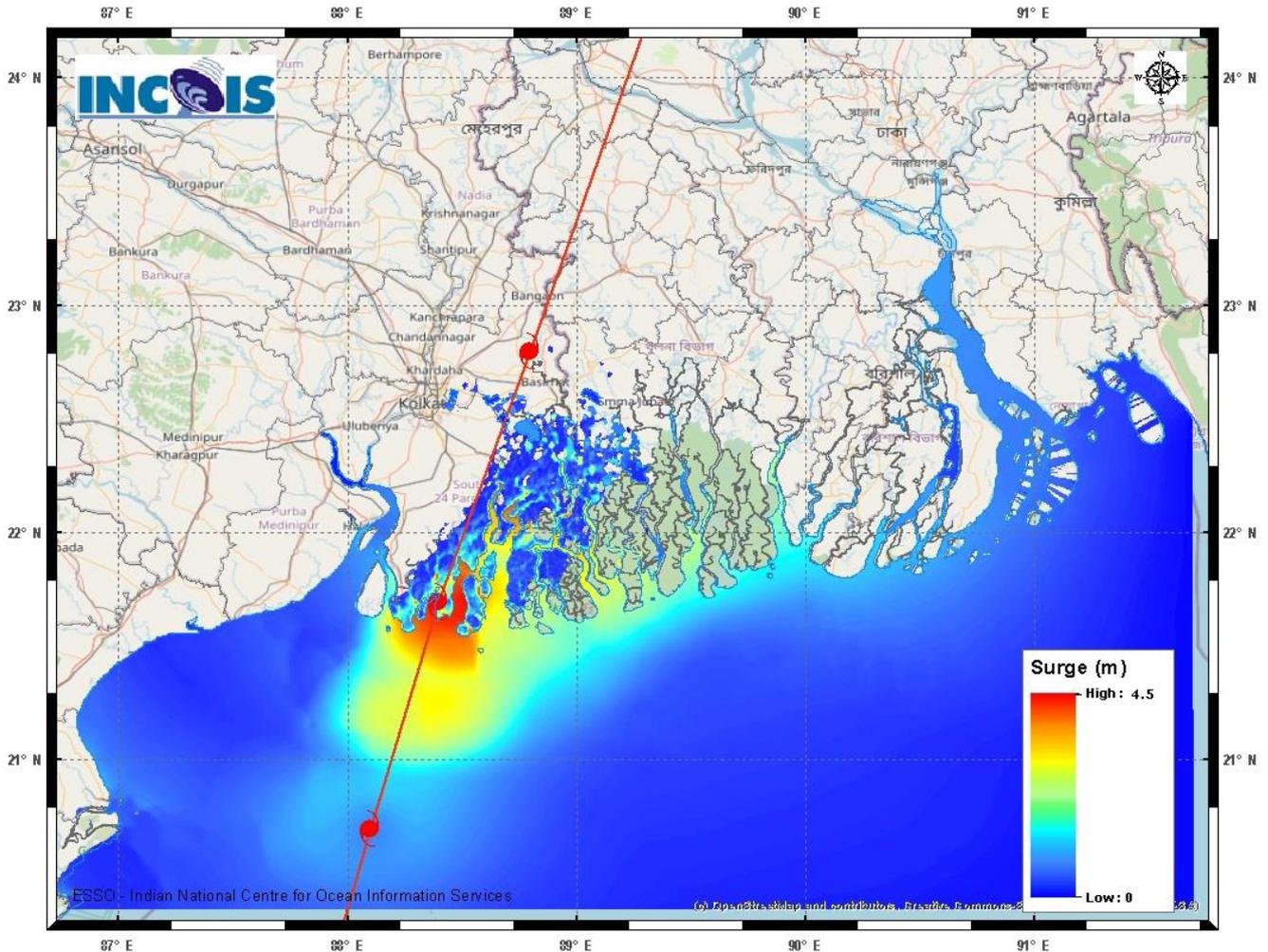
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



MSW(knot)/kmph)	Impact	Action
28-33 / (52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

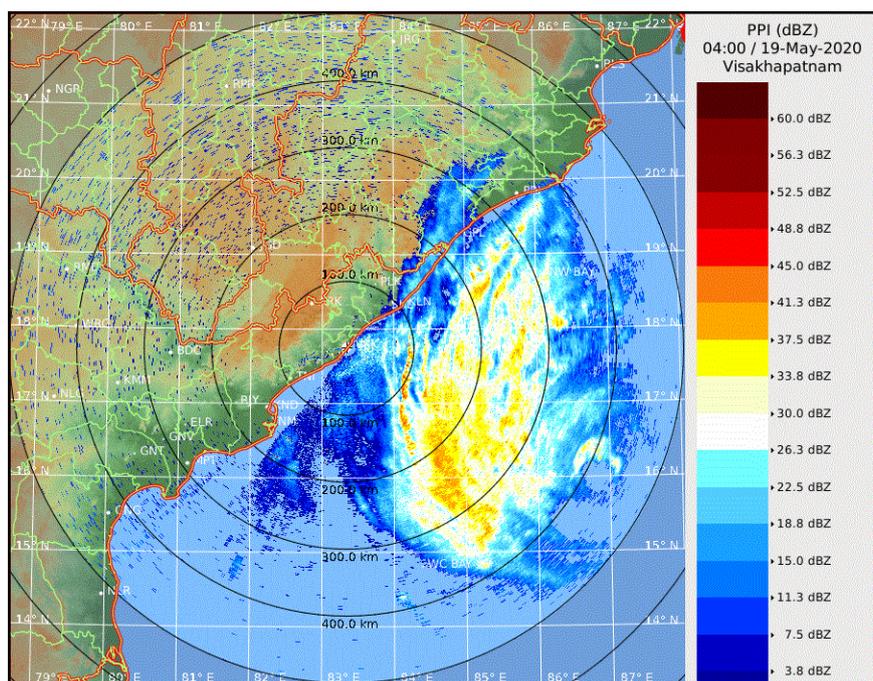
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 0556 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 05:30 IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1400 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The Extremely Severe Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Westcentral Bay of Bengal moved north-northeastwards with a speed of 17 kmph during past 06 hours and lay centred at 1130 hrs IST of 19th May, 2020 near latitude 16.5°N and longitude 86.9°E over **Westcentral Bay of Bengal** about 420 km nearly south of Paradip (Odisha), 570 km south-southwest of Digha (West Bengal) and 700 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
19.05.20/1130	16.5/86.9	210-220 gusting to 240	Extremely Severe Cyclonic Storm
19.05.20/1730	17.1/87.1	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/2330	18.0/87.3	190-200 gusting to 220	Extremely Severe Cyclonic Storm
20.05.20/0530	19.3/87.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1130	20.9/88.2	160-170 gusting to 190	Very Severe Cyclonic Storm
20.05.20/2330	22.7/88.7	95-105 gusting to 115	Cyclonic Storm
21.05.20/1130	24.3/89.3	50-60 gusting to 70	Depression
21.05.20/2330	25.6/90.2	20-30 gusting to 40	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.

(1) Heavy rainfall Warning:

Odisha

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May evening. **Rainfall intensity is likely to increase gradually and become maximum on 20th May.** Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind, speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off south Odisha coast and 40-50 kmph gusting to 60 kmph along & off north Odisha coast. It is very likely to increase becoming 55 to 65 kmph gusting to 75 kmph along & off north Odisha coast by today evening and along & off West Bengal coast by tonight.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 210-220 gusting to 240 kmph is prevailing over westcentral Bay of Bengal. Gale wind speed reaching 200-210 gusting to 230 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the evening of today, the 19th May. It will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th afternoon.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 06 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal by today evening and over north Bay of Bengal on 20th May 2020.

(4) 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.

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, into central Bay of Bengal and North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1730 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

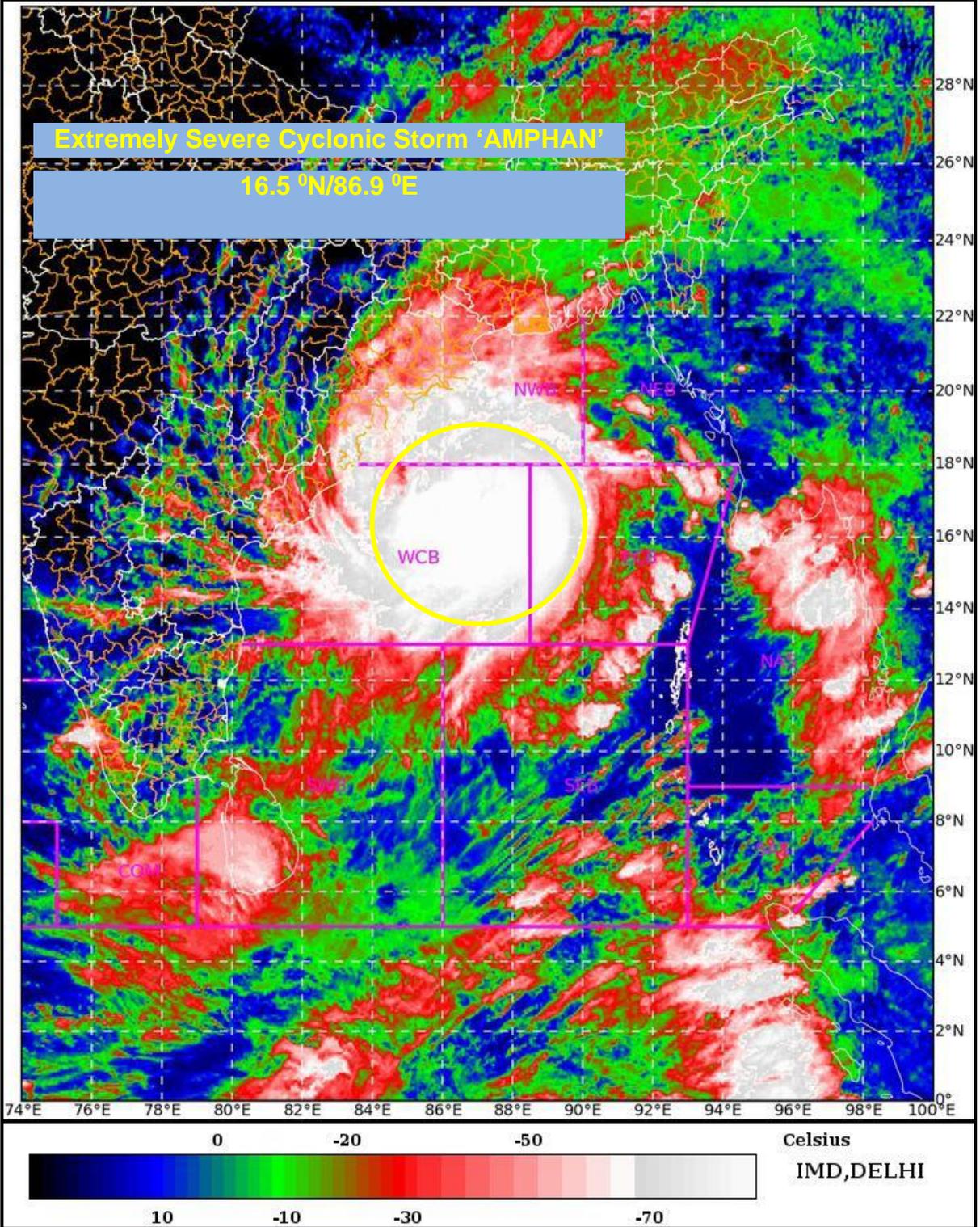
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 19-05-2020/(0600 to 0627) GMT

IMG_TIR1_TEMP 10.8 um 19-05-2020/(1130 to 1157) IST

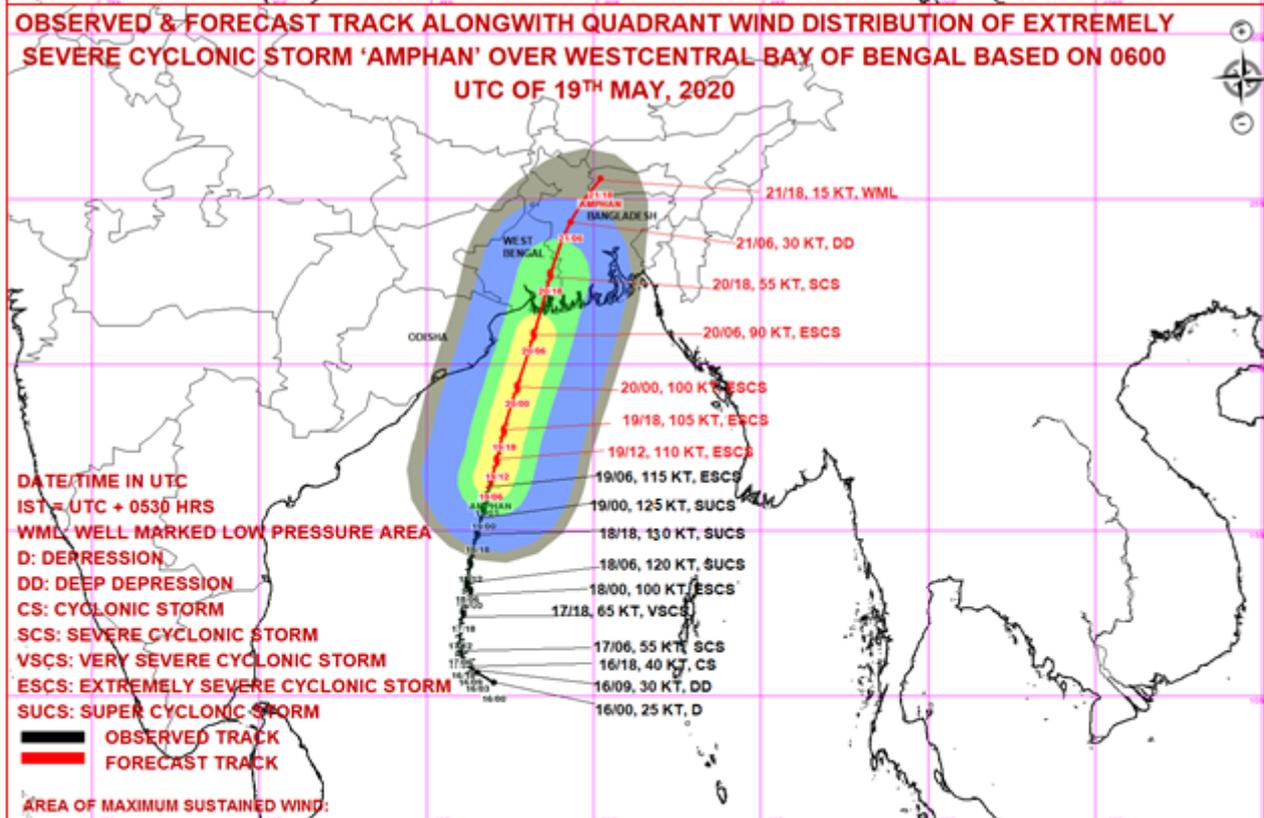
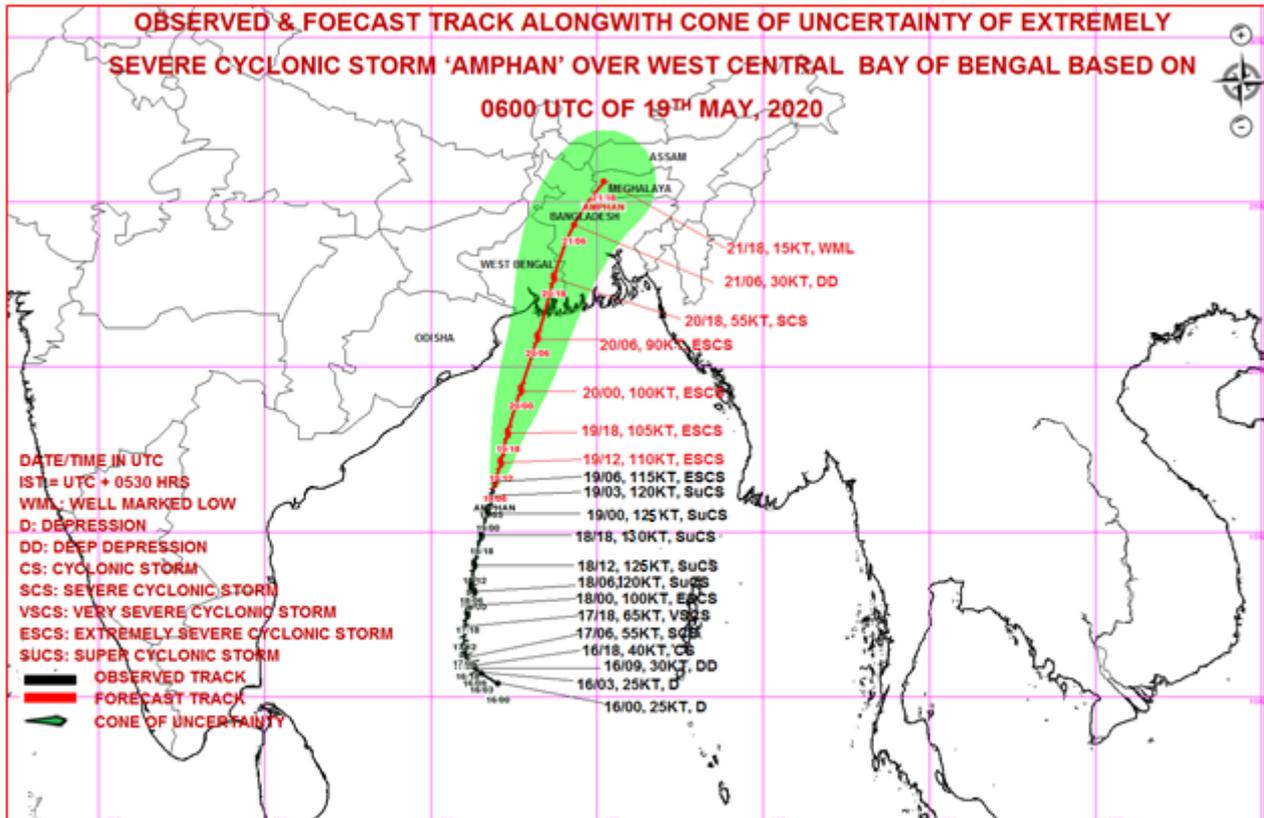


L1C Mercator



Legend: WCB – Westcentral Bay of Bengal

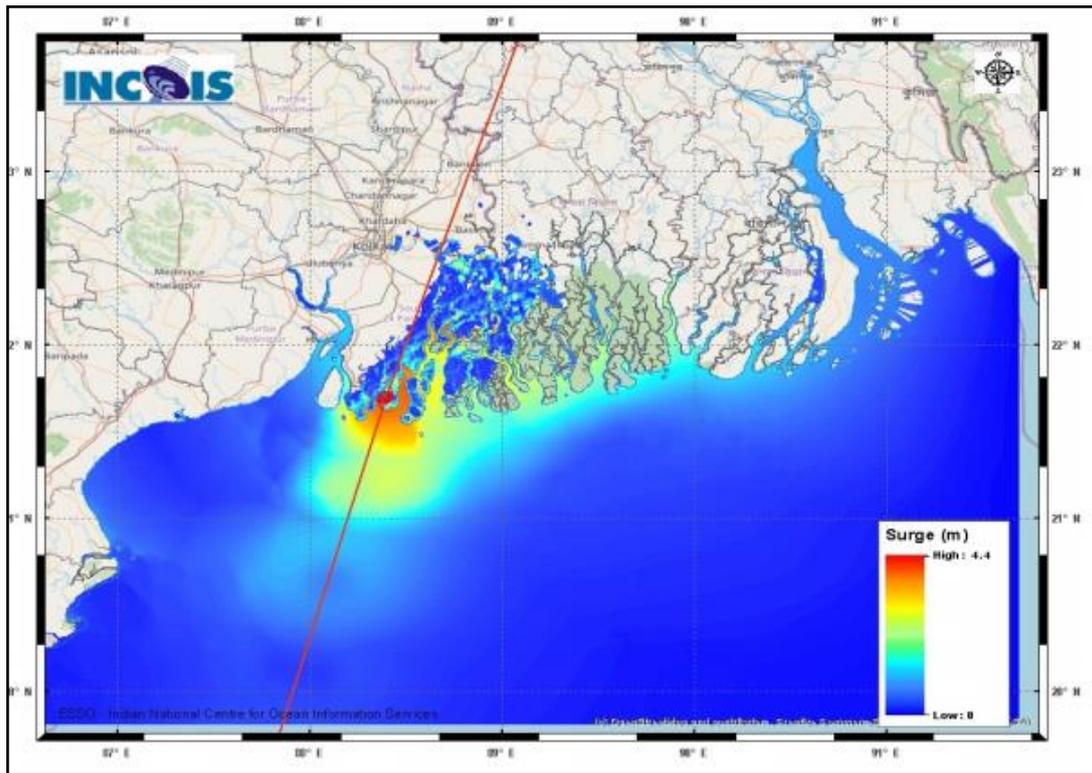
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



MSW(knot)/kmph)	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

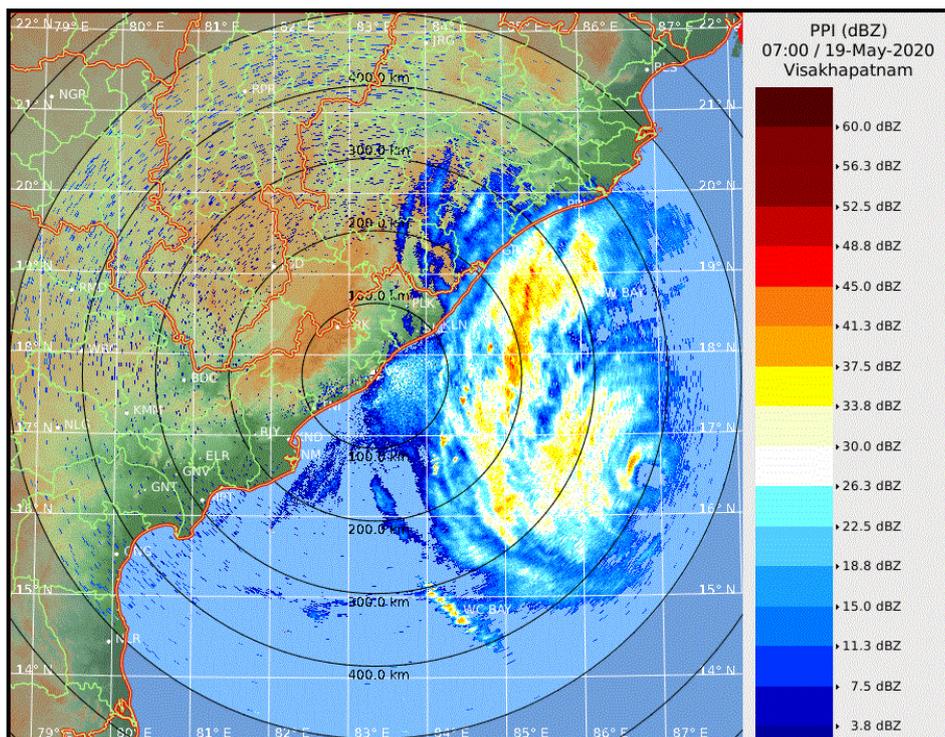
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 1245 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 1230 hrs IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1730 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Orange Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Westcentral Bay of Bengal moved nearly northwards with a speed of 18 kmph during past 06 hours and lay centred at 1430 hrs IST of 19th May, 2020 as an Extremely Severe Cyclonic Storm near latitude 17.0°N and longitude 86.9°E over **Westcentral Bay of Bengal** about 360 km nearly south of Paradip (Odisha), 510 km south-southwest of Digha (West Bengal) and 650 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh).

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
19.05.20/1430	17.0/86.9	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/1730	17.1/87.1	200-210 gusting to 230	Extremely Severe Cyclonic Storm
19.05.20/2330	18.0/87.3	190-200 gusting to 220	Extremely Severe Cyclonic Storm
20.05.20/0530	19.3/87.7	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/1130	20.9/88.2	160-170 gusting to 190	Very Severe Cyclonic Storm
20.05.20/2330	22.7/88.7	95-105 gusting to 115	Cyclonic Storm
21.05.20/1130	24.3/89.3	50-60 gusting to 70	Depression
21.05.20/2330	25.6/90.2	20-30 gusting to 40	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.

(1) Heavy rainfall Warning:

Odisha

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May evening. **Rainfall intensity is likely to increase gradually and become maximum on 20th May.** Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind, speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off south Odisha coast and 40-50 kmph gusting to 60 kmph along & off north Odisha coast. It is very likely to increase becoming 55 to 65 kmph gusting to 75 kmph along & off north Odisha coast by today evening and along & off West Bengal coast by tonight.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 210-220 gusting to 240 kmph is prevailing over westcentral Bay of Bengal. Gale wind speed reaching 200-210 gusting to 230 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the evening of today, the 19th May. It will gradually decrease becoming 165-175 kmph gusting to 195 kmph by 20th afternoon.

(3) Sea condition:

- Sea condition is Phenomenal and is likely to continue for next 06 hours over southern parts of Westcentral Bay of Bengal. It will become Phenomenal over northern parts of central Bay of Bengal and adjoining north Bay of Bengal by today evening and over north Bay of Bengal on 20th May 2020.

(4) 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.

- The fishermen are advised not to venture into west-central and adjoining central parts of south Bay of Bengal during next 24 hours, into central Bay of Bengal and North Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

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.

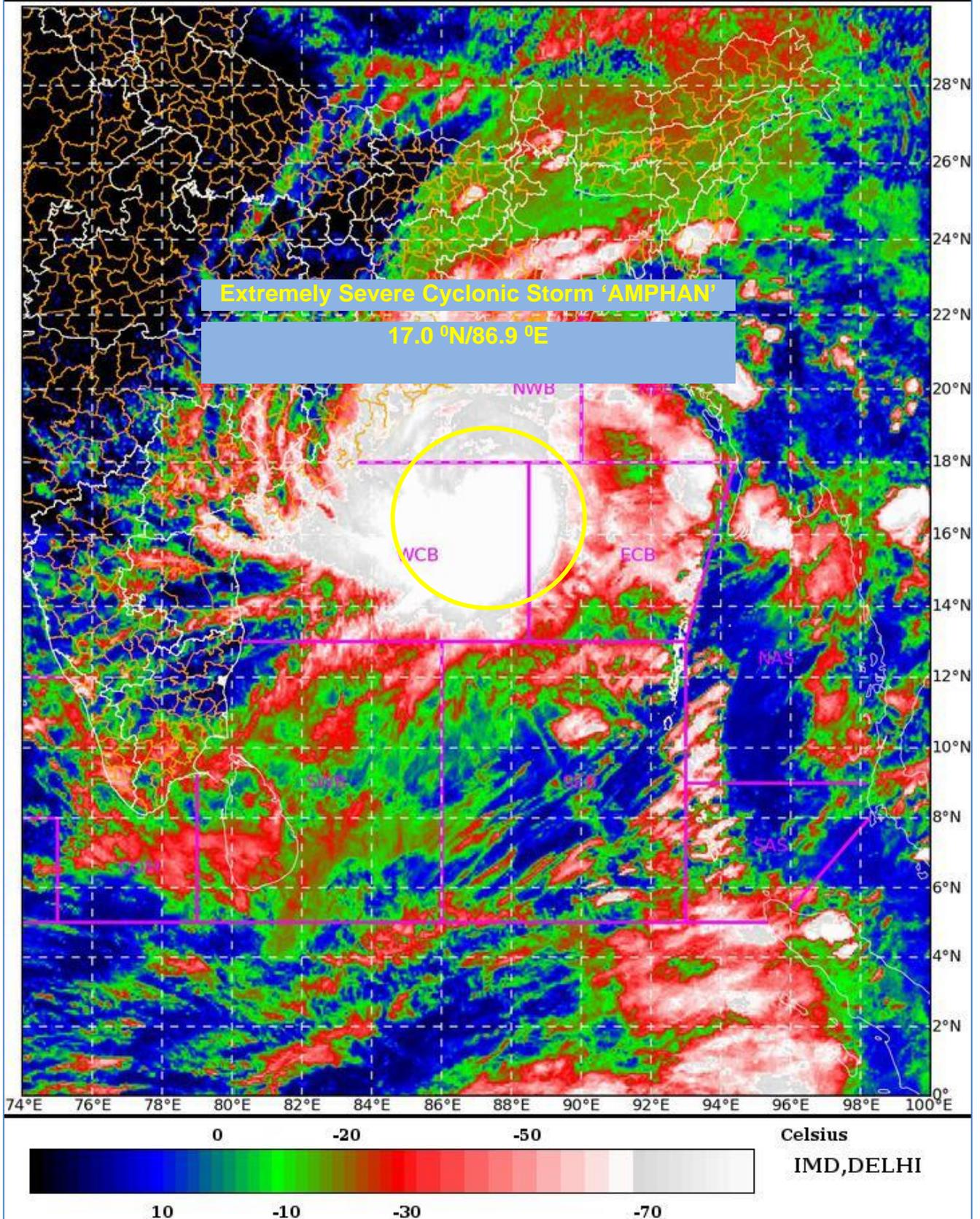
SAT : INSAT-3D IMG

19-05-2020/(0900 to 0926) GMT

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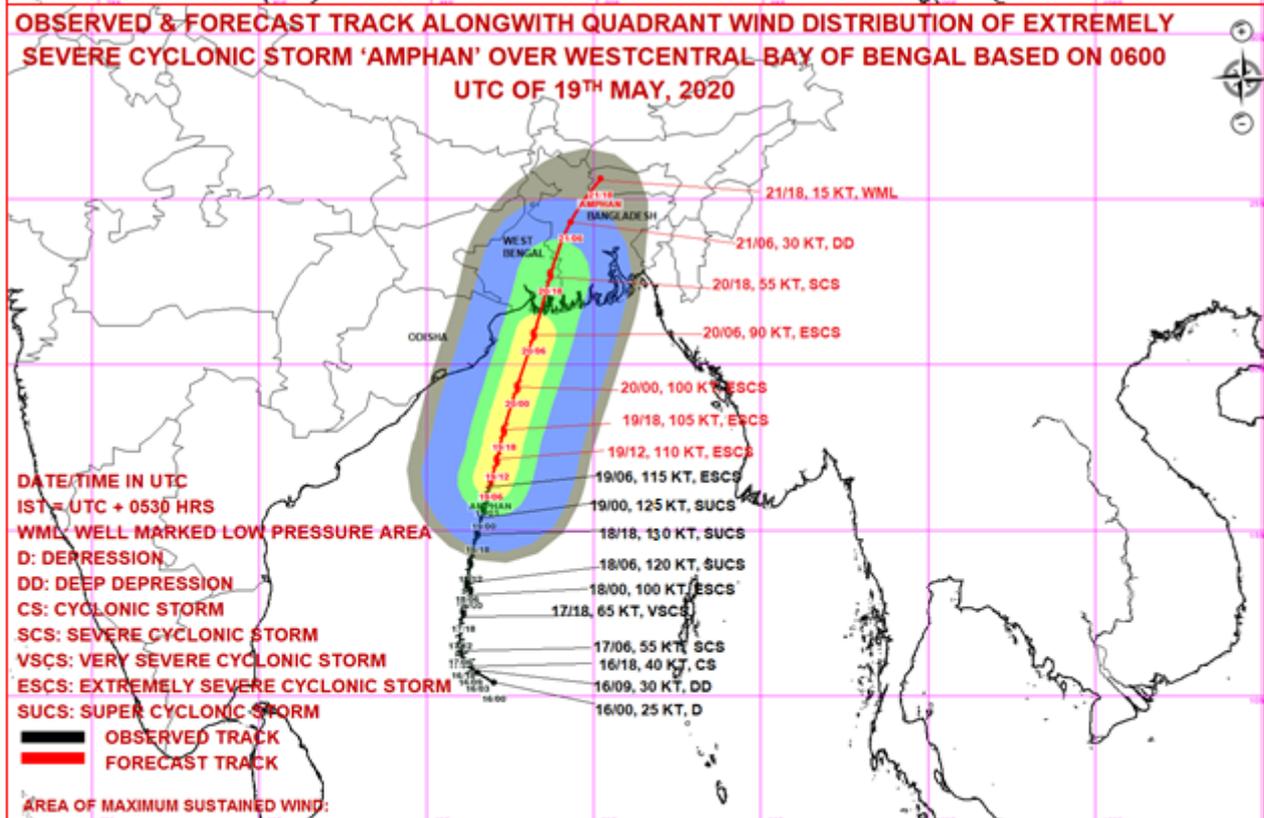
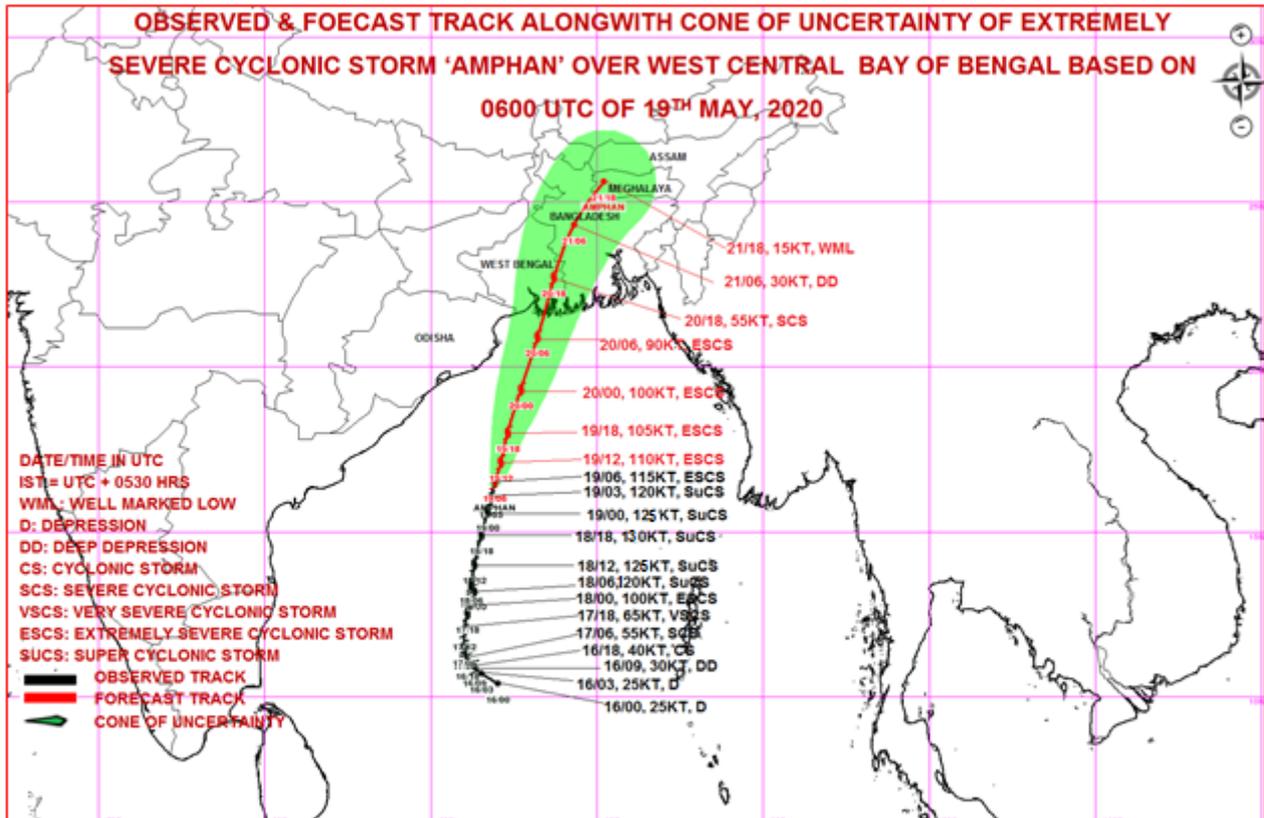
19-05-2020/(1430 to 1456) IST

L1C Mercator



Legend: WCB – Westcentral 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.

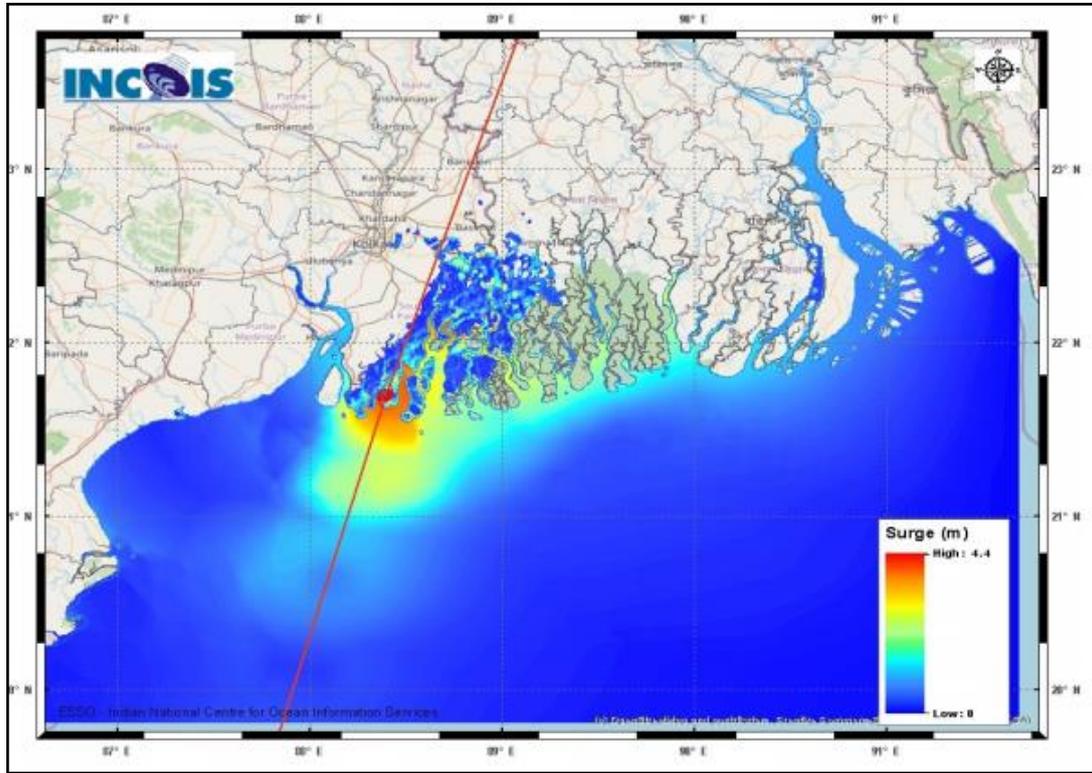


MSW(knot)/kmph)	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40(62-74)	High to very high seas	Total suspension of fishing operations
41-63/(75-117)	Very High seas	Total suspension of fishing operations
≥ 64 (≥118)	Phenomenal	Total suspension of fishing operations

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.

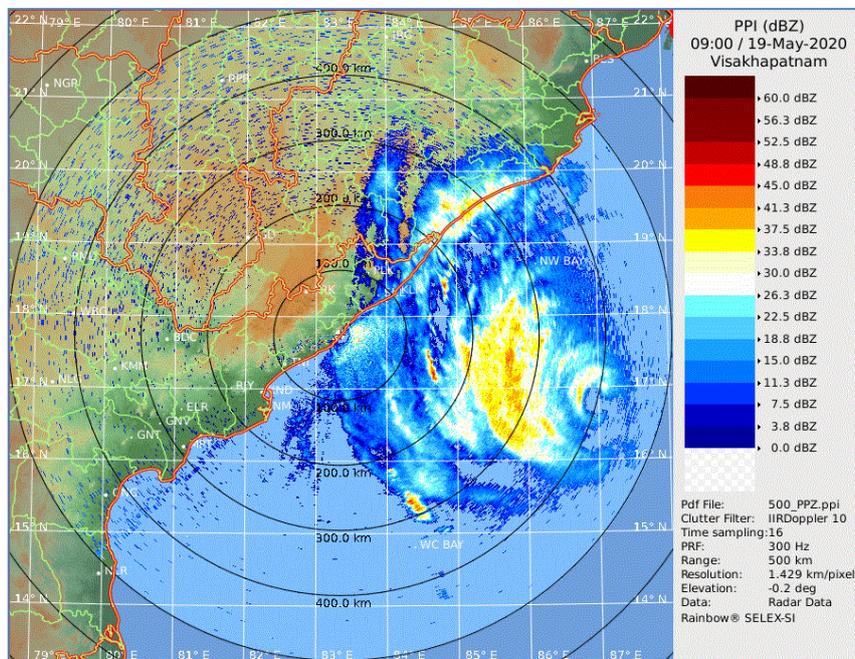
Figure: Storm Surge forecast from INCOIS issued at 1245 IST of 19th May 2020

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 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 1430 hrs IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2030 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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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H.Q. (INTEGRATED DEFENCE STAFF AND CDS) (FAX NO. 23005137/23005147)

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DIRECTOR GENERAL, AIR (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Westcentral and adjoining northwest Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Extremely Severe Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Westcentral Bay of Bengal moved nearly northwards with a speed of 17 kmph during past 06 hours and lay centred at 1730 hrs IST of 19th May, 2020 over **Westcentral and adjoining northwest Bay of Bengal** near latitude 17.4°N and longitude 87.0°E, about 320 km nearly south of Paradip (Odisha), 470 km south-southwest of Digha (West Bengal) and 610 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

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
19.05.20/1730	17.4/87.0	190-200 gusting to 220	Extremely Severe Cyclonic Storm
19.05.20/2330	18.4/87.2	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0530	19.4/87.4	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.6/87.8	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	21.8/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
21.05.20/0530	23.8/89.2	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.0/90.0	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.

(1) Heavy rainfall Warning:

Odisha

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May evening. **Rainfall intensity is likely to increase gradually and become maximum on 20th May.** Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind, speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off south Odisha coast and 40-50 kmph gusting to 60 kmph along & off north Odisha coast. It is very likely to increase becoming 55 to 65 kmph gusting to 75 kmph along & off north Odisha coast by today evening and along & off West Bengal coast by tonight.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 190-200 gusting to 220 kmph is prevailing over westcentral and adjoining northwest Bay of Bengal. Gale wind speed reaching 170-180 gusting to 200 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the morning of 20th May. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during landfall.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 12 hours over Westcentral Bay and adjoining northwest Bay of Bengal. It will become Phenomenal over north Bay of Bengal and adjoining central Bay of Bengal from morning of 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into westcentral Bay of Bengal during next 24 hours, North Bay of Bengal and adjoining central Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st 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.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

Damage Expected and Action suggested for interior districts of Gangetic West Bengal.

(i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2330 hours IST of 19th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

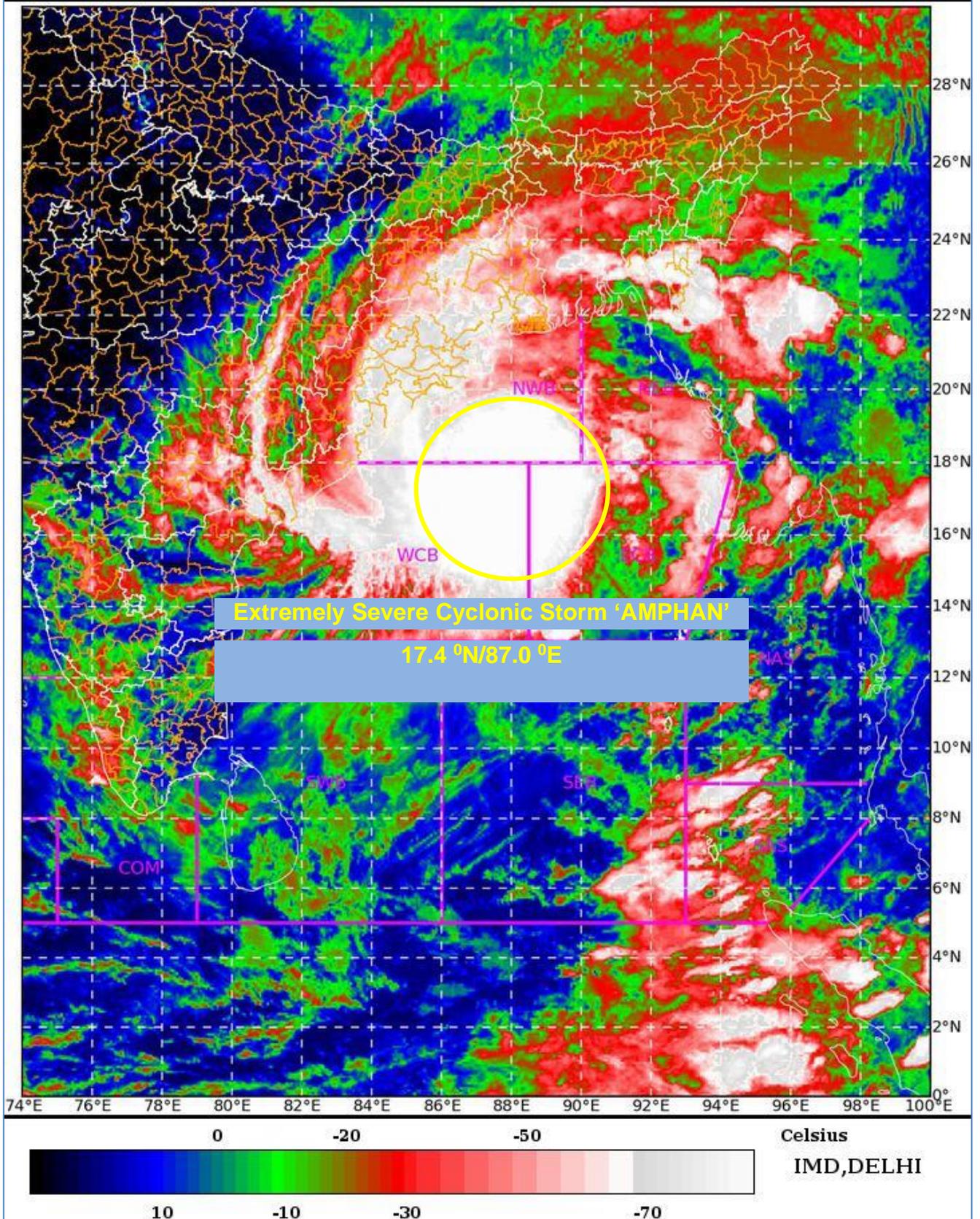
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19-05-2020/(1230 to 1256) GMT

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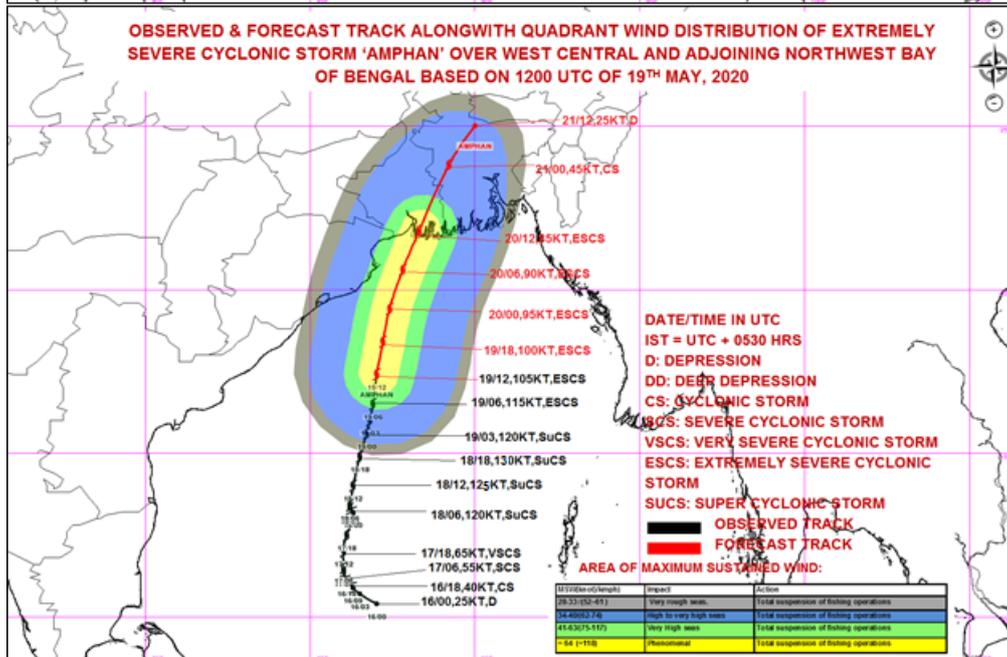
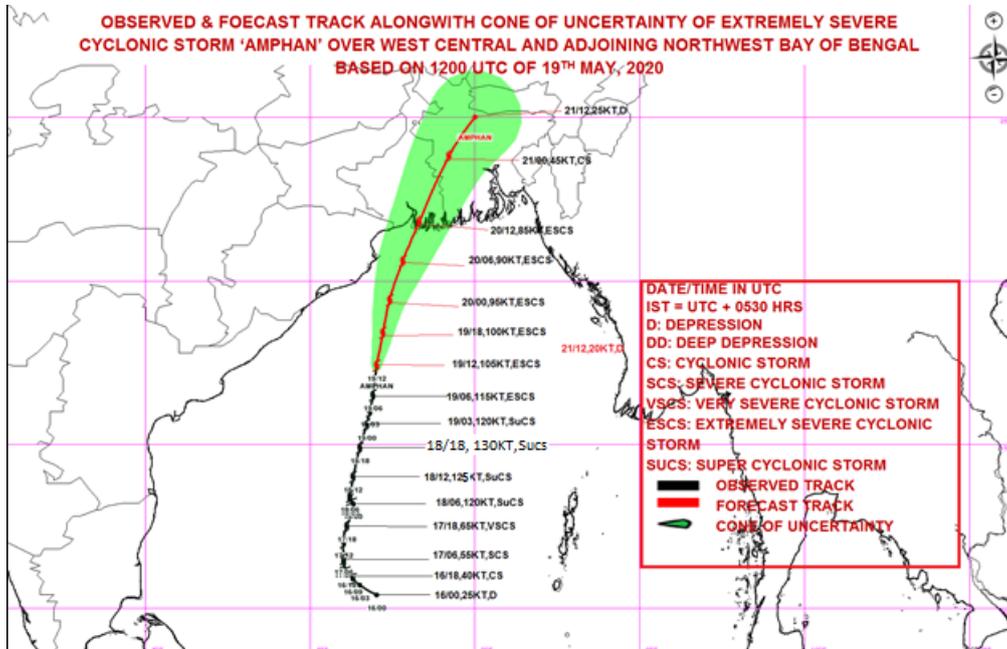
19-05-2020/(1800 to 1826) IST

L1C Mercator



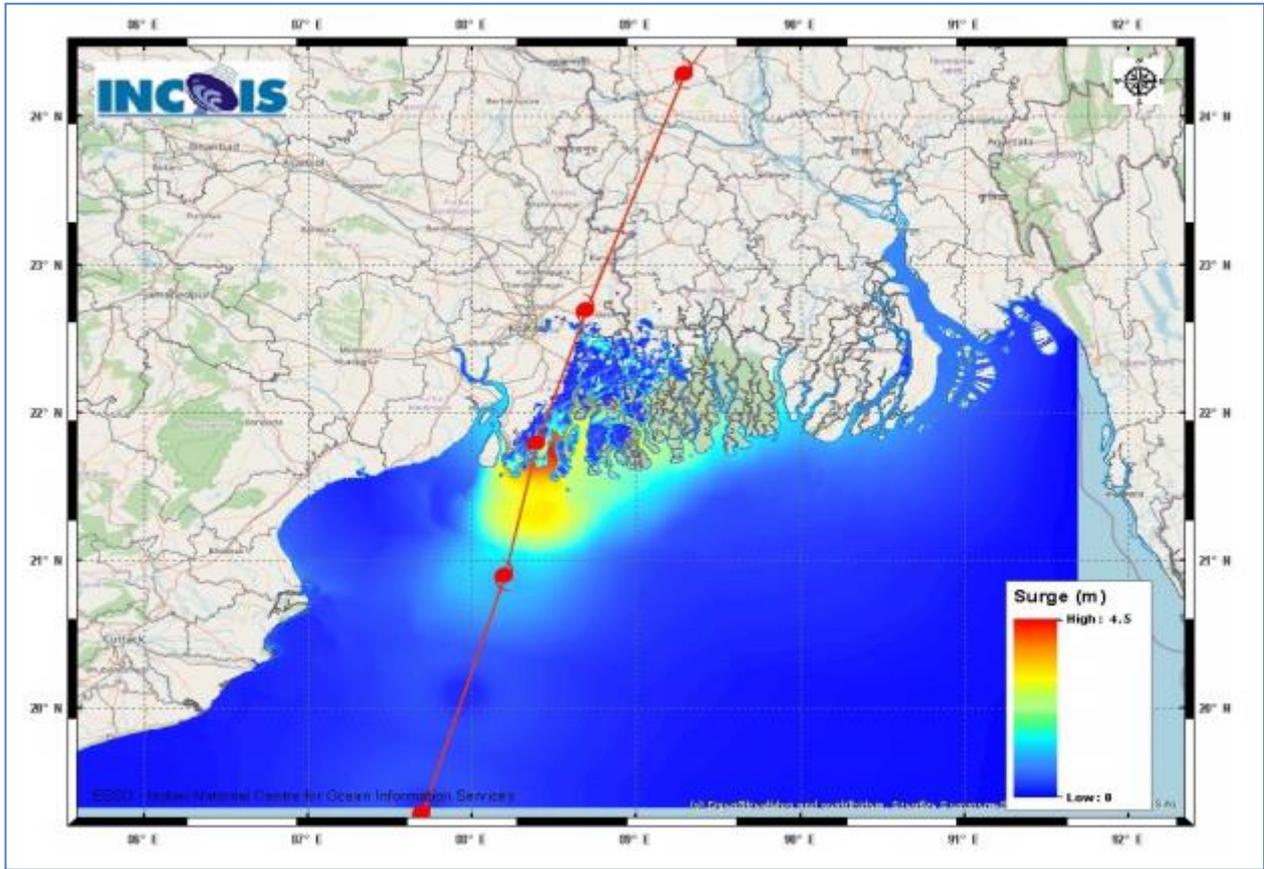
Legend: WCB – Westcentral Bay of Bengal

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.



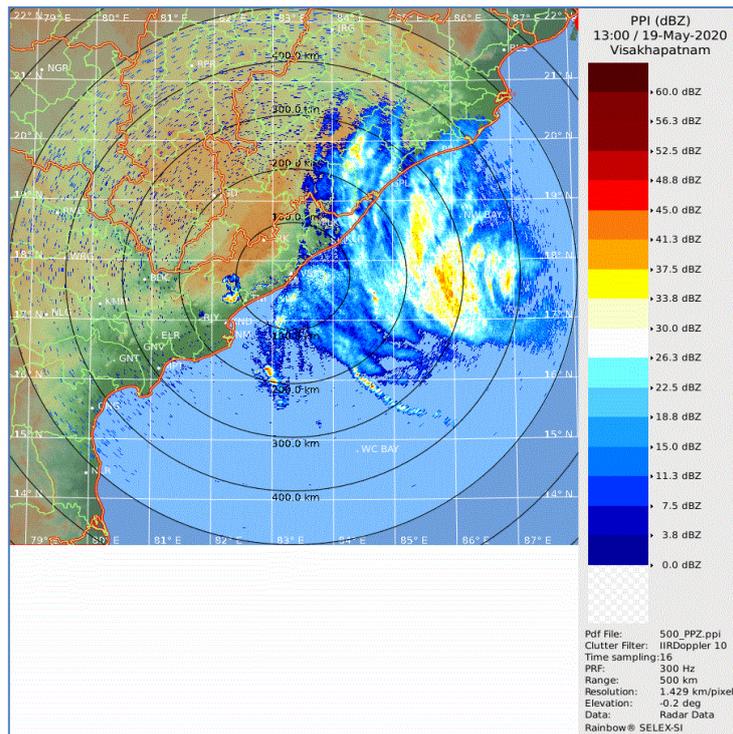
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 1830 hrs IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2330 HOURS IST

DATED: 19.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest and adjoining Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Westcentral Bay of Bengal moved north-northeastwards with a speed of 20 kmph during past 06 hours and lay centred at 2030 hrs IST of 19th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest and adjoining Westcentral Bay of Bengal** near latitude 18.1°N and longitude 87.1°E, about 250 km nearly south of Paradip (Odisha), 390 km south-southwest of Digha (West Bengal) and 540 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

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
19.05.20/2030	18.1/87.1	185-195 gusting to 215	Extremely Severe Cyclonic Storm
19.05.20/2330	18.7/87.3	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0530	19.8/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
21.05.20/0530	24.10/89.2	80-90 gusting to 100	Cyclonic Storm
21.05.20/1730	25.10/90.00	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.

(1) Heavy rainfall Warning:

Odisha

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May evening. **Rainfall intensity is likely to increase gradually and become maximum on 20th May.** Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind, speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off south Odisha coast and 40-50 kmph gusting to 60 kmph along & off north Odisha coast. It is very likely to increase becoming 55 to 65 kmph gusting to 75 kmph along & off north Odisha coast by today evening and along & off West Bengal coast by tonight.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 190-200 gusting to 220 kmph is prevailing over westcentral and adjoining northwest Bay of Bengal. Gale wind speed reaching 170-180 gusting to 200 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the morning of 20th May. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during landfall.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 12 hours over Westcentral Bay and adjoining northwest Bay of Bengal. It will become Phenomenal over north Bay of Bengal and adjoining central Bay of Bengal from morning of 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into westcentral Bay of Bengal during next 24 hours, North Bay of Bengal and adjoining central Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st 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.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

Damage Expected and Action suggested for interior districts of Gangetic West Bengal.

(i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0230 hours IST of 20th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG

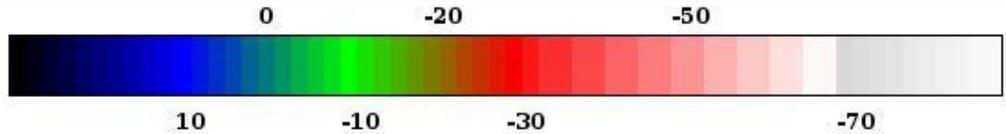
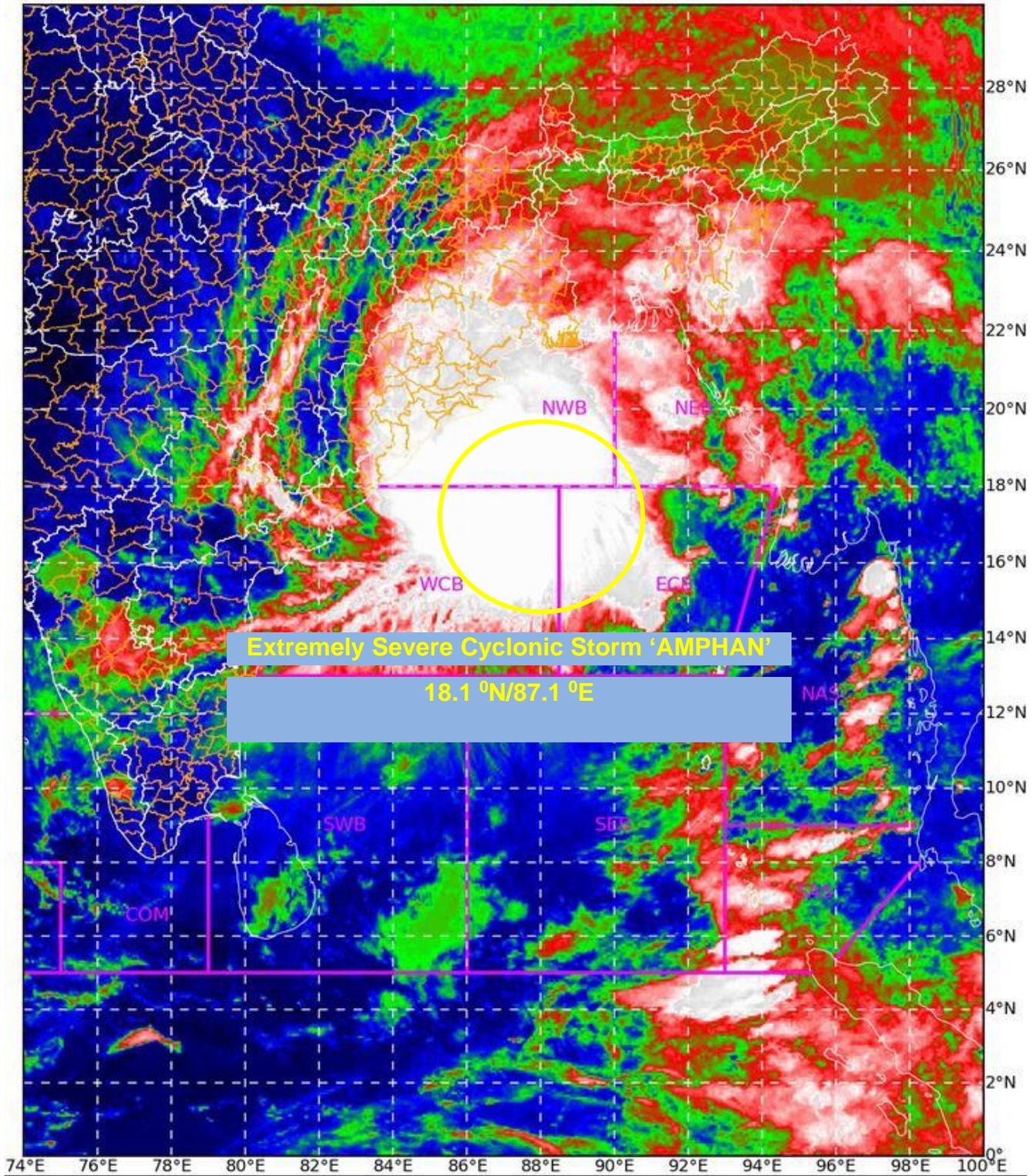
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19-05-2020/(2230 to 2256) IST



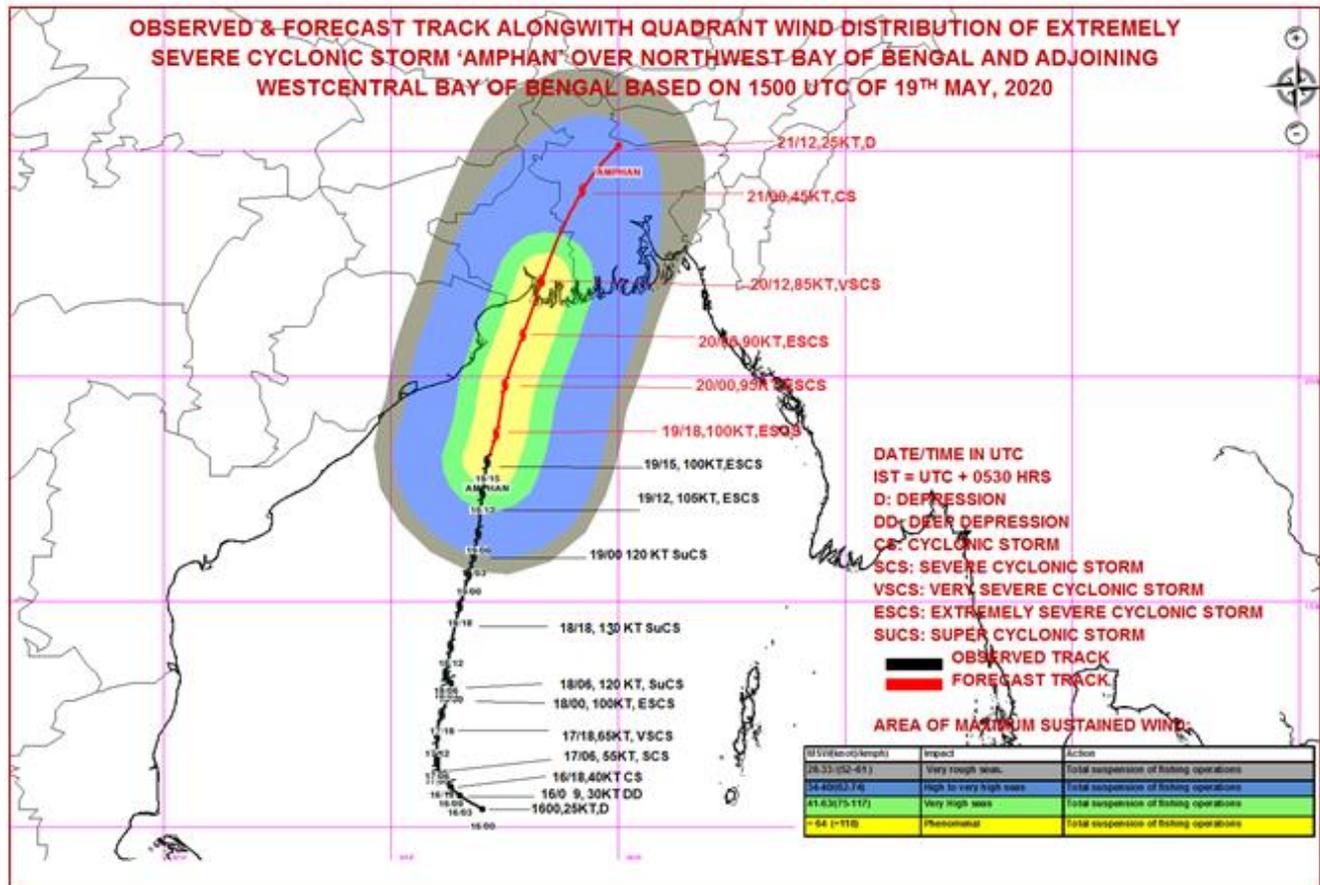
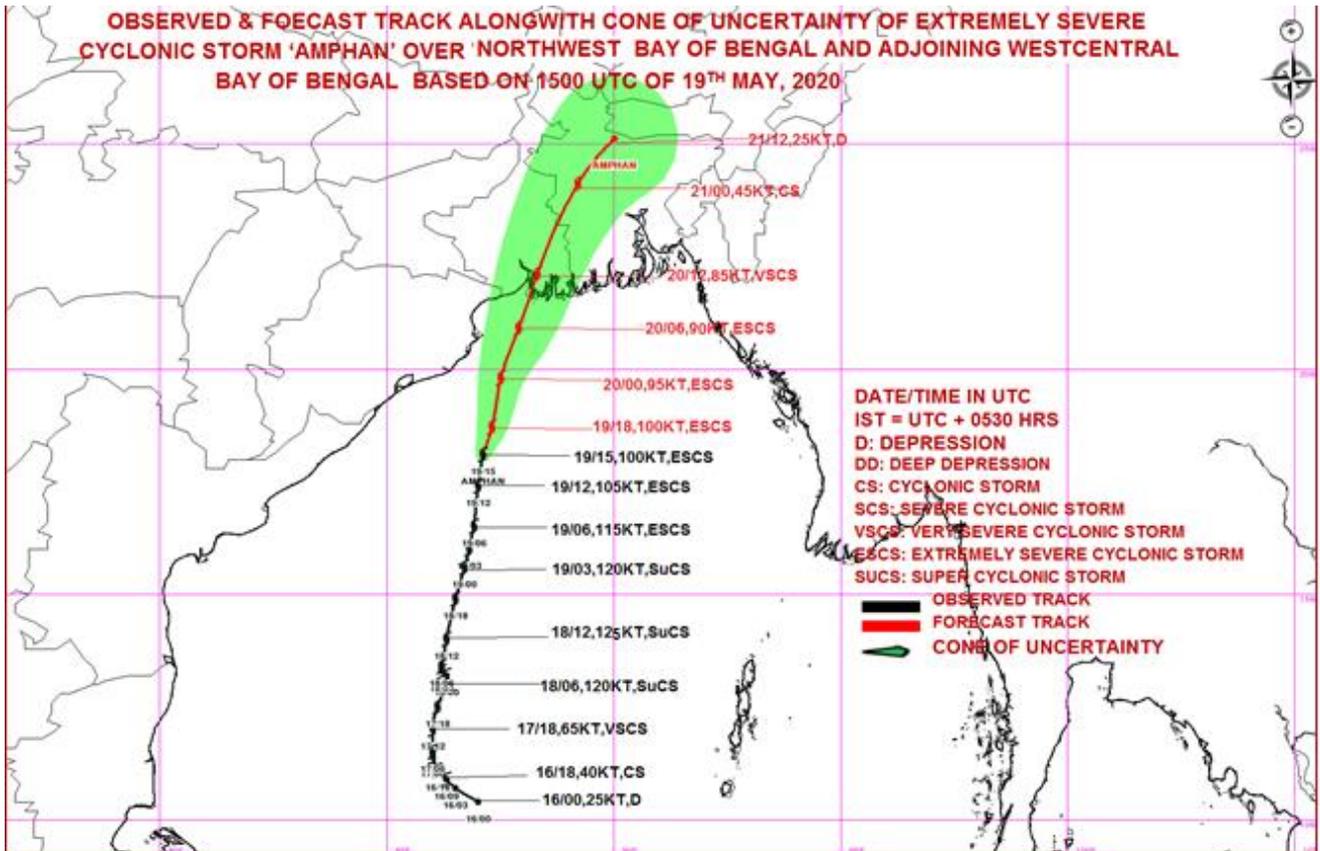
L1C Mercator



Celsius
IMD, DELHI

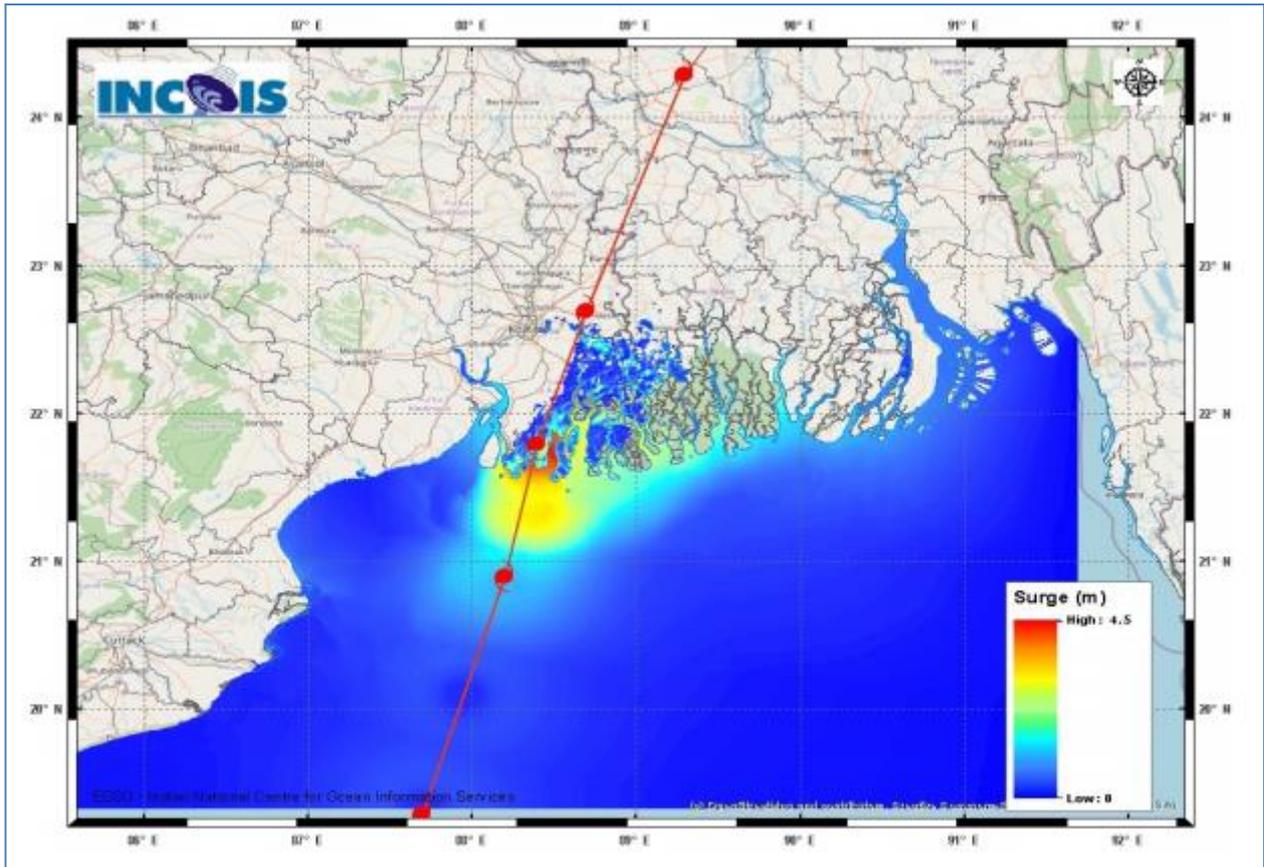
Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

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.



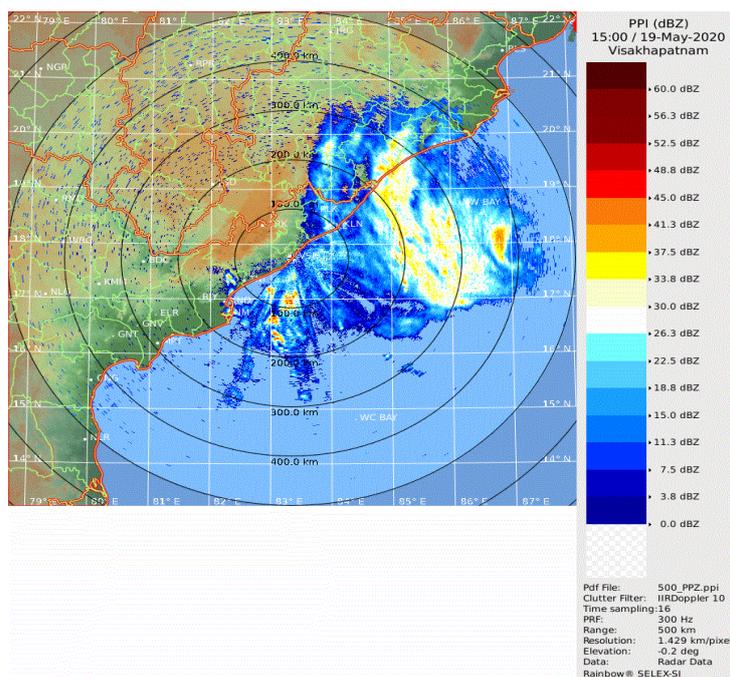
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Vishakhapatnam Doppler Weather Radar at 2030 hrs IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0230 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest and adjoining Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest and adjoining Westcentral Bay of Bengal moved nearly northwards with a speed of 19 kmph during past 06 hours and lay centred at 2330 hrs IST of 19th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest and adjoining Westcentral Bay of Bengal** near latitude 18.4°N and longitude 87.1°E, about 210 km nearly south of Paradip (Odisha), 360 km south-southwest of Digha (West Bengal) and 510 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

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
19.05.20/2330	18.4/87.1	180-190 gusting to 210	Extremely Severe Cyclonic Storm
20.05.20/0530	19.4/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.1/88.7	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/1130	24.6/89.6	60-70 gusting to 80	Cyclonic Storm
21.05.20/2330	25.6/90.1	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.

(1) Heavy rainfall Warning:

Odisha

Light to moderate rainfall is very likely at most places of coastal Odisha with heavy to very heavy rainfall at isolated places Jagatsinghpur, Kendrapara and Bhadrak Districts and isolated heavy falls over Jajpur, Balasore, Cuttack, Mayurbhanj, Khordha & Puri districts on 19th May and isolated heavy to very heavy rainfall at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Coastal districts of Gangetic West Bengal (East Medinipur, South & North 24 Parganas) are likely to experience light to moderate rainfall at many places commencing from today, the 19th May evening. **Rainfall intensity is likely to increase gradually and become maximum on 20th May.** Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 70 to 80 kmph gusting to 90 kmph is prevailing along and off Jagatsinghpur and Kendrapara districts of Odisha and squally wind speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off remaining coastal districts of Odisha. Paradip reported wind speed of 67 kmph at 2230 IST of 19th May 2020.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha during forenoon to afternoon of 20th May 2020.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 180-190 kmph gusting to 210 kmph is prevailing over westcentral and adjoining northwest Bay of Bengal. Gale wind speed reaching 170-180 kmph gusting to 200 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the morning of 20th May. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during landfall.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 12 hours over Westcentral Bay and adjoining northwest Bay of Bengal. It will become Phenomenal over north Bay of Bengal and adjoining central Bay of Bengal from morning of 20th May 2020.

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.

(4) Fishermen Warning

- The fishermen are advised not to venture into westcentral Bay of Bengal during next 24 hours, North Bay of Bengal and adjoining central Bay of Bengal during 19th to 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st 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.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

Damage Expected and Action suggested for interior districts of Gangetic West Bengal.

(i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0530 hours IST of 20th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

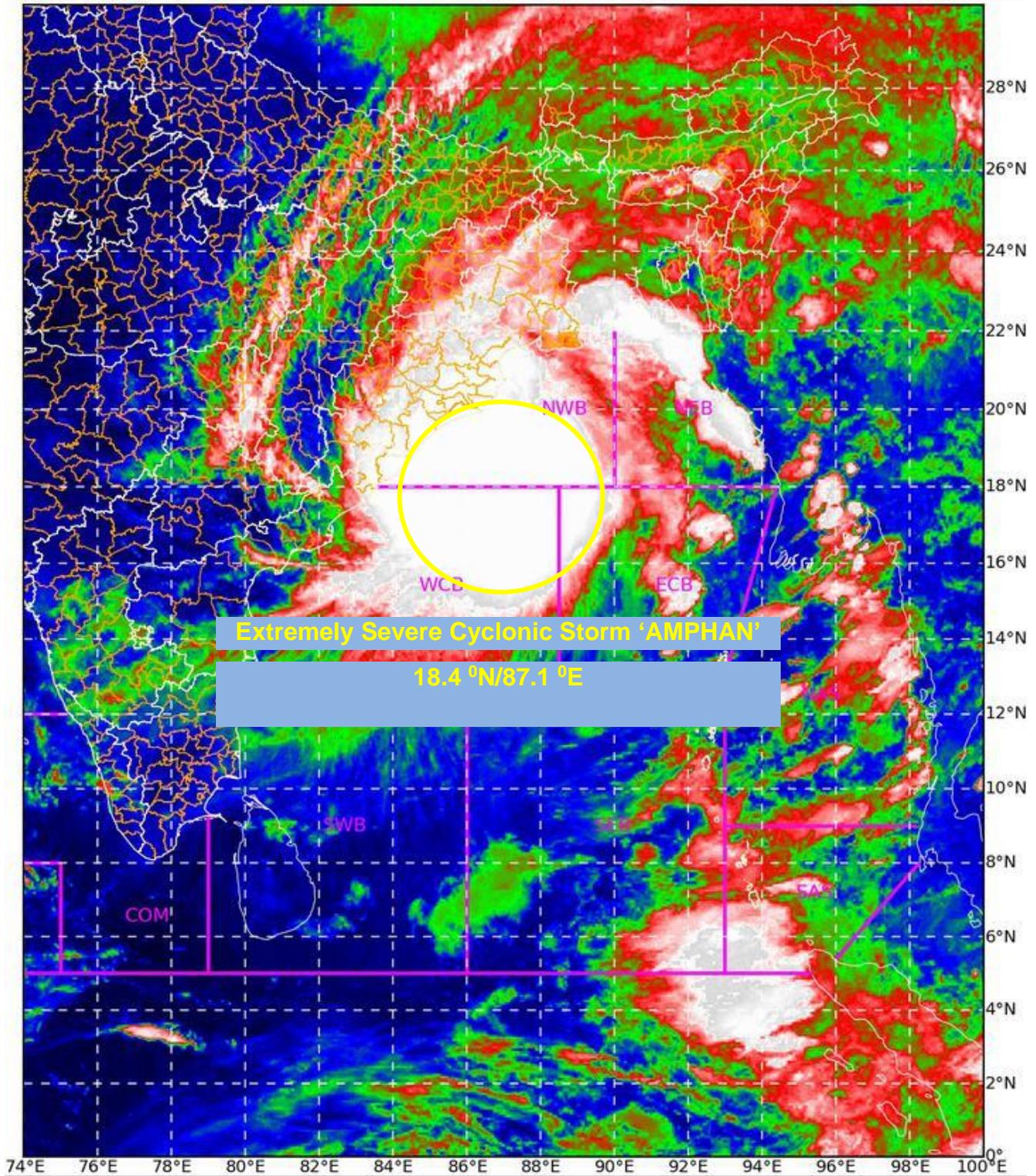
SAT : INSAT-3D IMG

19-05-2020/(2000 to 2026) GMT

IMG_TIR1_TEMP 10.8 um

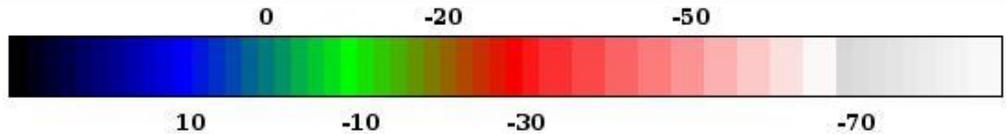
20-05-2020/(0130 to 0156) IST

L1C Mercator



Extremely Severe Cyclonic Storm 'AMPHAN'

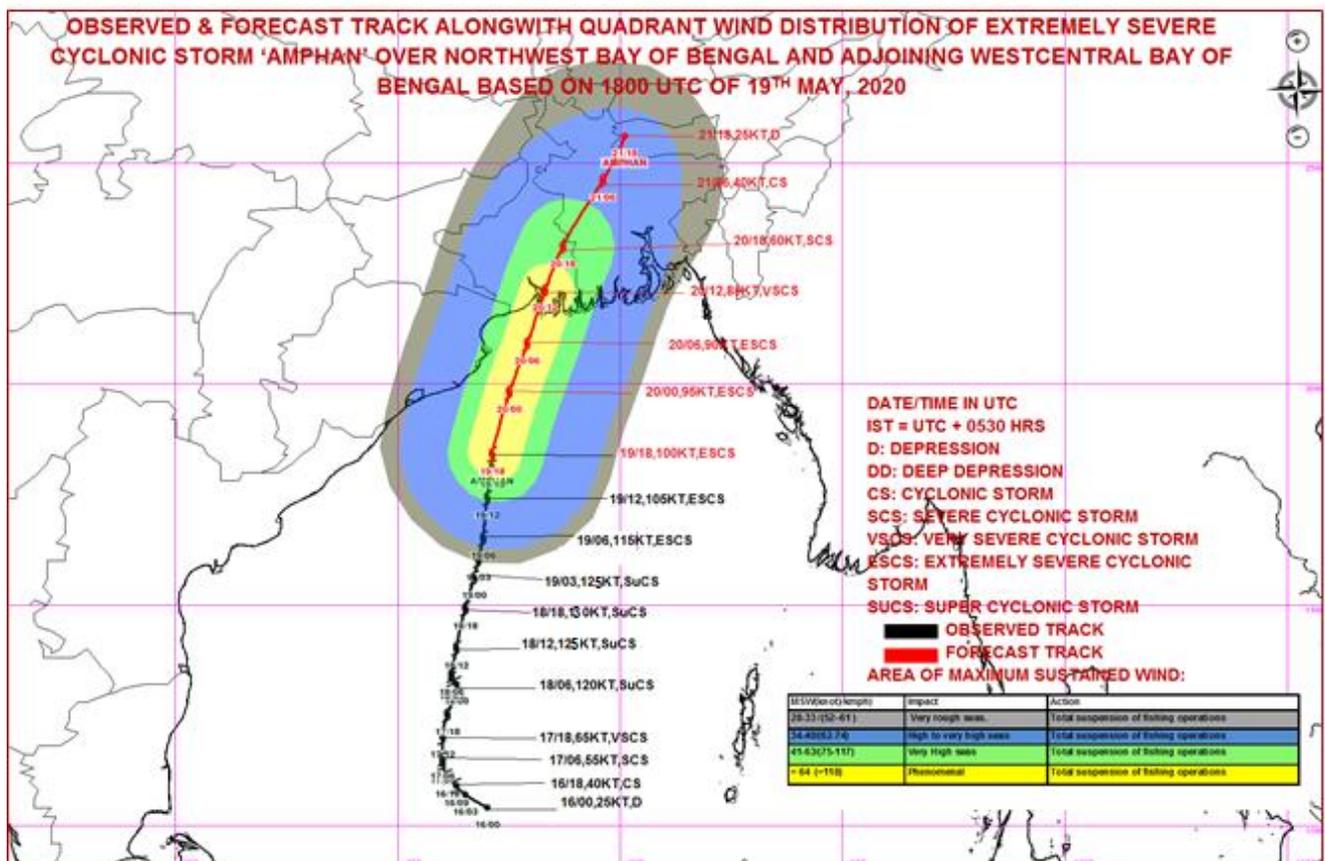
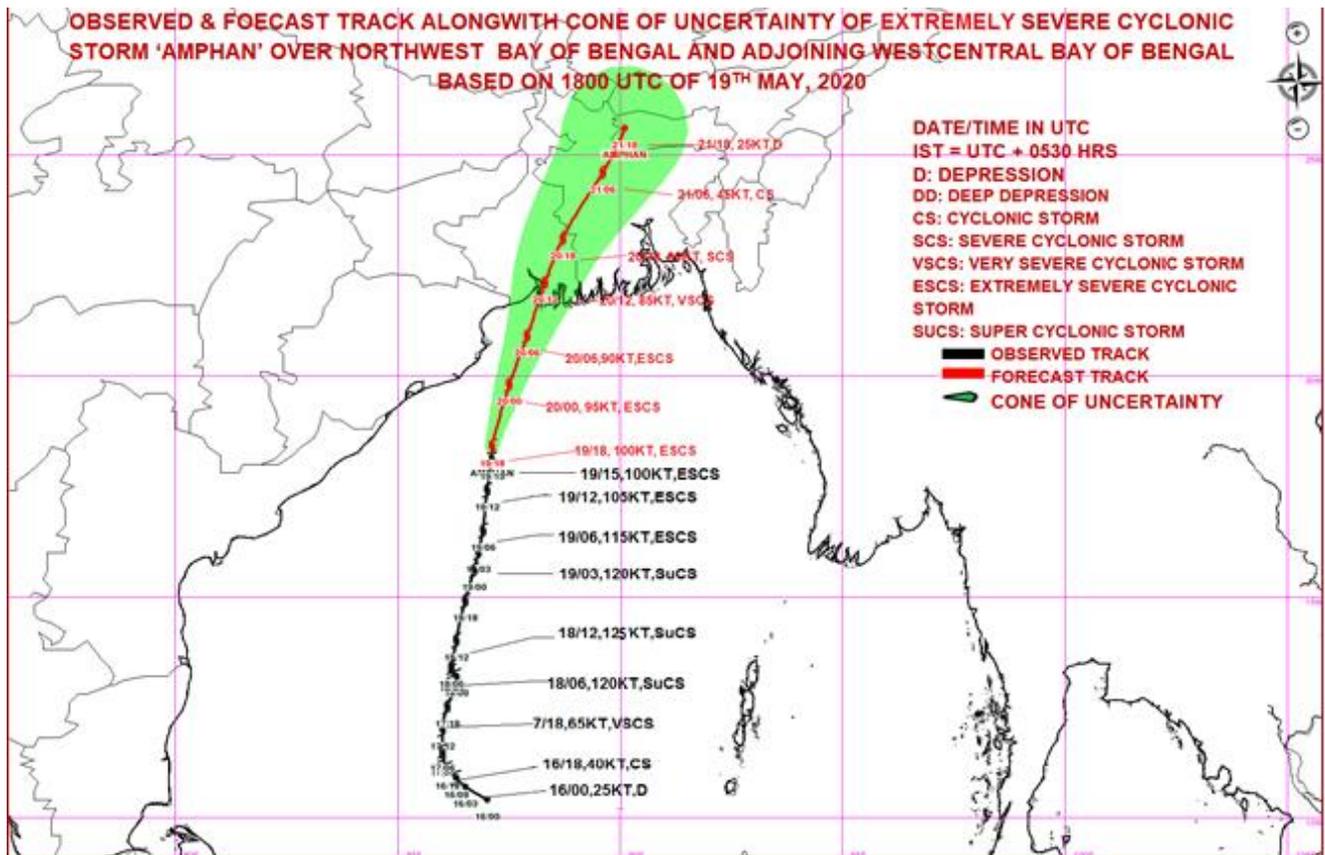
18.4 °N/87.1 °E



Celsius
IMD, DELHI

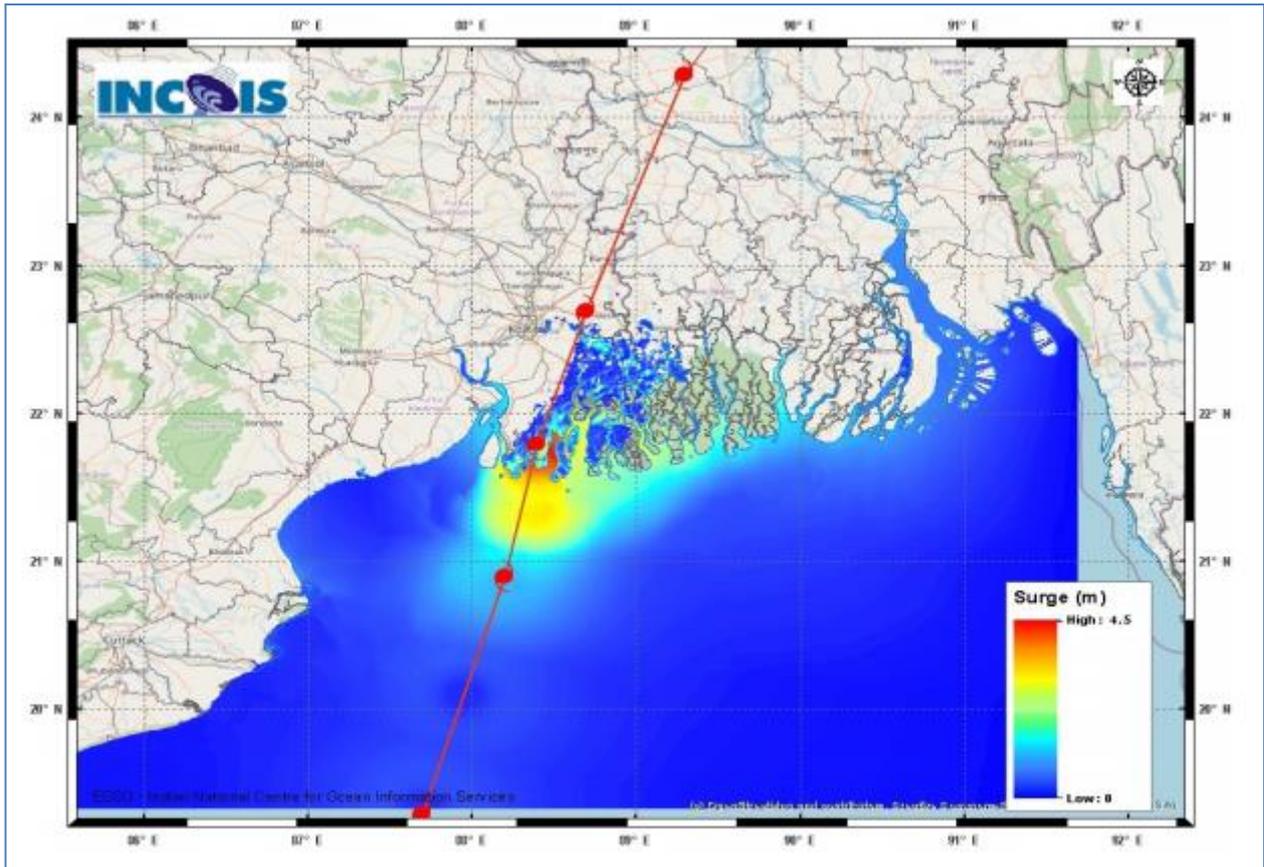
Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

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.



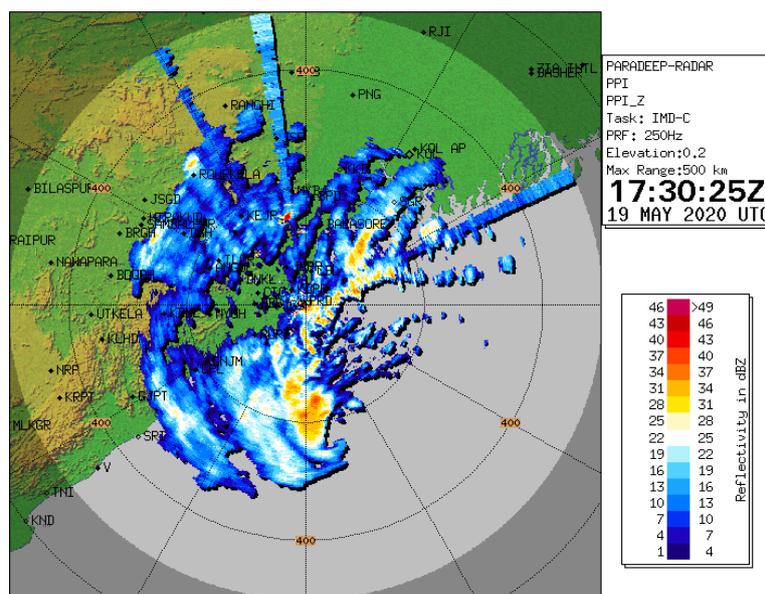
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Paradip Doppler Weather Radar at 2300 hrs IST of 19th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0530 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest and adjoining Westcentral Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest and adjoining Westcentral Bay of Bengal moved north-northeastwards with a speed of 11 kmph during past 06 hours and lay centred at 0230 hrs IST of 20th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest and adjoining Westcentral Bay of Bengal** near latitude 18.7°N and longitude 87.2°E, about 180 km nearly south of Paradip (Odisha), 320 km south-southwest of Digha (West Bengal) and 480 km south-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

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
20.05.20/0230	18.7/87.2	175-185 gusting to 205	Extremely Severe Cyclonic Storm
20.05.20/0530	19.5/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.9/87.9	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.1/88.3	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.1/88.7	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/1130	24.6/89.6	60-70 gusting to 80	Cyclonic Storm
21.05.20/2330	25.6/90.1	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.

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 70 to 80 kmph gusting to 90 kmph is prevailing along and off Jagatsinghpur and Kendrapara districts of Odisha and squally wind speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off remaining coastal districts of Odisha. Paradip reported wind speed of 70 kmph at 2330 IST of 19th May 2020.
- The wind speed will gradually increase becoming gale wind speed reaching 75 to 85 kmph gusting to 95 kmph from 20th morning along and off north Odisha coast (Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts) and West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts). **It will gradually increase thereafter becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha during forenoon to afternoon of 20th May 2020.**
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**
- Squally wind speed reaching 55-65 kmph gusting to 75 kmph likely to prevail over Puri, Khordha, Cuttack, Jajpur districts of Odisha during 20th May 2020.

Deep Sea area

- Gale wind speed reaching 180-190 gusting to 210 kmph is prevailing over westcentral and adjoining northwest Bay of Bengal. Gale wind speed reaching 170-180 gusting to 200 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the morning of 20th May. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during landfall.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 12 hours over Westcentral Bay and adjoining northwest Bay of Bengal. It will become Phenomenal over north Bay of Bengal and adjoining central Bay of Bengal from morning of 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into westcentral Bay of Bengal, North Bay of Bengal and adjoining central Bay of Bengal on 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

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.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutchha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutchha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st morning.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

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 Expected and Action suggested for interior districts of Gangetic West Bengal.

(i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0830 hours IST of 20th May, 2020.

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

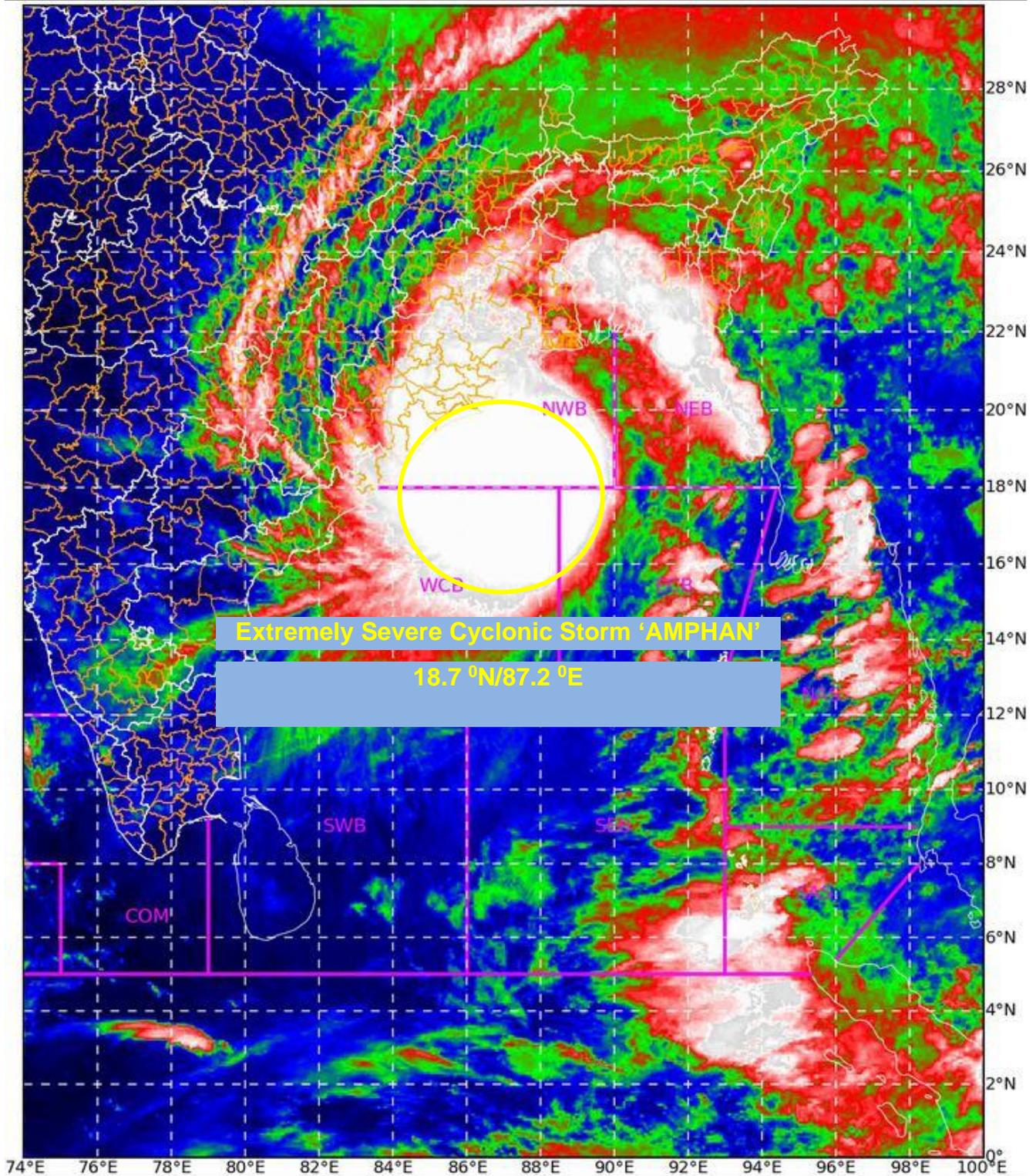
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19-05-2020/(2130 to 2156) GMT

IMG_TIR1_TEMP 10.8 um

20-05-2020/(0300 to 0326) IST

L1C Mercator



Extremely Severe Cyclonic Storm 'AMPHAN'

18.7 °N/87.2 °E

Celsius

IMD, DELHI

10

-10

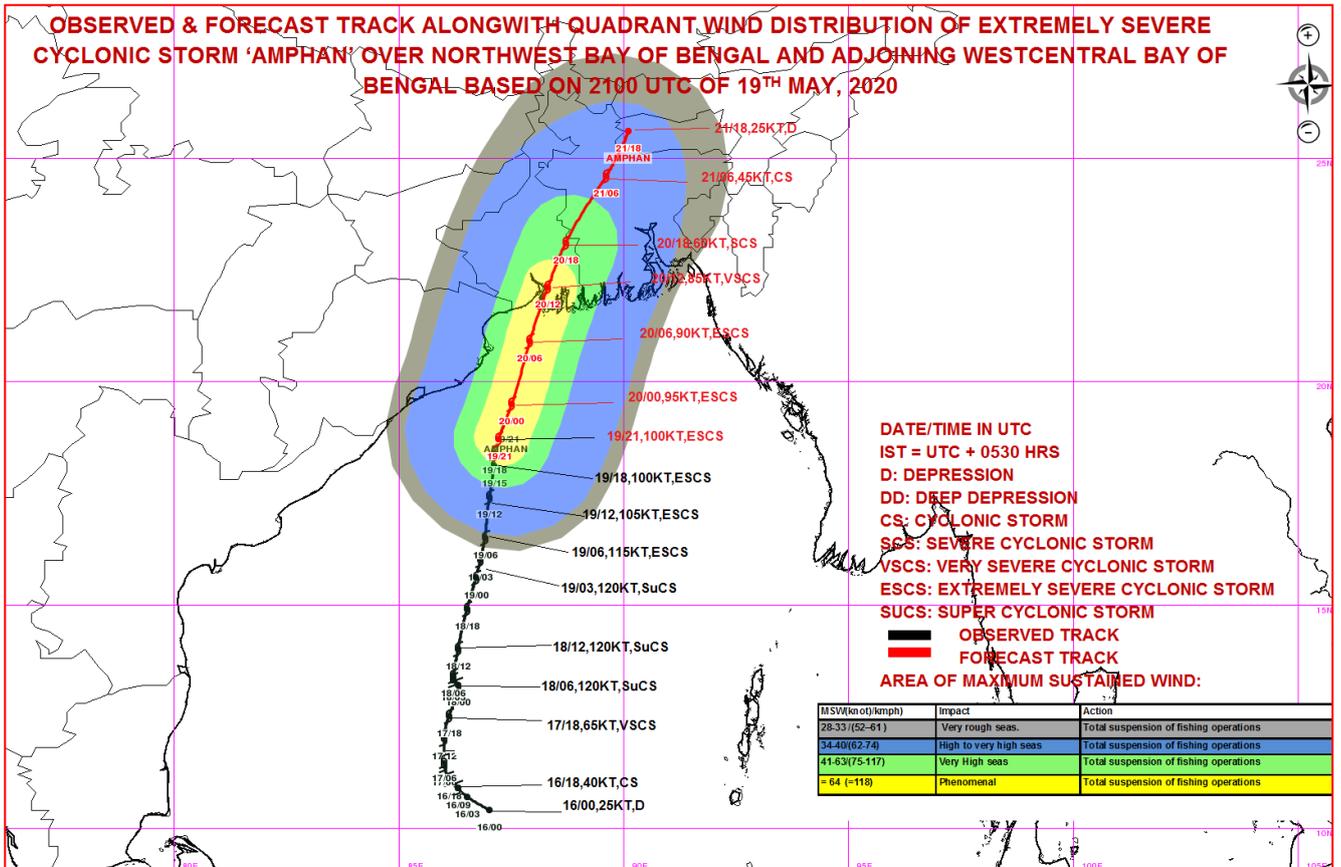
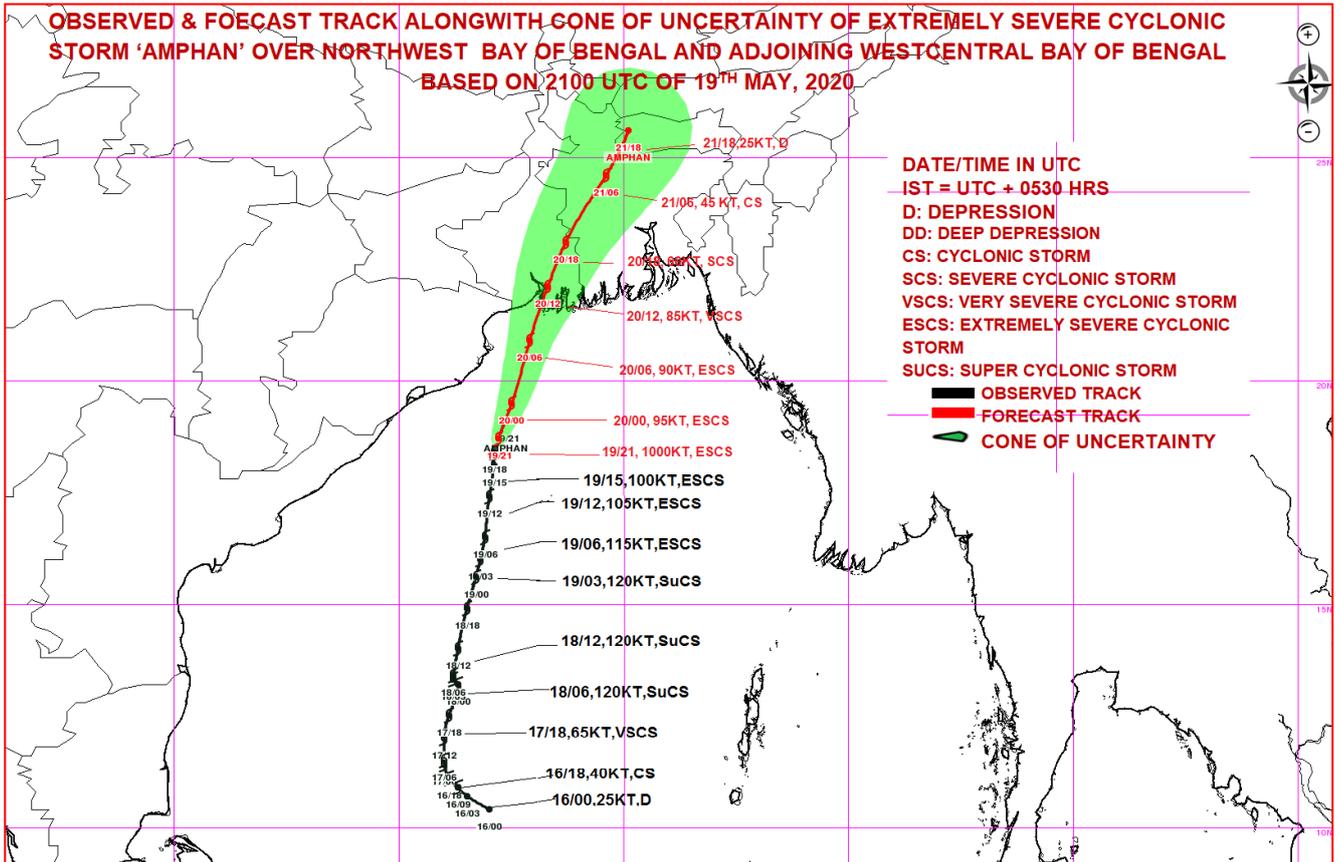
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-70

Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

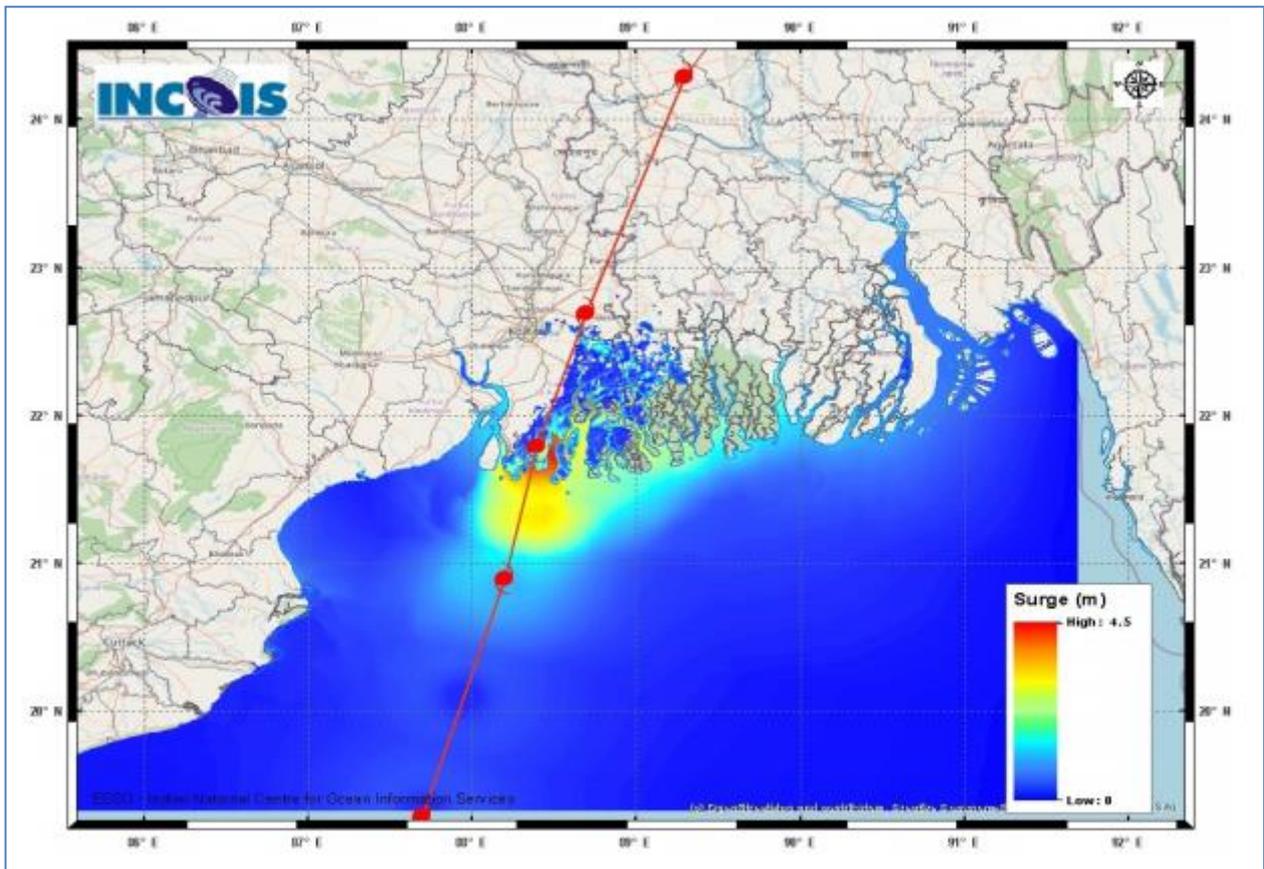
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%

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



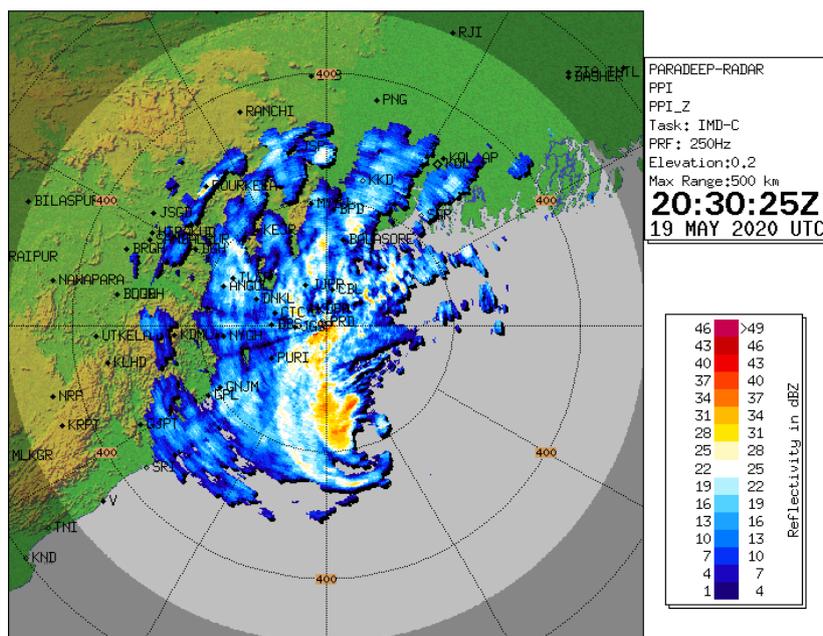
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

Figure: Storm Surge forecast from INCOIS issued at 1800 IST of 19th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

Figure: Reflectivity of Paradip Doppler Weather Radar at 0200 hrs IST of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0830 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest and adjoining Westcentral Bay of Bengal moved north-northeastwards with a speed of 14 kmph during past 06 hours and lay centred at 0530 hrs IST of today, the 20th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest Bay of Bengal** near latitude 19.1°N and longitude 87.5°E, about 155 km south-southeast of Paradip (Odisha), 280 km south of Digha (West Bengal) and 425 km southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of today, the 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph. After landfall the system is likely to move north-northeastwards close to Kolkata.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

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
20.05.20/0530	19.1/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/1130	20.5/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1730	26.0/90.3	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.

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) on 20th May 2020.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 90 to 100 kmph gusting to 110 kmph is prevailing along and off Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts of Odisha and squally wind speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off remaining coastal districts of Odisha (Puri, Khordha, Cuttack, Jajpur) during 20th May 2020.
- **It will gradually increase becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha during forenoon to afternoon of 20th May 2020.**
- Gale wind speed reaching 75 to 85 kmph gusting to 95 kmph is prevailing along and off West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts).
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**

Deep Sea area

- Gale wind speed reaching 170-180 gusting to 200 kmph is prevailing over northwest and adjoining westcentral Bay of Bengal. Gale wind speed reaching 170-180 gusting to 200 kmph is likely to prevail over northern parts of central Bay of Bengal and adjoining North Bay of Bengal from the morning of 20th May. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during landfall.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 12 hours over Westcentral Bay and adjoining northwest Bay of Bengal. It will become Phenomenal over north Bay of Bengal and adjoining central Bay of Bengal from morning of 20th May 2020.

(4) Fishermen Warning

- The fishermen are advised not to venture into westcentral Bay of Bengal, North Bay of Bengal and adjoining central Bay of Bengal on 20th May 2020.
- Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts till 20th May 2020.

(5) Storm Surge expected

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 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st morning.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

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 Expected and Action suggested for interior districts of Gangetic West Bengal.

(i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of 20th May, 2020.

Please follow the hourly bulletin, which has commenced based on 0530 Hrs IST of 20th May 2020.

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

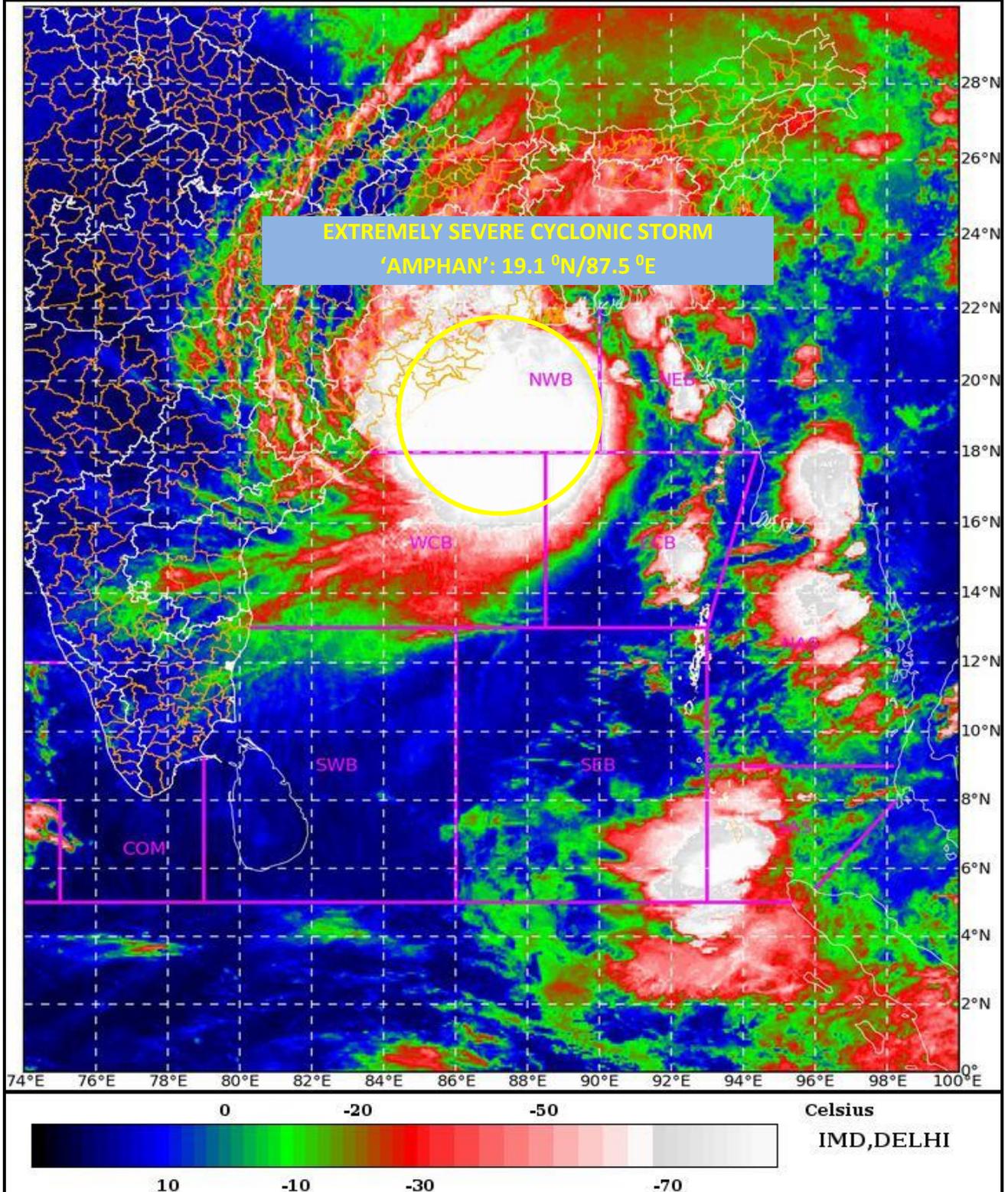
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 20-05-2020/(0000 to 0026) GMT

IMG_TIR1_TEMP 10.8 um 20-05-2020/(0530 to 0556) IST

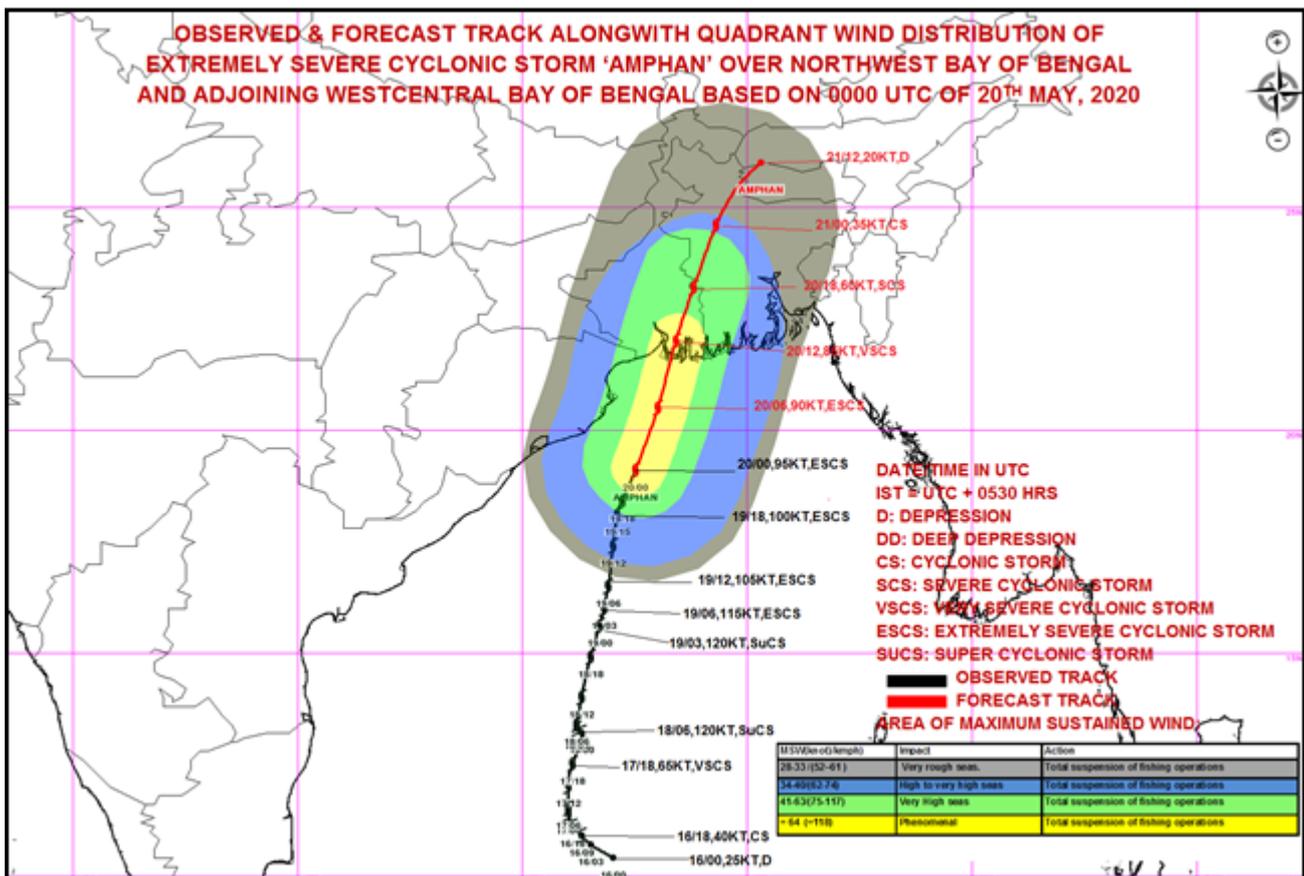
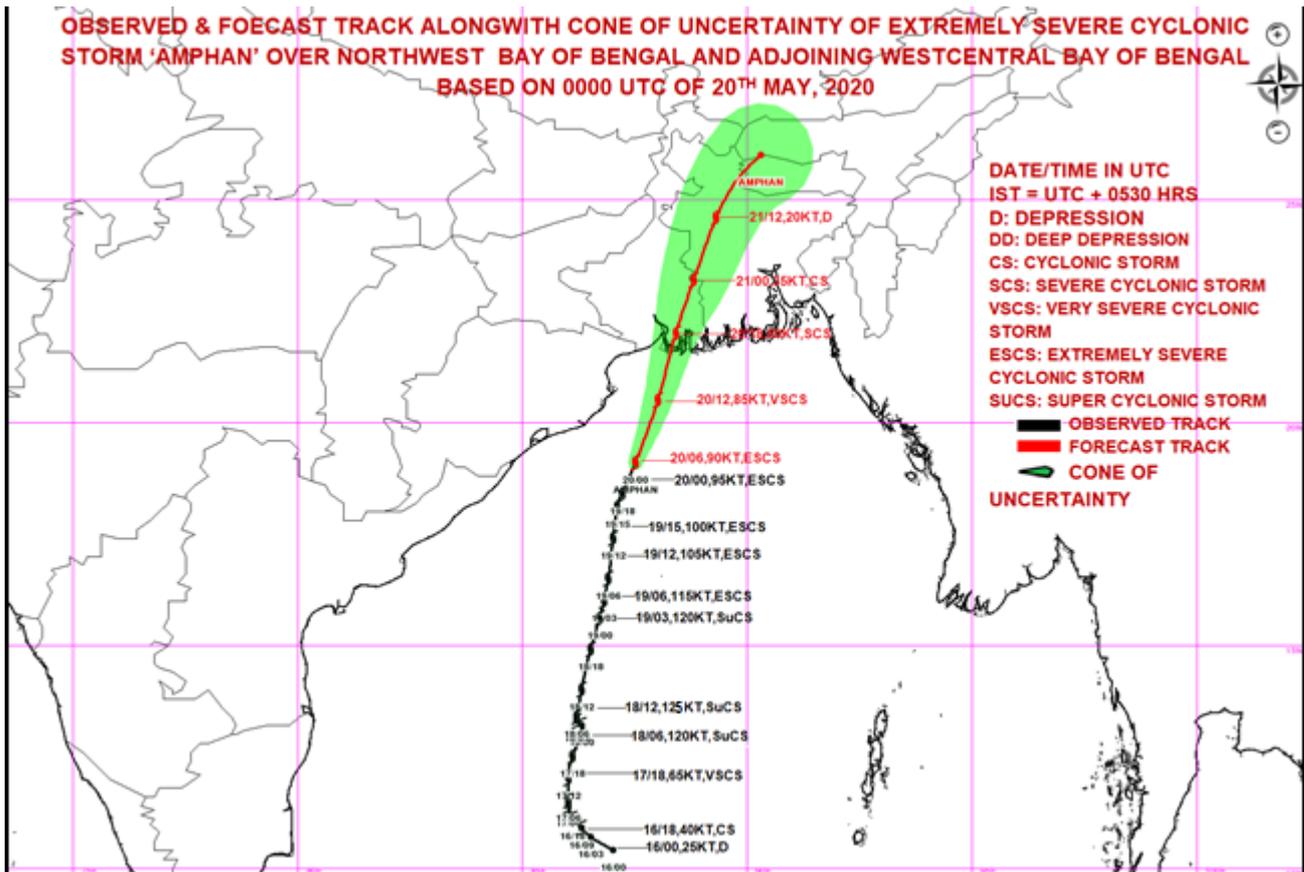


L1C Mercator



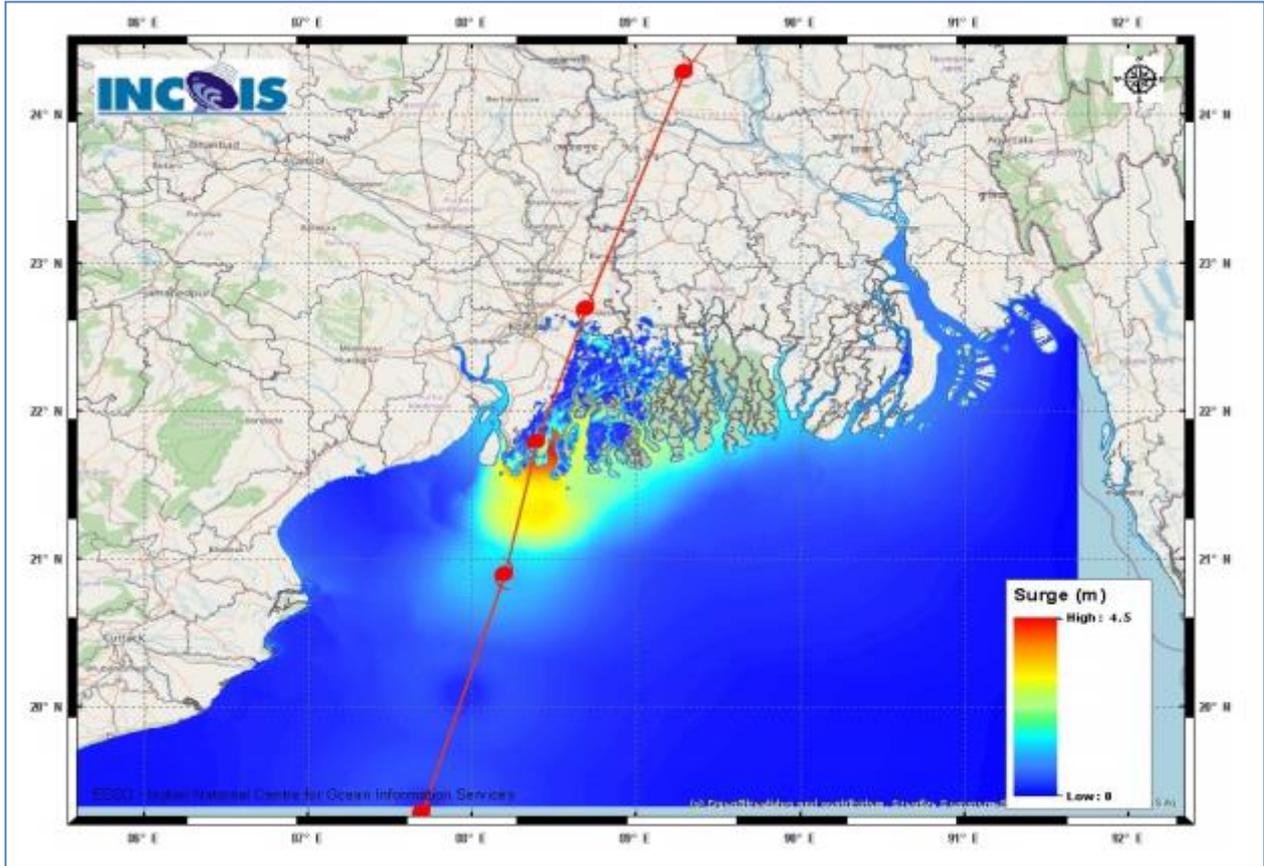
Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

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.

Figure: Storm Surge forecast from INCOIS issued at 0525 IST of 20th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

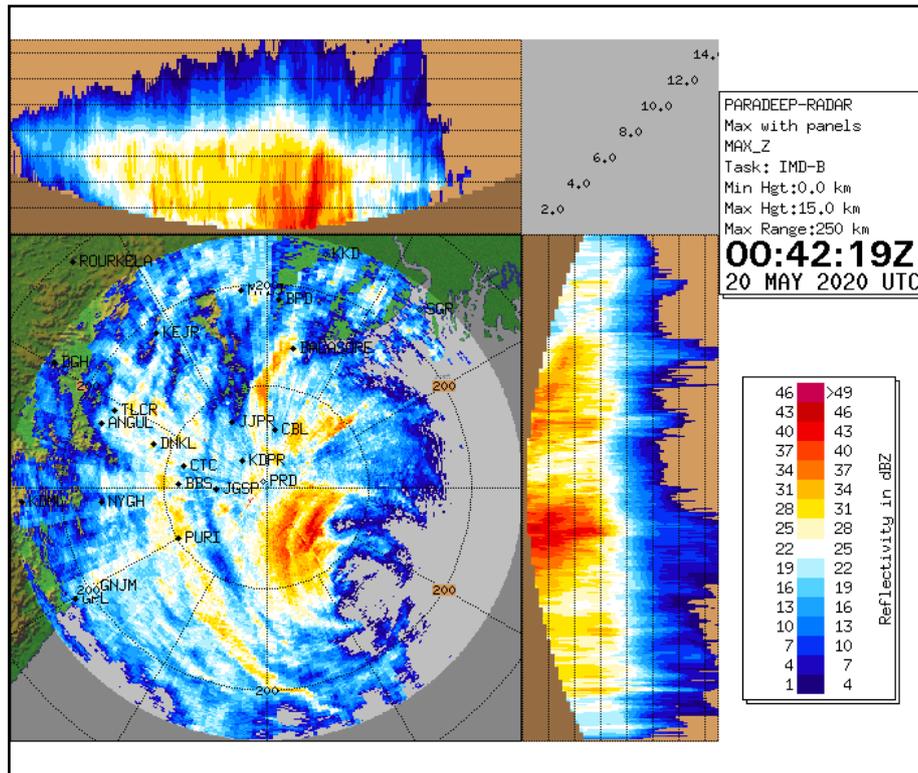
STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.7	Around 15
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-4.0	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 15
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.8	Around 0.44
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.2
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.5	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.8	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.5	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.8
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.8	Around 0.8

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.

Figure: Reflectivity of Paradip Doppler Weather Radar at 0042 UTC of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1000 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest Bay of Bengal moved north-northeastwards with a speed of 22 kmph during past 06 hours and lay centred at 0830 hrs IST of today, the 20th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest Bay of Bengal** near latitude 19.8°N and longitude 87.7°E, about 120 km east-southeast of Paradip (Odisha), 200 km south of Digha (West Bengal) and 360 km southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards across northwest Bay of Bengal and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during Afternoon to Evening hours of today, the 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph. Landfall process to commence from today afternoon. After landfall the system is likely to move north-northeastwards close to Kolkata.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Vishakhapatnam (Andhra Pradesh), Paradip (Odisha) and Gopalpur (Odisha).

Heavy to very heavy rainfall occurred at isolated places over north coastal districts of Odisha and heavy rainfall over coastal West Bengal during past 24 hours. Gale Wind, speed reaching 100-110 kmph gusting to 125 kmph, prevailed along & off north coastal Odisha districts and 55-65 kmph gusting to 75 kmph prevailed along & off south coastal Odisha.

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
20.05.20/0830	19.8/87.7	165-175 gusting to 195	Extremely Severe Cyclonic Storm
20.05.20/1130	20.5/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very 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.

20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1730	26.0/90.3	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) and isolated heavy falls over Jagatsinghpur district on 20th May 2020.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 90 to 100 kmph gusting to 110 kmph is prevailing along and off Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts of Odisha and squally wind speed reaching 55 to 65 kmph gusting to 75 kmph is prevailing along & off remaining coastal districts of Odisha (Puri, Khordha, Cuttack, Jajpur) during 20th May 2020.
- **It will gradually increase becoming 100 to 110 kmph gusting to 125 kmph along & off the above mentioned districts of North Odisha during forenoon to afternoon of 20th May 2020.**
- Gale wind speed reaching 80 to 90 kmph gusting to 100 kmph is prevailing along and off West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts).
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**

Deep Sea area

- Gale wind speed reaching 165-175 gusting to 195 kmph is prevailing over northwest and adjoining westcentral Bay of Bengal. Gale wind, speed reaching 150-160 gusting to 175 kmph is prevailing over northern parts of central Bay of Bengal. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during the evening hours of today, the 20th May.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 06 hours over Westcentral Bay of Bengal and for next 12 hours over 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.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 24 hours.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara, Bhadrak, Balasore, Jajpur & Mayurbhanj)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st morning.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

Damage Expected and Action suggested for interior districts of Gangetic West Bengal.

- (i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1430 hours IST of today, the 20th May, 2020.

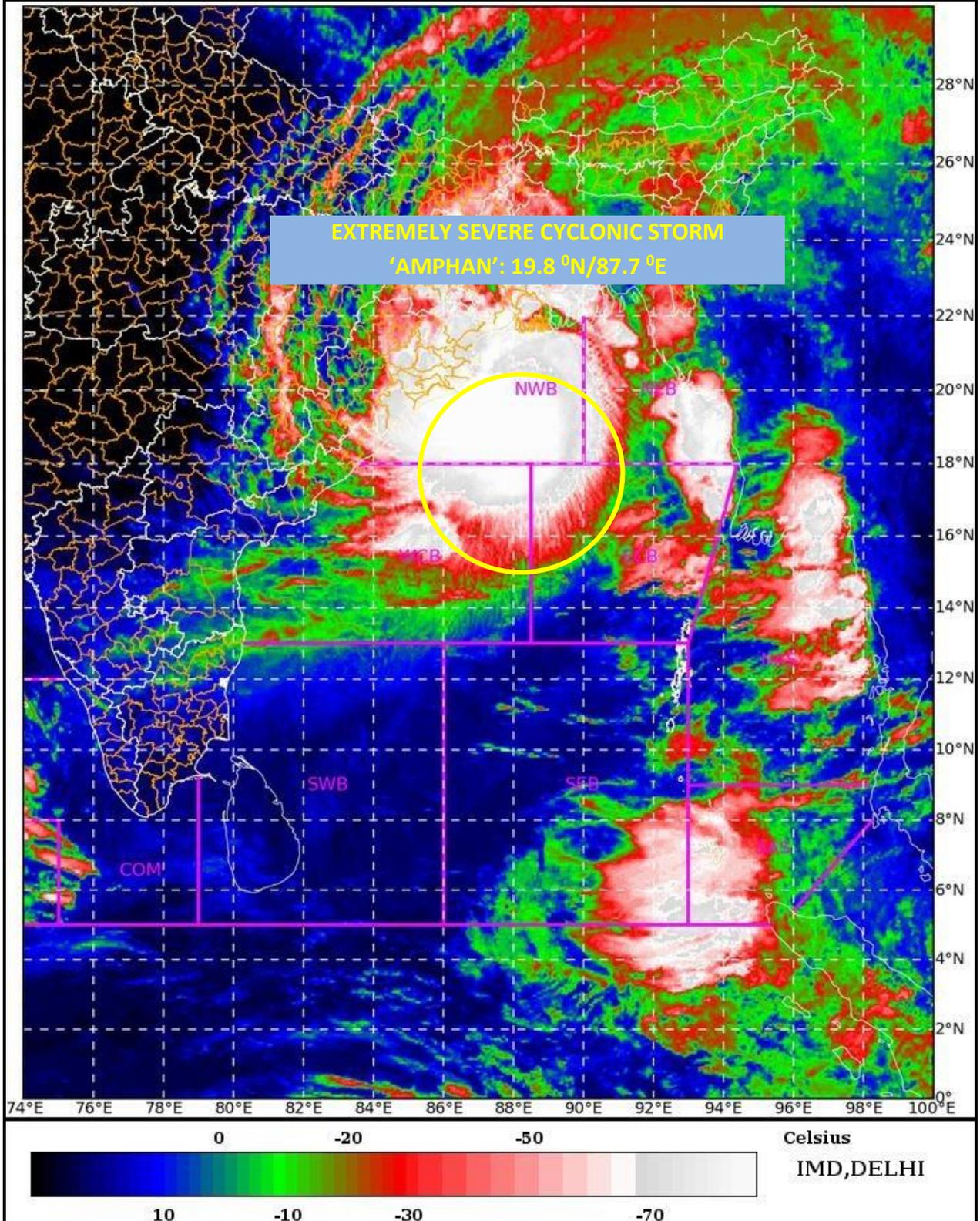
Please follow the hourly bulletin on the link:

<http://www.rsmcnewdelhi.imd.gov.in/images/bulletin/hourly.pdf>

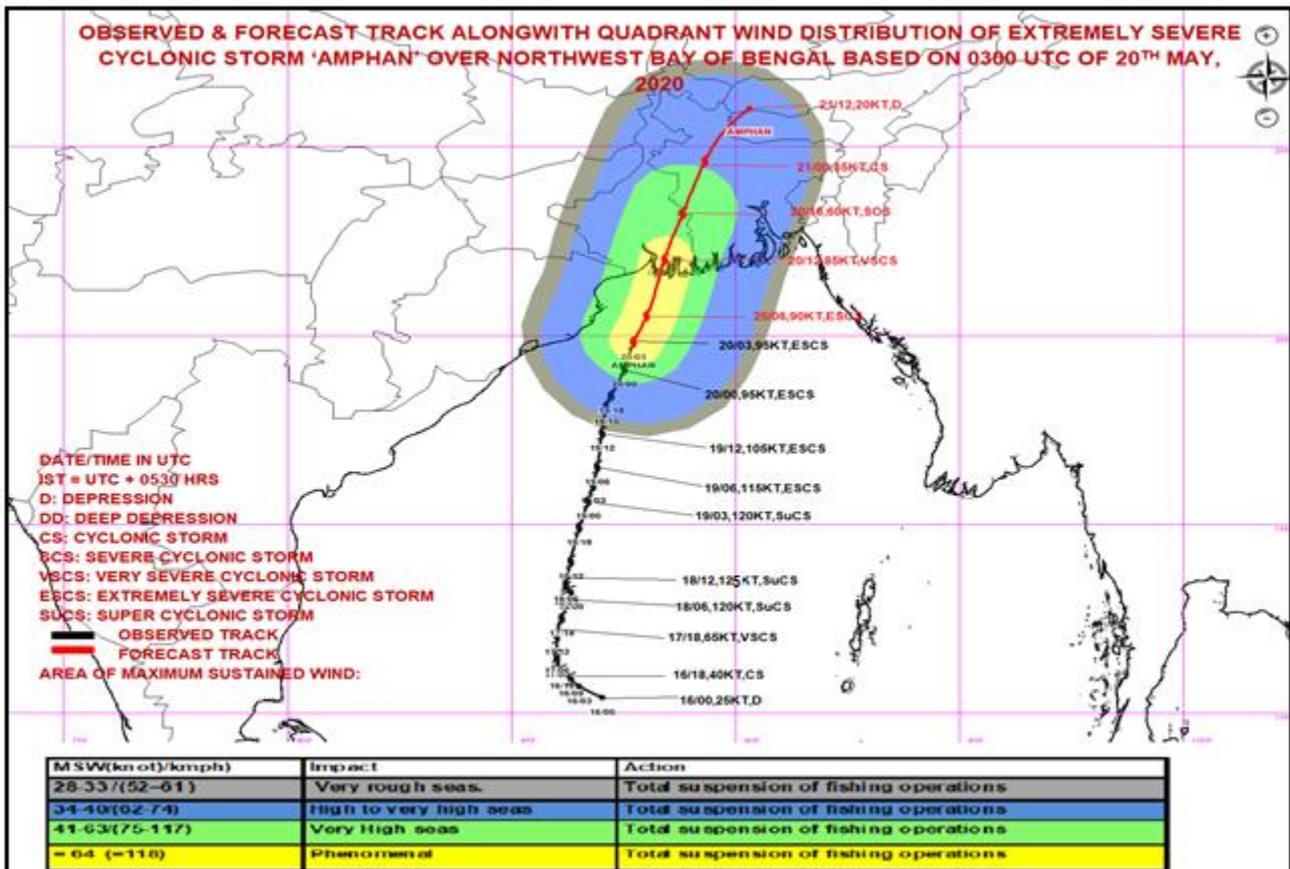
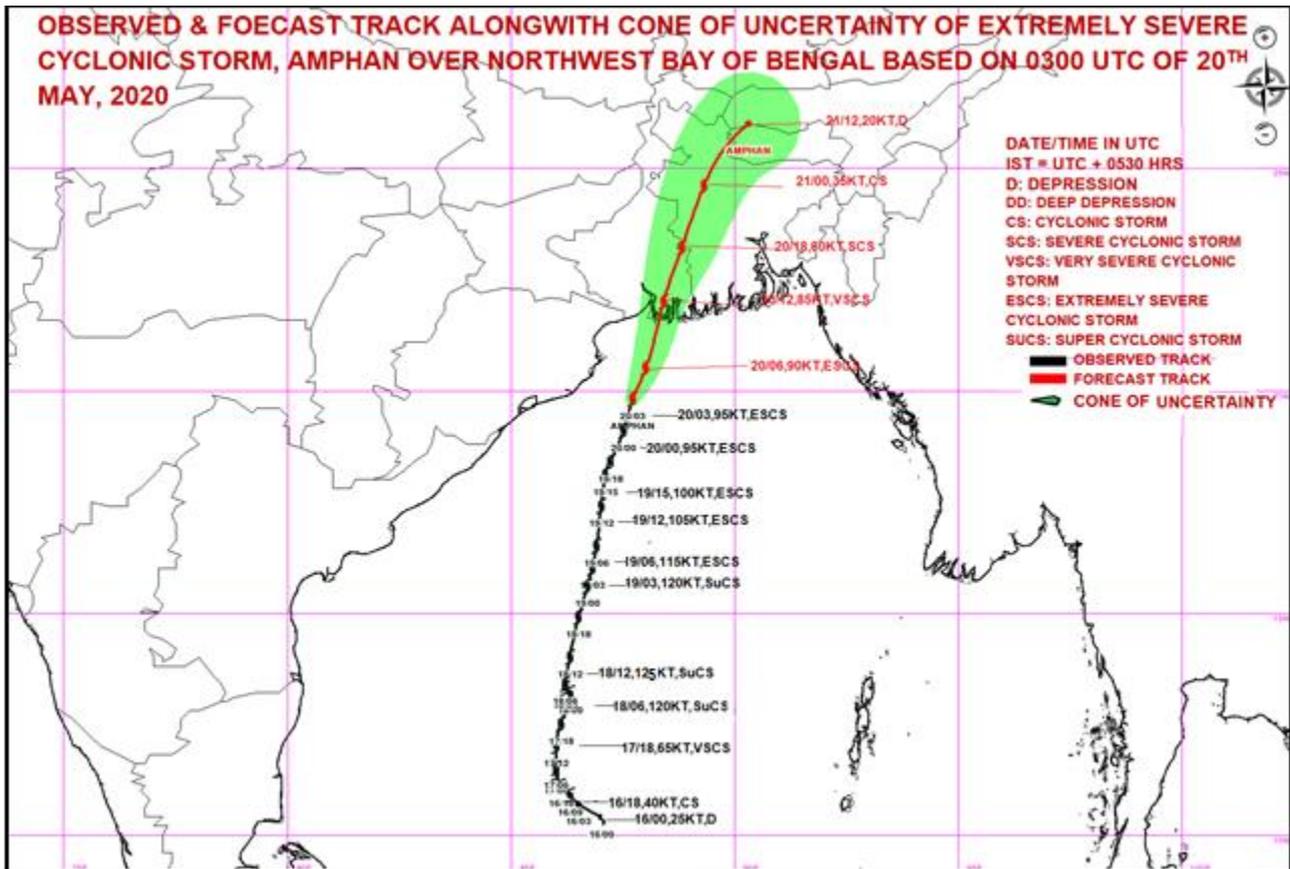
(Sunitha Devi S)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 20-05-2020/(0300 to 0326) GMT
IMG_TIR1_TEMP 10.8 um 20-05-2020/(0830 to 0856) IST
L1C Mercator

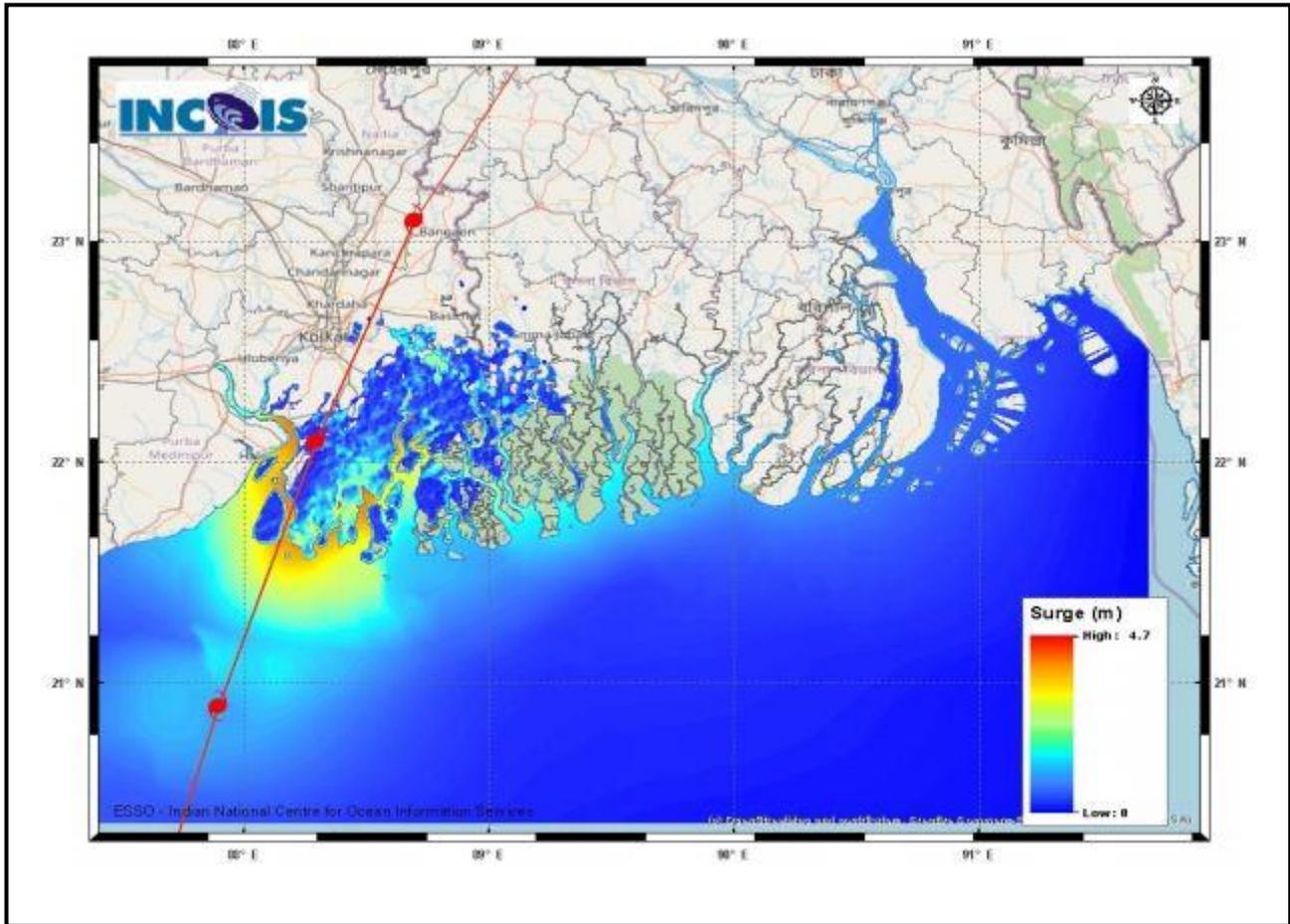


Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.



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.

Figure: Storm Surge forecast from INCOIS issued at 0818 IST of 20th May 2020



Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall.

STORM SURGE HEIGHT INFORMATION:

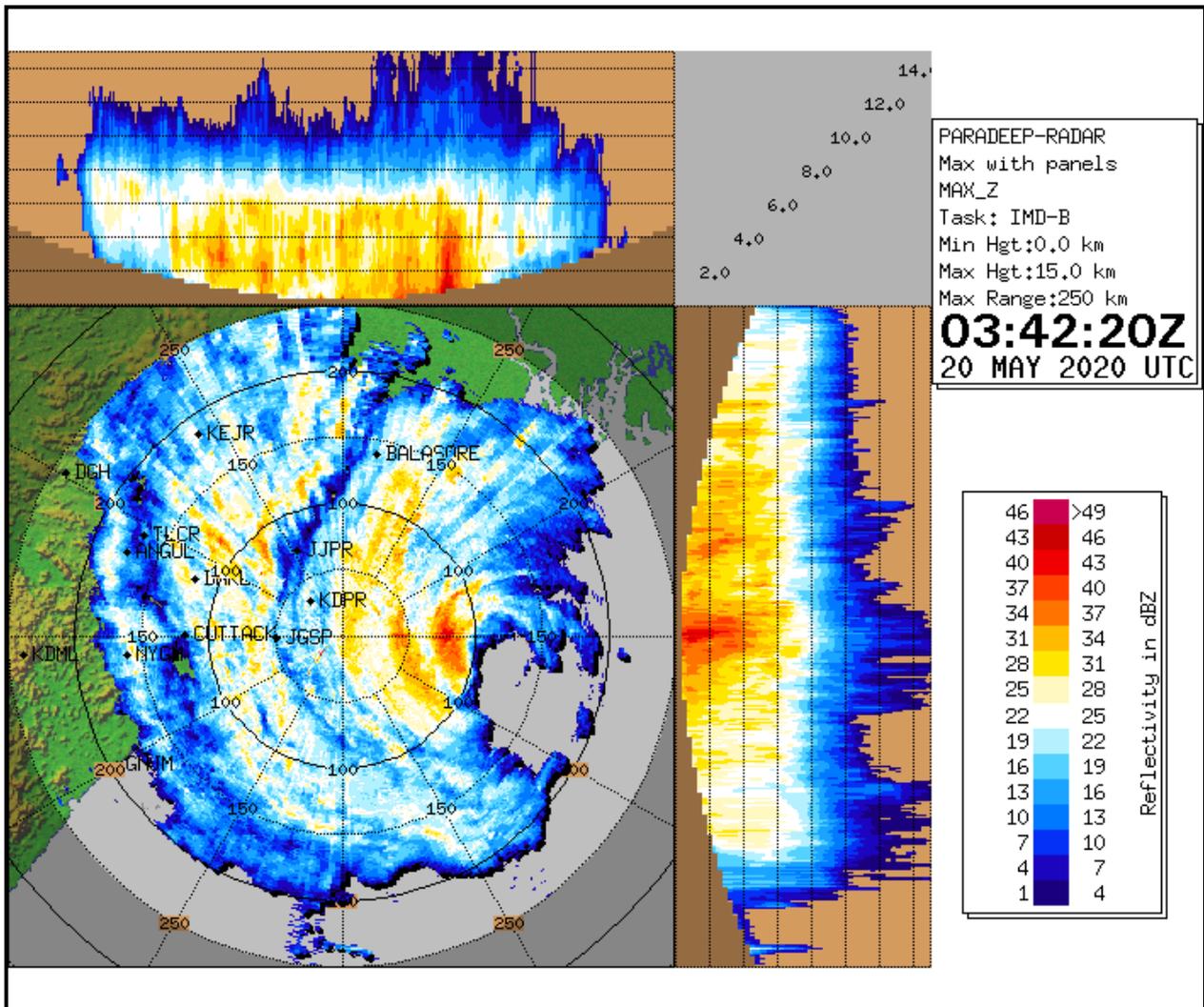
* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.7	Around 15
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-4.0	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 15
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.8	Around 0.44
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.2
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.5	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.8	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.5	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.8
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.8	Around 0.8

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.

Figure: Reflectivity of Paradip Doppler Weather Radar at 0342 UTC of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1320 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest Bay of Bengal moved north-northeastwards with a speed of 29 kmph during past 06 hours and lay centred at 1130 hrs IST of today, the 20th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest Bay of Bengal** near latitude 20.6°N and longitude 88.0°E, about 140 km east-northeast of Paradip (Odisha), 125 km south-southeast of Digha (West Bengal), 125 km nearly south of Sagar Islands and 275 km west-southwest of Khepupara (Bangladesh).

It is very likely to move north-northeastwards and cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close to Sundarbans during late Afternoon to Evening hours of today, the 20th May 2020 with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph. Landfall process to commence from today late afternoon (1600 hours IST of today onwards). After landfall the system is likely to move north-northeastwards close to Kolkata.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Paradip (Odisha) and Gopalpur (Odisha) and Kolkata (West Bengal).

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
20.05.20/1130	20.6/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	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.

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) and isolated heavy falls over Jagatsinghpur district on 20th May 2020.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy falls at isolated places over Meghalaya on 20th May and heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 90 to 100 kmph gusting to 110 kmph is prevailing along and off Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts of Odisha. It will gradually decrease becoming 50-60 kmph by today evening.
- **It will gradually increase becoming 100 to 110 kmph gusting to 125 kmph along & off the Balasore & Bhadrak Districts of North Odisha from today afternoon for the next 06 hours.**
- Gale wind speed reaching 80 to 90 kmph gusting to 100 kmph is prevailing along and off West Bengal coast (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata Districts).
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**

Deep Sea area

- Gale wind speed reaching 160-170 gusting to 190 kmph is prevailing over northwest Bay of Bengal. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during the evening hours of today, the 20th May.

(3) Sea condition:

- Sea condition is Phenomenal and is very likely to continue for next 06 hours over Westcentral Bay of Bengal and for next 12 hours over Northwest Bay of Bengal.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts 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.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara) till today Afternoon and over (Bhadrak, Balasore) till today evening.

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st 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.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

Damage Expected and Action suggested for interior districts of Gangetic West Bengal.

- (i) Minor damage to power and communication lines. (ii) Major damage to Kutcha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

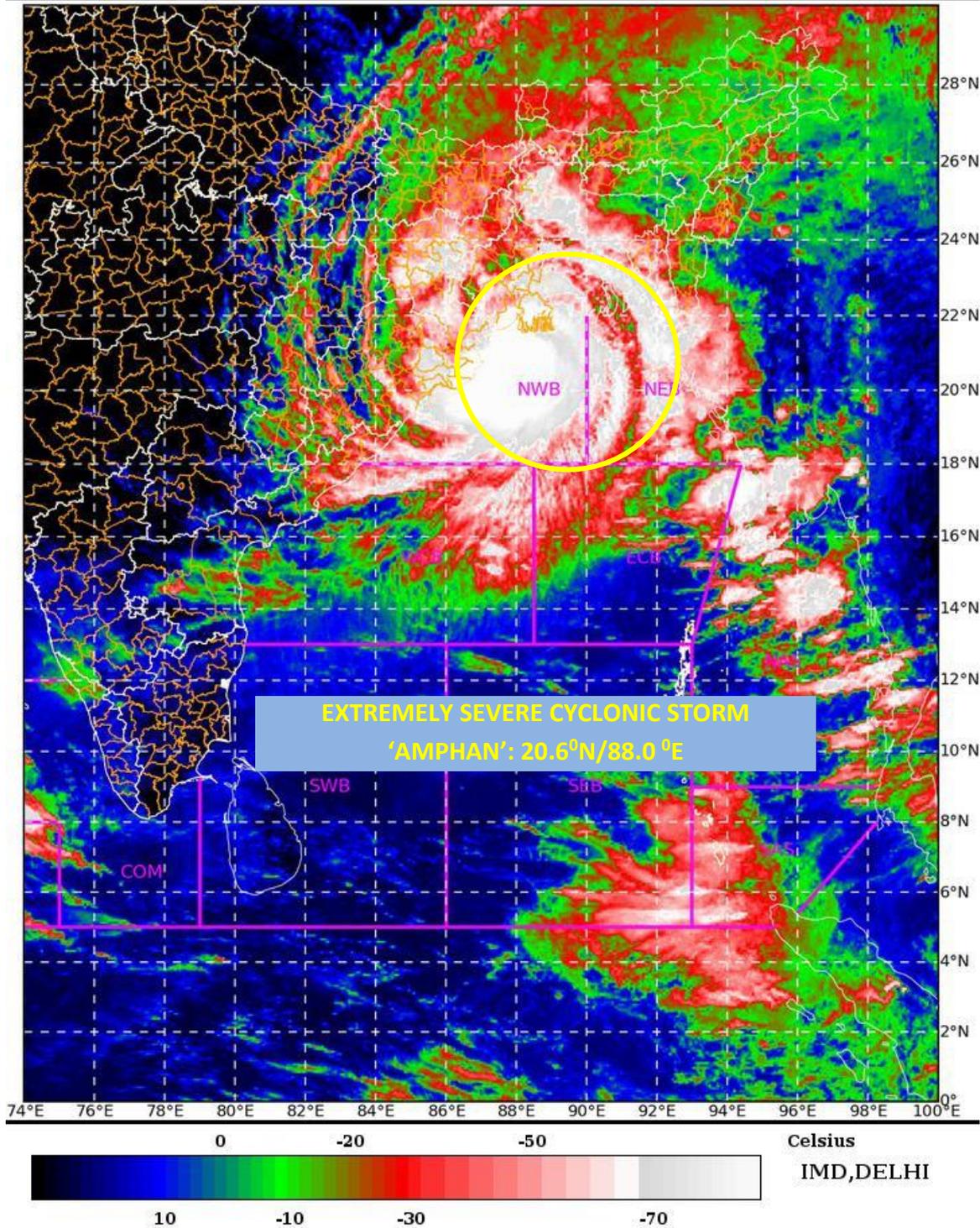
Next Bulletin will be issued at 1730 hours IST of today, the 20th May, 2020.

Please follow the hourly bulletin on the link:

<http://www.rsmcnewdelhi.imd.gov.in/images/bulletin/hourly.pdf>

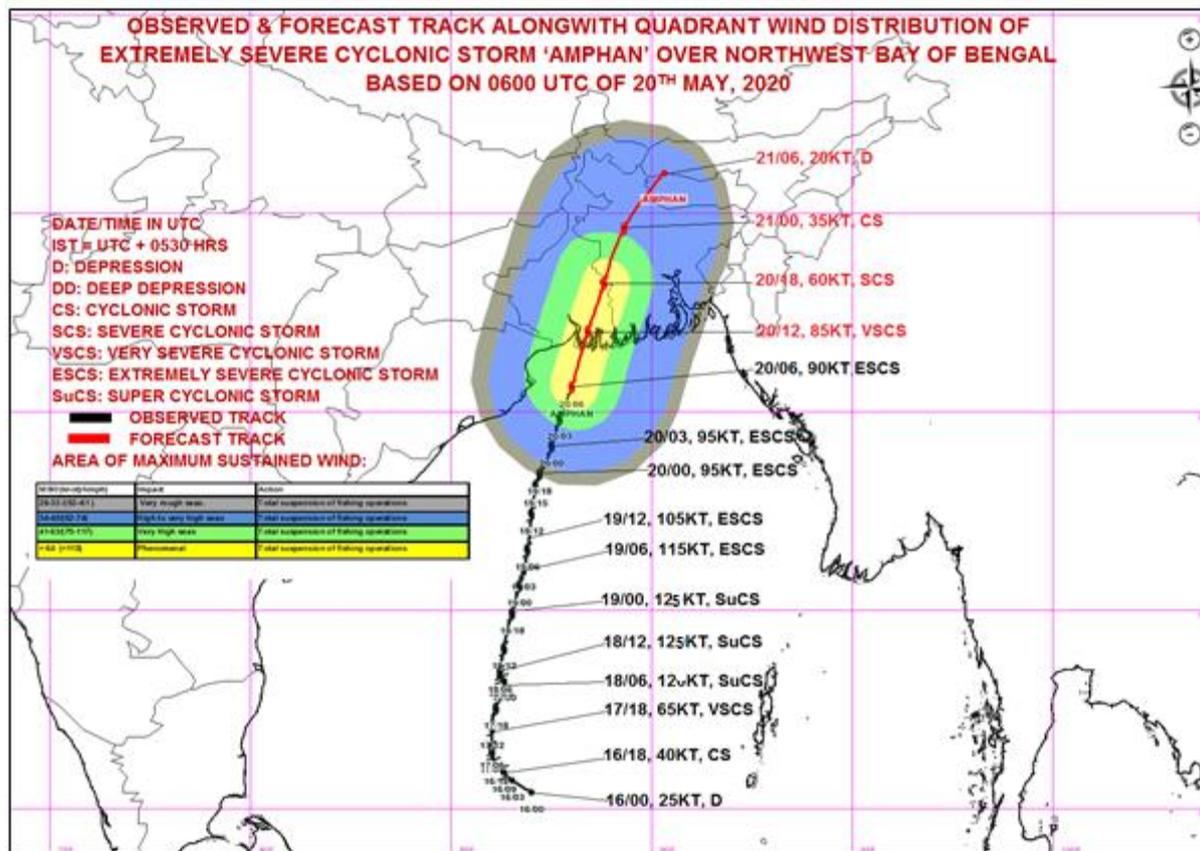
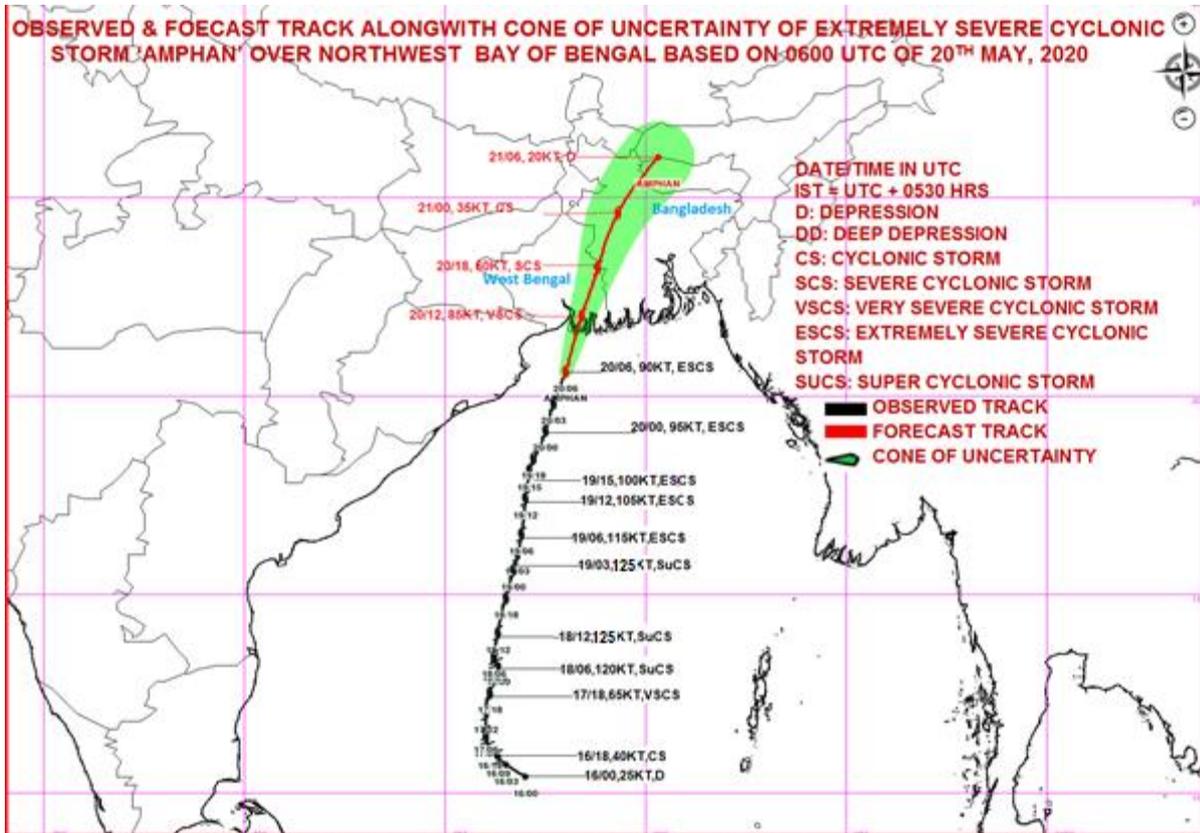
**(Sunitha Devi S)
Scientist-E, RSMC, New Delhi**

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam



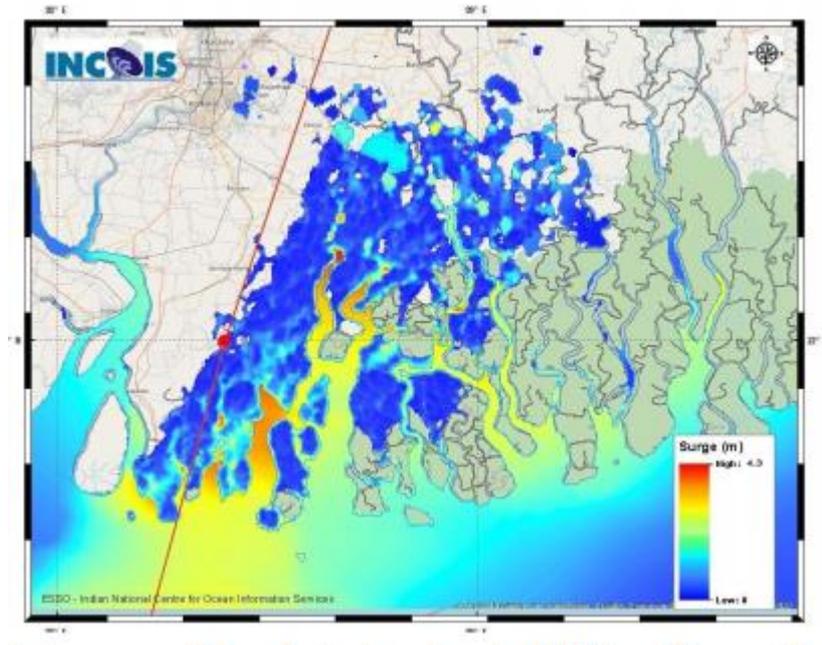
Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

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.

Figure: Storm Surge forecast from INCOIS issued at 1148 IST of 20th May 2020

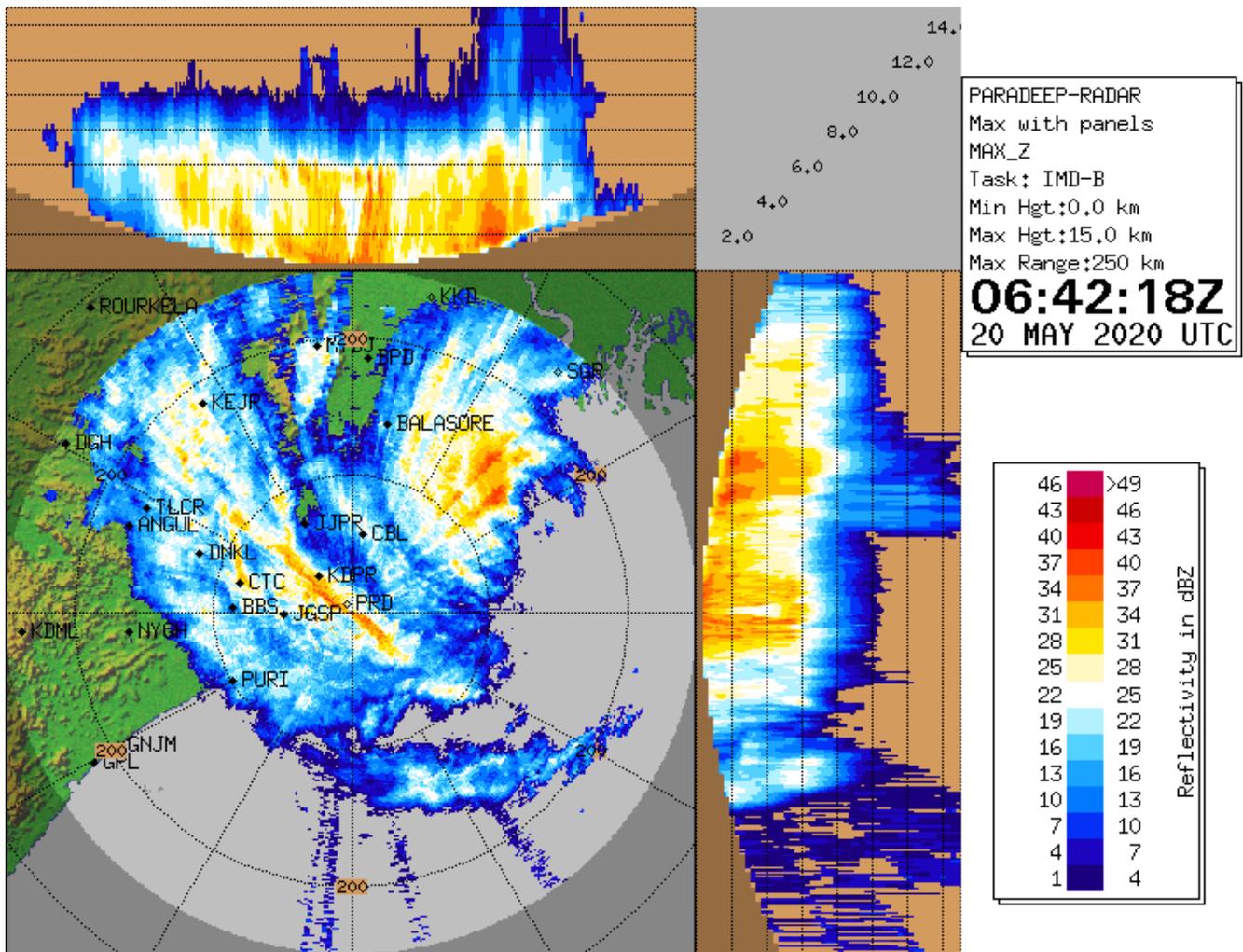


Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7

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.

Figure: Reflectivity of Paradip Doppler Weather Radar at 0342 UTC of 20th May 2020



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.: 36 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1640 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (23421105, 23421219)

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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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) over Northwest Bay of Bengal: Cyclone Warning for West Bengal and north Odisha coasts: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest Bay of Bengal moved north-northeastwards with a speed of 20 kmph during past 06 hours and lay centred at 1430 hrs IST of today, the 20th May, 2020 as an Extremely Severe Cyclonic Storm over **Northwest Bay of Bengal** near latitude 21.4°N and longitude 88.1°E, about 190 km east-northeast of Paradip (Odisha), 65 km east-southeast of Digha (West Bengal), 35 km nearly south of Sagar Islands and 225 km south-southwest of Khepupara (Bangladesh).

Landfall process has commenced and the forward sector of the wall cloud region is entering into land in West Bengal. During next 2-3 hours it is very likely cross West Bengal – Bangladesh coasts between Digha (West Bengal) and Hatiya Islands (Bangladesh) close Sundarbans with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph. After landfall, the system is likely to move north-northeastwards close to Kolkata.

Kolkata (Alipur) reported 105 kmph winds at 1430 hrs IST of today, the 20th May 2020.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

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
20.05.20/1430	21.4/88.1	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	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.

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak, Mayurbhanj, Jajpur, Kendrapara and Keonjhar Districts) and isolated heavy falls over Jagatsinghpur district on 20th May 2020.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) on 20th May and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy falls at isolated places over Meghalaya on 20th May and heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 80 to 90 kmph gusting to 100 kmph is prevailing along and off Jagatsinghpur, Kendrapara, Bhadrak, Balasore and Mayurbhanj districts of Odisha. It will gradually decrease from tonight.
- **Gale wind speed reaching 155 to 165 kmph gusting to 185 kmph very likely along & off east Medinipur and north & south 24 Parganas districts and 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts of West Bengal during the time of landfall (20th afternoon to night).**

Deep Sea area

- Gale wind speed reaching 160-170 gusting to 190 kmph is prevailing over northwest Bay of Bengal. It will gradually decrease becoming 155-165 kmph gusting to 185 kmph over North Bay of Bengal during the evening hours of today, the 20th May.

(3) Sea condition:

- Sea condition is Phenomenal is very likely to continue over Northwest Bay of Bengal for next 06 hours.
- Sea condition high to very high over Northeast Bay of Bengal for next 06 hours.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal and adjoining central Bay of Bengal during next 24 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 24 hours.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. (Figure enclosed)

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.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutcha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

(b) Odisha (Jagatsinghpur, Kendrapara) till today Afternoon and over (Bhadrak, Balasore) till today evening.

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Minor disruption of railways, overhead power lines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.
- Small boats, country crafts may get detached from moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships not advisable.

7. Post Landfall Outlook:

After the landfall the system is very likely to continue to move north-northeastwards, across Gangetic West Bengal & Bangladesh and weaken gradually. It is likely to maintain the intensity of Cyclonic Storm till the morning of 21st May and thereafter it will weaken into a Deep Depression over Bangladesh.

Under its influence gale wind speed reaching 70-80 kmph gusting to 90 kmph likely over interior Districts (Murshidabad & Nadia) of Gangetic West Bengal during 20th night to 21st morning.

Light to moderate rainfall at most places with isolated heavy falls very likely over interior Districts of Gangetic West Bengal on 21st. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts on 20th May and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020. Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

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 Expected and Action suggested for interior districts of Gangetic West Bengal.

- (i) Minor damage to power and communication lines. (ii) Major damage to Kutchha and some damage to Pucca roads. (iii) Breaking of tree branches, uprooting of small trees. (iv) Damage to banana and papaya trees. (v) People in affected areas to remain indoors.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of today, the 20th May, 2020.

Please follow the hourly bulletin on the link:

<http://www.rsmcnewdelhi.imd.gov.in/images/bulletin/hourly.pdf>

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG

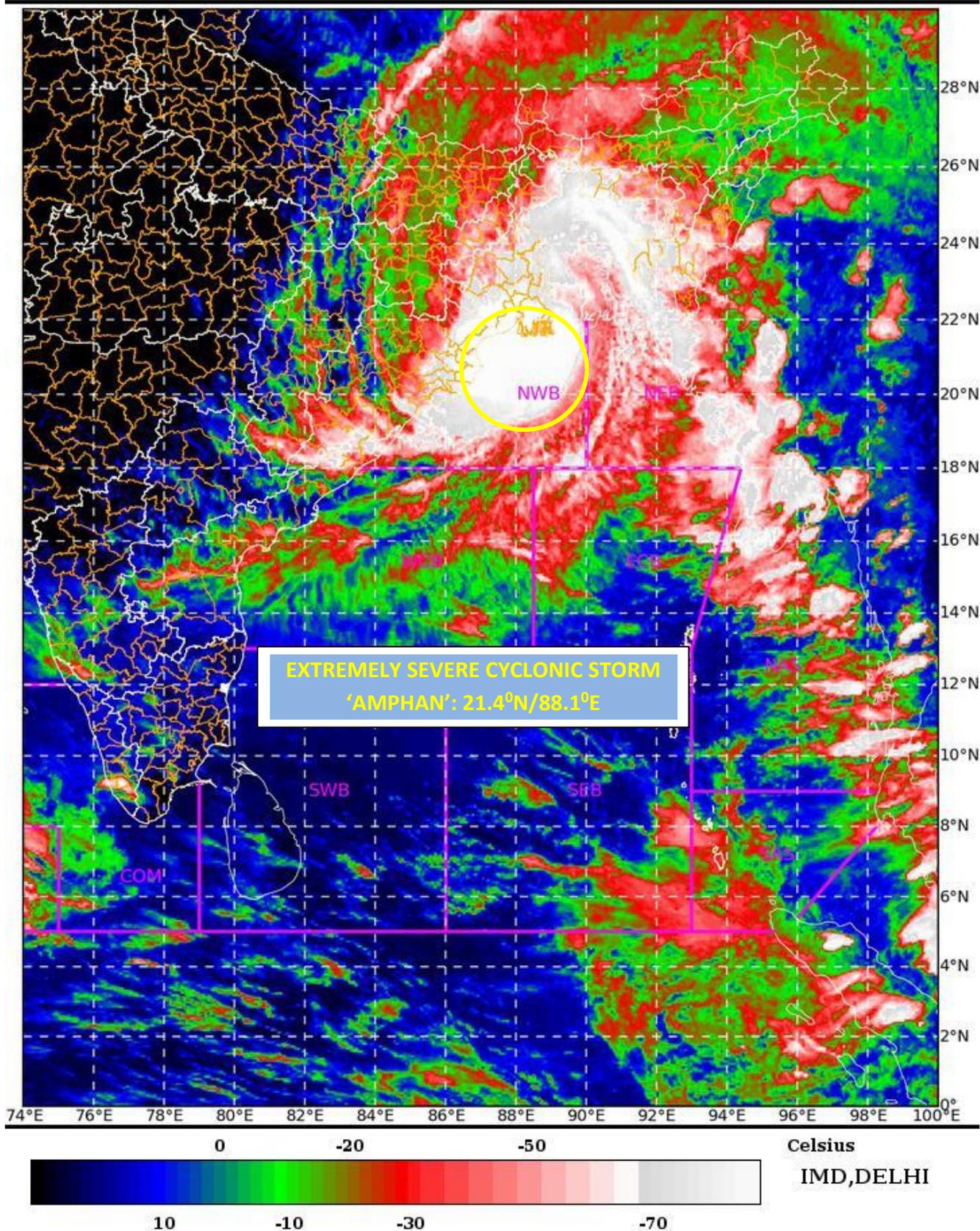
20-05-2020/(1000 to 1026) GMT

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20-05-2020/(1530 to 1556) IST



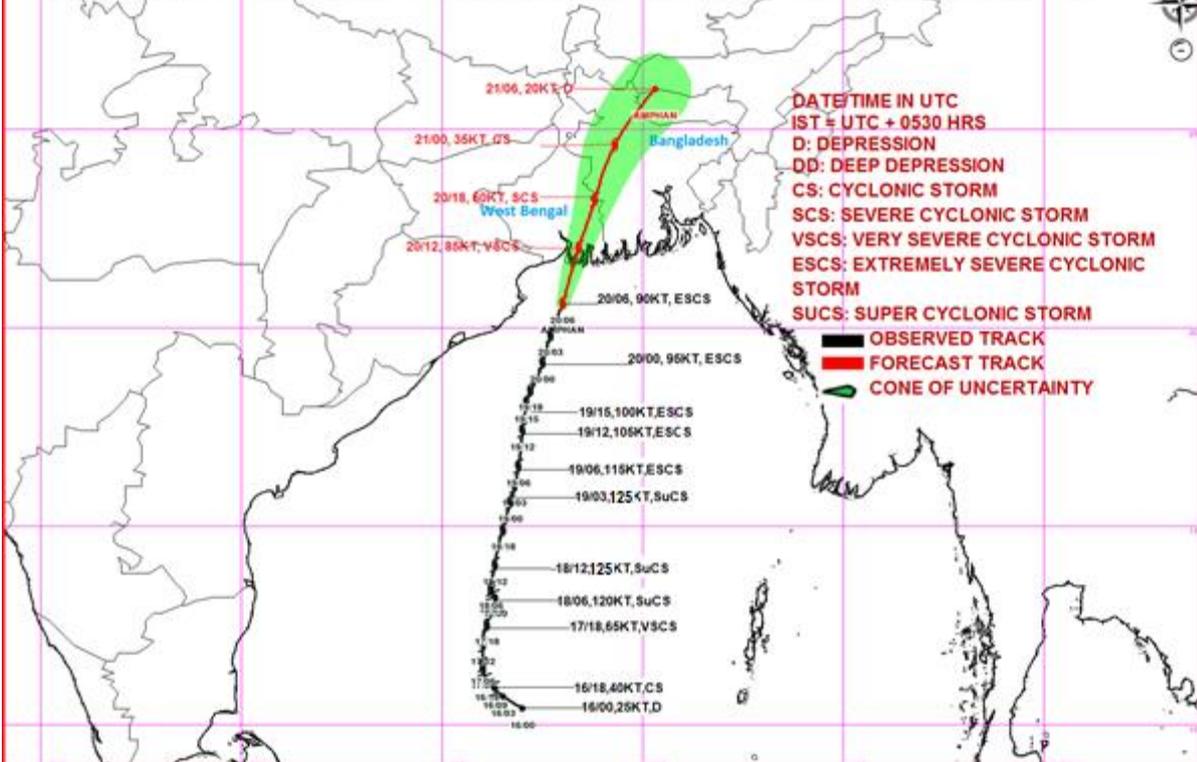
L1C Mercator



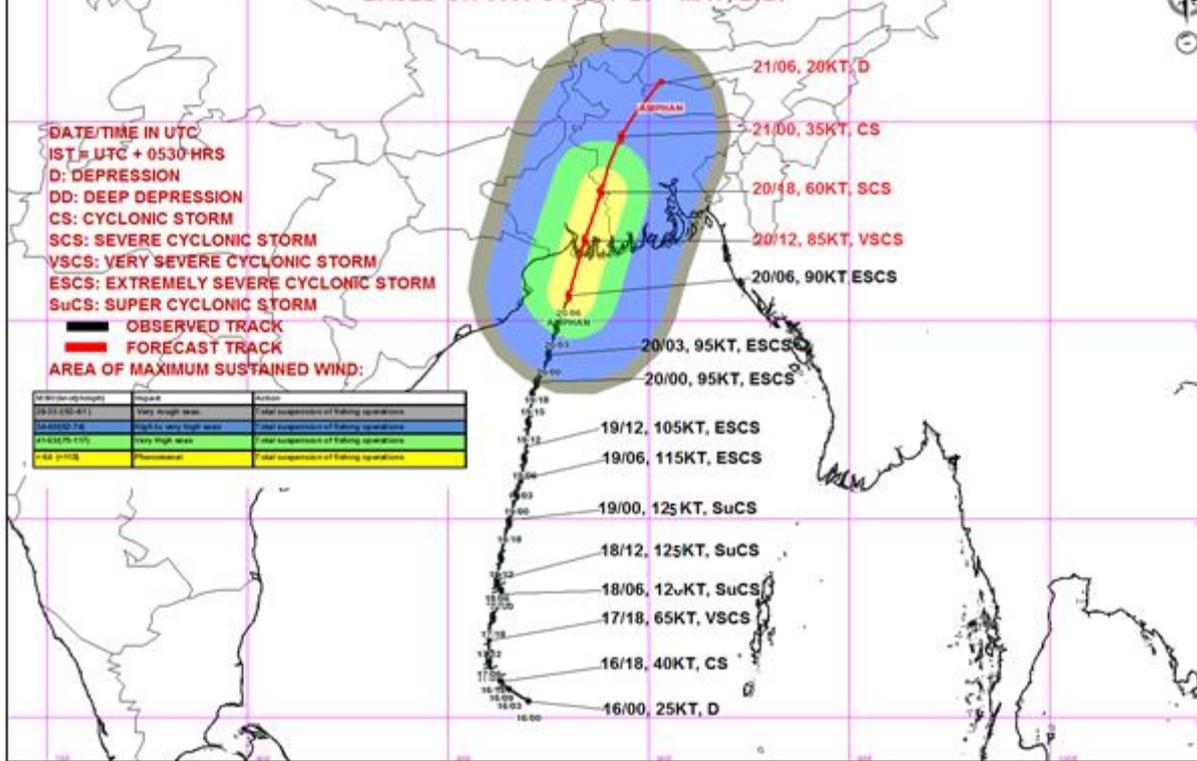
Legend: WCB – Westcentral Bay of Bengal
 NWB – Northwest Bay of Bengal

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.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' OVER NORTHWEST BAY OF BENGAL BASED ON 0600 UTC OF 20TH MAY, 2020



OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' OVER NORTHWEST BAY OF BENGAL BASED ON 0600 UTC OF 20TH MAY, 2020



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.

Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020

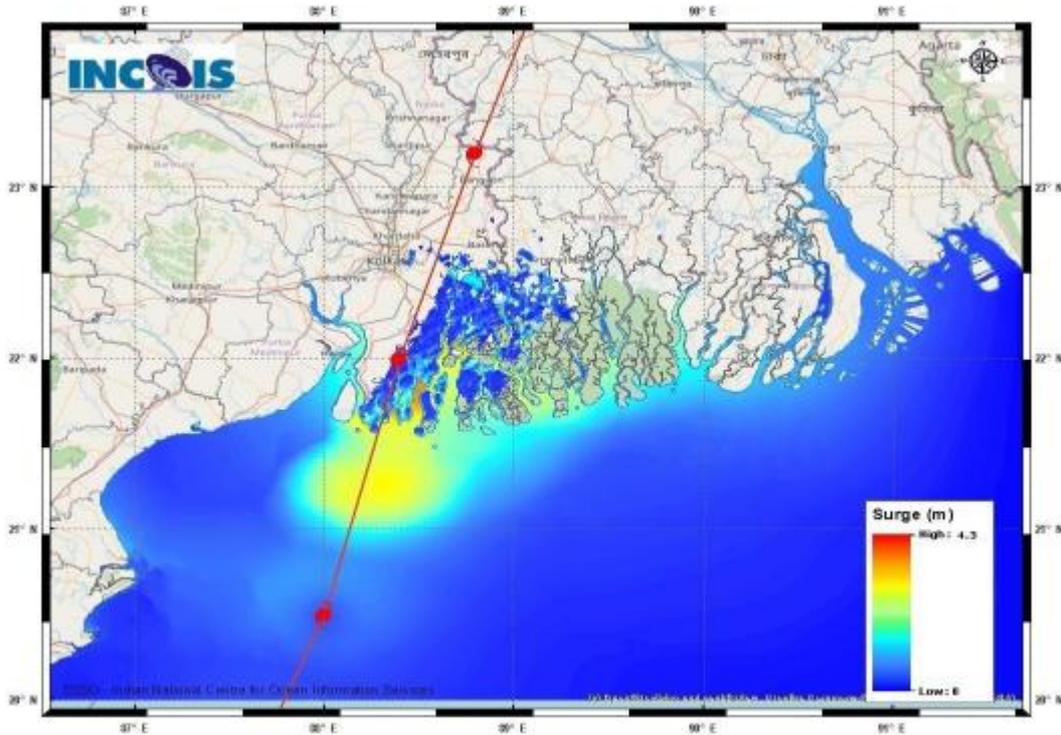


Fig: Computed storm surge & Inundation based on the IMD track forecast

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Strom Surge model.

STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1930 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) crossed West Bengal – Bangladesh coasts: Cyclone warning for West Bengal coast: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Northwest Bay of Bengal moved north-northeastwards with a speed of 25 kmph during past 06 hours, crossed West Bengal – Bangladesh coasts as a Very Severe Cyclonic Storm with a speed of 155-165 kmph gusting to 185 kmph across Sundarbans, near Lat. 21.65°N and longitude 88.3°E and lay centred at 1730 hrs IST of today, the 20th May, 2020, over West Bengal coast near latitude 21.9°N and longitude 88.4°E, about 70 km nearly to the south of Kolkata (West Bengal), 95 km east-northeast of Digha (West Bengal), 35 km northeast of Sagar Islands and 185 km south-southwest of Khepupara (Bangladesh).

Kolkata (Alipur) reported 112 kmph winds at 1752 hrs IST of today, the 20th May 2020.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

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
20.05.20/1730	21.9/88.4	140-150 gusting to 165	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	100-110 gusting to 125	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	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.

(1) Heavy rainfall Warning:

Odisha

Heavy to very heavy rainfall very likely at isolated places over north coastal Odisha (Balasore, Bhadrak and isolated heavy falls over Jagatsinghpur district during next 12 hours.

West Bengal

Rainfall at most places with heavy to very heavy falls at a few places & extremely heavy falls at isolated places likely over Gangetic West Bengal (east & west Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata and adjoining districts) during next 12 hours and isolated heavy rain over interior districts on 21st May, 2020.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts during next 12 hours and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy falls at isolated places over Meghalaya during next 12 hours and heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Gale wind, speed reaching 60 to 70 kmph gusting to 80 kmph is prevailing along and off Balasore district of Odisha during next 3 hours. It will gradually decrease subsequently.
- **Gale wind speed reaching 140 to 150 kmph gusting to 165 kmph very likely along & off east Medinipur and north & south 24 Parganas districts, 110-120 kmph gusting to 130 kmph over Kolkata, Hoogli, Howrah and West Medinipur Districts and 80-90kmph gusting to 100 kmph over Bardhaman, Murshidabad, & Nadia Districts of West Bengal . It is very likely to decrease during next 06 hours.**

Deep Sea area

- Gale wind speed reaching 130-140 gusting to 150 kmph is prevailing over northern parts of northwest Bay of Bengal. It will gradually decrease during next 06 hours.

(3) Sea condition:

- Sea condition is very High over Northwest Bay of Bengal and is likely to continue for next 06 hours.
- Sea condition will be high to very high over Northeast Bay of Bengal for next 06 hours.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal during next 12 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 12 hours.

(5) Storm Surge expected

- Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during next 06 hours. (Figure enclosed)

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.

(6) Damage Expected and Action suggested

(a) West Bengal (east Medinipur, south & north 24 Parganas, Howrah, Hoogli, Kolkata districts)

Damage Expected:

- Extensive damage to all types of kutchha houses, some damage to old badly managed Pucca structures. Potential threat from flying objects.
- Extensive uprooting of communication and power poles.
- Disruption of rail/road link at several places.
- Extensive damage to standing crops, plantations, orchards.
- Blowing down of Palm and coconut trees.
- Uprooting of large bushy trees.
- Large boats and ships may get torn from their moorings.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations till 20th May 2020.
- Diversion or suspension of rail and road traffic.
- People in affected areas to remain indoors. Mobilise evacuation from Low lying areas.
- Movement in motor boats and small ships not advisable.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of today, the 20th May, 2020.

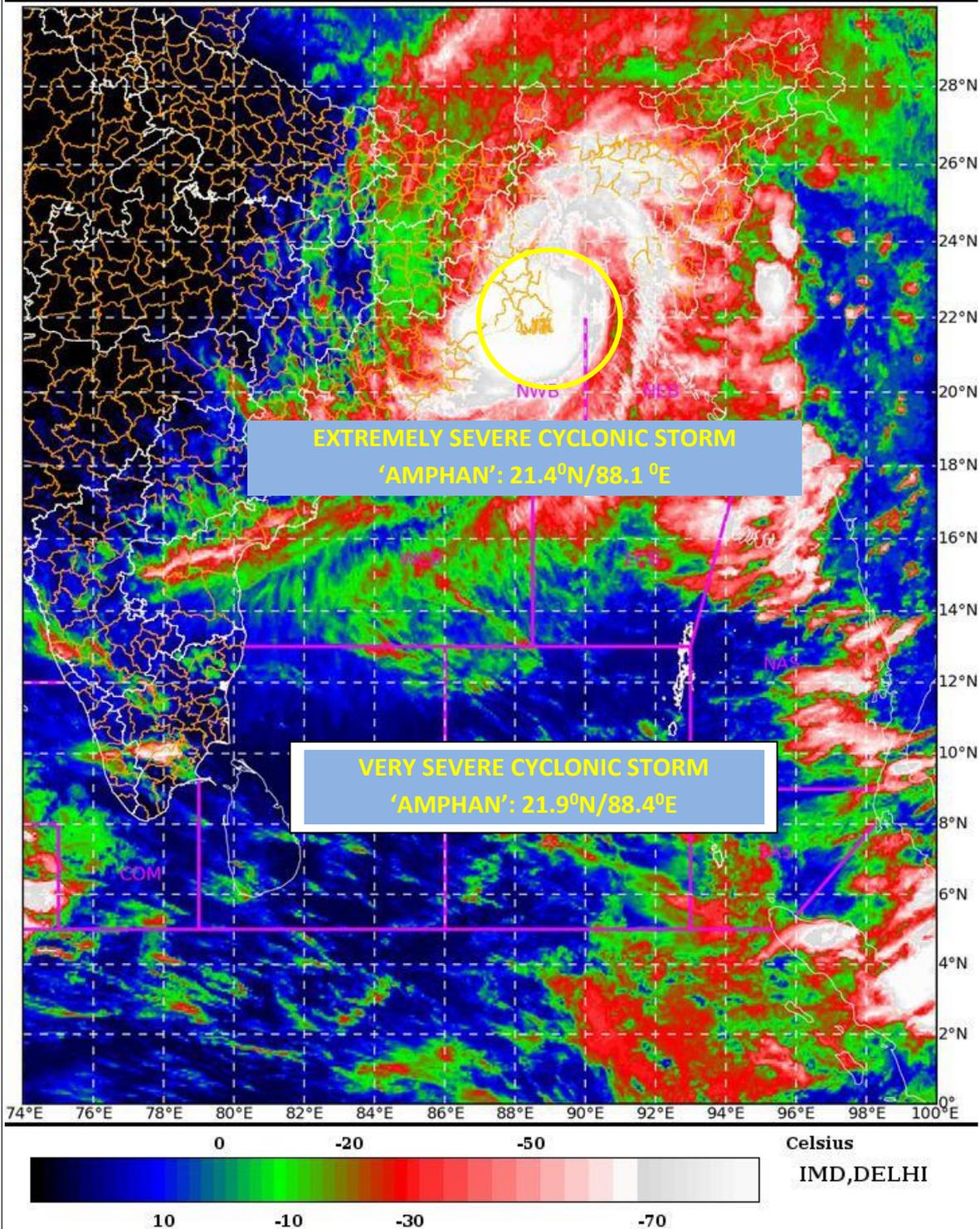
Please follow the hourly bulletin on the link:

<http://www.rsmcnewdelhi.imd.gov.in/images/bulletin/hourly.pdf>

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

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 20-05-2020/(1200 to 1226) GMT
 IMG_TIR1_TEMP 10.8 um 20-05-2020/(1730 to 1756) IST
 L1C Mercator



Legend: WCB – Westcentral Bay of Bengal
 NWB – Northwest Bay of Bengal

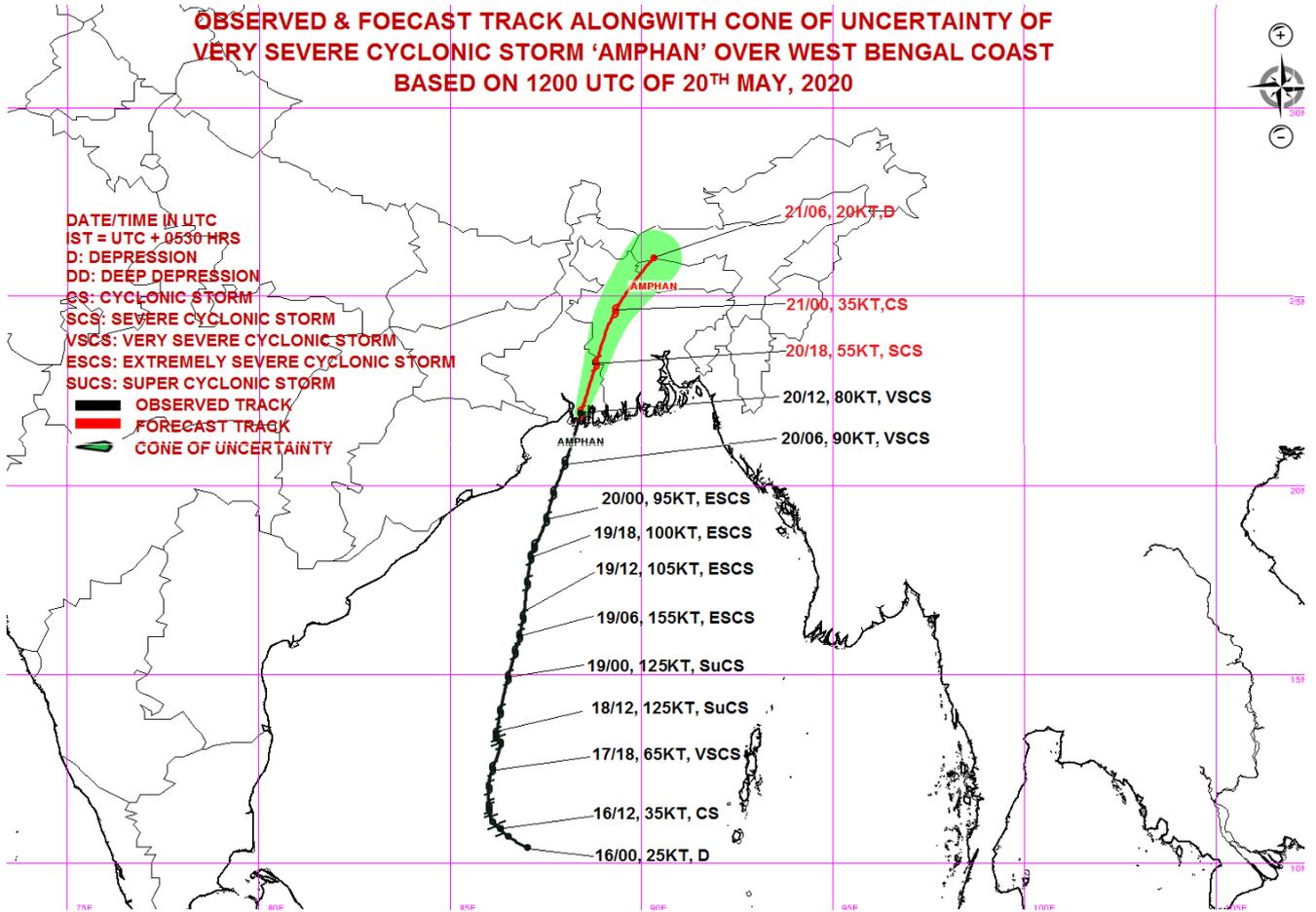
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
 Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FOECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM 'AMPHAN' OVER WEST BENGAL COAST BASED ON 1200 UTC OF 20TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM
 SuCS: SUPER CYCLONIC STORM

— OBSERVED TRACK
 — FORECAST TRACK
 — CONE OF UNCERTAINTY

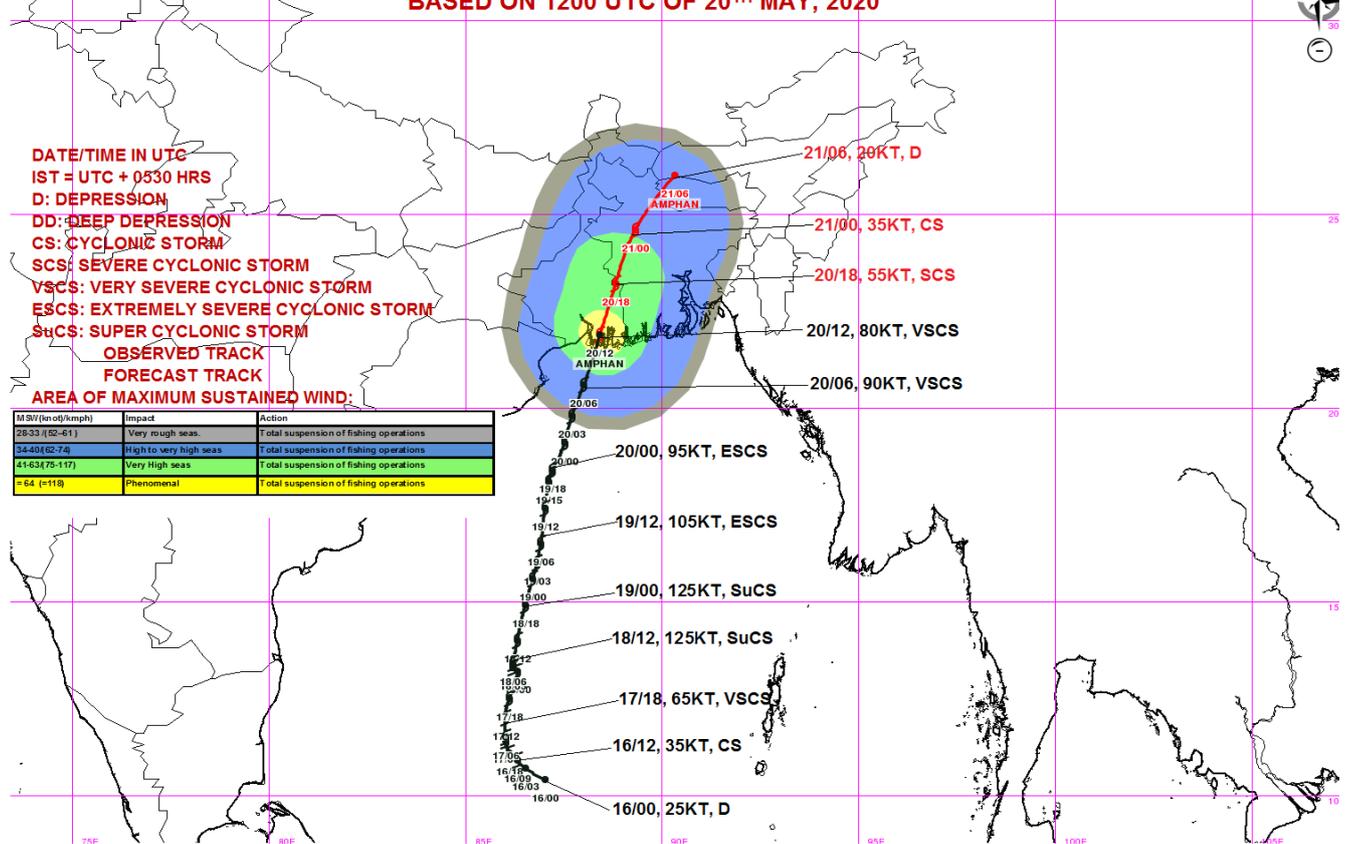


OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM 'AMPHAN' OVER WEST BENGAL COAST BASED ON 1200 UTC OF 20TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM
 SuCS: SUPER CYCLONIC STORM

— OBSERVED TRACK
 — FORECAST TRACK
 — AREA OF MAXIMUM SUSTAINED WIND:



MSW (knott/kmph)	Impact	Action
26-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40 (62-74)	High to very high seas	Total suspension of fishing operations
41-53 (75-117)	Very High seas	Total suspension of fishing operations
≥ 54 (≥118)	Phenomenal	Total suspension of fishing operations

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.

Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020

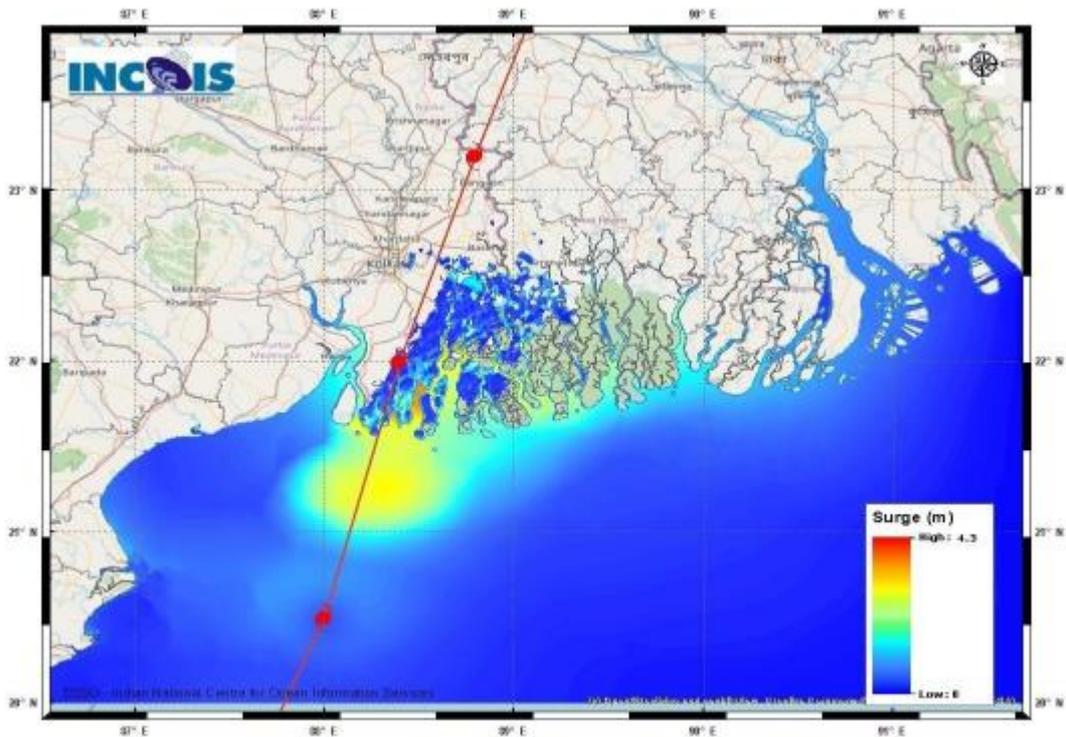


Fig: Computed storm surge & Inundation based on the IMD track forecast

Storm Surge of about 4-5 meters above Astronomical Tide is likely to inundate low lying areas of south & north 24 Parganas and about 3-4 meters over the low lying areas of East Medinipur District of West Bengal during the time of Landfall. Given below is the direct model output from INCIOS Storm Surge model.

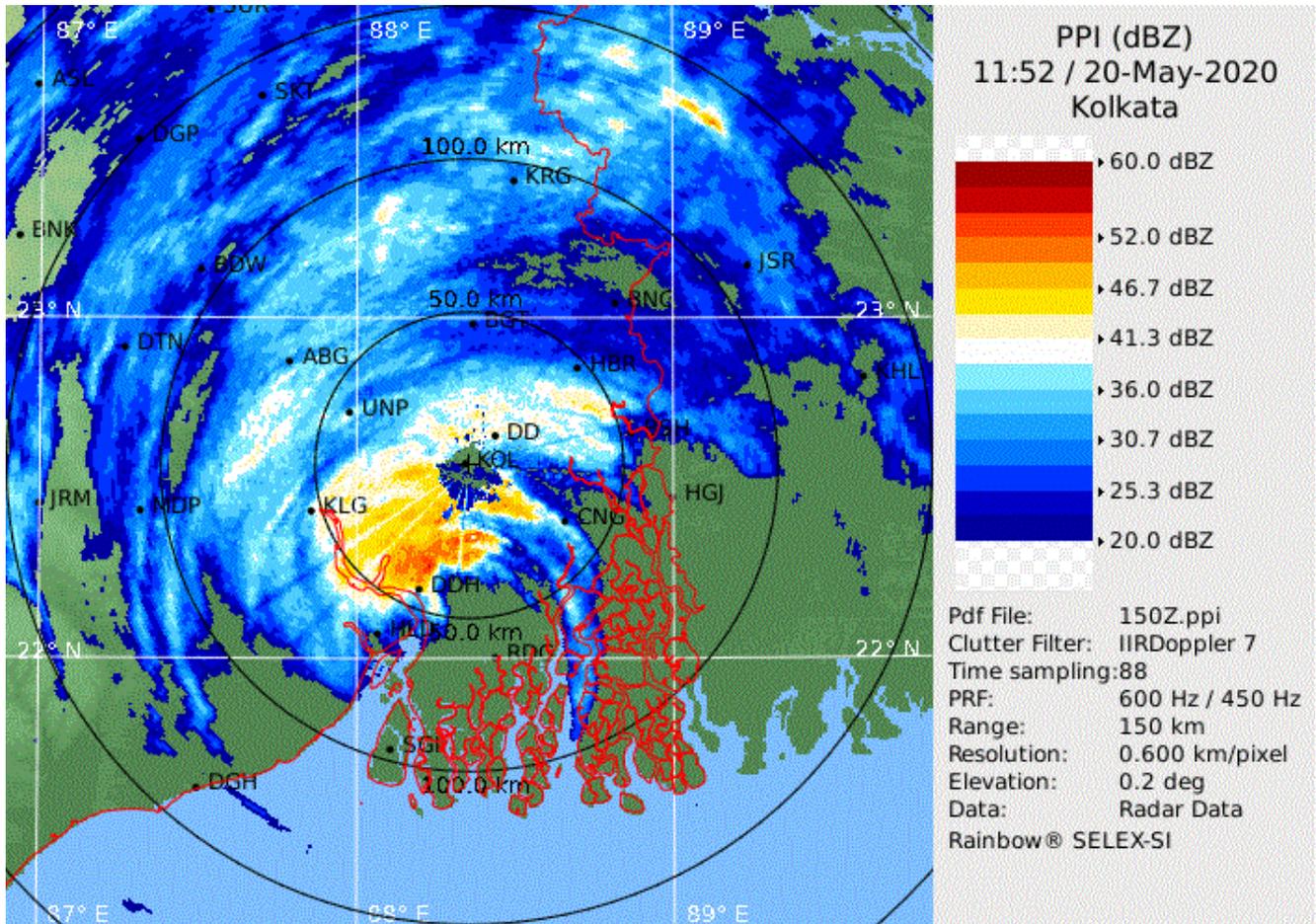
STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Diamond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahapur	0.5-0.7	Around 0.7

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.

Figure: Reflectivity of Kolkata Doppler Weather Radar at 1152 UTC of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2200 HOURS IST

DATED: 20.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay over West Bengal close to Kolkata as a Very Severe Cyclonic Storm: Cyclone warning for West Bengal coast: Red Message.

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over West Bengal coast moved north-northeastwards with a speed of 25 kmph during past 06 hours and lay centered at 2030 hrs IST of today, the 20th may 2020 over West Bengal near **Lat. 22.7°N and Long. 88.6°E** close to Kolkata as a Very Severe Cyclonic Storm with wind speed of 120-130 kmph gusting to 145 kmph **160 km northeast of Digha (West Bengal), 120 km north-northeast of Sagar Islands and 185 km west-northwest of Khepupara (Bangladesh).**

Kolkata (Alipur & Dumdum) both reported 100 kmph winds and 222 mm & 194 mm rainfall respectively at 2030 hrs IST of today, the 20th May 2020.

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

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
20.05.20/2030	22.7/88.6	120-130 gusting to 145	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	100-110 gusting to 125	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	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.

(1) Heavy rainfall Warning:

West Bengal

Rainfall at most places with heavy rainfall at isolated places likely over Gangetic West Bengal (east & west Howrah, Hoogli, Kolkata and adjoining districts) during next 06 hours.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts during next 12 hours and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy falls at isolated places over Meghalaya during next 12 hours and heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal & Odisha

- Squally wind, speed reaching 40 to 50 kmph gusting to 60 kmph is prevailing along and off Balasore district of Odisha during next 3 hours. It will gradually decrease subsequently.
- **Gale wind speed reaching 110 to 120 kmph gusting to 130 kmph very likely over Kolkata, Hoogli, Howrah and West Medinipur Districts and 80-90kmph gusting to 100 kmph over Bardhaman, Murshidabad, & Nadia Districts of West Bengal . It is very likely to decrease during next 06 hours.**

Deep Sea area

- Gale wind speed reaching 60-70 gusting to 80 kmph is prevailing over northern parts of northwest Bay of Bengal. It is likely to continue for next 6 hours. It will gradually decrease thereafter. Squally wind speed reaching 30-40 gusting to 50 kmph likely during subsequent 06 hours.

(3) Sea condition:

- Sea condition is rough to very rough over North Bay of Bengal and is likely to continue for next 12 hours.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal during next 12 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 12 hours.

(5) Damage Expected and Action suggested

(a) West Bengal (Howrah, Hoogli, Kolkata and adjoining interior districts)

Damage Expected:

- Total destruction of thatched houses/ extensive damage to kutcha houses. Some damage to pucca houses. Potential threat from flying objects.
- Bending/ uprooting of power and communication poles.
- Major damage to Kutcha and Pucca roads. Flooding of escape routes. Minor disruption of railways, overhead powerlines and signalling systems.
- Widespread damage to standing crops, plantations, orchards, falling of green coconuts and tearing of palm fronds. Blowing down of bushy trees like mango.

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.

- Small boats, country crafts may get detached from moorings.
- Visibility severely affected.

Fishermen Warning & Action Suggested:

- Total suspension of fishing operations. Mobilise evacuation from coastal areas.
- Judicious regulation of rail and road traffic.
- People in affected areas to remain indoors.
- Movement in motor boats and small ships unsafe.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0230 hours IST of today, the 21st May, 2020.

Please follow the hourly bulletin on the link:

<http://www.rsmcnewdelhi.imd.gov.in/images/bulletin/hourly.pdf>

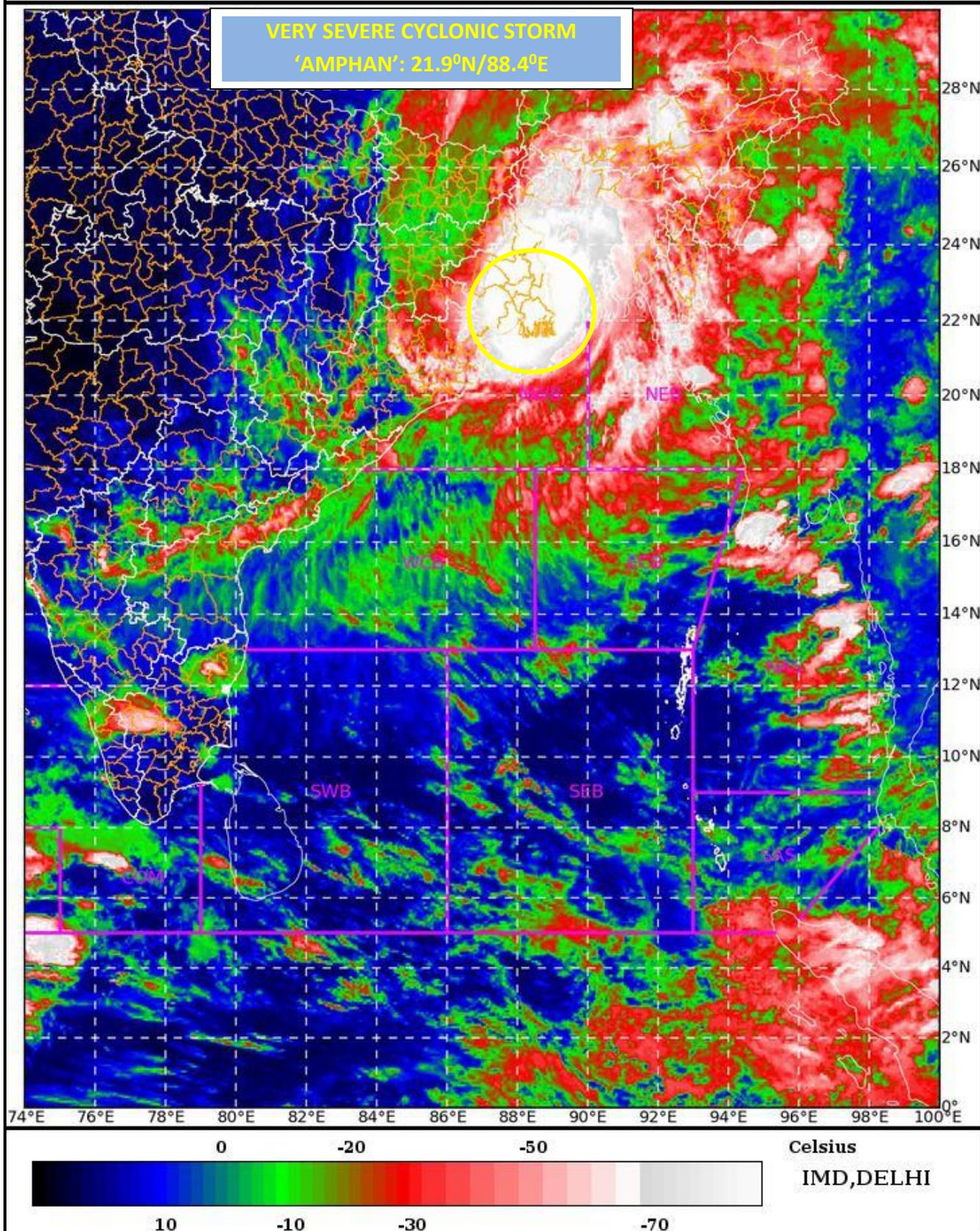
(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 20-05-2020/(1500 to 1526) GMT

IMG_TIR1_TEMP 10.8 um 20-05-2020/(2030 to 2056) IST

L1C Mercator



Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

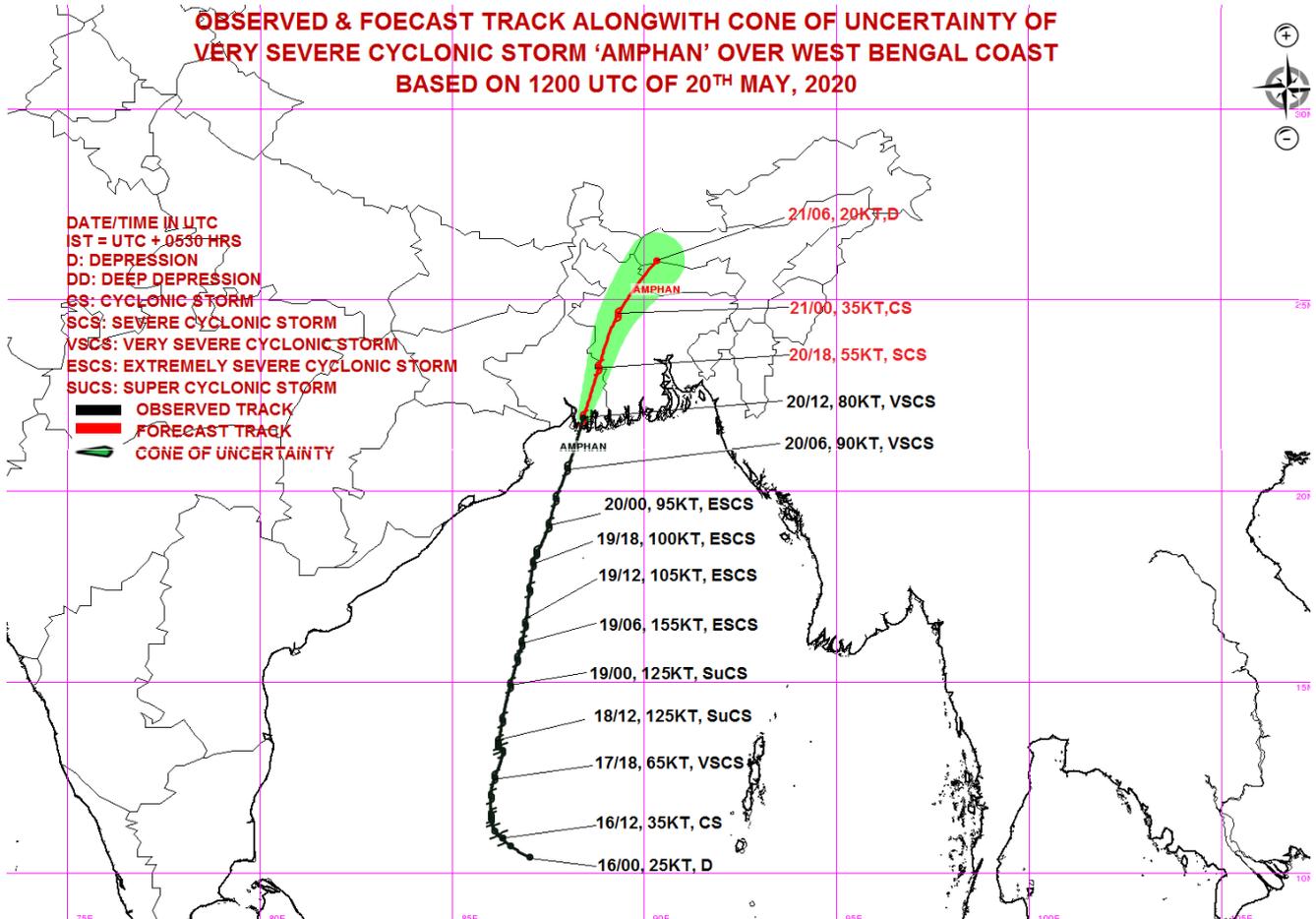
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF VERY SEVERE CYCLONIC STORM 'AMPHAN' OVER WEST BENGAL COAST BASED ON 1200 UTC OF 20TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM
 SuCS: SUPER CYCLONIC STORM

— OBSERVED TRACK
 — FORECAST TRACK
 — CONE OF UNCERTAINTY

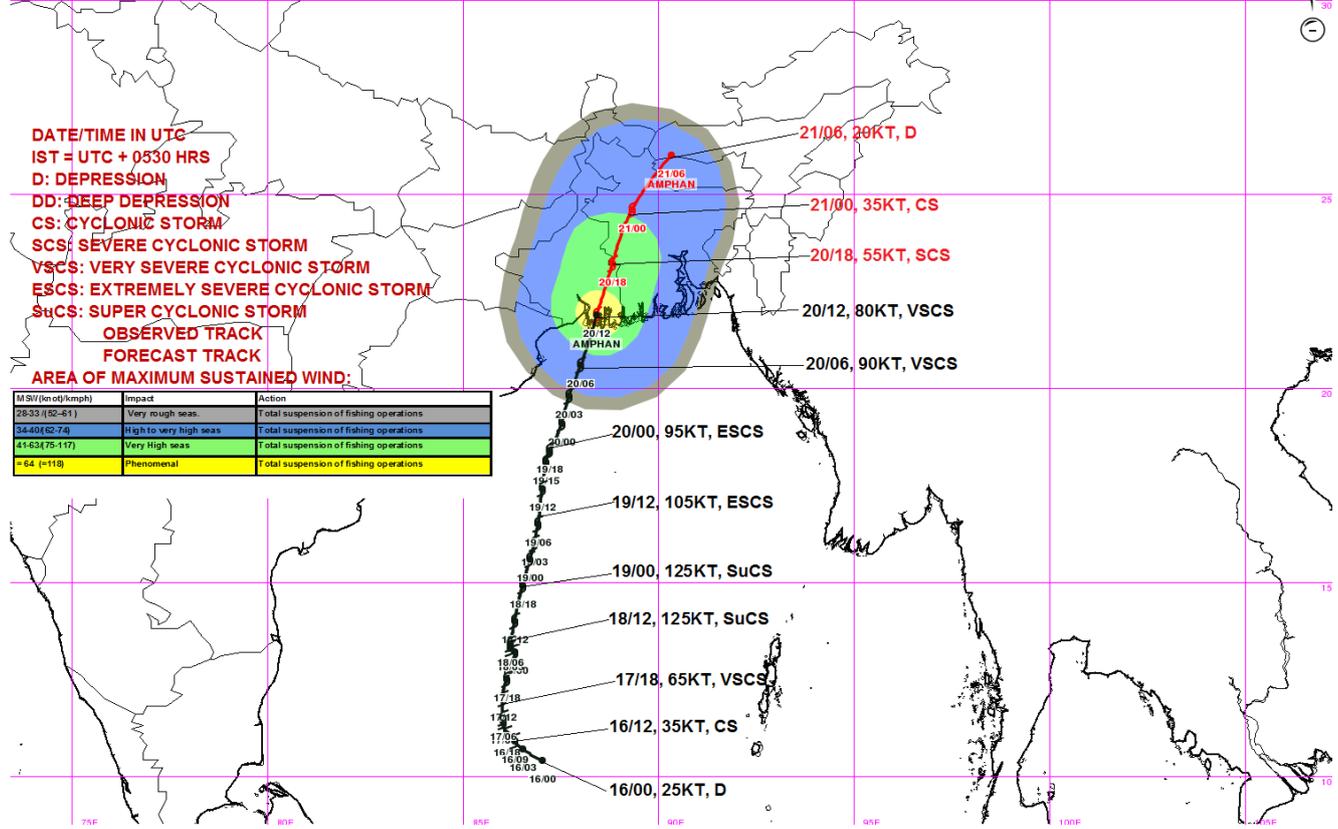


OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF VERY SEVERE CYCLONIC STORM 'AMPHAN' OVER WEST BENGAL COAST BASED ON 1200 UTC OF 20TH MAY, 2020



DATE/TIME IN UTC
 IST = UTC + 0530 HRS
 D: DEPRESSION
 DD: DEEP DEPRESSION
 CS: CYCLONIC STORM
 SCS: SEVERE CYCLONIC STORM
 VSCS: VERY SEVERE CYCLONIC STORM
 ESCS: EXTREMELY SEVERE CYCLONIC STORM
 SuCS: SUPER CYCLONIC STORM

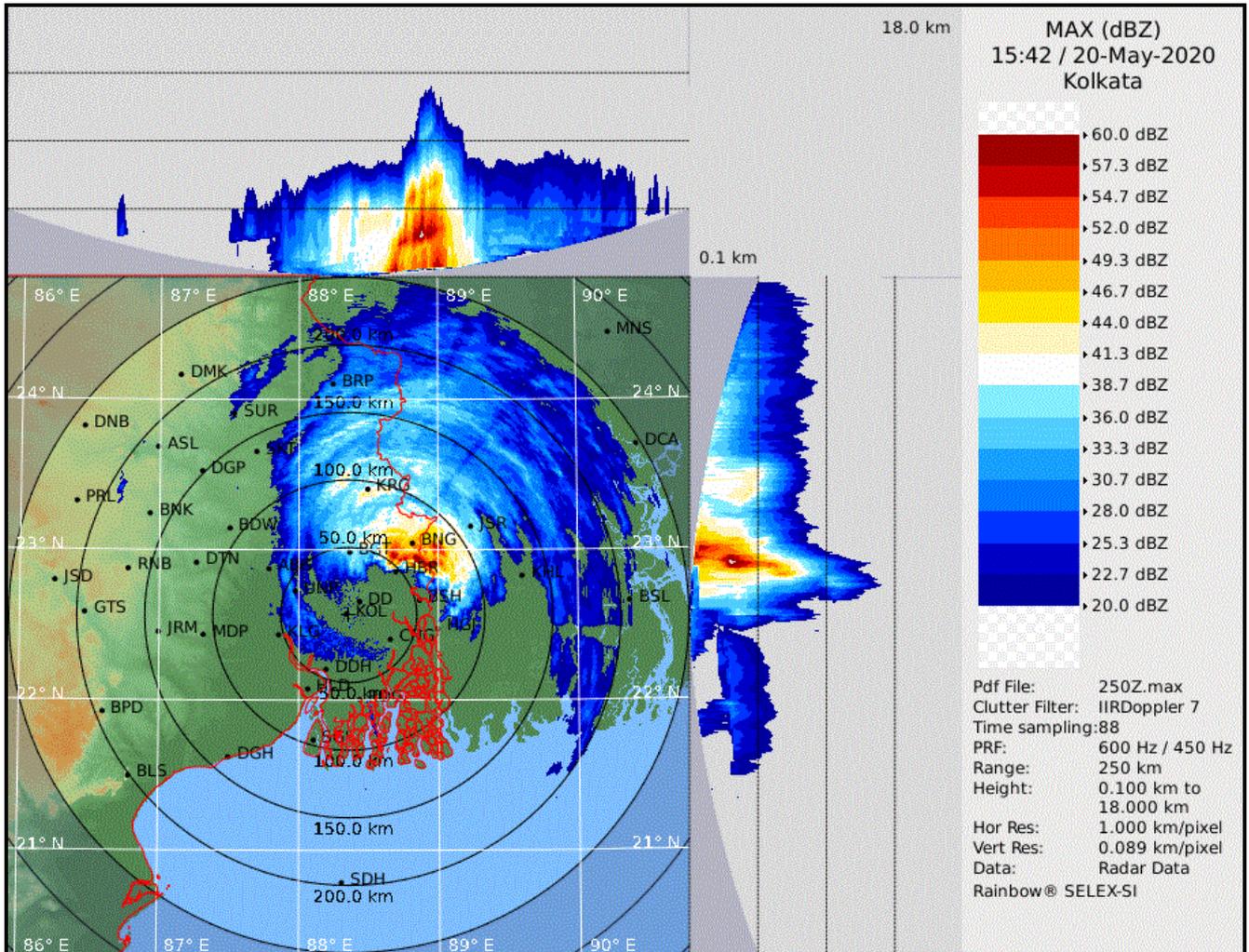
— OBSERVED TRACK
 — FORECAST TRACK
 — AREA OF MAXIMUM SUSTAINED WIND:



MSW (kn or kmph)	Impact	Action
28-33 (52-61)	Very rough seas	Total suspension of fishing operations
34-40 (62-74)	High to very high seas	Total suspension of fishing operations
41-53 (75-117)	Very High seas	Total suspension of fishing operations
≥ 54 (≥ 118)	Phenomenal	Total suspension of fishing operations

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.

Figure: Reflectivity of Kolkata Doppler Weather Radar at 1542 UTC of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0200 HOURS IST

DATED: 21.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay over Bangladesh & adjoining West Bengal as a Severe Cyclonic Storm: Cyclone warning for West Bengal coast: Red Message.

The Very Severe Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over West Bengal coast moved north-northeastwards with a speed of 28 kmph during past 06 hours and lay centered at 2330 hrs IST of yesterday, the 20th may 2020 over Bangladesh and adjoining West Bengal near **Lat. 23.3°N and Long. 89.0°E** as a Severe Cyclonic Storm about 110 km northeast of Kolkata, **240 km northeast of Digha (West Bengal), 200 km north-northeast of Sagar Islands and 190 km northwest of Khepupara (Bangladesh). It is very likely to continue to move north-northeastwards and weaken further into a Cyclonic Storm during next 06 hours.**

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

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
20.05.20/2330	23.3/89.0	90-100 gusting to 110	Severe Cyclonic Storm
21.05.20/0530	24.6/89.5	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

West Bengal

Light to moderate rainfall at a few places likely over Gangetic West Bengal (Nadia, east Burdman, Murshidabad, northern parts of North 24 Pargana districts) during next 06 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.

Sub-Himalayan West Bengal and Sikkim

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over Malda & Dinajpur districts during next 06 hours and over most of the districts of Sub-Himalayan West Bengal & Sikkim on 21st May, 2020.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy falls at isolated places over Meghalaya during next 06 hours and heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal

- Squally wind, speed reaching 50 to 60 kmph gusting to 70 kmph very likely over Nadia, east Burdman, Murshidabad, northern parts of North 24 Pargana districts during next 06 hours. It is very likely to decrease during subsequent 06 hours.

Deep Sea area

- Gale wind speed reaching 60-70 gusting to 80 kmph is prevailing over northern parts of northwest Bay of Bengal. It is likely to continue for next 06 hours. It will gradually decrease thereafter. Squally wind speed reaching 30-40 gusting to 50 kmph likely during subsequent 06 hours.

(3) Sea condition:

- Sea condition is rough to very rough over North Bay of Bengal and is likely to continue for next 12 hours.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal during next 12 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 12 hours.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0530 hours IST of today, the 21st May, 2020.

(V R Durai)
Scientist-E, RSMC, New Delhi

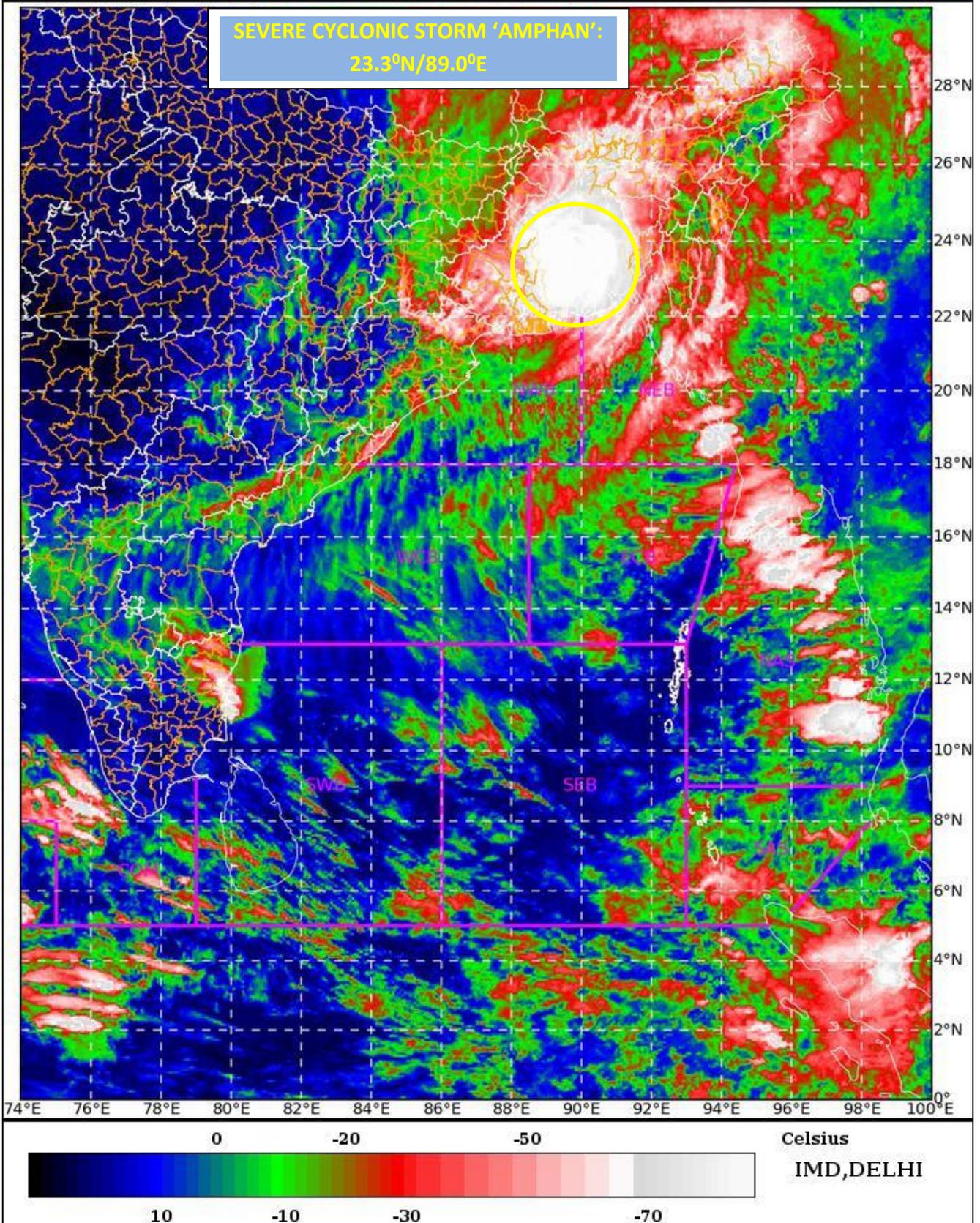
Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

SAT : INSAT-3D IMG 20-05-2020/(1900 to 1926) GMT

IMG_TIR1_TEMP 10.8 um 21-05-2020/(0030 to 0056) IST



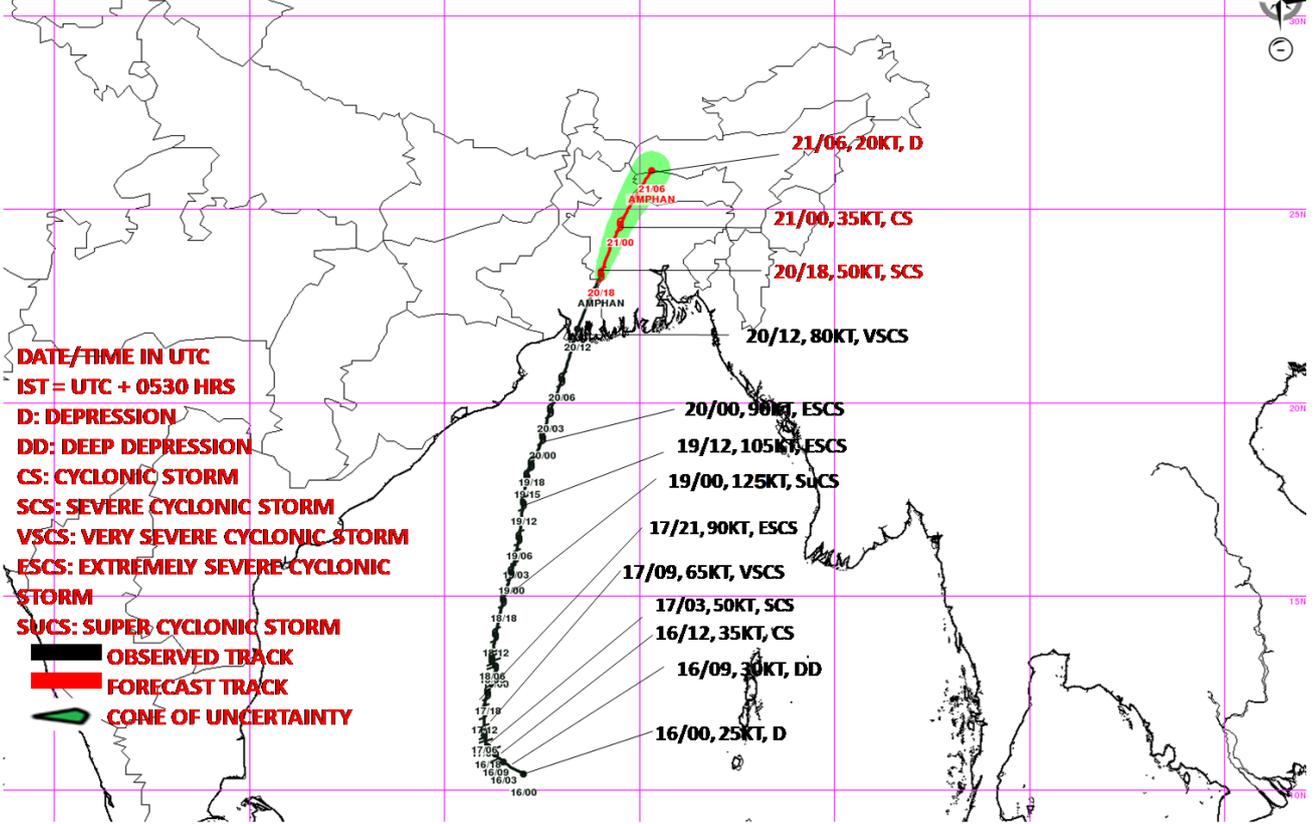
L1C Mercator



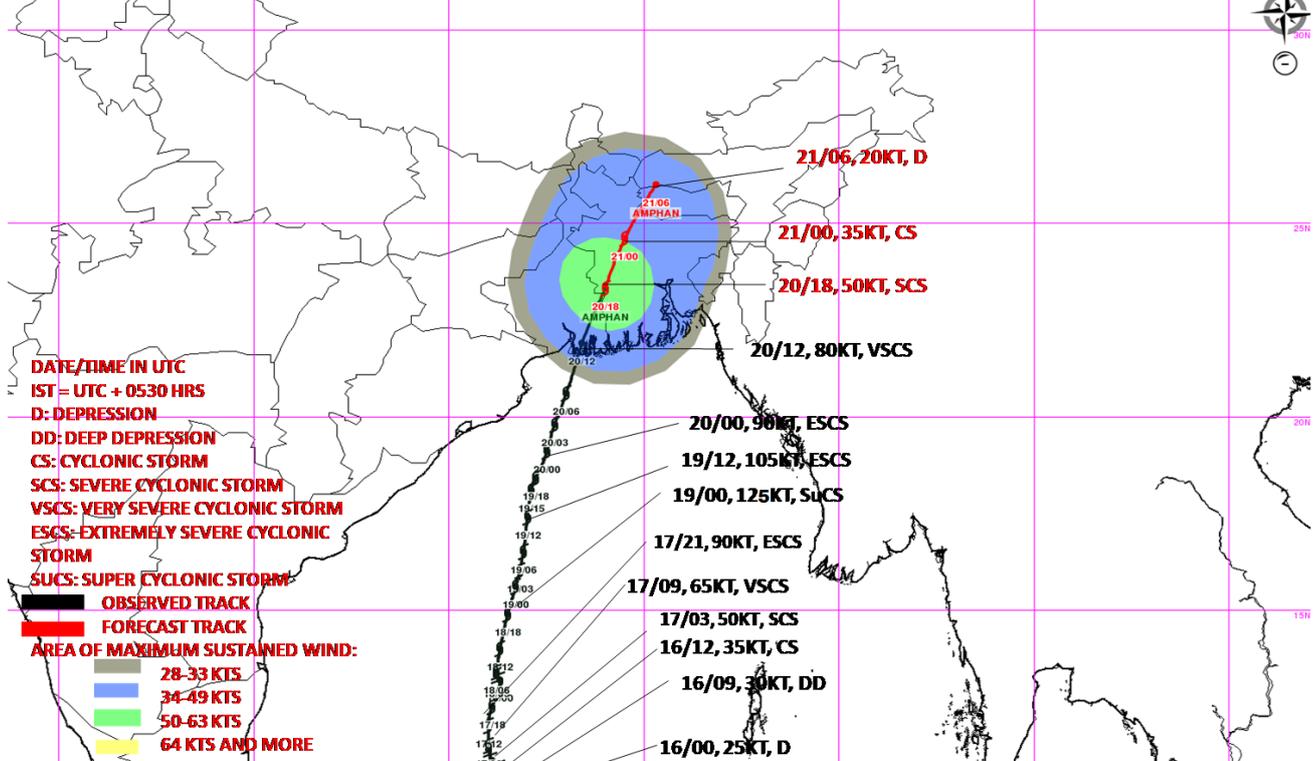
Legend: WCB – Westcentral Bay of Bengal
NWB – Northwest Bay of Bengal

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.

OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF SEVERE CYCLONIC STORM 'AMPHAN' OVER ADJOINING BANGLADESH AND WEST BENGAL BASED ON 1800 UTC OF 20TH MAY, 2020



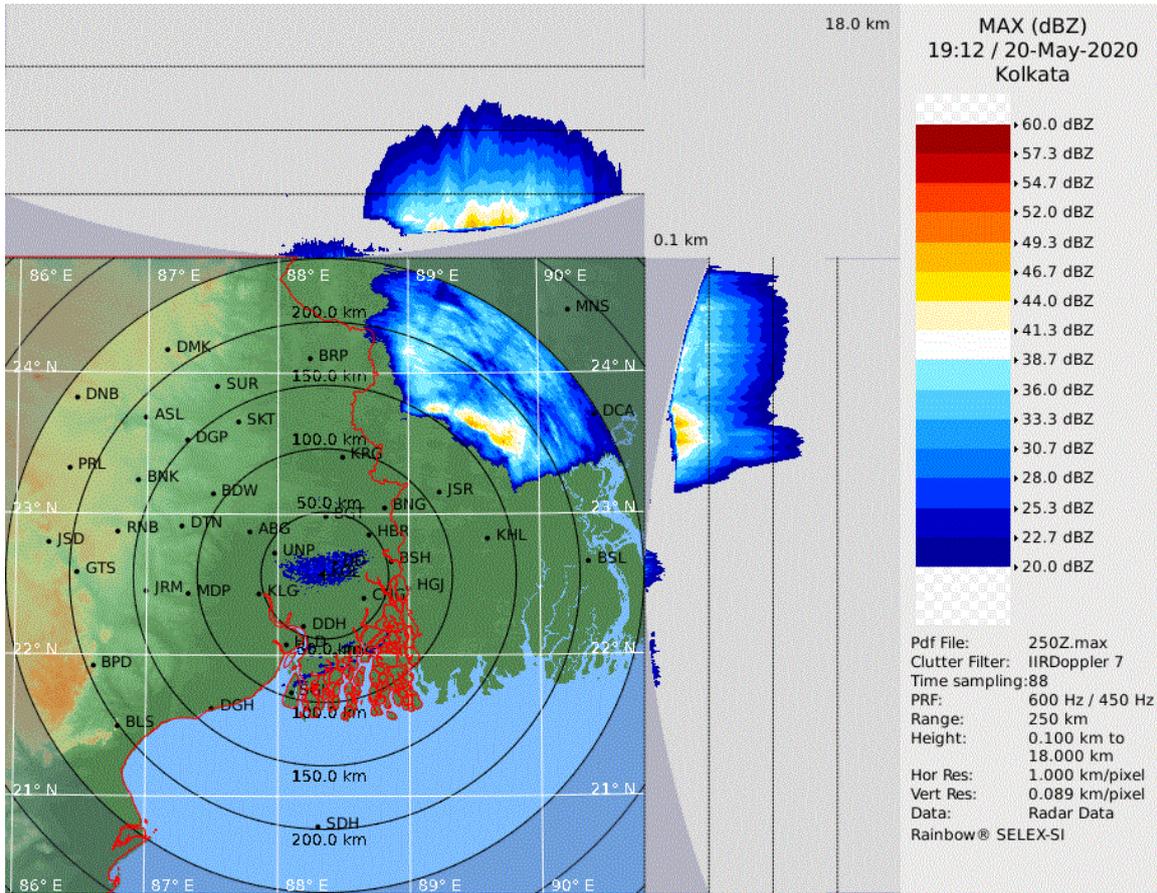
OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF SEVERE CYCLONIC STORM, AMPHAN OVER ADJOINING BANGLADESH AND WEST BENGAL BASED ON 1800 UTC OF 20TH MAY, 2020



MSW(knot/kmph)	Impact	Action
28-33 (52-61)	Very rough seas.	Total suspension of fishing operations
34-40 (62-74)	High to very high seas	Total suspension of fishing operations
41-63 (75-117)	Very High seas	Total suspension of fishing operations

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.

Figure: Reflectivity of Kolkata Doppler Weather Radar at 1912 UTC of 20th May 2020



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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0600 HOURS IST

DATED: 21.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, ANDAMAN & NICOBAR ISLANDS (FAX NO. 03192- 232656)

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

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

CHIEF SECRETARY, ANDHRA PRADESH (FAX NO. 0863-2441029, 08645-246600)

CHIEF SECRETARY, TAMIL NADU (FAX NO. 044-25672304)

CHIEF SECRETARY, PUDUCHERRY (FAX NO. 0413-2337575, 2334145)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay over Bangladesh as a Cyclonic Storm: Cyclone warning for West Bengal coast: Red Message.

The Severe Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) over Bangladesh and adjoining West Bengal coast moved north-northeastwards with a speed of 30 kmph during past 06 hours and lay centered at 0230 hrs IST of today, the 21st May 2020 near Lat. 24.2°N and Long. 89.3°E **over Bangladesh as a Cyclonic Storm** about 210 km north-northeast of Kolkata, 340 km north-northeast of Digha (West Bengal), 300 km north-northeast of Sagar Islands and 260 km north-northwest of Khepupara (Bangladesh).

It is very likely to continue to move north-northeastwards and weaken further into a Deep Depression 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 (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
21.05.20/0230	24.2/89.3	80-90 gusting to 100	Cyclonic Storm
21.05.20/0530	24.6/89.5	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.0/90.3	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

West Bengal

Light to moderate rainfall at a few places likely over Nadia and Murshidabad districts of Gangetic West Bengal during next 06 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.

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at a few places over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal

- **Squally wind, speed reaching 30 to 40 kmph gusting to 50 kmph very likely over Nadia and Murshidabad districts during next 06 hours. It is very likely to decrease during subsequent 06 hours.**

Deep Sea area

- Gale wind speed reaching 60-70 gusting to 80 kmph is prevailing over northern parts of northwest Bay of Bengal. It is likely to continue for next 06 hours. It will gradually decrease thereafter becoming Squally wind speed reaching 30-40 gusting to 50 kmph during subsequent 06 hours.

(3) Sea condition:

- Sea condition is rough to very rough over North Bay of Bengal and is likely to continue for next 12 hours.

(4) Fishermen Warning

- The fishermen are advised not to venture into North Bay of Bengal during next 12 hours. Also, fishermen are advised not to venture into North Bay of Bengal along and off North Odisha, West Bengal and adjoining Bangladesh coasts during next 12 hours.

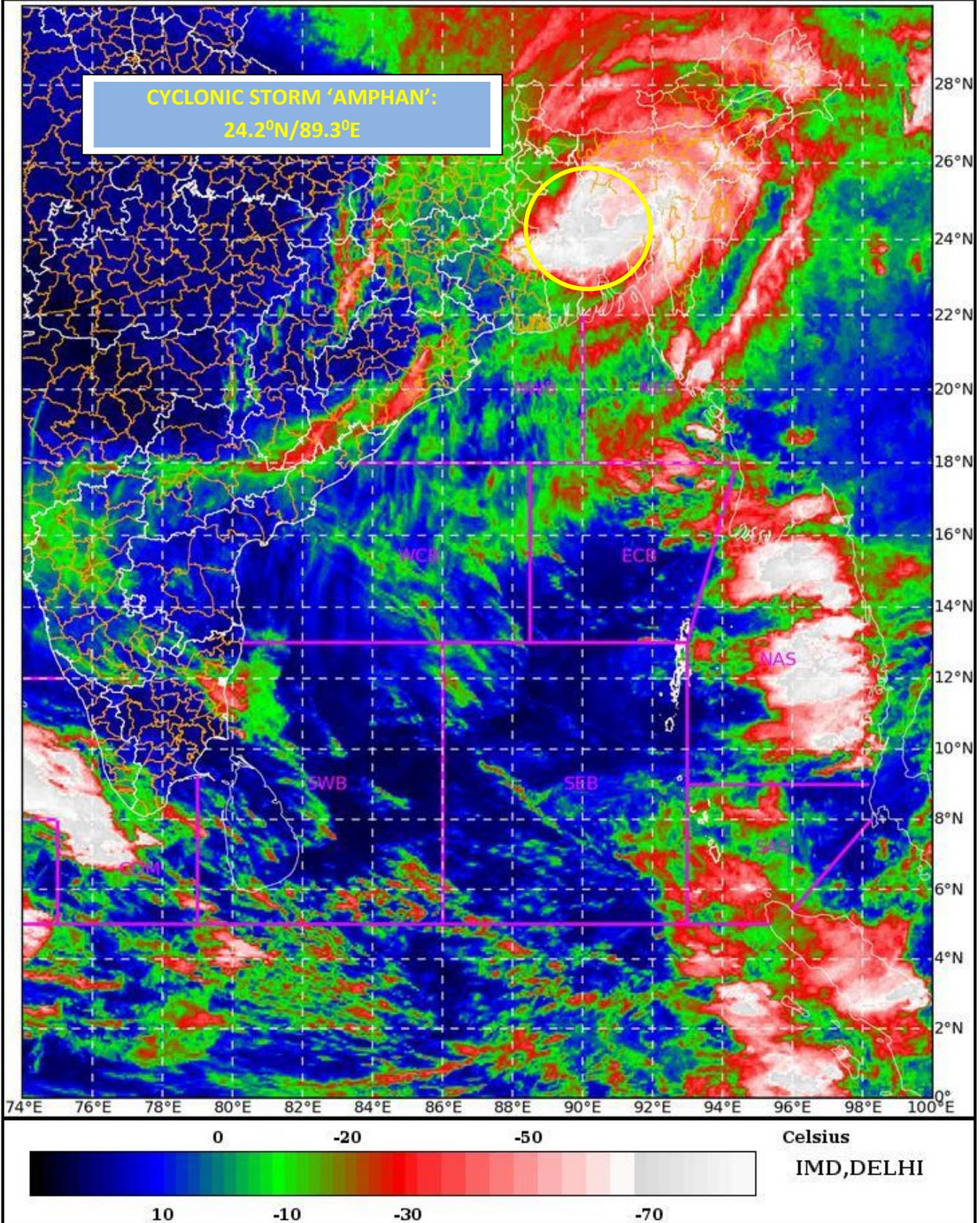
Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0830 hours IST of today, the 21st May, 2020.

(V R Durai)
Scientist-E, RSMC, New Delhi

Copy to: CRS, Pune/ ACWC Chennai/ ACWC Kolkata/CWC Bhubaneswar/ /CWC Visakhapatnam

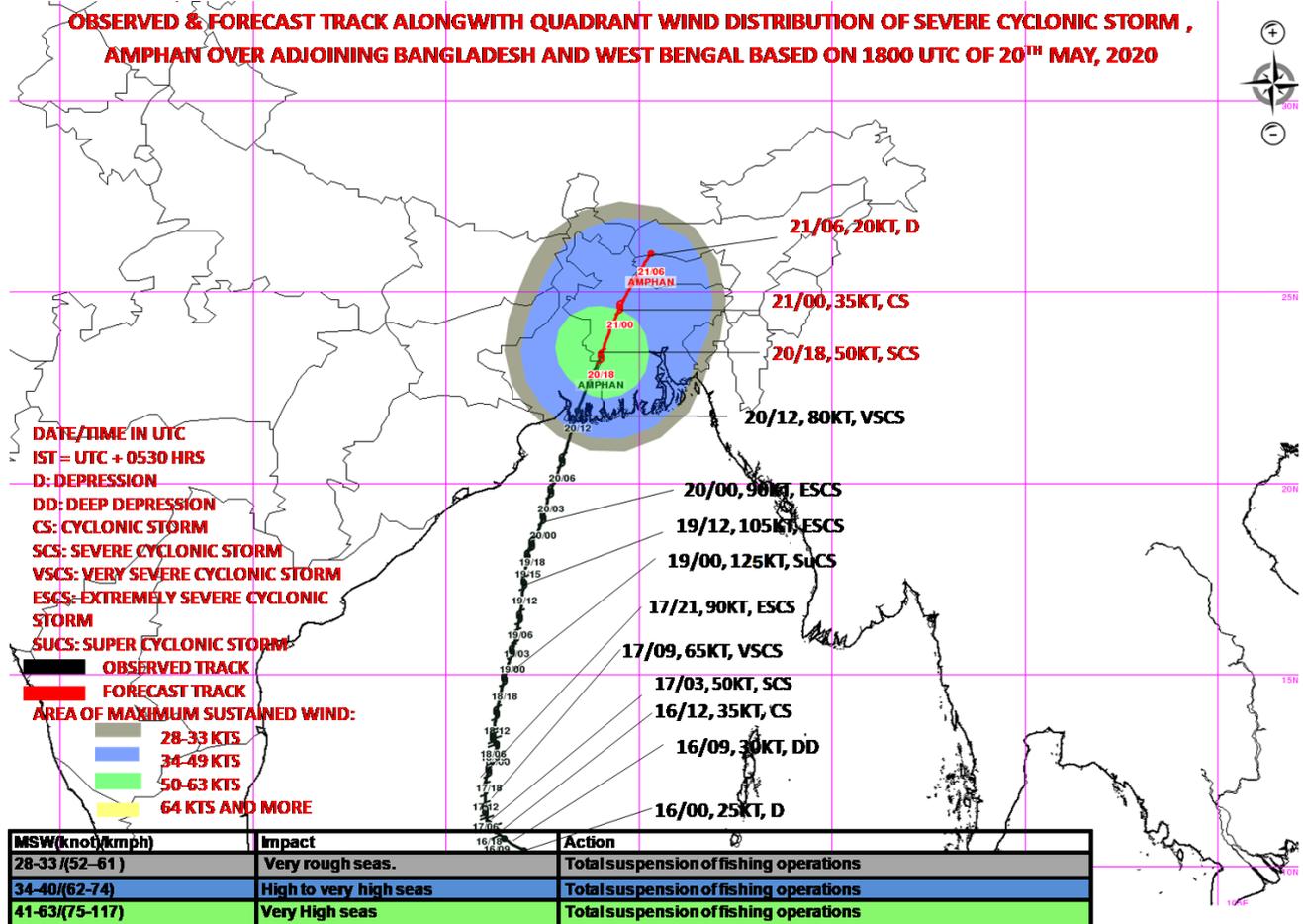
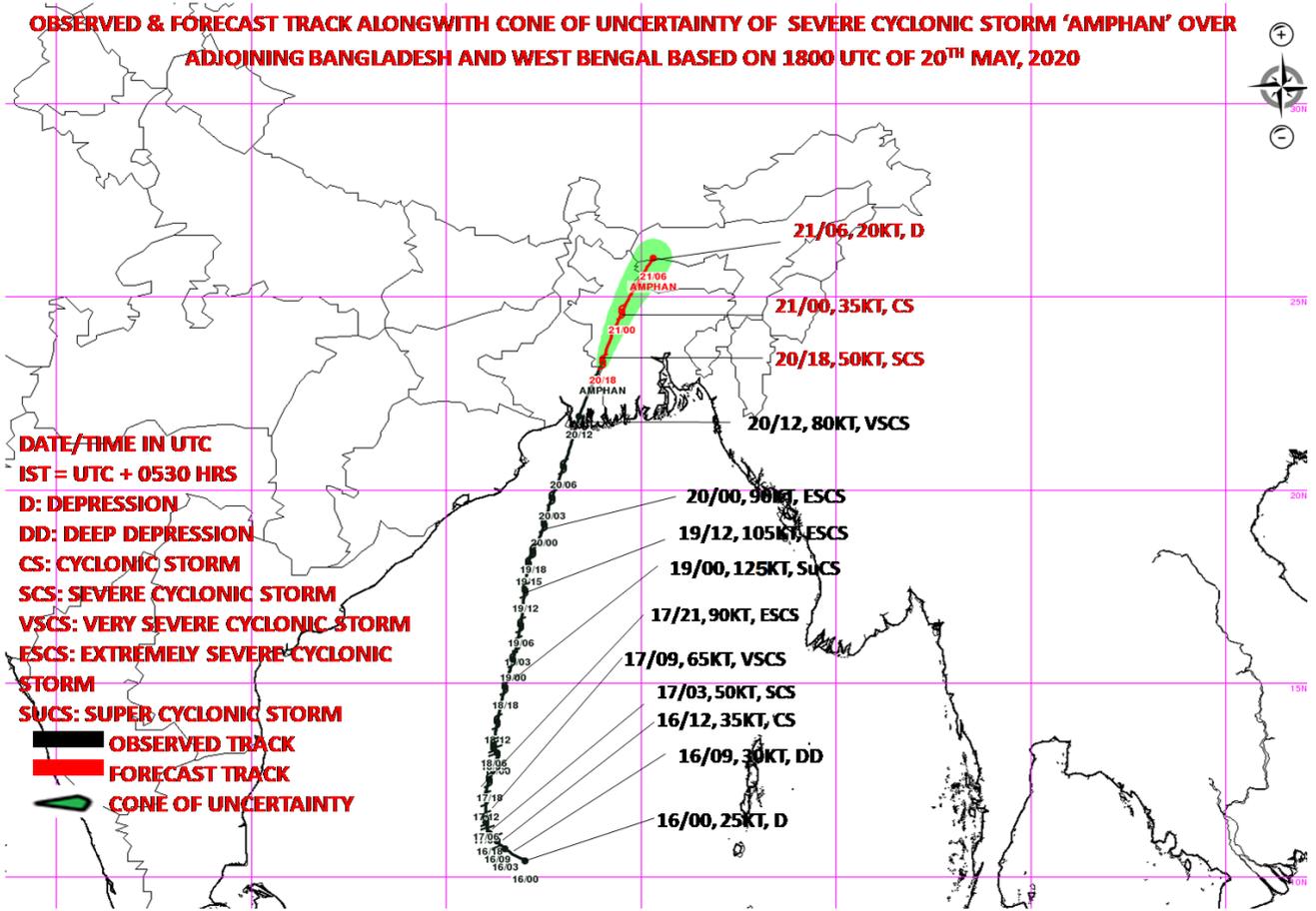
SAT : INSAT-3D IMG 20-05-2020/(2300 to 2326) GMT
 IMG_TIR1_TEMP 10.8 um 21-05-2020/(0430 to 0456) IST
 L1C Mercator



Legend: WCB – Westcentral 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.

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.: 41 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 0800 HOURS IST

DATED: 21.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay as a Cyclonic Storm over Bangladesh

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) moved north-northeastwards with a speed of 27 kmph during past 06 hours, further weakened into a **Cyclonic Storm** and lay centered at 0530 hrs IST of today, the 21st May 2020 over **Bangladesh** near Lat. 24.7°N and Long. 89.5°E about 270 km north-northeast of Kolkata, 150 km south of Dhubri and 110 km south-southeast of Rangpur (Bangladesh).

It is very likely to continue to move north-northeastwards and weaken further into a Deep Depression 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 (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
21.05.20/0530	24.7/89.5	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	26.2/90.7	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

Assam & Meghalaya

Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely over the western districts of Assam & Meghalaya on 21st May.

(2) Wind warning

West Bengal

- Squally wind, speed reaching 30 to 40 kmph gusting to 50 kmph very likely over Meghalaya & West Assam during next 12 hours.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 1130 hours IST of today, the 21st May, 2020.

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

Copy to: RMC Guwahati/ ACWC Kolkata

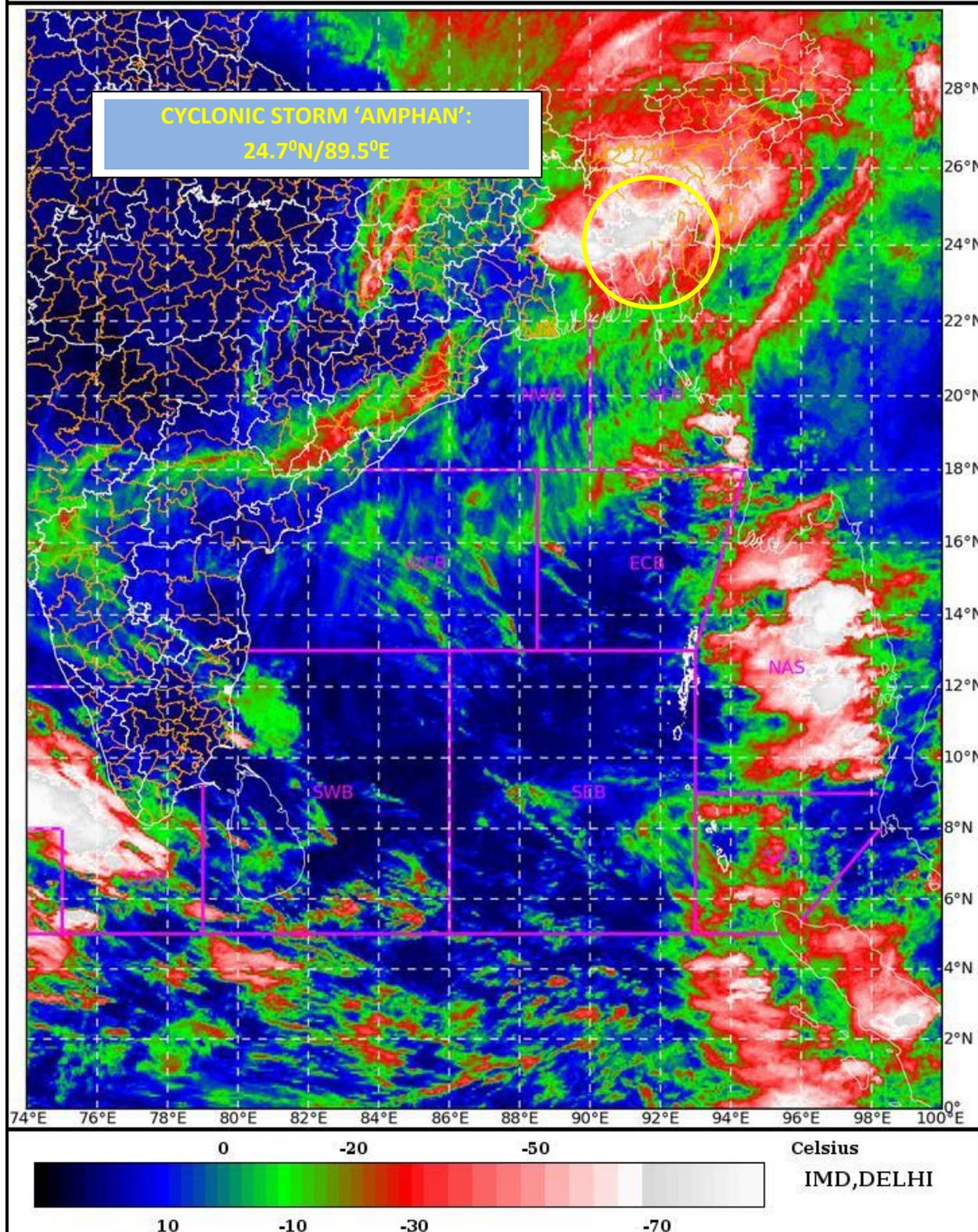
Spatial rainfall distribution: Isolated: <25%, A few: 26-50%, Many: 51-75%, Most: 76-100%
Rainfall amount (mm): Heavy rain: 64.5 – 115.5, Very heavy rain: 115.6 – 204.4, Extremely heavy rain: 204.5 or more.

SAT : INSAT-3D IMG 21-05-2020/(0030 to 0056) GMT

IMG_TIR1_TEMP 10.8 um 21-05-2020/(0600 to 0626) IST

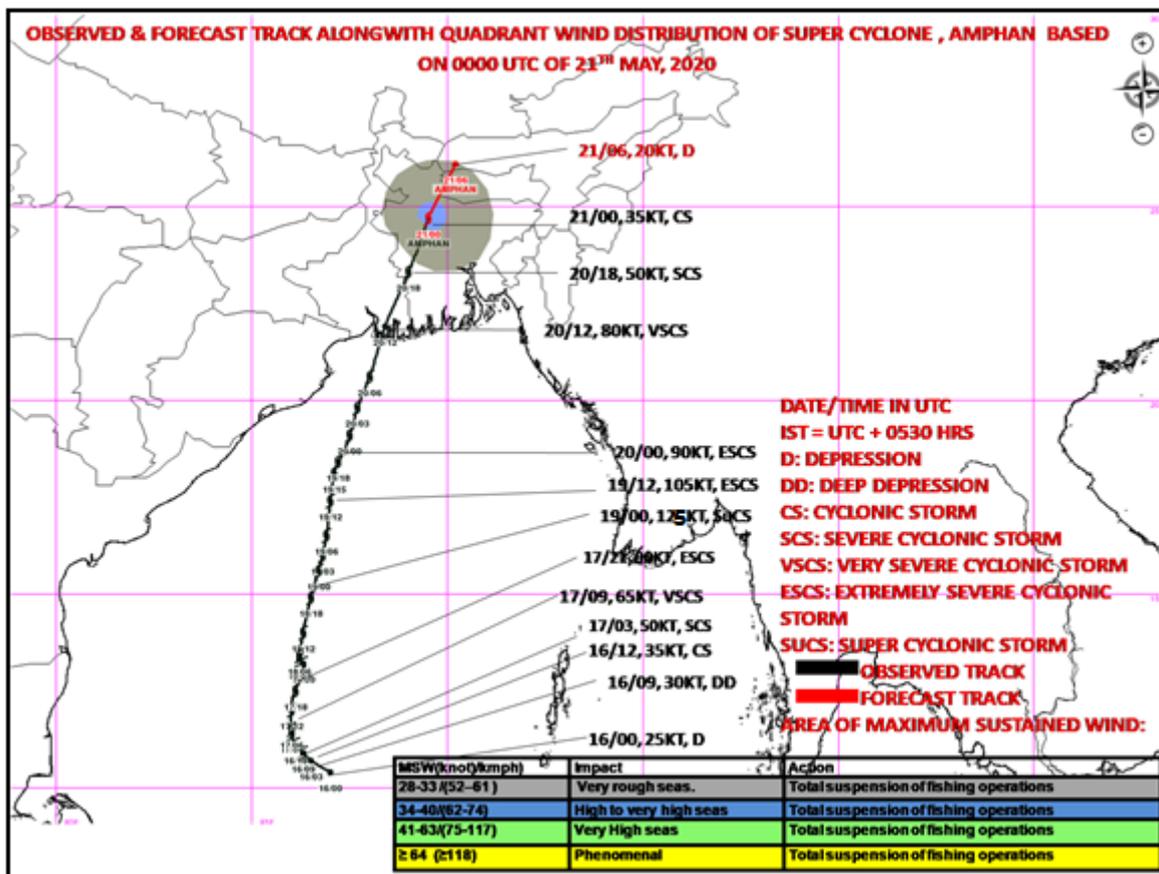
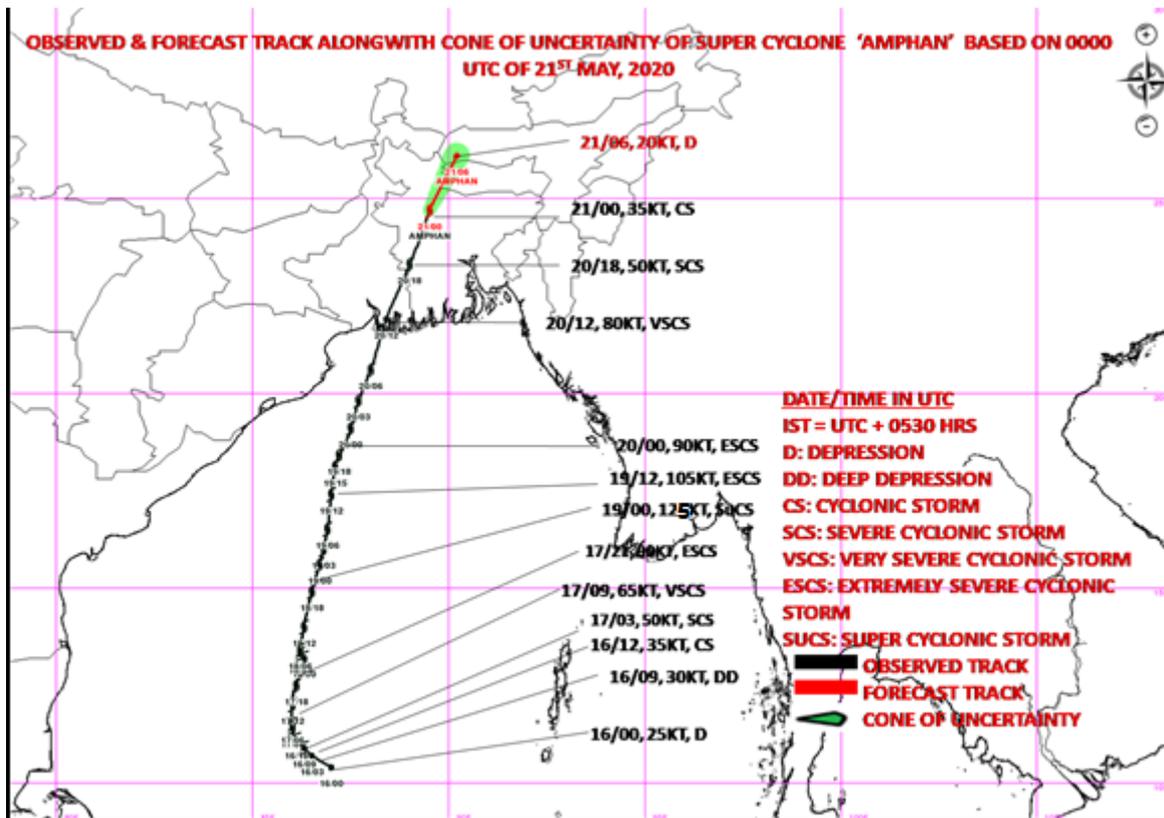


L1C Mercator



Legend: WCB – Westcentral Bay of Bengal
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.: 42 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1145 HOURS IST

DATED: 21.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay as a Cyclonic Storm over Bangladesh

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) moved north-northeastwards with a speed of 10 kmph during past 06 hours as a **Cyclonic Storm** and lay centered at 0830 hrs IST of today, the 21st May 2020 over **Bangladesh** near Lat. 24.7°N and Long. 89.5°E about 270 km north-northeast of Kolkata, 150 km south of Dhubri and 110 km south-southeast of Rangpur (Bangladesh).

It is very likely to continue to move north-northeastwards and weaken further into a Deep Depression 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 (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
21.05.20/0830	24.7/89.5	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	25.3/89.8	50-60 gusting to 70	Deep Depression
21.05.20/1730	26.5/90.5	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

Assam & Meghalaya: Light to moderate rainfall at most places with heavy to very heavy & **extremely heavy falls (≥ 20 cm)** at isolated places very likely on 21st May, 2020.

Arunachal Pradesh: Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely on 21st May, 2020.

(2) Wind warning

Squally wind speed reaching 50 to 60 kmph gusting to 70 kmph very likely over Western Assam & Western Meghalaya till evening and reduce gradually thereafter.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

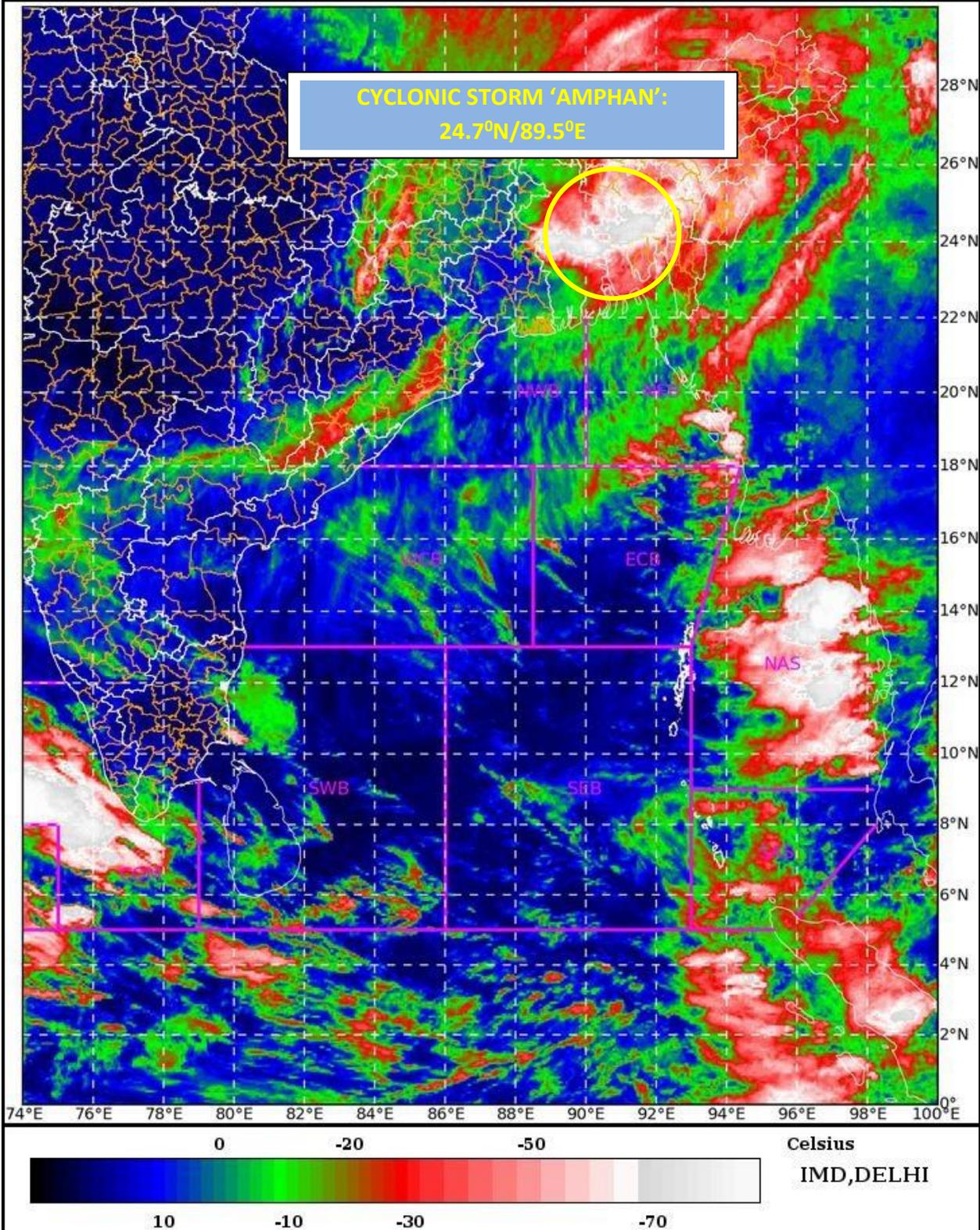
Next Bulletin will be issued at 1430 hours IST of today, the 21st May, 2020.

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

Copy to: RMC Guwahati/ ACWC Kolkata

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.

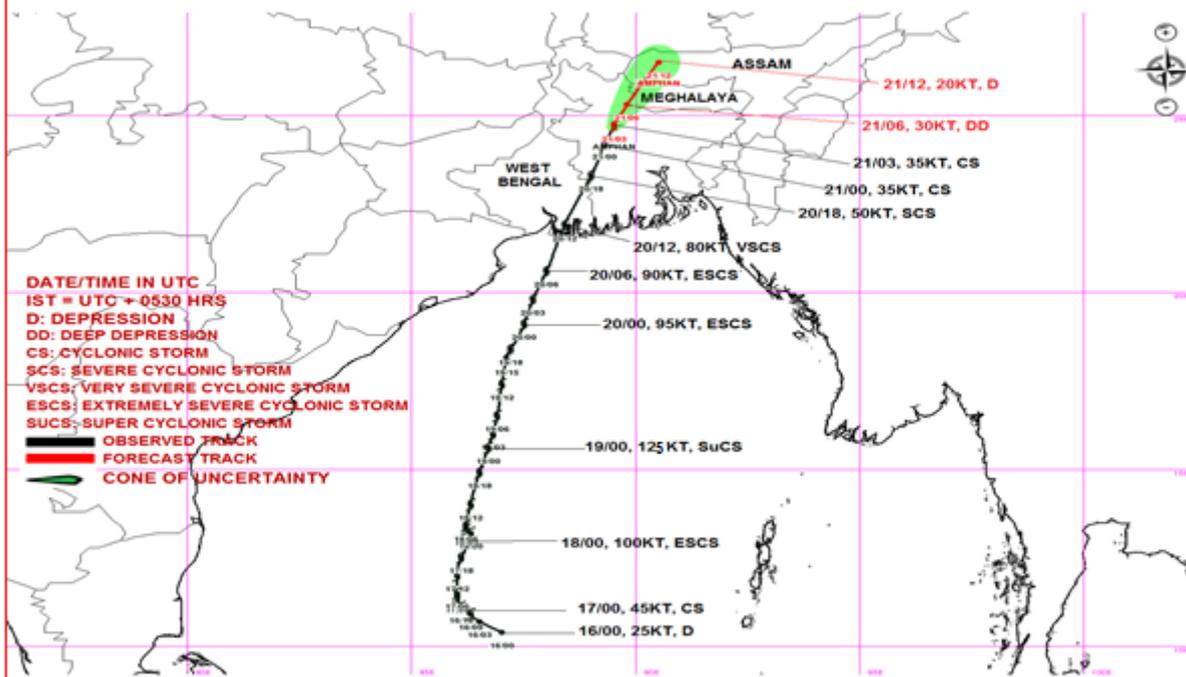
SAT : INSAT-3D IMG 21-05-2020/(0030 to 0056) GMT
 IMG_TIR1_TEMP 10.8 um 21-05-2020/(0600 to 0626) IST
 L1C Mercator



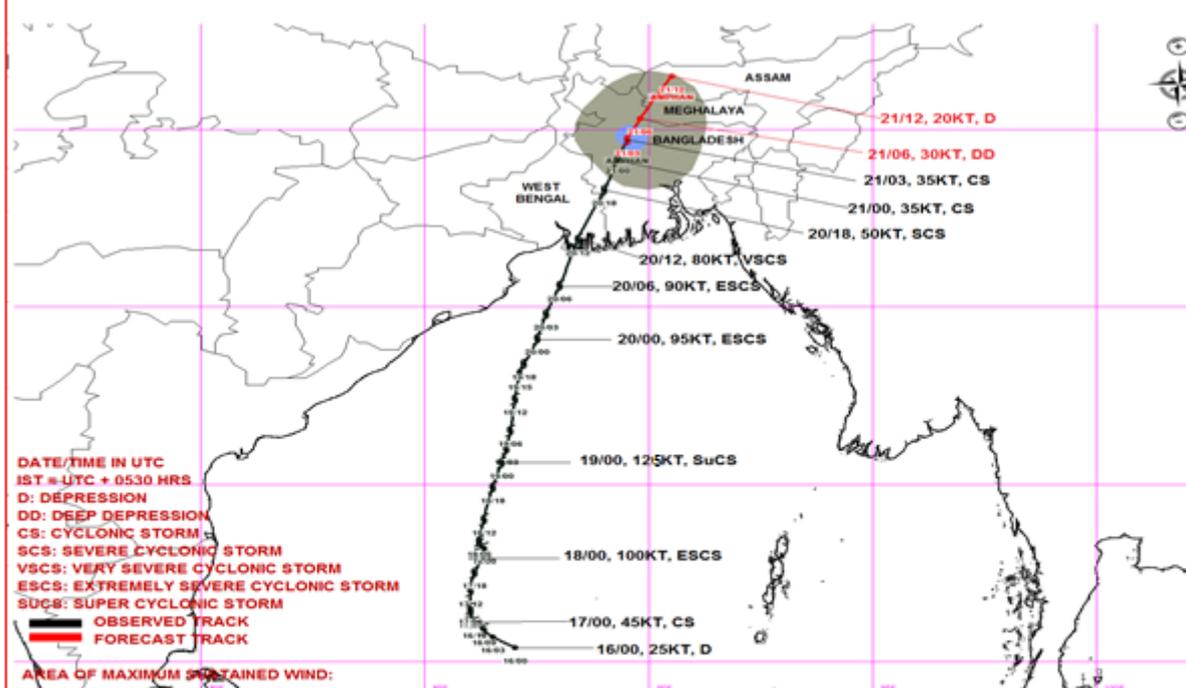
Legend: WCB – Westcentral Bay of Bengal
 NWB – Northwest Bay of Bengal

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.

OBSERVED & FOECAST TRACK OF SUPER CYCLONIC STORM 'AMPHAN' BASED ON 0300 UTC OF 21ST MAY, 2020



OBSERVED & FORECAST TRACK AND WIND DISTRIBUTION OF SUPER CYCLONIC STORM 'AMPHAN' BASED ON 0300 UTC OF 21ST MAY, 2020



MSW(knot)/kmph	Impact	Action
28-33/(52-61)	Very rough seas.	Total suspension of fishing operations
34-40/(62-74)	High to very high seas	Total suspension of fishing operations

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 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1430 HOURS IST

DATED: 21.05.2020

FROM: INDIA METEOR

OLOGICAL DEPARTMENT (FAX NO. 24643965/24699216/24623220)

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay as a Deep Depression over Bangladesh

The Super Cyclonic Storm 'AMPHAN' (pronounced as **UM-PUN**) moved north-northeastwards as a Cyclonic Storm with a speed of 06 kmph during past 06 hours, further weakened into a **Deep Depression** and lay centered at 1130 hrs IST of today, the 21st May 2020 over **Bangladesh** near Lat. 25.0°N and Long. 89.6°E about 300 km east-northeast of Kolkata, 110 km south-southeast of Dhubri and 80 km south-southeast of Rangpur (Bangladesh).

It is very likely to continue to move north-northeastwards and weaken further into a Depression during next 06 hours and further into a well marked low thereafter.

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
21.05.20/1130	25.0/89.6	50-60 gusting to 70	Deep Depression
21.05.20/1730	26.2/90.3	30-40 gusting to 50	Depression

(1) Heavy rainfall Warning:

Assam & Meghalaya: Light to moderate rainfall at most places with heavy to very heavy & **extremely heavy falls (≥20 cm)** at isolated places very likely on 21st May, 2020.

Arunachal Pradesh: Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely on 21st May, 2020.

(2) Wind warning

Squally wind speed reaching 50 to 60 kmph gusting to 70 kmph very likely over Western Assam & Western Meghalaya till evening and reduce 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.

(3) Realised weather over West Bengal

- **Maximum sustained wind speed recorded:**

Kolkata (Dum Dum) reported **130 kmph at 1855 hrs IST** and Kolkata (Alipore) **112 kmph at 1752 hrs IST of 20th May**.

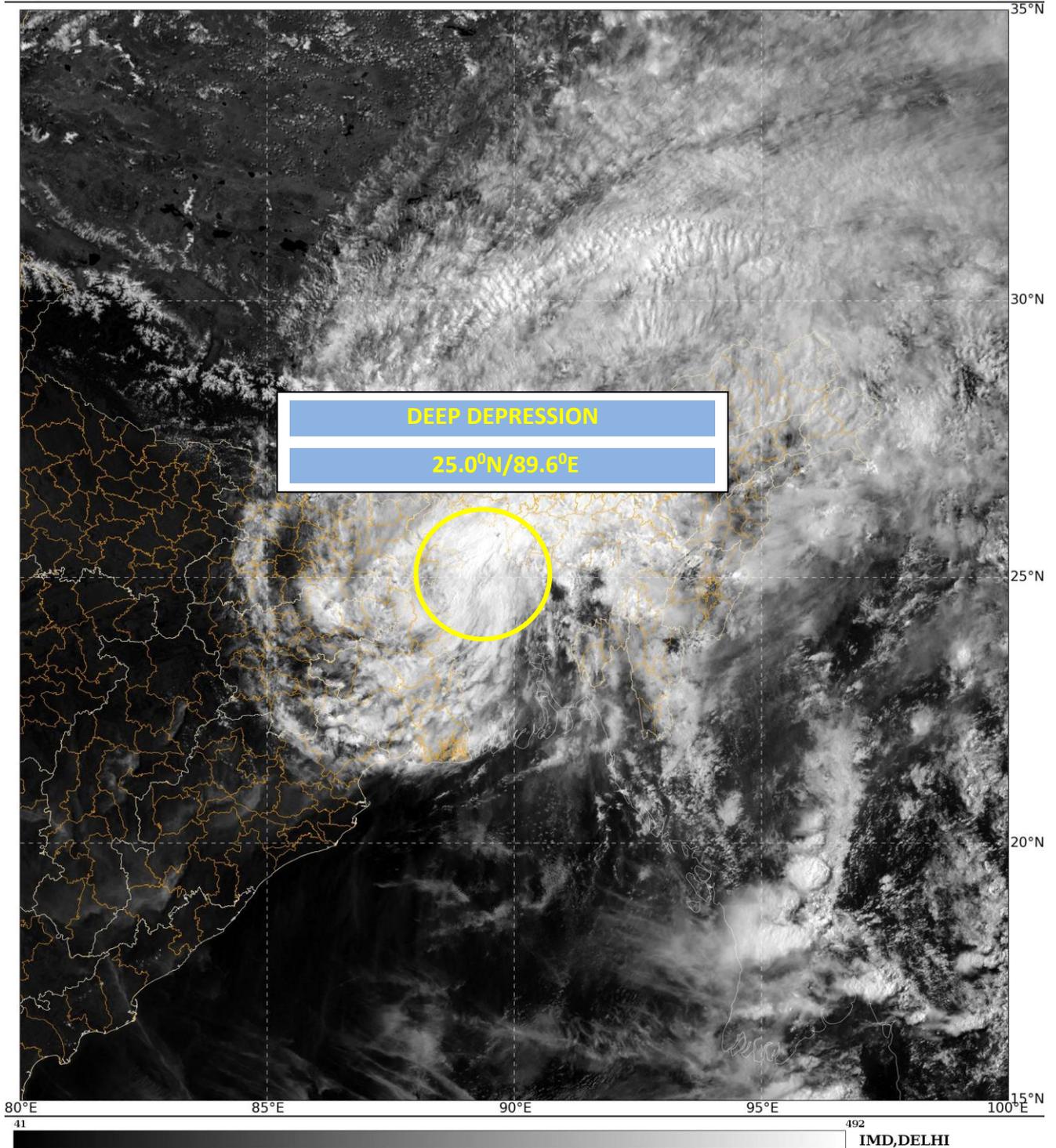
- The chief amounts of rainfall (in cm) realised on 20th May are: Alipore-24, DumDum-20 and Haldia-8.

Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 2030 hours IST of today, the 21st May, 2020.

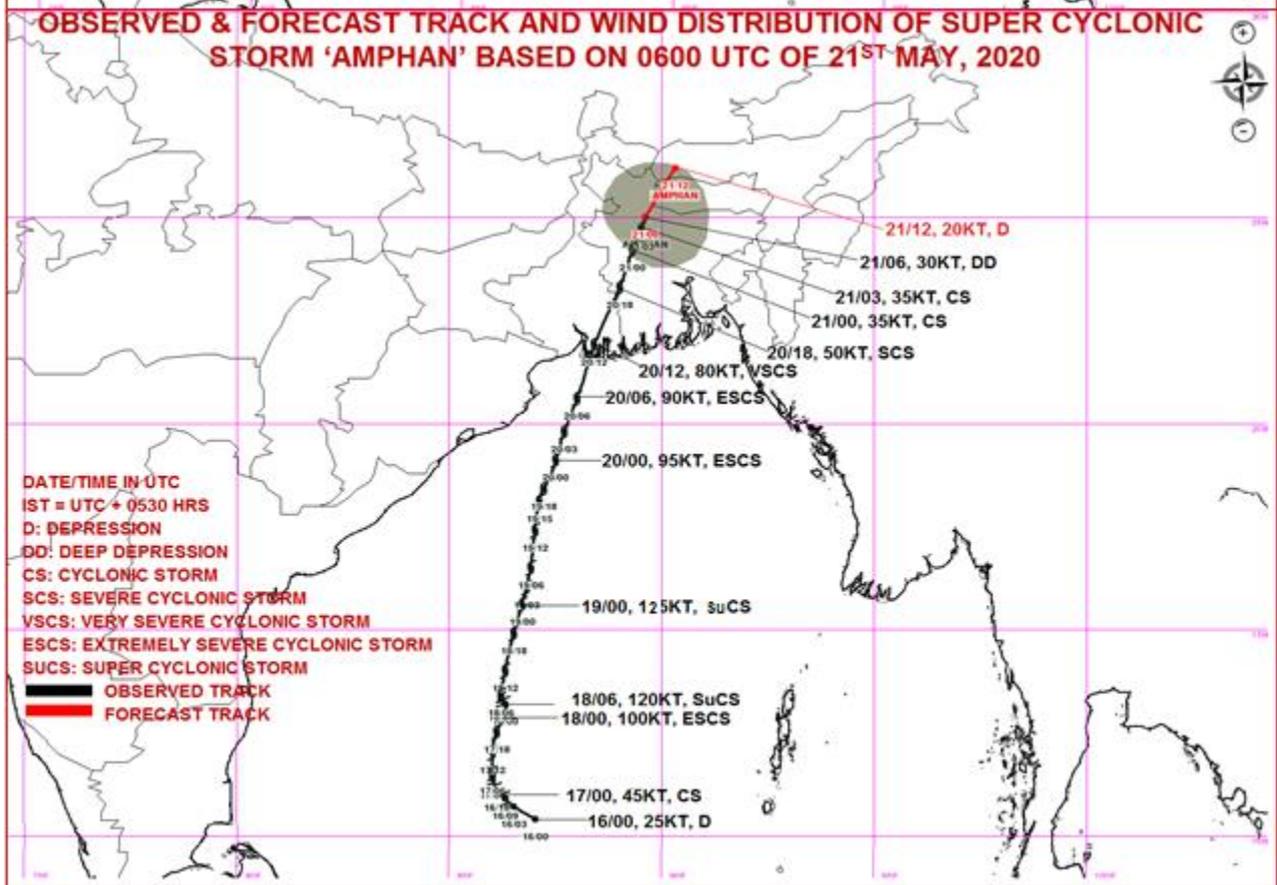
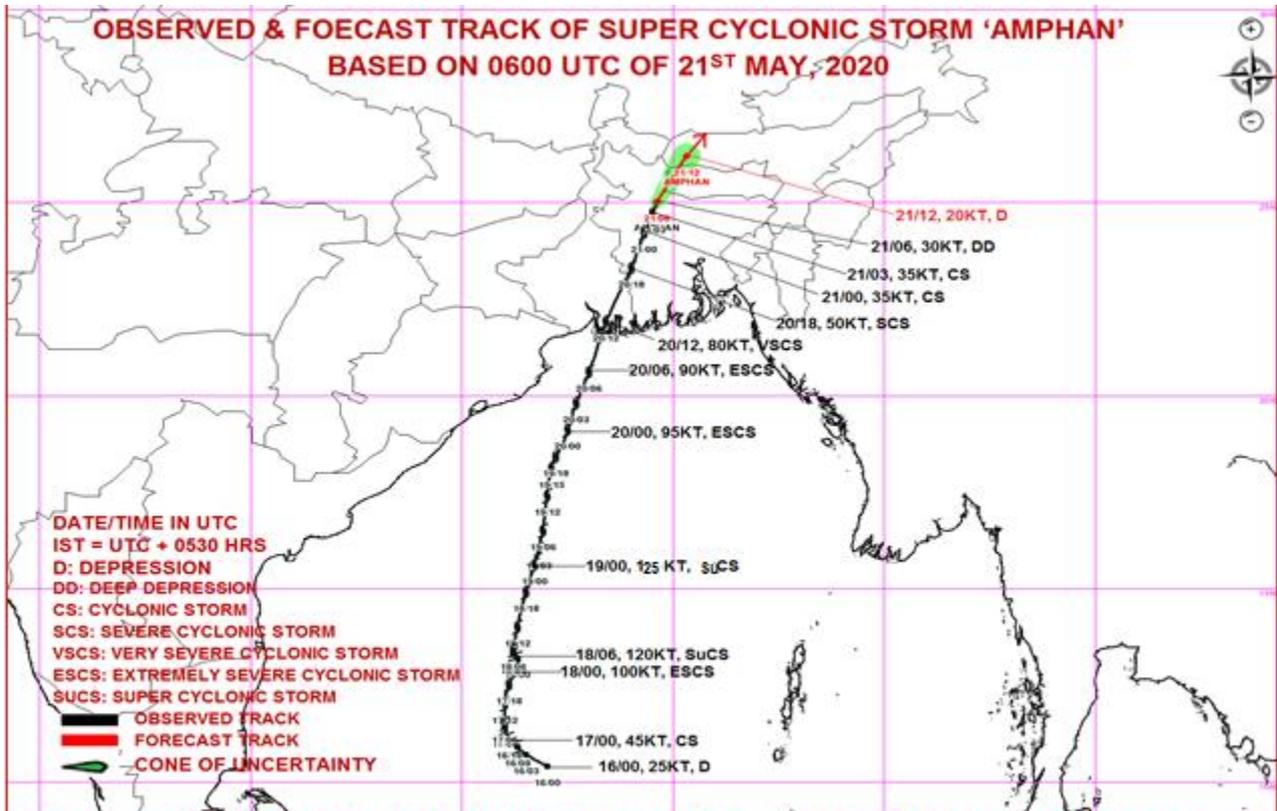
(Naresh Kumar)
Scientist-E, RSMC, New Delhi

Copy to: RMC Guwahati/ ACWC Kolkata



**Legend: WCB – Westcentral Bay of Bengal
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.: 44 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 2030 HOURS IST

DATED: 21.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) lay as a Depression over Bangladesh

The Deep Depression [remnant of the Super Cyclonic Storm 'AMPHAN'] moved slightly northwards with a speed of 07 kmph during past 06 hours, further weakened into a **Depression** and lay centered at 1730 hrs IST of today, the 21st May 2020 over **Bangladesh** near Lat. 25.4°N and Long. 89.6°E about 350 km north-northeast of Kolkata, 70 km south-southwest of Dhubri and 50 km east-southeast of Rangpur (Bangladesh).

It is very likely to continue to move north-northeastwards and weaken further into a well marked low during next 12 hours.

(1) Heavy rainfall Warning:

Assam & Meghalaya: Light to moderate rainfall at most places with heavy to very heavy at isolated places very likely over west Assam and isolated heavy falls over Meghalaya during next 12 hours.

Arunachal Pradesh: Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely during next 12 hours.

(2) Wind warning

Squally wind speed reaching 30 to 40 kmph gusting to 50 kmph very likely over Western Assam & Western Meghalaya during next 12 hours and reduce gradually thereafter.

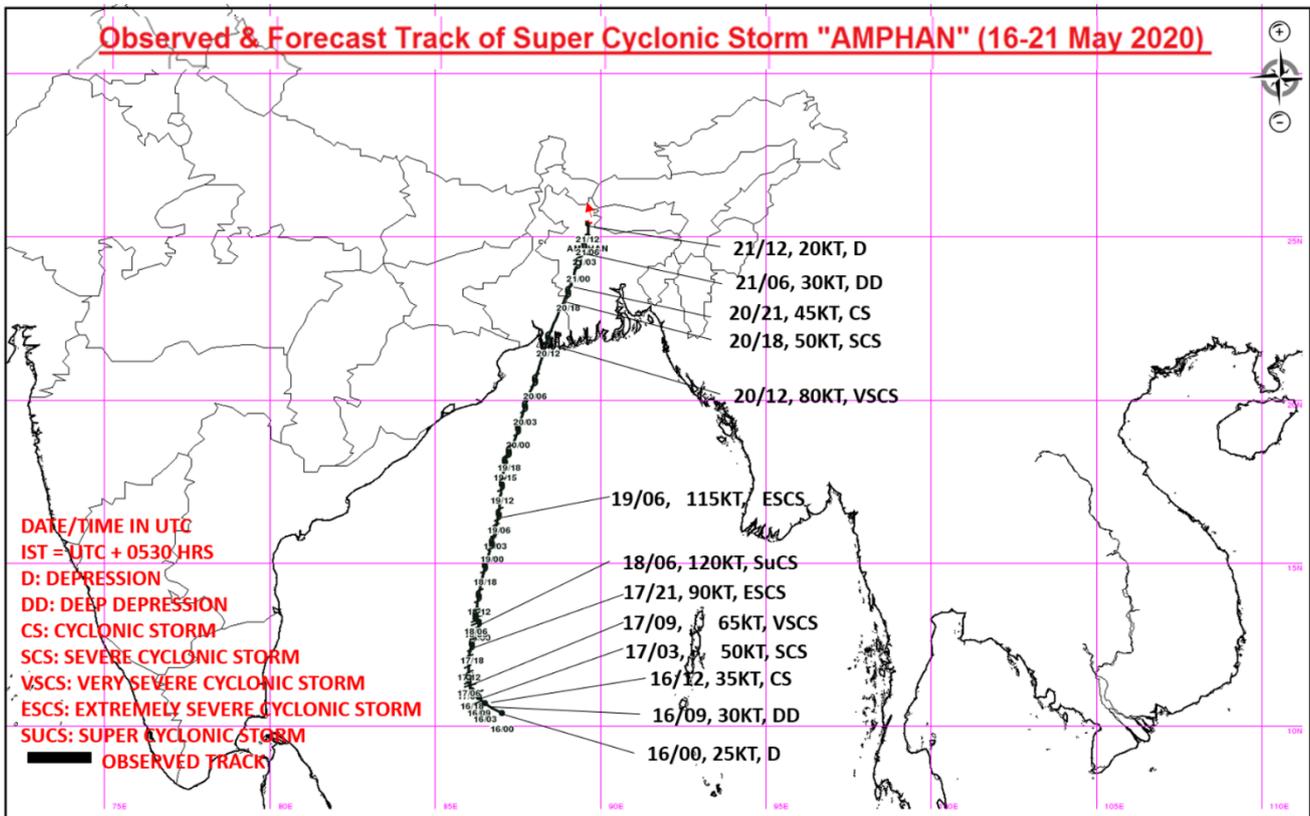
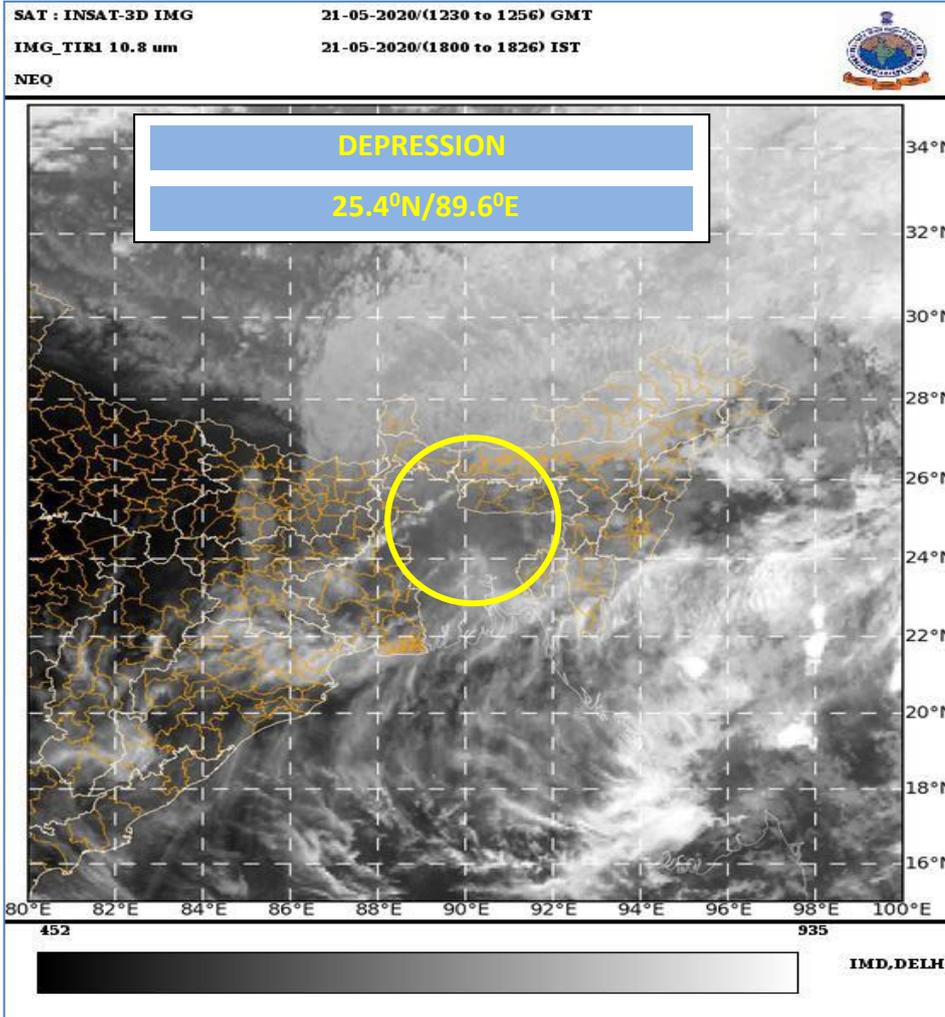
Kindly visit www.rsmcnewdelhi.imd.gov.in and www.mausam.imd.gov.in for updates on the system.

Next Bulletin will be issued at 0230 hours IST of tomorrow, the 22nd May, 2020.

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

Copy to: RMC Guwahati/ ACWC Kolkata

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.: 45 (BAY OF BENGAL 01/2020)

TIME OF ISSUE: 1230 HOURS IST

DATED: 22.05.2020

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

TO: CONTROL ROOM, NDM, MINISTRY OF HOME AFFAIRS (FAX.NO. 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 (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, WEST BENGAL (FAX NO. 033-22144328)

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

CHIEF SECRETARY, GOVT. OF ASSAM (FAX NO. 0361-2237200)

CHIEF SECRETARY, GOVT. OF MEGHALAYA (FAX NO. 0364 - 2225978)

CHIEF SECRETARY, GOVT. OF SIKKIM (FAX NO. 03592 -204323)

Sub: Super Cyclonic Storm 'AMPHAN' (pronounced as UM-PUN) weakened into a Well Marked Low Pressure Area over north Bangladesh and neighbourhood.

The Depression [remnant of the Super Cyclonic Storm 'AMPHAN'] moved slightly northwards during past 06 hours and further weakened into a **Well Marked Low Pressure Area** over north Bangladesh & neighbourhood at 2330 hrs IST of today, the 21st May 2020. It is very likely to continue to move north-northeastwards and weaken further into a low pressure area during next 12 hours.

(1) Heavy rainfall Warning:

Assam & Meghalaya: Light to moderate rainfall at most places with heavy to very heavy at isolated places very likely over west Assam and isolated heavy falls over Meghalaya during next 06 hours.

Arunachal Pradesh: Light to moderate rainfall at most places with heavy to very heavy falls at isolated places very likely during next 06 hours.

(2) Wind warning

Squally wind speed reaching 30 to 40 kmph gusting to 50 kmph very likely over Western Assam & Western Meghalaya during next 06 hours and reduce gradually thereafter.

This is the last bulletin for this system. However, regular bulletin will continue from National Weather Forecasting Centre, IMD New Delhi.

(Shobhit Katiyar)
Scientist-C, RSMC, New Delhi

Copy to: RMC Guwahati/ ACWC Kolkata

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

21-05-2020/(1800 to 1826) GMT

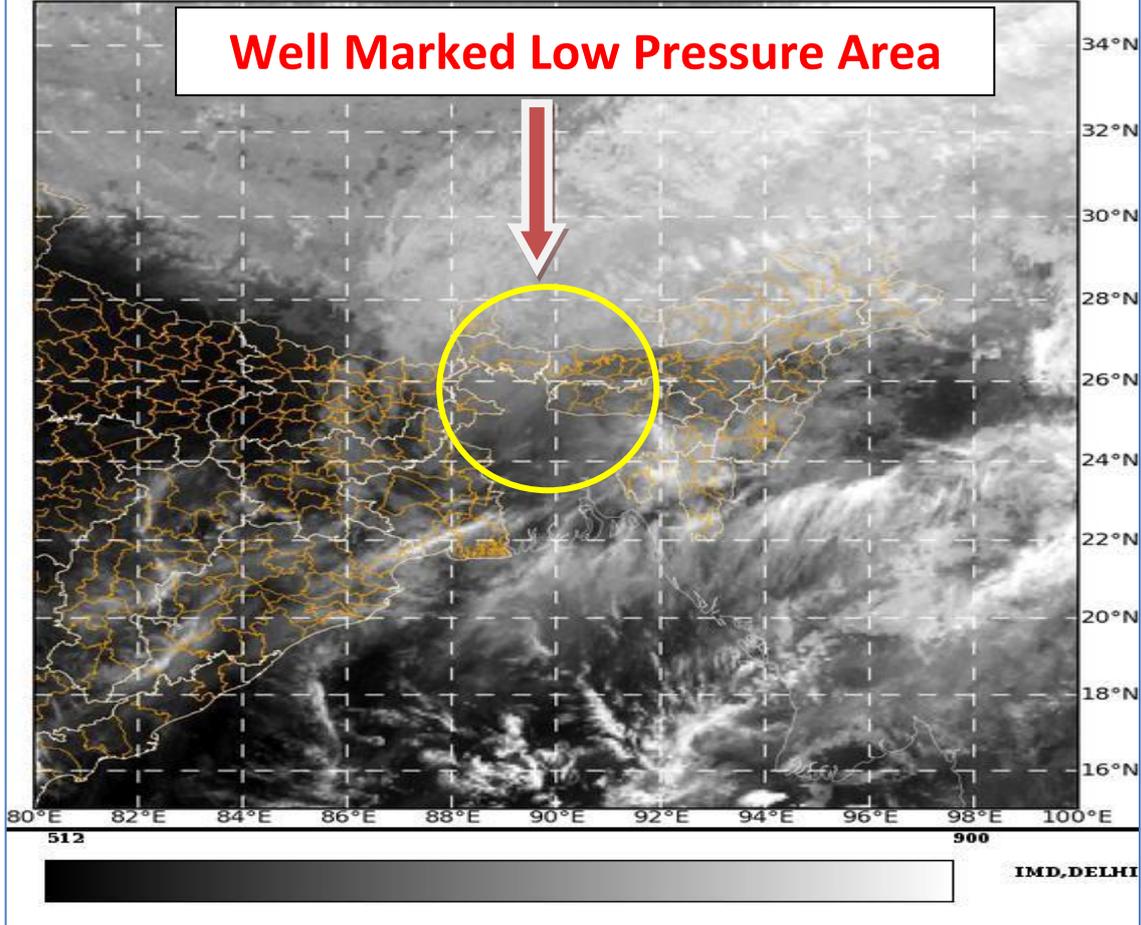
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21-05-2020/(2330 to 2356) IST

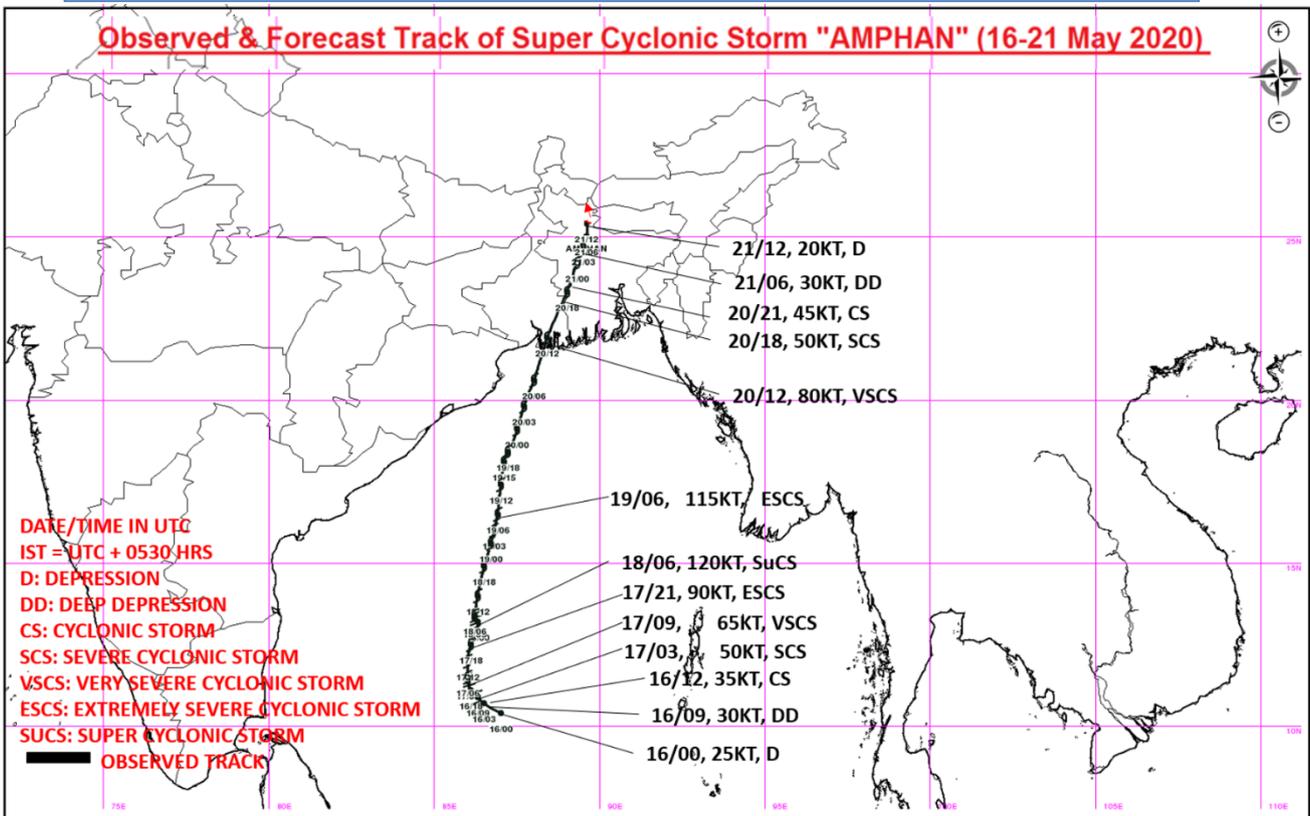
NEQ



Well Marked Low Pressure Area



Observed & Forecast Track of Super Cyclonic Storm "AMPHAN" (16-21 May 2020)



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.