



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 10.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 10.11.2018 BASED ON 0300 UTC OF 10.11.2018.**

YESTERDAY'S LOW PRESSURE AREA OVER CENTRAL PARTS OF ANDAMAN SEA LAY AS WELL MARKED LOW PRESSURE AREA OVER NORTH ANDAMAN SEA AND NEIGHBOURHOOD AT 1200 UTC OF 9<sup>TH</sup> NOVEMBER. LATEST OBSERVATIONS AND SATELLITE IMAGERIES INDICATE THAT THE WELL MARKED LOW PRESSURE AREA CONCENTRATED INTO A DEPRESSION AND LAY CENTRED AT 0300 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER 2018 OVER SOUTHEAST BAY OF BENGAL NEAR LATITUDE 11.7°N AND LONGITUDE 92.5°E, ABOUT 20 KM NORTHWEST OF PORT BLAIR (43333), 1340 KM EAST-SOUTHEAST OF CHENNAI (43278) AND 1390 KM EAST-SOUTHEAST OF NELLORE (43245). IT IS VERY LIKELY TO INTENSIFY INTO A DEEP DEPRESSION DURING NEXT 24 HOURS AND INTO A CYCLONIC STORM DURING THE SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING SUBSEQUENT 72 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
10.11.18/0300	11.7/92.5	45-55 GUSTING TO 65	DEPRESSION
10.11.18/1200	12.5/91.0	50-60 GUSTING TO 70	DEEP DEPRESSION
11.11.18/0000	13.3/89.6	55-65 GUSTING TO 75	DEEP DEPRESSION
11.11.18/1200	13.8/88.8	65-75 GUSTING TO 85	CYCLONIC STORM
12.11.18/0000	13.8/86.7	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/1200	13.6/85.7	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/0000	13.3/85.0	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/1200	12.9/84.0	110-120 GUSTING TO 135	SEVERE CYCLONIC STORM

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T1.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ANDAMAN SEA AND ADJOINING EASTCENTRAL AND EASTCENTRAL BAY OF BENGAL. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1006 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTRE.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH BAY OF BENGAL & ADJOINING AREAS DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

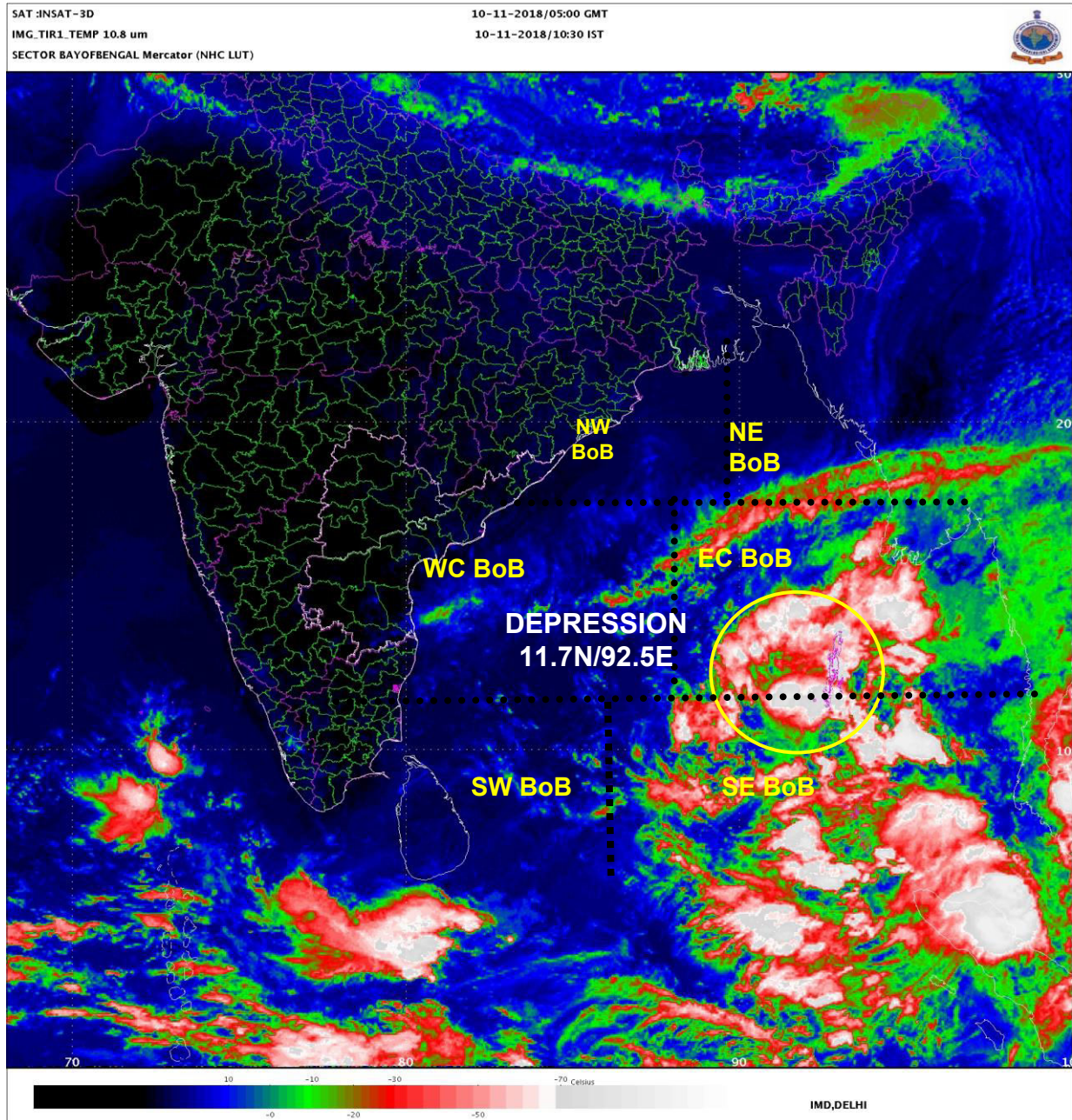
THE ENVIRONMENTAL CONDITIONS LIKE SEA SURFACE TEMPERATURE (28-29 DEG. C), TROPICAL CYCLONE HEAT POTENTIAL (TCHP) 50-80 KJ/CM<sup>2</sup>, LOWER LEVEL CONVERGENCE ( $5-10 \times 10^{-5}$  SECOND<sup>-1</sup>), LOWER LEVEL VORTICITY ( $50 \times 10^{-6}$  SECOND<sup>-1</sup>), UPPER LEVEL DIVERGENCE ( $10 \times 10^{-5}$  SECOND<sup>-1</sup>) AND LOW VERTICAL WIND SHEAR (5-15 KNOTS) ALSO FAVOURABLE FOR FURTHER INTENSIFICATION OF THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL AND ADJOINING NORTH ANDAMAN SEA. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF LOW OVER CENTRAL PARTS OF ANDAMAN SEA.

MOST OF THE NWP MODELS ALSO SUGGEST WEST-NORTHWESTWARD MOVEMENT OF THE DEPRESSION DURING NEXT 48 HRS AND THEN WEST-SOUTHWESTWARD TOWARDS NORTH TAMIL NADU AND ADJOINING SOUTH ANDHRA PRADESH COAST IN SUBSEQUENT 72 HOURS.

MOST OF THE MODELS ALSO SUGGEST GRADUAL INTENSIFICATION INTO A CYCLONIC STORM DURING NEXT 48 HRS.

**(NEETHA K. GOPAL)**  
**Scientist-E, RSMC, New Delhi**

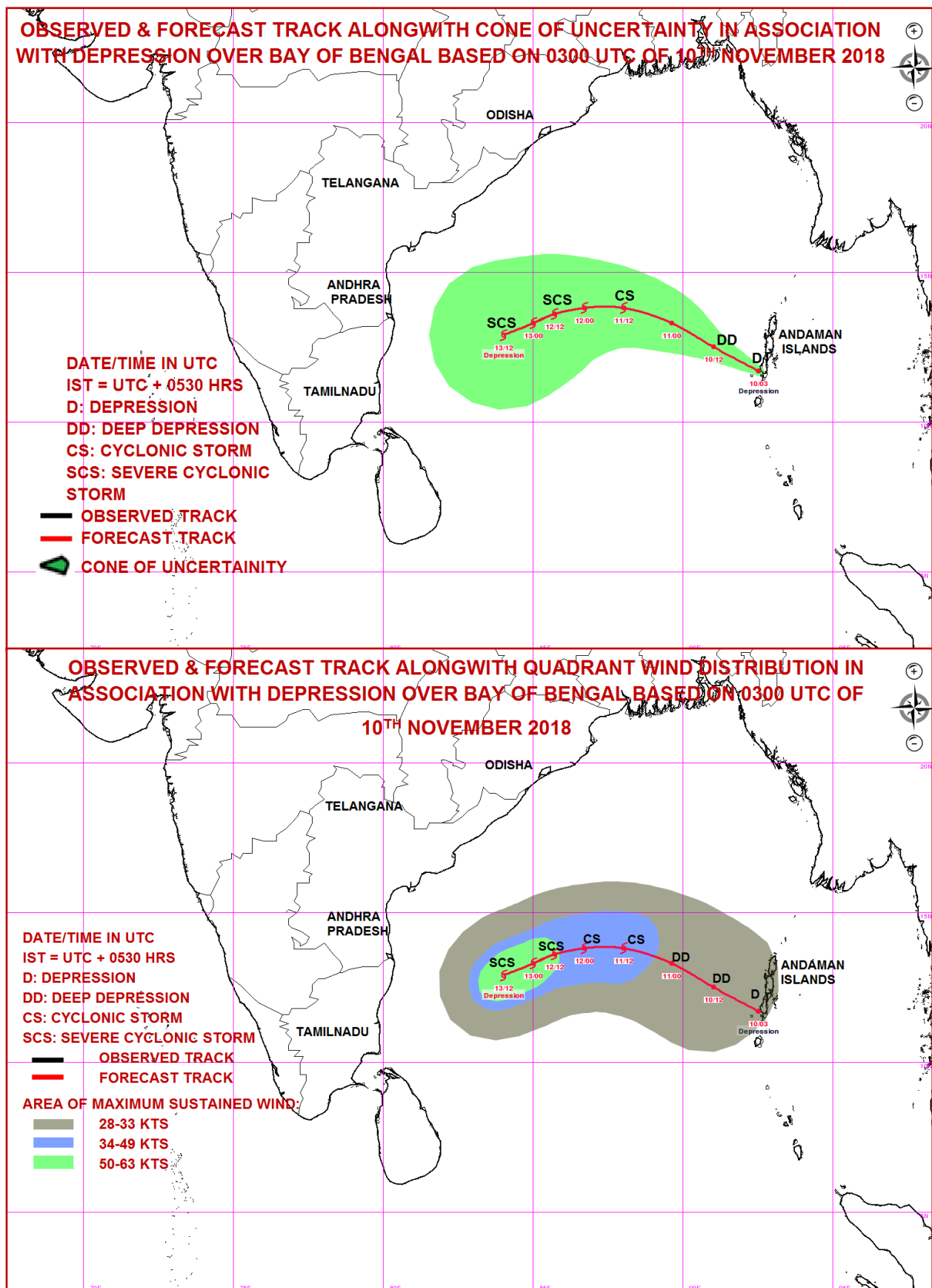




---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 10.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 10.11.2018 BASED ON 1200 UTC OF 10.11.2018.**

THE DEPRESSION OVER SOUTHEAST BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 25 KMPH DURING PAST 06 HOURS, INTENSIFIED INTO A DEEP DEPRESSION AND LAY CENTRED AT 1200 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST & ADJOINING CENTRAL BAY OF BENGAL NEAR LATITUDE 12.6°N AND LONGITUDE 90.8°E ABOUT 230 KM WEST-NORTHWEST OF PORT BLAIR (43333), 1140 KM EAST-SOUTHEAST OF CHENNAI (43278) AND 1180 KM EAST-SOUTHEAST OF NELLORE (43245). IT IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING SUBSEQUENT 72 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
10.11.18/1200	12.6/90.8	50-60 GUSTING TO 70	DEEP DEPRESSION
10.11.18/1800	13.0/89.9	55-65 GUSTING TO 75	DEEP DEPRESSION
11.11.18/0000	13.4/89.0	60-70 GUSTING TO 80	CYCLONIC STORM
11.11.18/0600	13.7/88.4	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1200	13.8/88.0	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0000	13.8/87.5	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/1200	13.7/86.8	80-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/0000	13.5/86.0	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/1200	13.3/85.1	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 16.0°N AND LONGITUDE 88.5°E TO 93.5°E AND NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CURVED BAND PATTERN. THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1004 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

ACTIVITY OVER SOUTH BAY OF BENGAL & ADJOINING AREAS DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

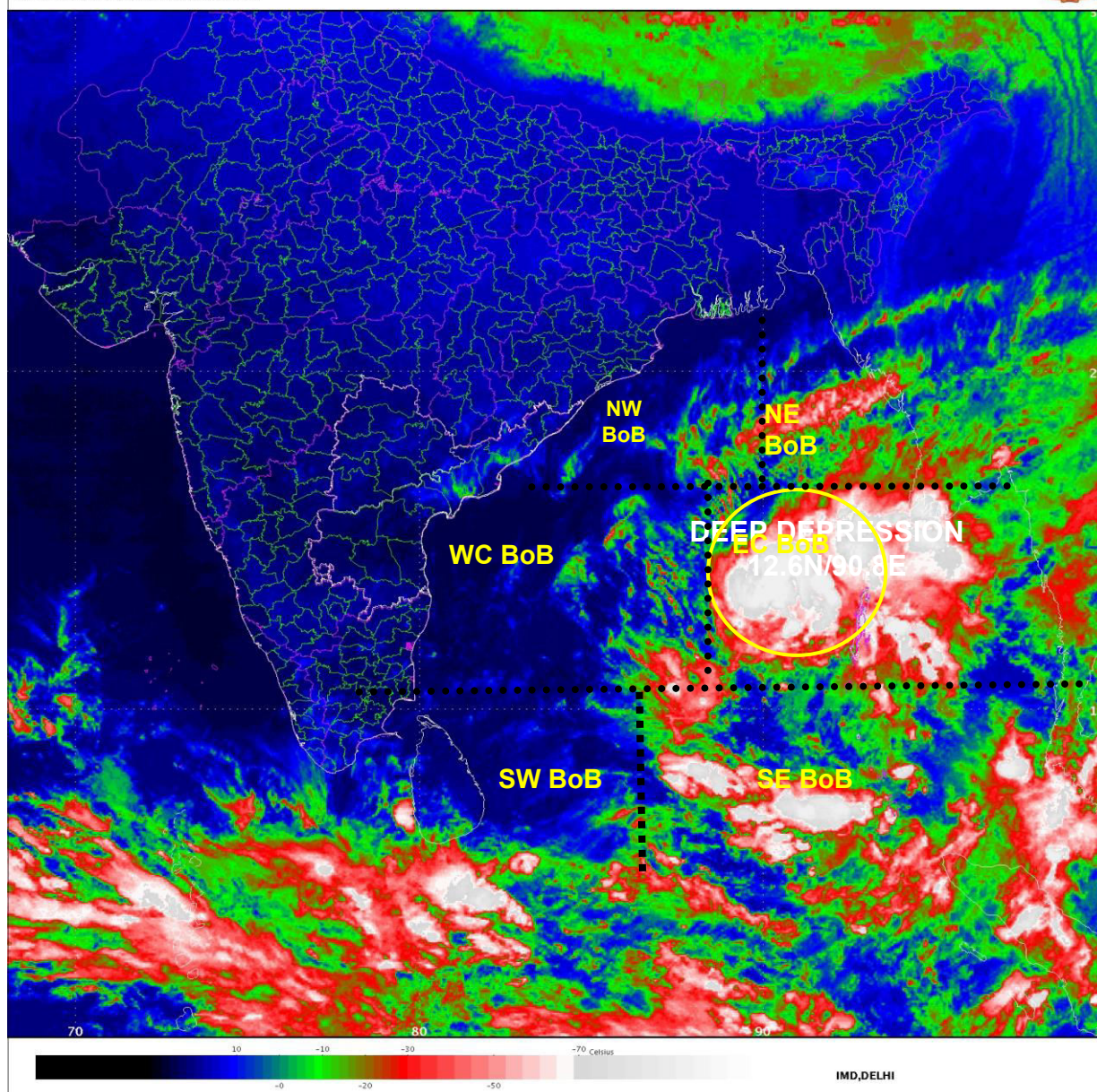
THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE HAS INCREASED IN PAST 12 HOURS AND IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOWER LEVEL VORTICITY HAS ALSO INCREASED AND IS OF ORDER 100X10<sup>-6</sup> SECOND<sup>-1</sup> SOUTH OF THE SYSTEM CENTRE AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, THE UPPER LEVEL DIVERGENCE HAS ALSO INCREASED AND IS OF ORDER 30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW (5-10 KNOTS) AROUND THE SYSTEM CENTRE. WARM AIR ADVECTION IS TAKING PLACE AROUND THE SYSTEM CENTRE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM OVER SOUTHEAST & ADJOINING CENTRAL BAY OF BENGAL.

MOST OF THE NWP MODELS ALSO SUGGEST WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HRS AND THEN WEST-SOUTHWESTWARD TOWARDS NORTH TAMIL NADU AND ADJOINING SOUTH ANDHRA PRADESH COAST IN SUBSEQUENT 72 HOURS.

MOST OF THE MODELS ALSO SUGGEST GRADUAL INTENSIFICATION INTO A CYCLONIC STORM DURING NEXT 24 HRS.

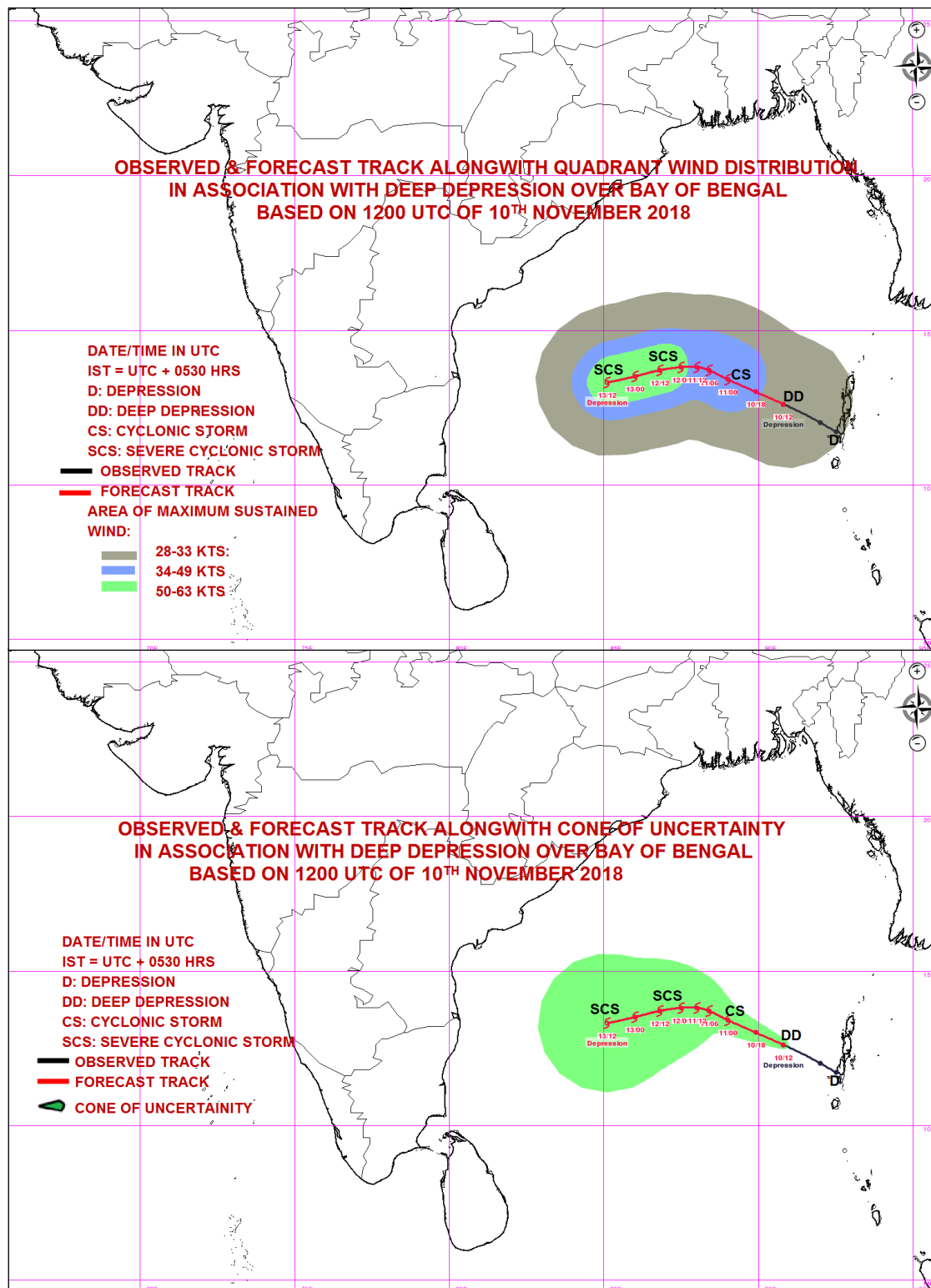
**(NARESH KUMAR)**  
**SCIENTIST-E, RSMC, NEW DELHI**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 10.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2000 UTC OF 10.11.2018 BASED ON 1800 UTC OF 10.11.2018.**

THE DEEP DEPRESSION OVER SOUTHEAST & ADJOINING CENTRAL BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 18 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER, 2018 NEAR LATITUDE 13.0°N AND LONGITUDE 89.9°E ABOUT 330 KM WEST-NORTHWEST OF PORT BLAIR (ANDAMAN ISLANDS) (43333), 1055 KM EAST OF CHENNAI(43278) (TAMIL NADU) AND 1120 KM EAST-SOUTHEAST OF NELLORE (43245) (ANDHRA PRADESH). IT IS VERY LIKELY TO INTENSIFY INTO A CYCLONIC STORM DURING NEXT 12 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 36 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING THE SUBSEQUENT 72 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
10.11.18/1800	13.0/89.9	55-65 gusting to 75	Deep Depression
11.11.18/0000	13.4/89.0	60-70 gusting to 80	Cyclonic Storm
11.11.18/0600	13.7/88.4	65-75 gusting to 85	Cyclonic Storm
11.11.18/1200	13.8/88.0	70-80 gusting to 90	Cyclonic Storm
11.11.18/1800	13.8/87.7	75-85 gusting to 95	Cyclonic Storm
12.11.18/0600	13.7/87.1	80-90 gusting to 100	Cyclonic Storm
12.11.18/1800	13.6/86.4	90-100 gusting to 110	Severe Cyclonic Storm
13.11.18/0600	13.4/85.5	90-100 gusting to 110	Severe Cyclonic Storm
13.11.18/1800	13.3/84.7	100-110 gusting to 125	Severe Cyclonic Storm

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF TODAY, THE 10<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.5°N TO 15.5.0°N AND LONGITUDE 88.0°E TO 95.5°E AND NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93° C. THE SYSTEM SHOWS CURVED BAND PATTERN. THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1004 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH BAY OF BENGAL & ADJOINING AREAS DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE HAS INCREASED IN PAST 12 HOURS AND IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup>, THE LOWER LEVEL VORTICITY HAS ALSO INCREASED AND IS OF ORDER 100X10<sup>-6</sup> SECOND<sup>-1</sup> SOUTH OF THE SYSTEM CENTRE AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, THE UPPER LEVEL DIVERGENCE HAS ALSO INCREASED AND IS OF ORDER 30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW (5-10 KNOTS) AROUND THE SYSTEM CENTRE. WARM AIR ADVECTION IS TAKING PLACE AROUND THE SYSTEM CENTRE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM OVER SOUTHEAST & ADJOINING CENTRAL BAY OF BENGAL.

MOST OF THE NWP MODELS ALSO SUGGEST WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HRS AND THEN WEST-SOUTHWESTWARD TOWARDS NORTH TAMIL NADU AND ADJOINING SOUTH ANDHRA PRADESH COAST IN SUBSEQUENT 72 HOURS.

MOST OF THE MODELS ALSO SUGGEST GRADUAL INTENSIFICATION INTO A CYCLONIC STORM DURING NEXT 12 HRS.

(D R Pattanaik)  
SCIENTIST-E, RSMC, NEW DELHI

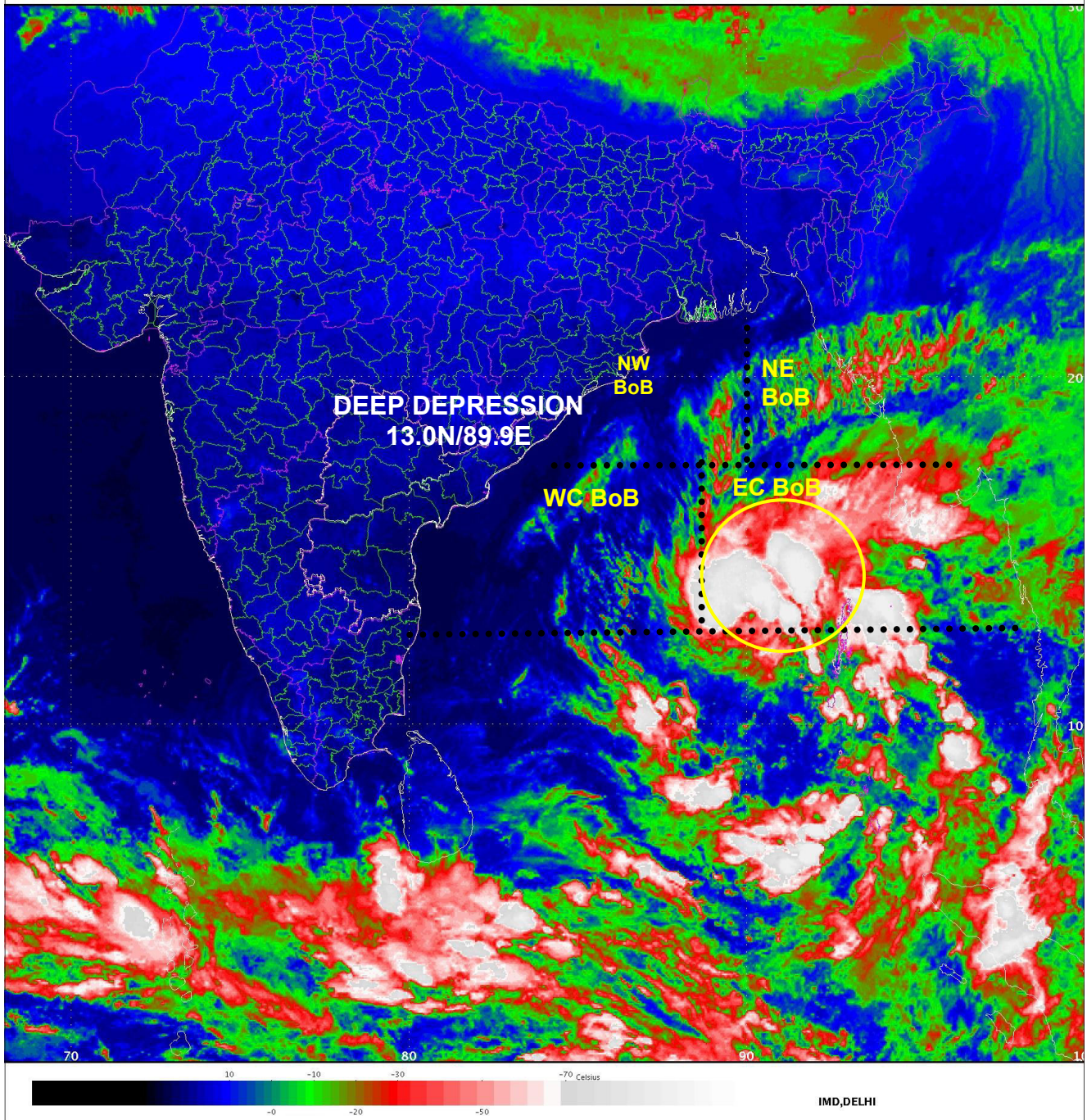
SAT :INSAT-3D

IMG\_TIR1\_TEMP 10.8 um

SECTOR BAYOFBENGAL Mercator (NHC LUT)

10-11-2018/16:30 GMT

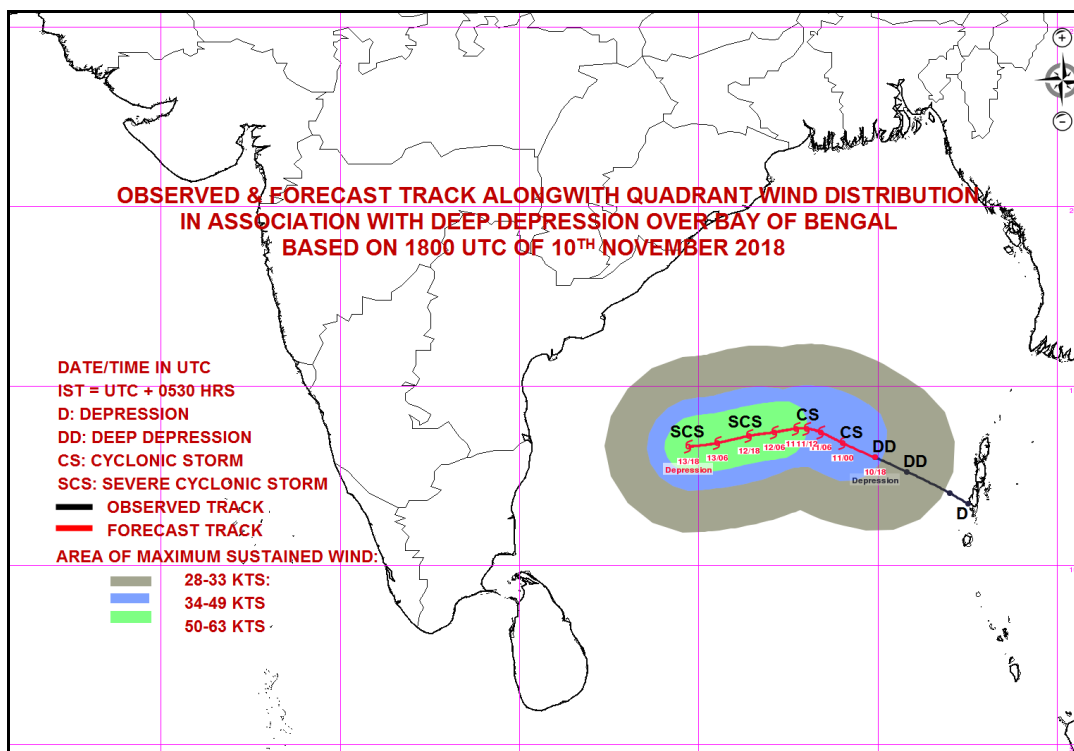
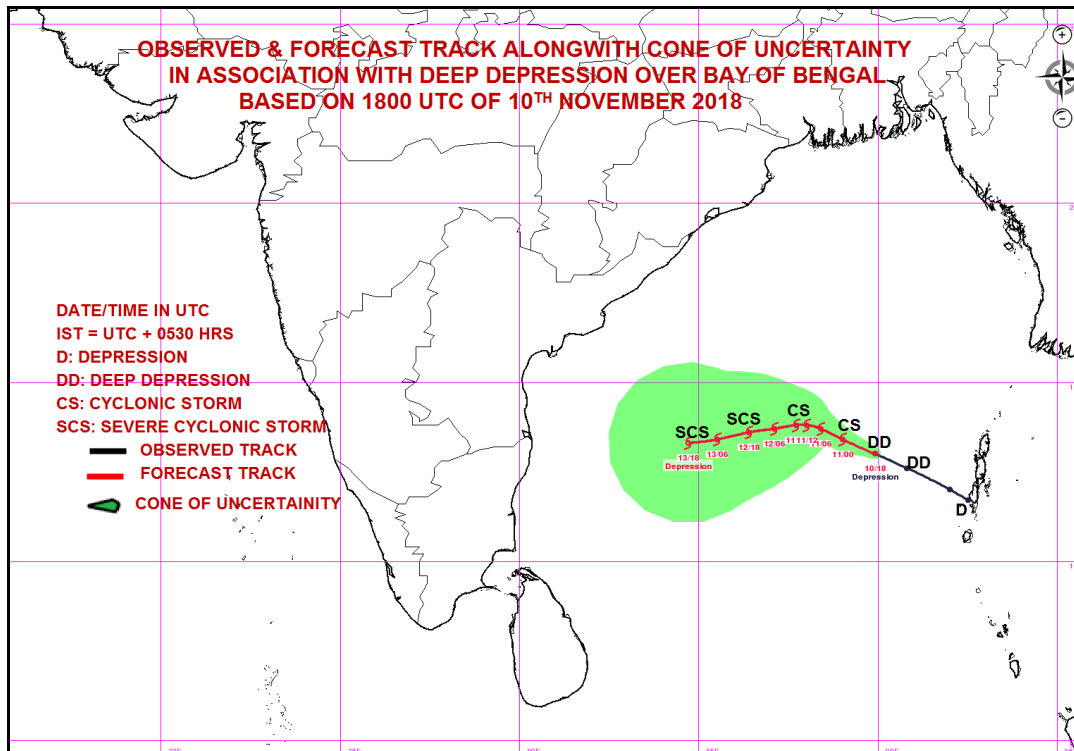
10-11-2018/22:00 IST



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 11.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 11.11.2018 BASED ON 0000 UTC OF 11.11.2018.**

THE DEEP DEPRESSION OVER SOUTHEAST & ADJOINING CENTRAL BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS, INTENSIFIED INTO A CYCLONIC STORM 'GAJA' AND LAY CENTRED AT 0000 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 OVER EASTCENTRAL AND ADJOINING WESTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.4°N AND LONGITUDE 89.3°E, ABOUT 400 KM WEST-NORTHWEST OF PORT BLAIR (ANDAMAN ISLANDS)( 43333), 990 KM NORTHEAST OF CHENNAI (TAMIL NADU)(43278) AND 1050 KM EAST-SOUTHEAST OF NELLORE (ANDHRA PRADESH)(43245). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 36 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING THE SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS IT IS ALSO LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER FORENOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
11.11.18/0000	13.4/89.3	60-70 gusting to 80	Cyclonic Storm
11.11.18/0600	13.6/88.7	65-75 gusting to 85	Cyclonic Storm
11.11.18/1200	13.8/88.2	70-80 gusting to 90	Cyclonic Storm
11.11.18/1800	14.0/87.7	80-90 gusting to 100	Cyclonic Storm
12.11.18/0000	14.2/87.3	90-100 gusting to 110	Severe Cyclonic Storm
12.11.18/1200	14.5/86.5	95-105 gusting to 115	Severe Cyclonic Storm
13.11.18/0000	14.5/85.7	100-110 gusting to 120	Severe Cyclonic Storm
13.11.18/1200	14.4/84.9	100-110 gusting to 120	Severe Cyclonic Storm
14.11.18/0000	14.1/84.0	90-100 gusting to 110	Severe Cyclonic Storm
14.11.18/1200	13.7/82.7	80-90 gusting to 100	Severe Cyclonic Storm
15.11.18/0000	13.2/81.2	70-80 gusting to 90	Cyclonic Storm
15.11.18/1200	12.6/79.5	50-60 gusting to 70	Deep Depression

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 13.0°N TO 19.0°N AND LONGITUDE 86.5°E TO 95.0°E AND NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1002 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 35 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH AND ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE HAS INCREASED IN PAST 12 HOURS AND IS OF ORDER  $10-15 \times 10^{-5}$  SECOND<sup>-1</sup>, THE LOWER LEVEL VORTICITY HAS ALSO INCREASED AND IS OF ORDER  $100 \times 10^{-6}$  SECOND<sup>-1</sup> SOUTHWEST OF THE SYSTEM CENTRE AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, THE UPPER LEVEL DIVERGENCE IS OF ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND EAST NORTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10.-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 16°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HOURS. IT IS LIKELY TO MOVE WEST SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 36 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST SOUTHWESTWARD THEREAFTER.WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM.MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(D R Pattanaik)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



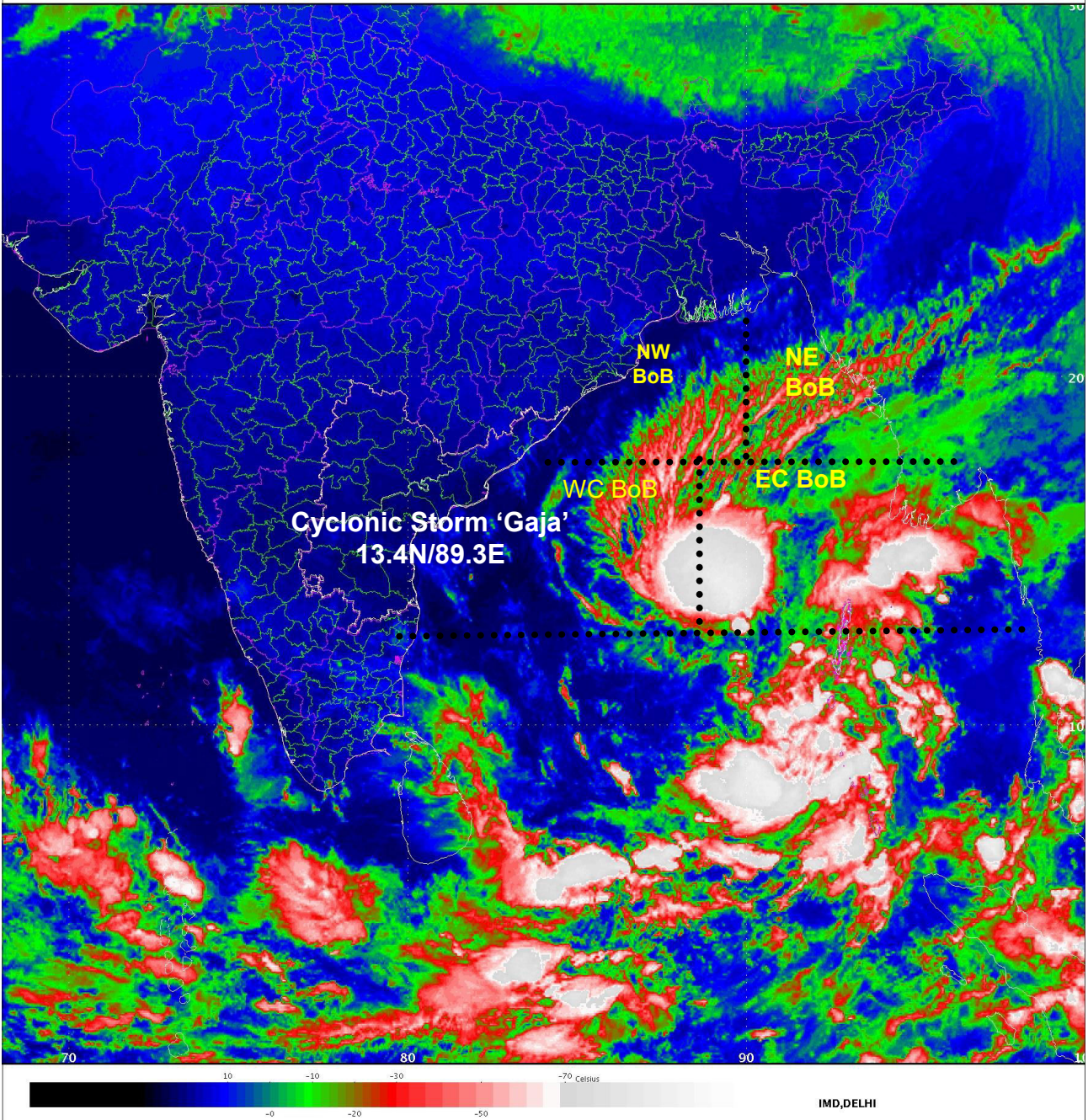
SAT :INSAT-3D

11-11-2018/02:00 GMT

IMG\_TIR1\_TEMP 10.8 um

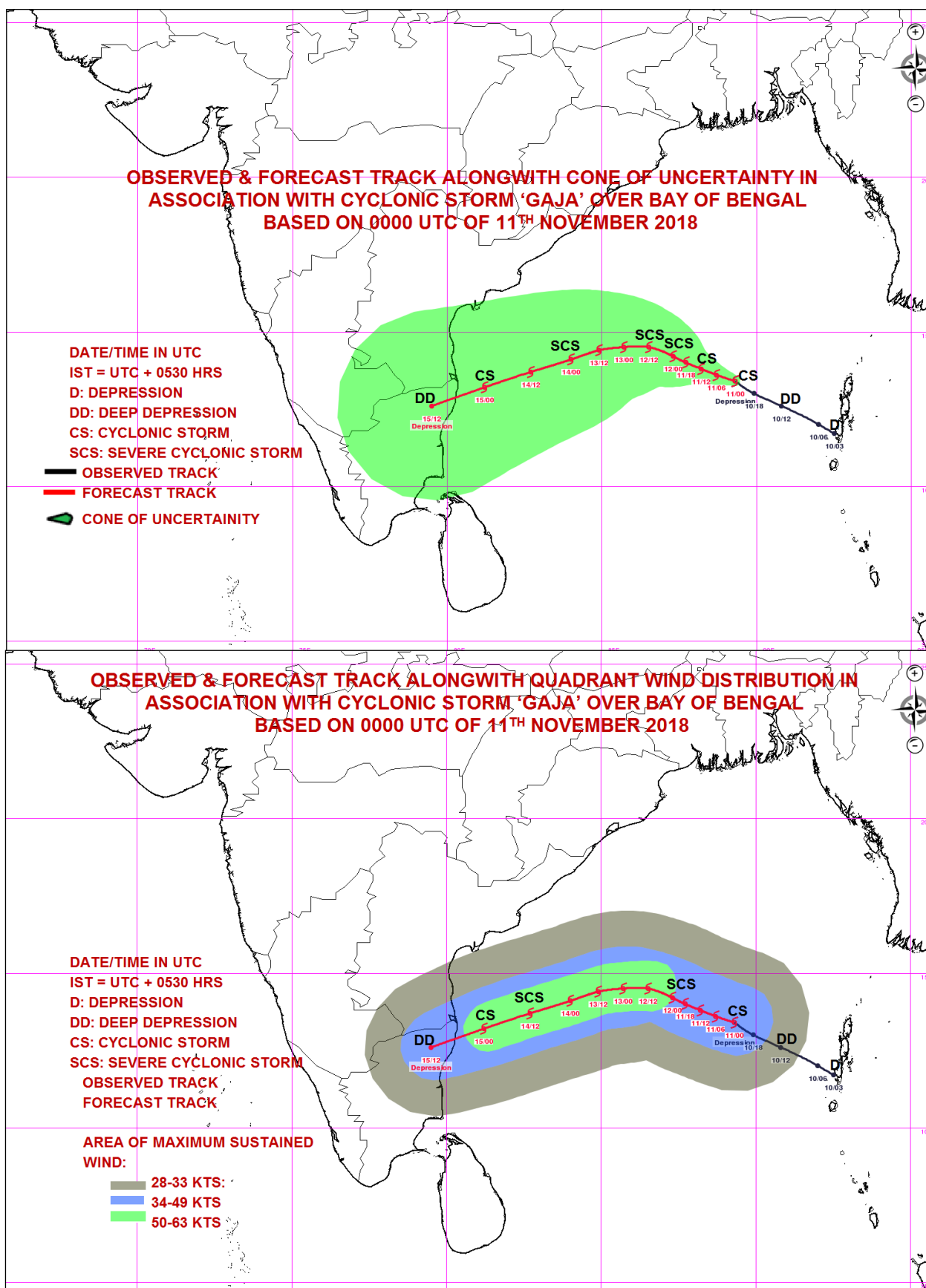
11-11-2018/07:30 IST

SECTOR BAY OF BENGAL Mercator (NHC LUT)



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 01**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 01 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 11.11.2018 BASED ON 0300 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER EASTCENTRAL AND ADJOINING WESTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER EASTCENTRAL AND ADJOINING WESTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS WITH A SPEED OF 13 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 OVER EASTCENTRAL AND ADJOINING WESTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 88.9°E, ABOUT 460 KM WEST-NORTHWEST OF PORT BLAIR (43333) (ANDAMAN ISLANDS), 930 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 980 KM EAST-SOUTHEAST OF SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) (ANDHRA PRADESH). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 36 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING THE SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS BETWEEN CUDDALORE (43329) (TAMIL NADU) AND SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11.11.18/0300	13.5/88.9	60-70 GUSTING TO 80	CYCLONIC STORM
11.11.18/6000	13.6/88.7	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1200	13.8/88.2	70-80 GUSTING TO 90	CYCLONIC STORM
11.11.18/1800	14.0/87.7	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/0000	14.2/87.3	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
12.11.18/1200	14.5/86.5	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/0000	14.5/85.7	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
13.11.18/1200	14.4/84.9	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0000	14.1/84.0	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
14.11.18/1200	13.7/82.7	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	13.2/81.2	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	12.6/79.5	50-60 GUSTING TO 70	DEEP DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.5°N TO 17.0°N AND LONGITUDE 86.5°E TO 90.5°E AND NEIGHBOURING NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 89°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 13.2°N/ 84. °0 E REPORTED A MEAN SEA LEVEL PRESSURE OF 1011.7 HPA AND MEAN SURFACE WIND SPEED OF 030°/ 16 KNOTS. ANOTHER BOUY LOCATED AT 15° N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1011.0 HPA AND MEAN SURFACE WIND SPEED OF 100°/ 16 KNOTS. A THIRD BOUY LOCATED AT 14°N/ 87° E REPORTED MEAN SEA ;LEVEL PRESSURE OF 1010.4 HPA.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1002 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 35 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

#### **REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH AND ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS IS AROUND  $50-100 \times 10^{-6}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND EAST NORTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10.-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HOURS. IT IS LIKELY TO MOVE WEST SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 36 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

**(NEETHA K GOPAL)**  
**SCIENTIST-E, RSMC, NEW DELHI**

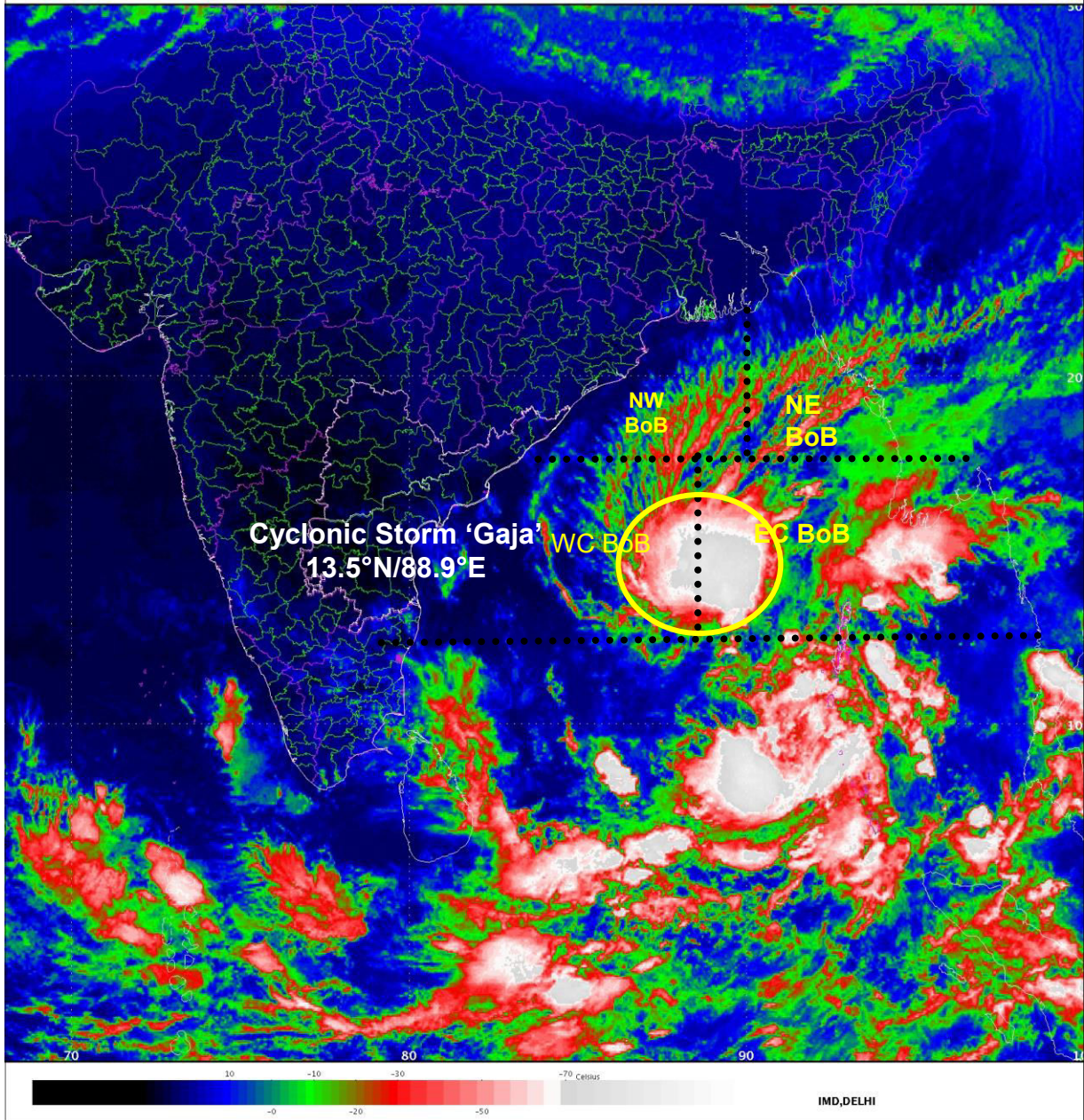
---

#### **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

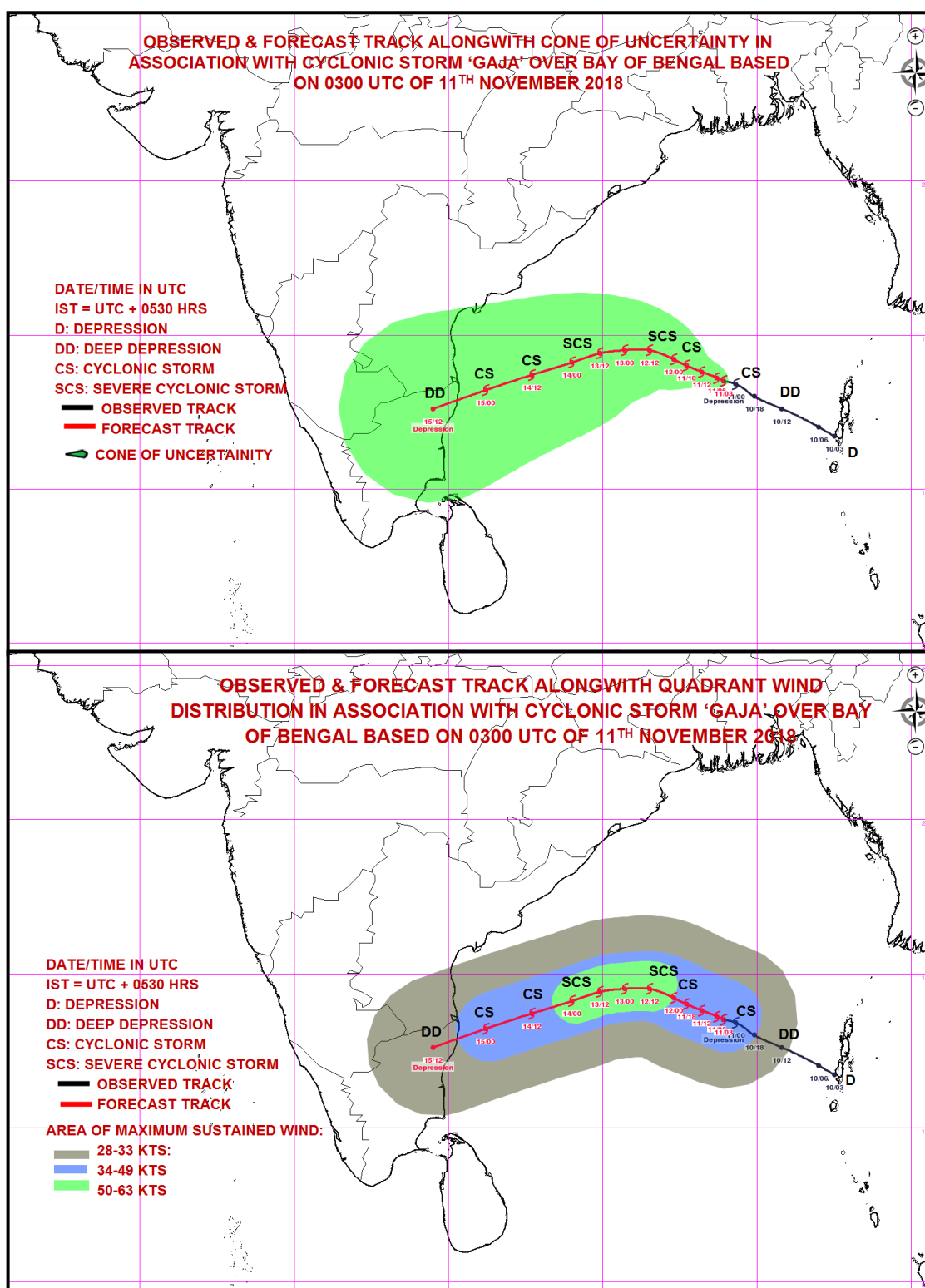
11-11-2018/03:30 GMT  
11-11-2018/09:00 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





# PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 02**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 02 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 11.11.2018 BASED ON 0600 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER EASTCENTRAL AND ADJOINING WESTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WEST-NORTHWESTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 88.5°E, ABOUT 890 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 930 KM EAST-SOUTHEAST OF SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) (ANDHRA PRADESH). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 36 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING THE SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS BETWEEN CUDDALORE (43329) (TAMIL NADU) AND SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11.11.18/0600	13.5/88.5	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1200	13.6/88.2	70-80 GUSTING TO 90	CYCLONIC STORM
11.11.18/1800	13.7/87.7	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0000	13.8/87.3	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/0600	13.9/86.9	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
12.11.18/1800	14.1/86.1	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/0600	14.2/85.3	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
13.11.18/1800	14.2/84.5	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0600	13.9/83.4	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
14.11.18/1800	13.4/82.1	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	12.6/80.2	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	11.8/78.5	50-60 GUSTING TO 70	DEEP DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.5°N TO 17.0°N AND LONGITUDE 86.5°E TO 90.5°E AND NEIGHBOURING NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14°N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.8 HPA AND MEAN SURFACE WIND SPEED OF 030°/ 10 KNOTS. A SHIP LOCATED AT 14.1° N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.8 HPA AND MEAN SURFACE WIND SPEED OF 040°/ 12 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH AND ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS AROUND  $100 \times 10^{-6}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND EAST NORTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10.-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HOURS. IT IS LIKELY TO MOVE WEST SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 36 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

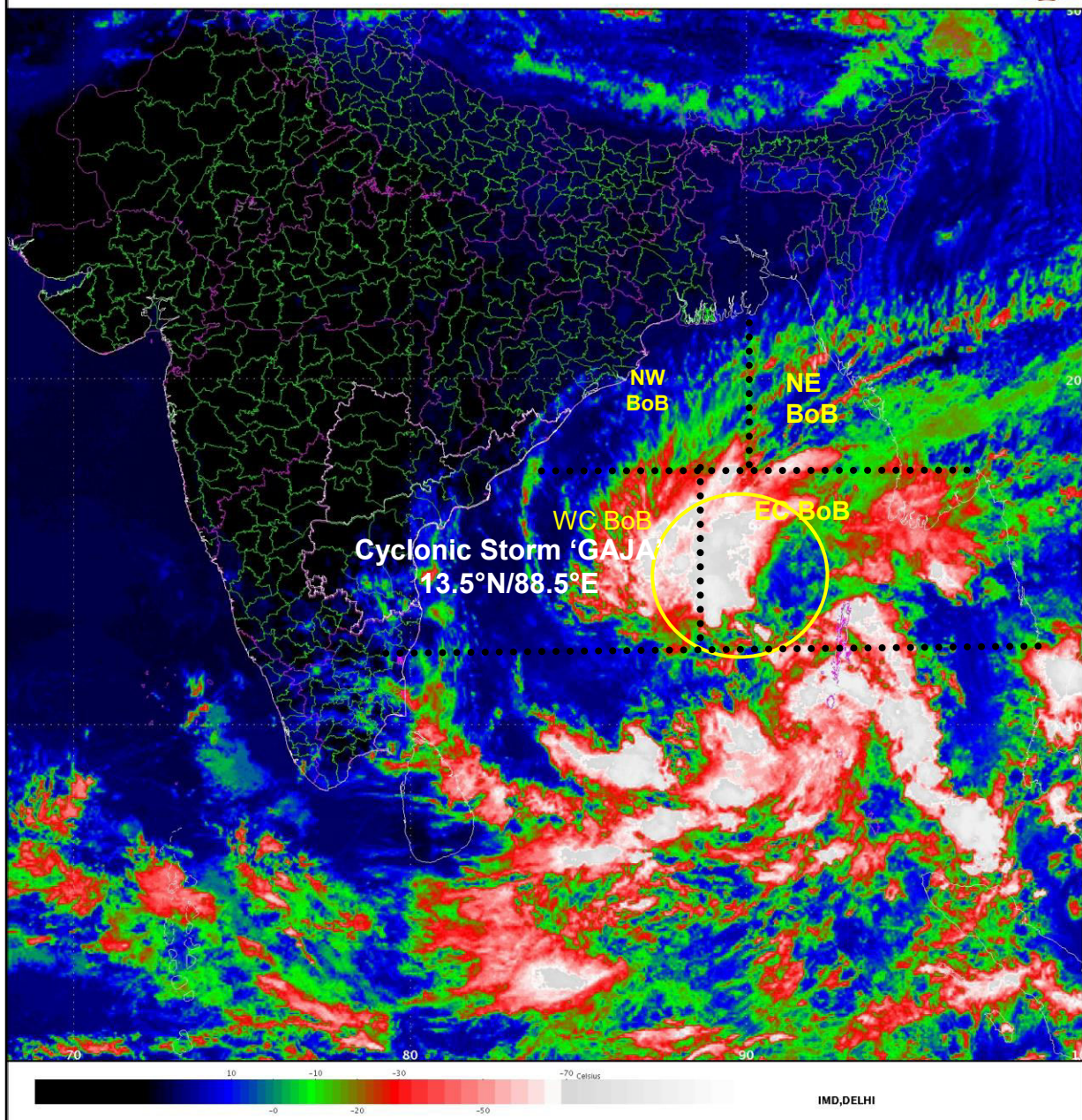
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



SAT:INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

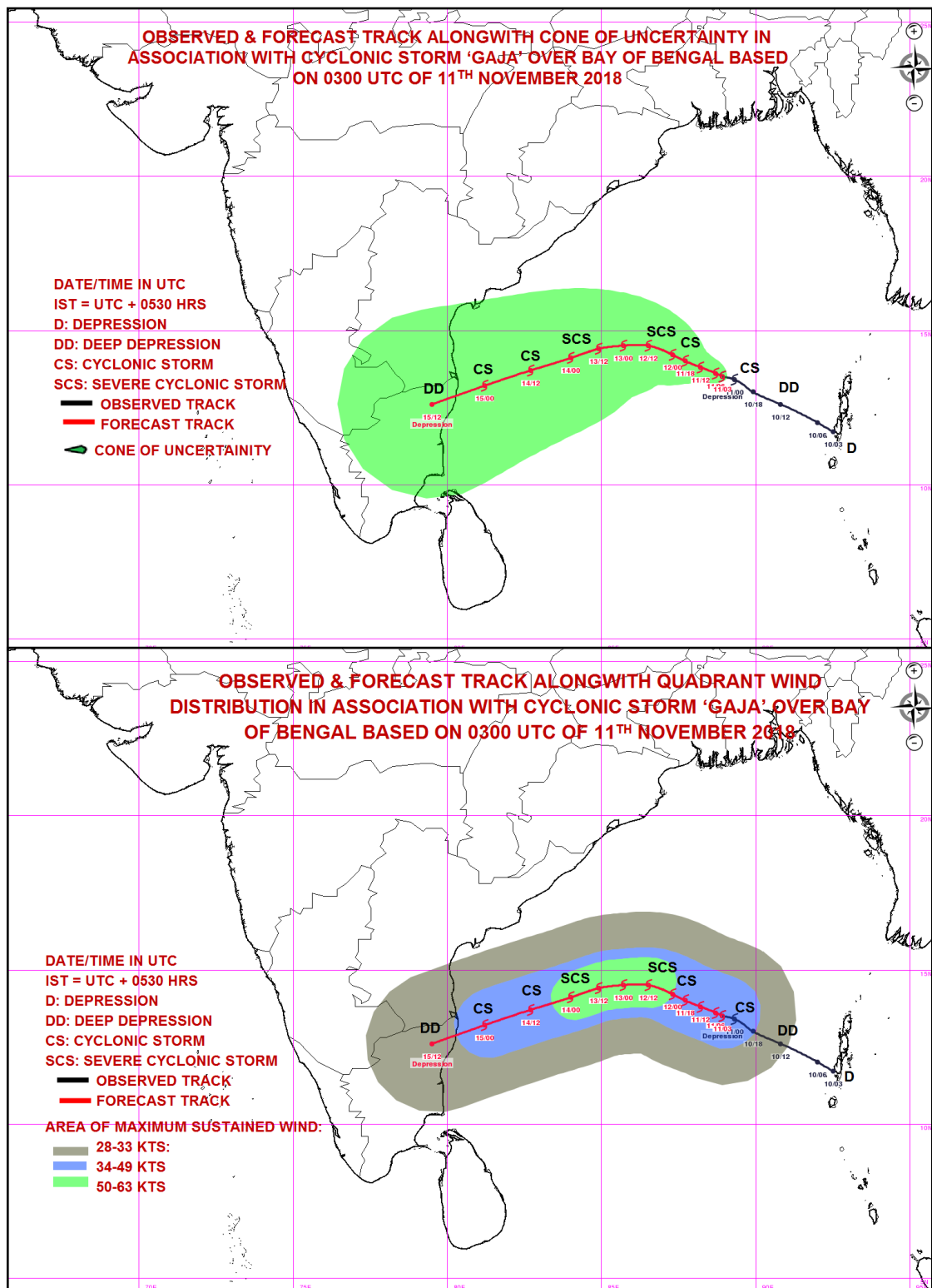
11-11-2018/07:00 GMT  
11-11-2018/12:30 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 03**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 03 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1030 UTC OF 11.11.2018 BASED ON 0900 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED WESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 NEAR LATITUDE 13.5°N AND LONGITUDE 88.2°E, ABOUT 860 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 900 KM EAST-SOUTHEAST OF SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) (ANDHRA PRADESH). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 36 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS DURING THE SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU – SOUTH ANDHRA PRADESH COASTS BETWEEN CUDDALORE (43329) (TAMIL NADU) AND SRIHARIKOTA (LAT. 13.67°N/ LONG. 79.83°E) AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11.11.18/0900	13.5/88.2	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1200	13.6/88.0	70-80 GUSTING TO 90	CYCLONIC STORM
11.11.18/1800	13.7/87.7	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0000	13.8/87.3	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/0600	13.9/86.9	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
12.11.18/1800	14.1/86.1	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/0600	14.2/85.3	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
13.11.18/1800	14.2/84.5	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0600	13.9/83.4	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
14.11.18/1800	13.4/82.1	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	12.6/80.2	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	11.8/78.5	50-60 GUSTING TO 70	DEEP DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0900 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.5°N TO 17.0°N AND LONGITUDE 86.5°E TO 90.5°E AND NEIGHBOURING NORTHWEST ANDAMAN SEA. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14°N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.8 HPA AND MEAN SURFACE WIND SPEED OF 030°/ 10 KNOTS. A SHIP LOCATED AT 14.1° N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.8 HPA AND MEAN SURFACE WIND SPEED OF 040°/ 12 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH AND ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

THE ENVIRONMENTAL CONDITIONS: SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS AROUND  $100 \times 10^{-6}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND EAST NORTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10.-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 36 HOURS. IT IS LIKELY TO MOVE WEST SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 36 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

**(NARESH KUMAR)**  
**SCIENTIST-E, RSMC, NEW DELHI**

---

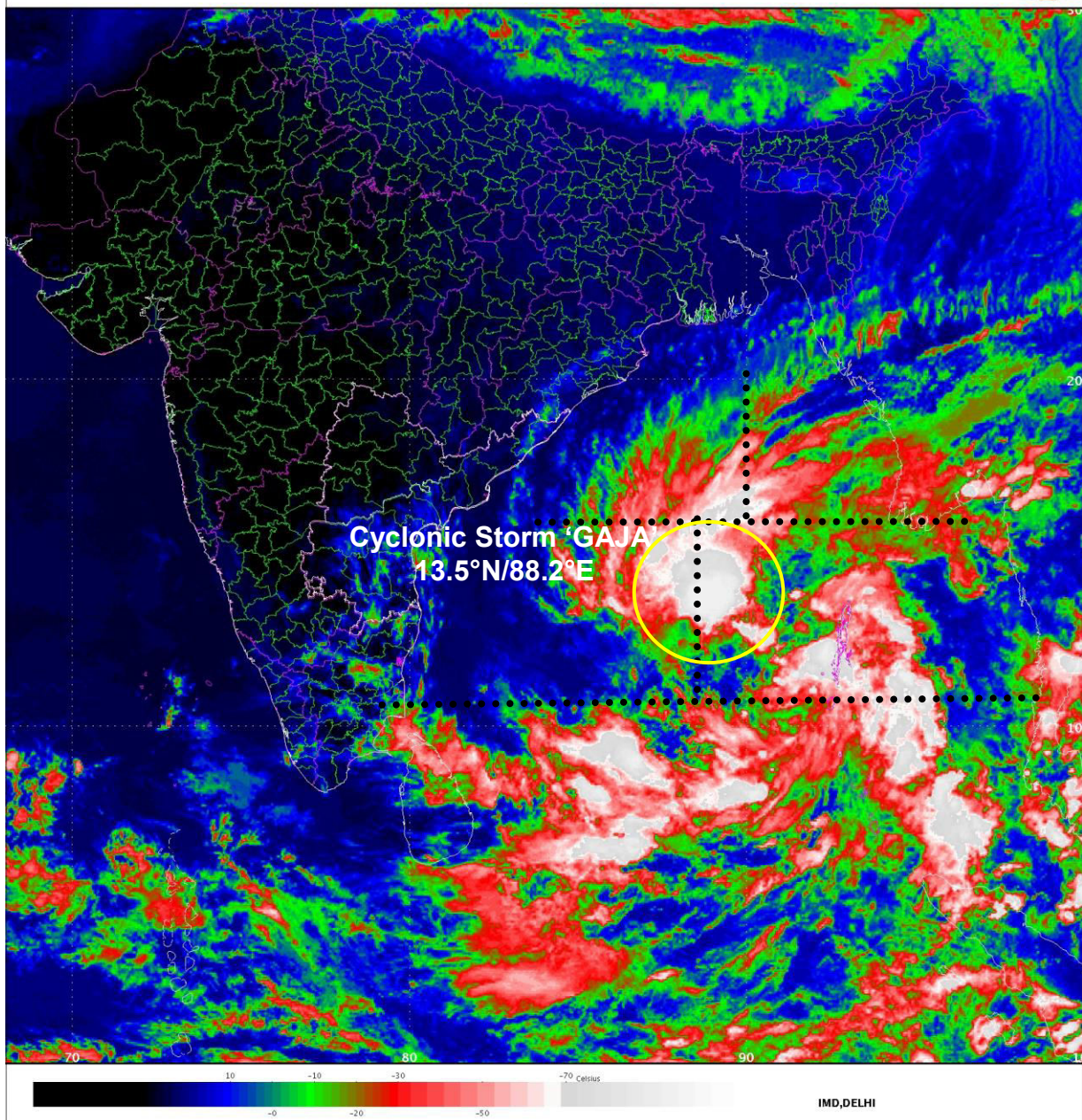
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

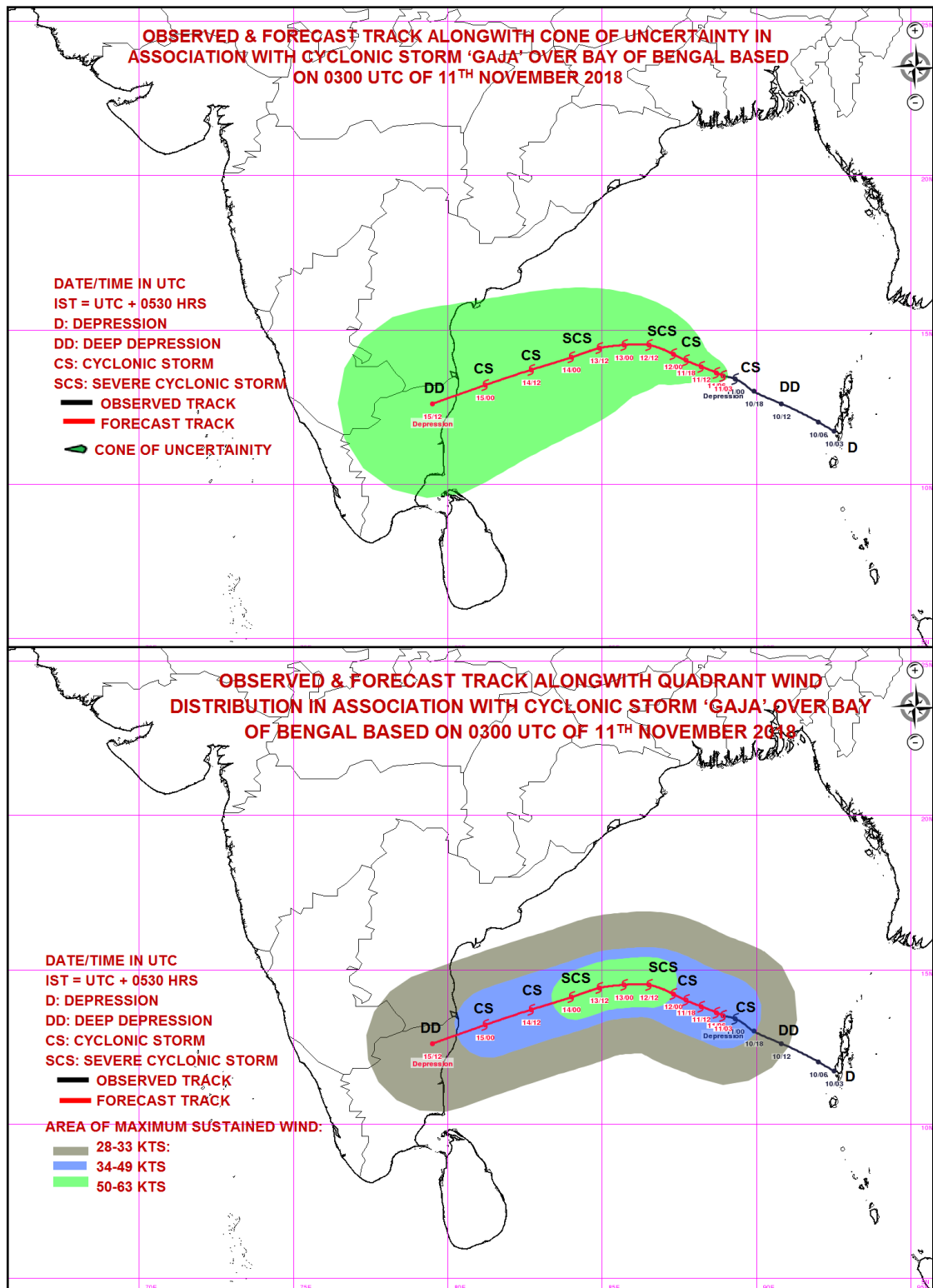
11-11-2018/09:30 GMT  
11-11-2018/15:00 IST



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 04**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 04 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1430 UTC OF 11.11.2018 BASED ON 1200 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WESTWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 88.0°E, ABOUT 840 KM EAST-NORTHEAST OF CHENNAI (43278) AND 880 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-NORTHWESTWARDS DURING NEXT 24 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMILNADU COAST DURING SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM AND CHENNAI AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
11.11.18/1200	13.5/88.0	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1800	13.6/87.6	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0000	13.7/87.3	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0600	13.8/86.9	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/1200	13.7/86.4	85-95 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/0000	13.5/85.7	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/1200	13.1/84.5	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0000	12.8/83.8	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1200	12.4/82.7	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	12.0/81.4	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	11.6/79.3	60-70 GUSTING TO 80	CYCLONIC STORM
16.11.18/0000	11.3/77.2	20-30 GUSTING TO 40	DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.5°N TO 18.5°N AND LONGITUDE 84.5°E TO 91.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14°N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.4 HPA AND MEAN SURFACE WIND SPEED OF 020°/ 10 KNOTS. ANOTHER BOUY LOCATED AT 15°N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.9 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 16 KNOTS. A SHIP LOCATED AT 12.5°N/ 87.5°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.0 HPA AND MEAN SURFACE WIND SPEED OF 290°/ 12 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

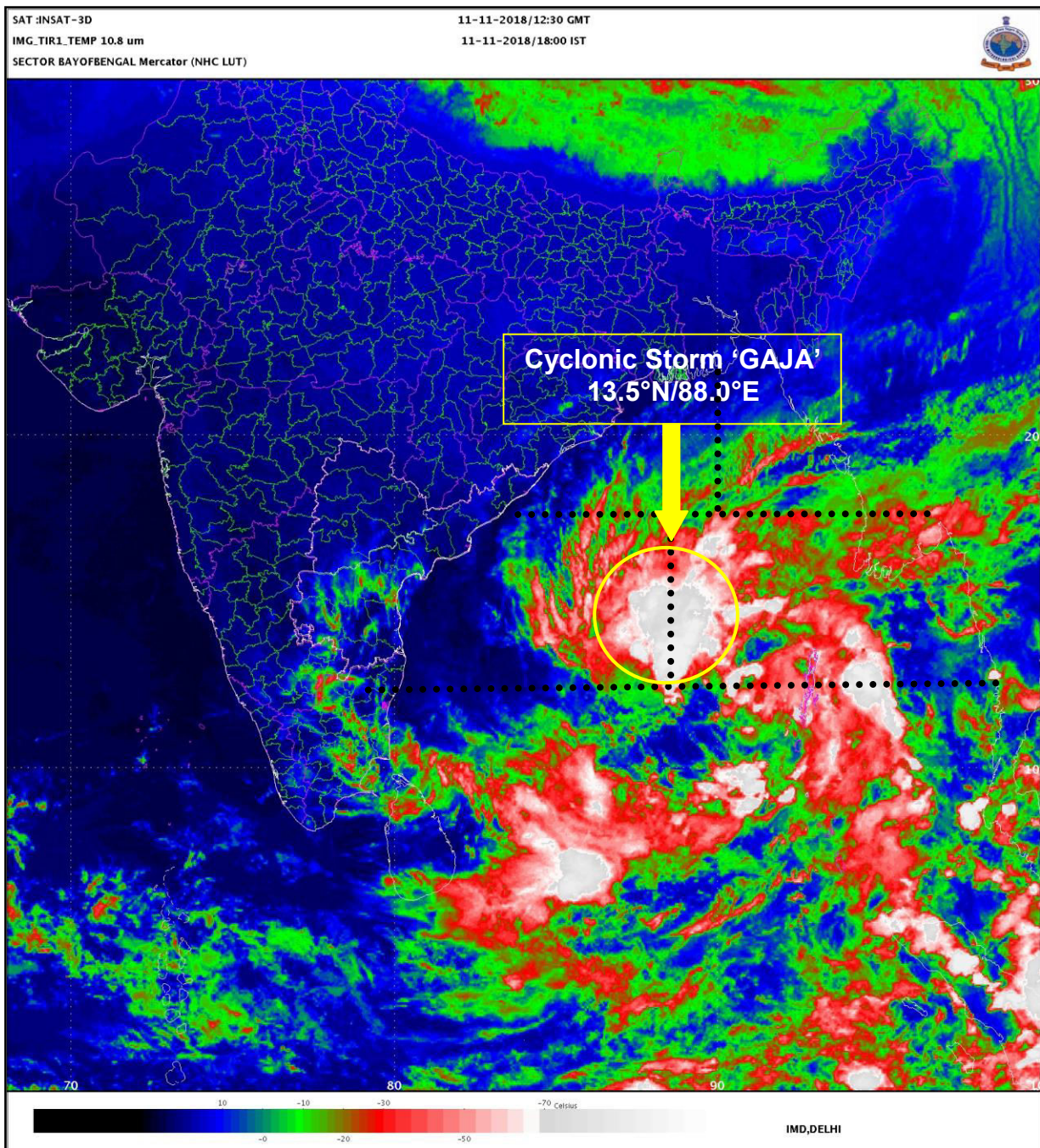
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTH OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED IN PAST 06 HOURS AND IS OF ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 24 HOURS. IT IS LIKELY TO MOVE WEST-SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 24 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST-SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(ANANDA K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

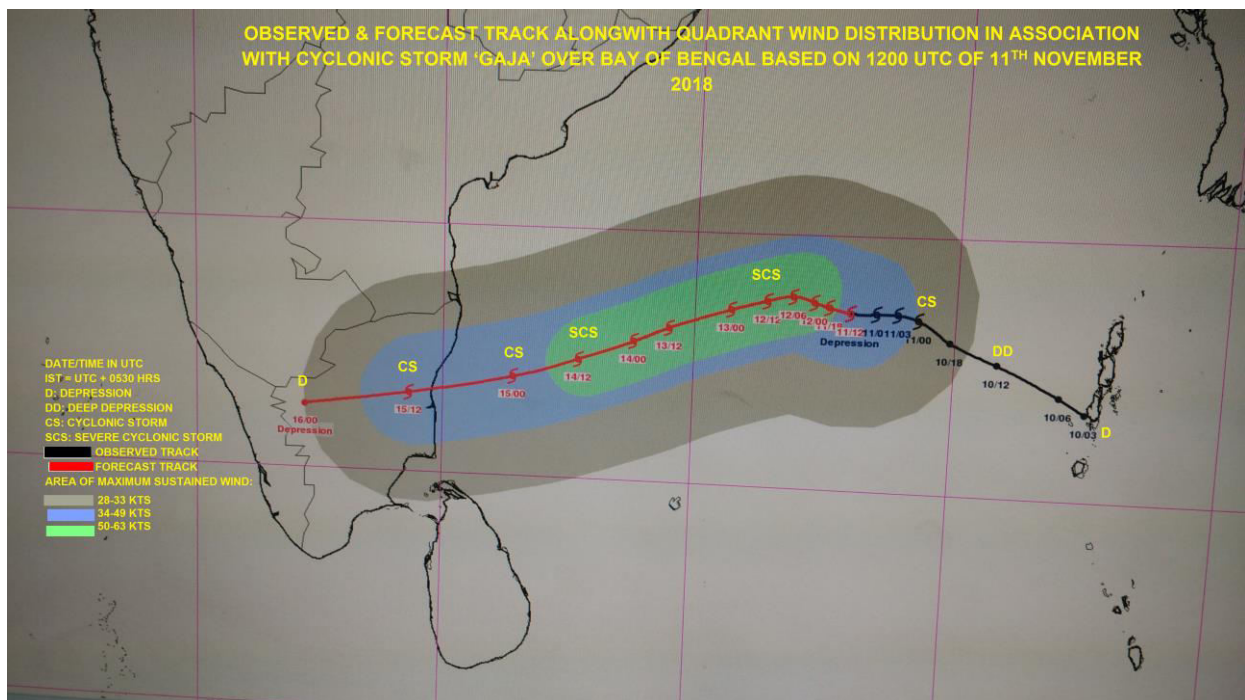
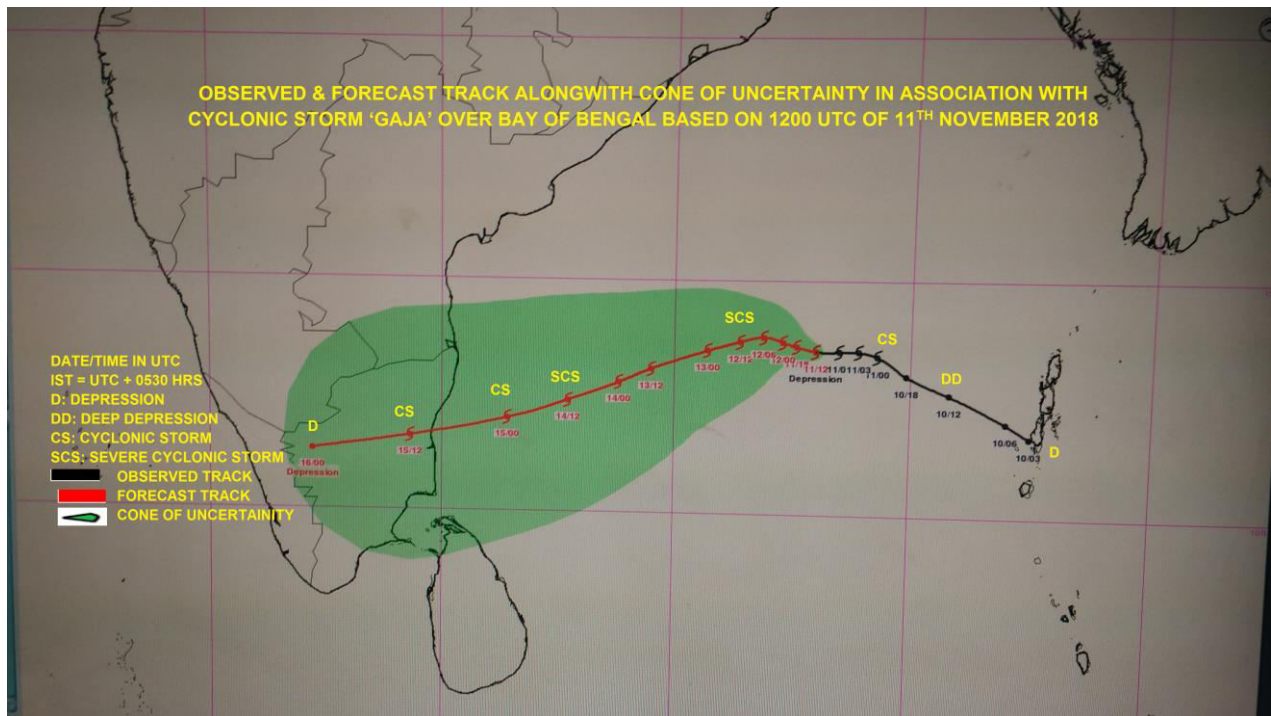
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**  
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 05**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 05 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1730 UTC OF 11.11.2018 BASED ON 1500 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WESTWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 87.7°E, ABOUT 810 KM EAST-NORTHEAST OF CHENNAI (43278) AND 900 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS DURING NEXT 24 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMILNADU COAST DURING SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM AND CHENNAI AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
11.11.18/1500	13.5/87.7	65-75 GUSTING TO 85	CYCLONIC STORM
11.11.18/1800	13.5/87.4	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0000	13.6/87.1	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0600	13.6/86.8	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/1200	13.6/86.4	85-95 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/0000	13.5/85.7	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/1200	13.1/84.5	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0000	12.8/83.8	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1200	12.4/82.7	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	12.0/81.4	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	11.6/79.3	60-70 GUSTING TO 80	CYCLONIC STORM
16.11.18/0000	11.3/77.2	20-30 GUSTING TO 40	DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 1500 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 16.5°N AND LONGITUDE 86.5°E TO 91.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14.0°N/ 87.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.3 HPA AND MEAN SURFACE WIND SPEED OF 060°/ 05 KNOTS. ANOTHER BOUY LOCATED AT 13.5°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1010.9 HPA AND MEAN SURFACE WIND SPEED OF 020°/ 15 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

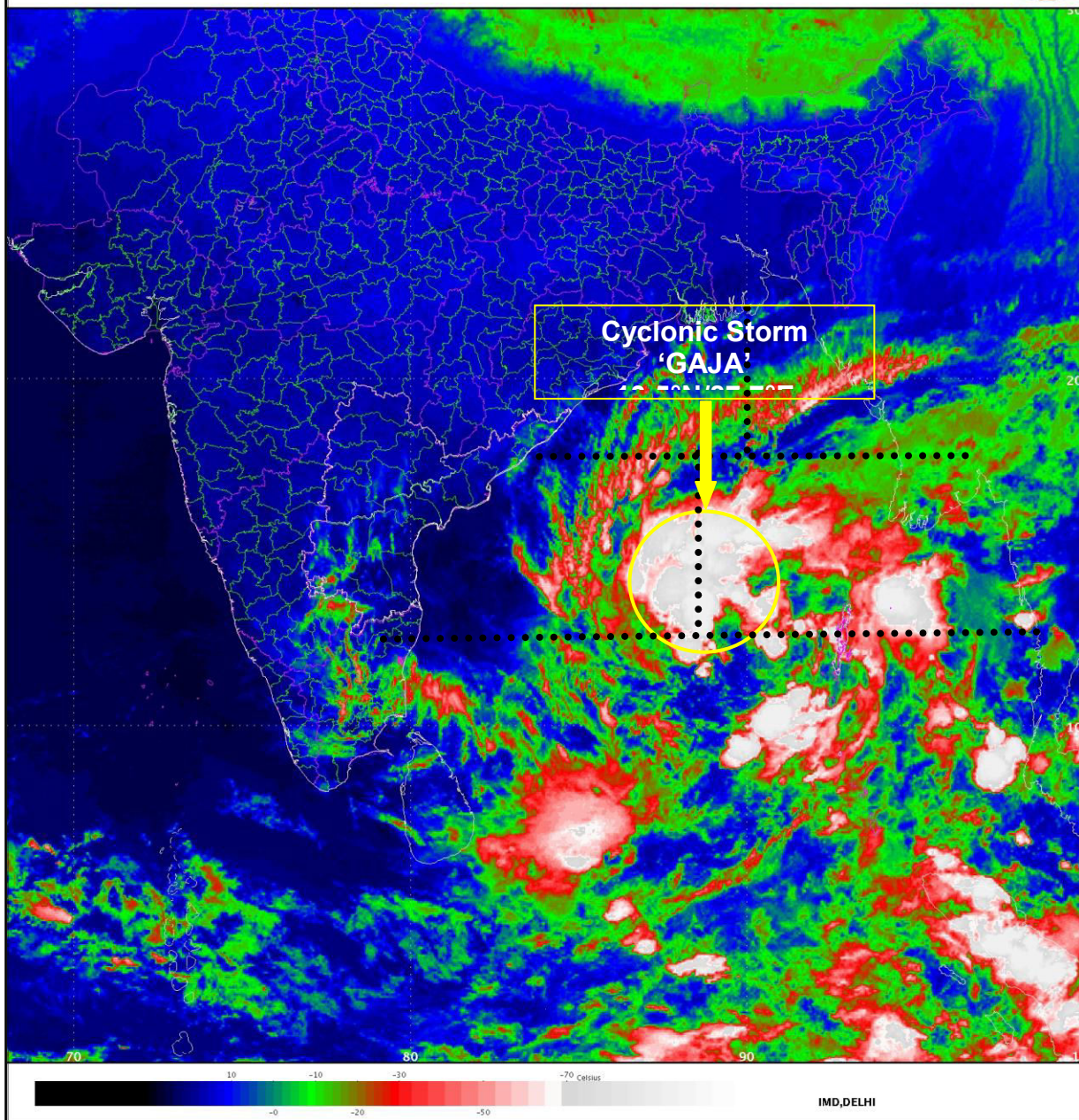
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTH OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED IN PAST 06 HOURS AND IS OF ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WEST-NORTHWESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 24 HOURS. IT IS LIKELY TO MOVE WEST-SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 24 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST-SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(ANANDA K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

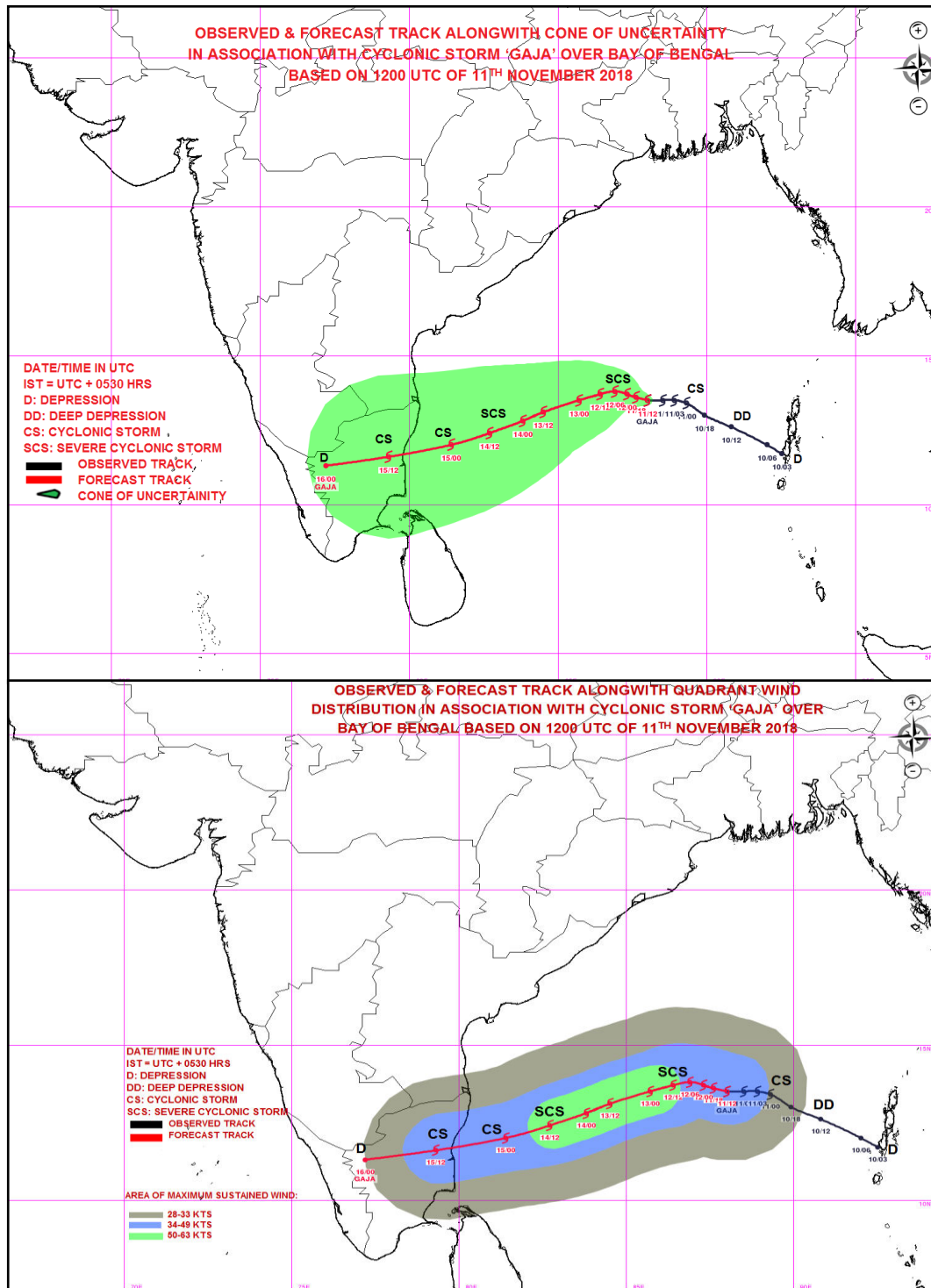
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 06**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 06 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 11.11.2018 BASED ON 1800 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 11<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 87.4°E, ABOUT 770 KM EAST-NORTHEAST OF CHENNAI (43278) AND 870 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS DURING NEXT 12 HOURS AND THEN WEST-SOUTHWESTWARDS TOWARDS NORTH TAMILNADU COAST DURING SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM AND CHENNAI AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11.11.18/1800	13.5/87.4	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0000	13.5/87.1	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0600	13.6/86.8	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/1200	13.6/86.4	85-95 GUSTING TO 110	SEVERE CYCLONIC STORM
12.11.18/1800	13.5/86.0	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/0600	13.2/85.0	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/1800	12.9/84.1	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0600	12.6/83.2	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
14.11.18/1800	12.2/82.0	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/0600	11.8/80.5	70-80 GUSTING TO 90	CYCLONIC STORM
15.11.18/1800	11.4/78.3	50-60 GUSTING TO 70	DEEP DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF TODAY, THE 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 16.5°N AND LONGITUDE 86.0°E TO 91.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14.0°N/ 87.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.2 HPA AND MEAN SURFACE WIND SPEED OF 080°/ 10 KNOTS. ANOTHER BOUY LOCATED AT 13.5°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.8 HPA AND MEAN SURFACE WIND SPEED OF 010°/ 20 KNOTS. A SHIP LOCATED AT 11.2°N/ 87.6°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.0 HPA AND MEAN SURFACE WIND SPEED OF 270°/ 10 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED IN PAST 06 HOURS AND IS OF ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 14°N AND THUS FAVOURS WESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 12 HOURS. IT IS LIKELY TO MOVE WEST-SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 24 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST-SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(ANANDA K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

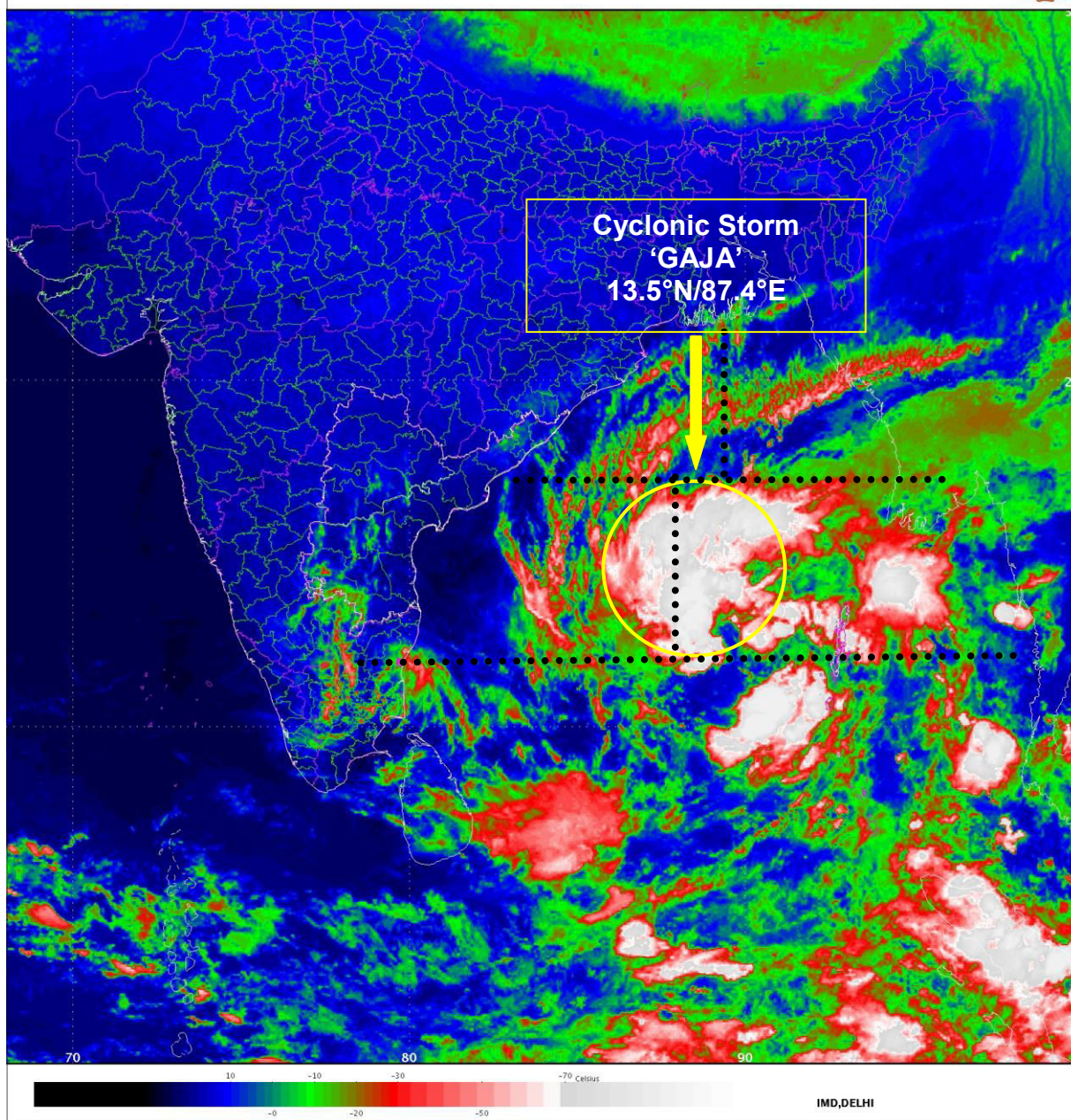
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



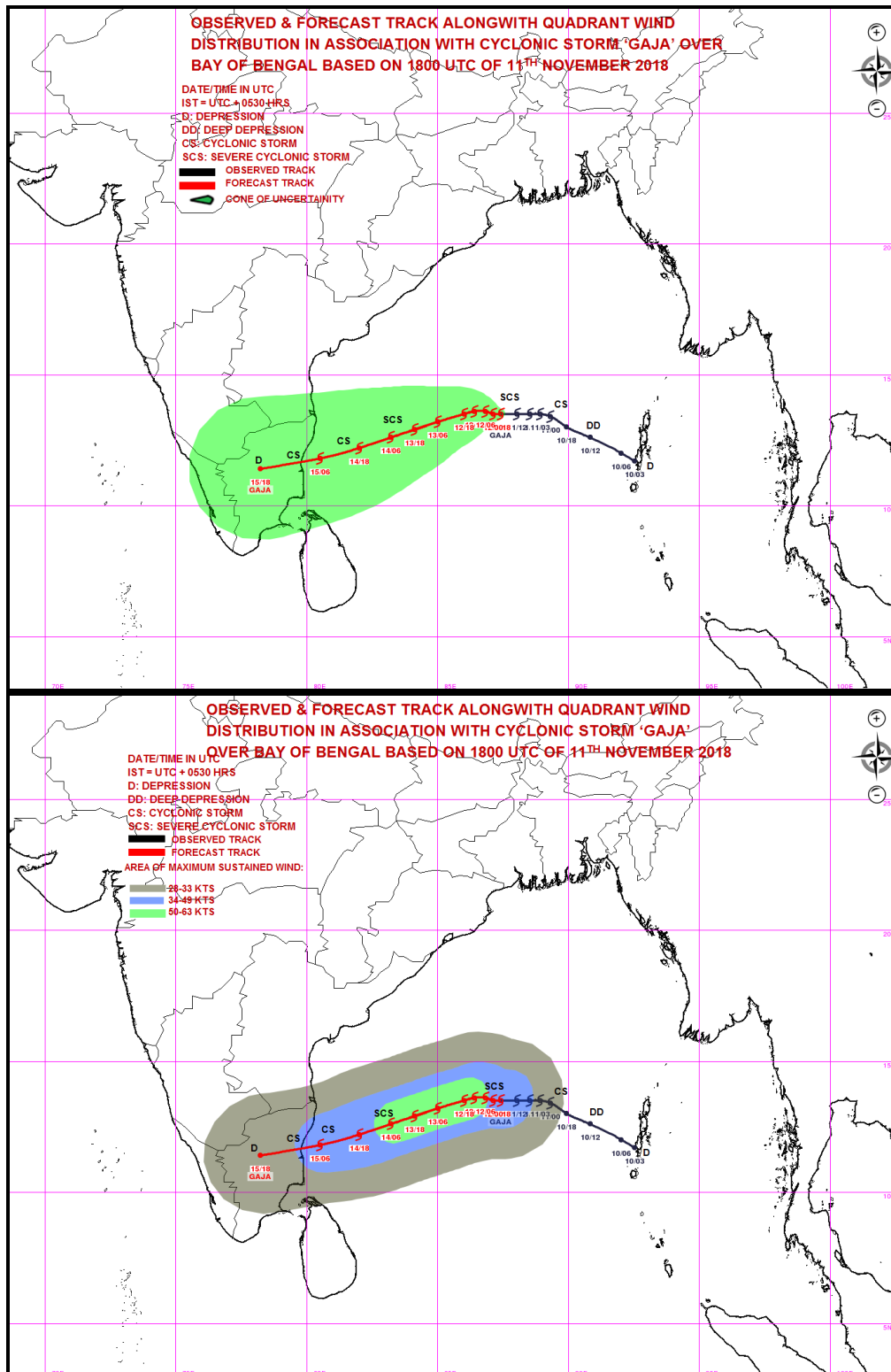
SAT:INSAT-3D  
IMG:TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

11-11-2018/16:30 GMT  
11-11-2018/22:00 IST



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 07**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 07 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 12.11.2018 BASED ON 2100 UTC OF 11.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER WESTWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF 11<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 87.2°E, ABOUT 750 KM EAST-NORTHEAST OF CHENNAI (43278) AND 850 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS WITH A WESTWARD MOVEMENT. IT IS WEST-SOUTHWESTWARDS TOWARDS NORTH TAMILNADU COAST DURING SUBSEQUENT 48 HOURS. HOWEVER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM AND CHENNAI AS A CYCLONIC STORM 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
11.11.18/2100	13.5/87.2	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0000	13.5/87.1	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/0600	13.5/86.8	80-90 GUSTING TO 100	CYCLONIC STORM
12.11.18/1200	13.5/86.4	85-95 GUSTING TO 110	SEVERE CYCLONIC STORM
12.11.18/1800	13.4/86.0	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/0600	13.2/85.0	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
13.11.18/1800	12.9/84.1	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/0600	12.6/83.2	95-105 GUSTING TO 120	SEVERE CYCLONIC STORM
14.11.18/1800	12.2/82.0	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/0600	11.8/80.5	70-80 GUSTING TO 90	CYCLONIC STORM
15.11.18/1800	11.4/78.3	50-60 GUSTING TO 70	DEEP DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 2100 UTC OF 11<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 9°N TO 18°N AND LONGITUDE 84.0°E TO 92.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 14.0°N/ 87.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.5 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 10 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

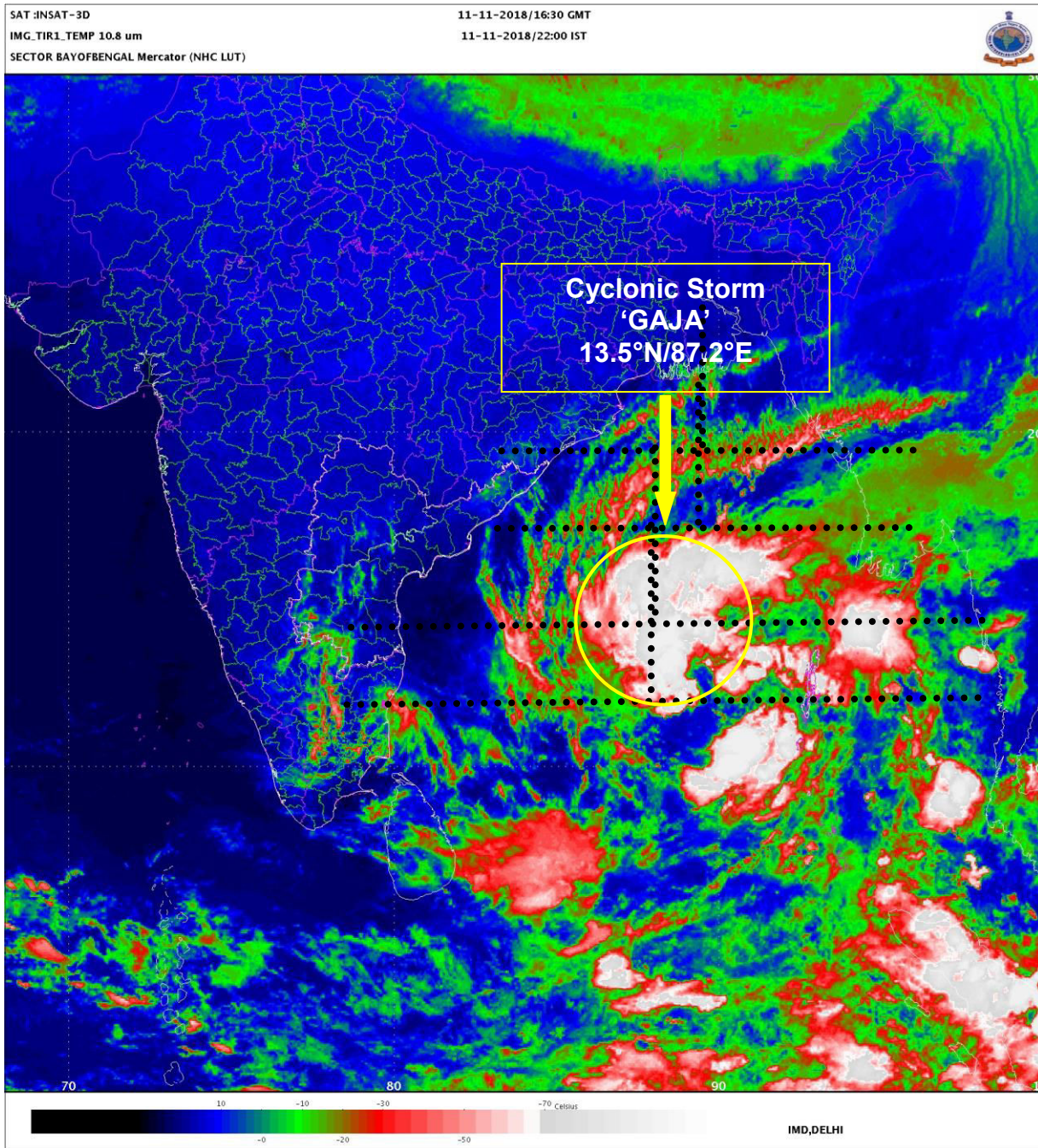
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $15 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED IN PAST 06 HOURS AND IS OF ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> IN THE SOUTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU SOUTH ANDHRA PRADESH COAST. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N AND THUS FAVOURS WESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 12 HOURS. IT IS LIKELY TO MOVE WEST-SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 24 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST-SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(ANANDA K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

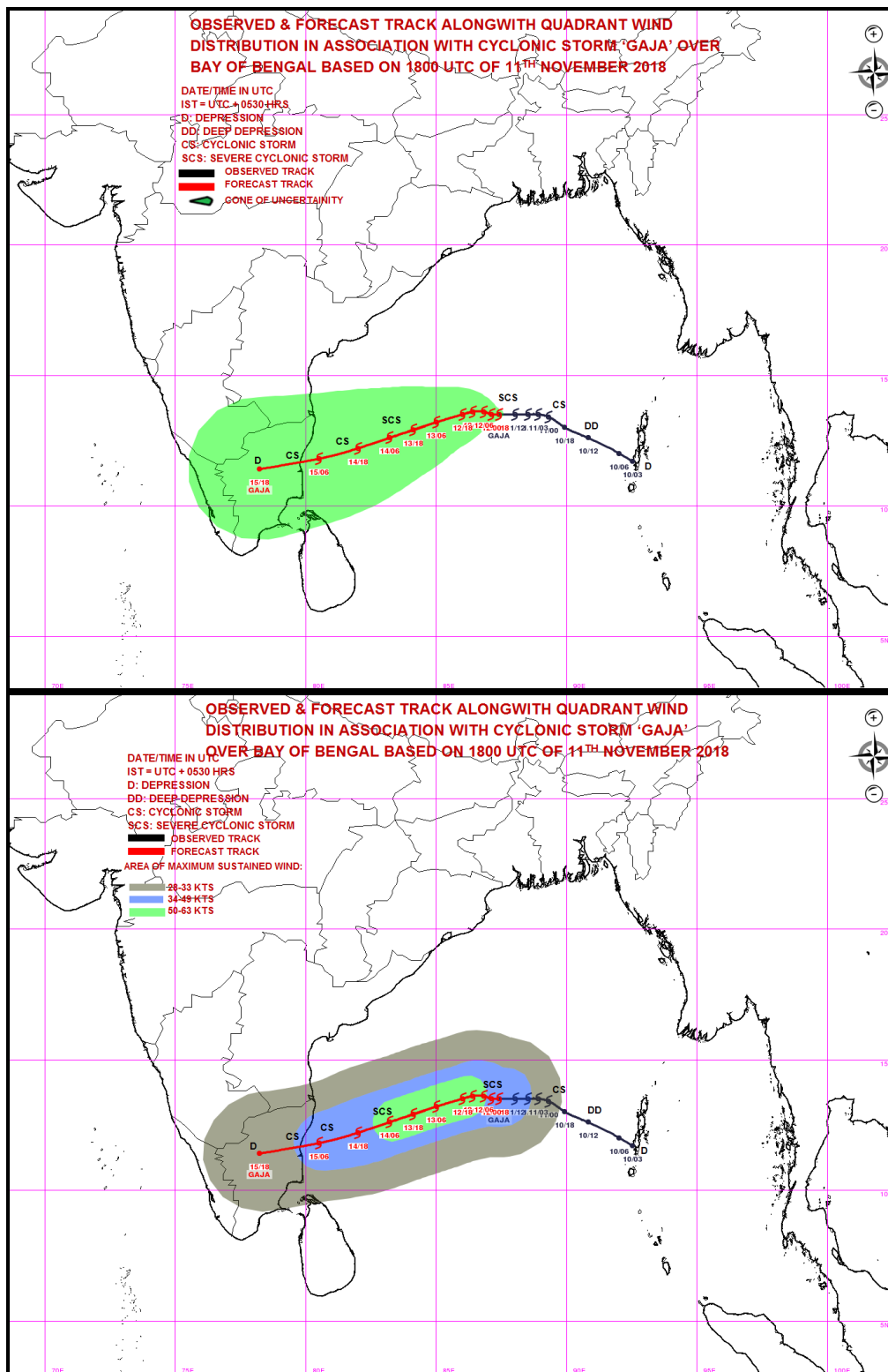
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**




---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 08**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 08 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 12.11.2018 BASED ON 0000 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED FURTHER NEARLY WESTWARDS WITH A SPEED OF 06 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.4°N AND LONGITUDE 87.1°E, ABOUT 740 KM EAST-NORTHEAST OF CHENNAI (TAMIL NADU) AND 840 KM EAST-NORTHEAST OF NAGAPPATTINAM (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM AND CHENNAI AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER FORENOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12.11.18/0000	13.4/87.1	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0600	13.3/86.7	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/1200	13.2/86.3	75-85 GUSTING TO 95	SEVERE CYCLONIC STORM
12.11.18/1800	13.1/85.9	80-90 GUSTING TO 100	SEVERE CYCLONIC STORM
13.11.18/0000	12.9/85.5	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/1200	12.5/84.4	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/0000	12.0/83.2	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1200	11.6/81.9	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
15.11.18/0000	11.2/80.4	80-90 GUSTING TO 100	SEVERE CYCLONIC STORM
15.11.18/1200	10.9/79.0	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0000	10.6/77.5	35-45 GUSTING TO 55	DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10°N TO 17°N AND LONGITUDE 84.0°E TO 92.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C. THE SYSTEM SHOWS CENTRAL DENSE OVERCAST(CDO). THE CONVECTIVE CLOUDS ARE HIGHER IN NORTHERN SECTOR.

A BOUY LOCATED AT 13.5°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.2 HPA AND MEAN SURFACE WIND SPEED OF 350°/ 20 KNOTS. ANOTHER BUOY LOCATED AT 15.0°N/ 89.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.6 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 15 KNOTS. A SHIP LOCATED AT 10°N/ 88°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.5 HPA AND MEAN SURFACE WIND SPEED OF 290°/ 20 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

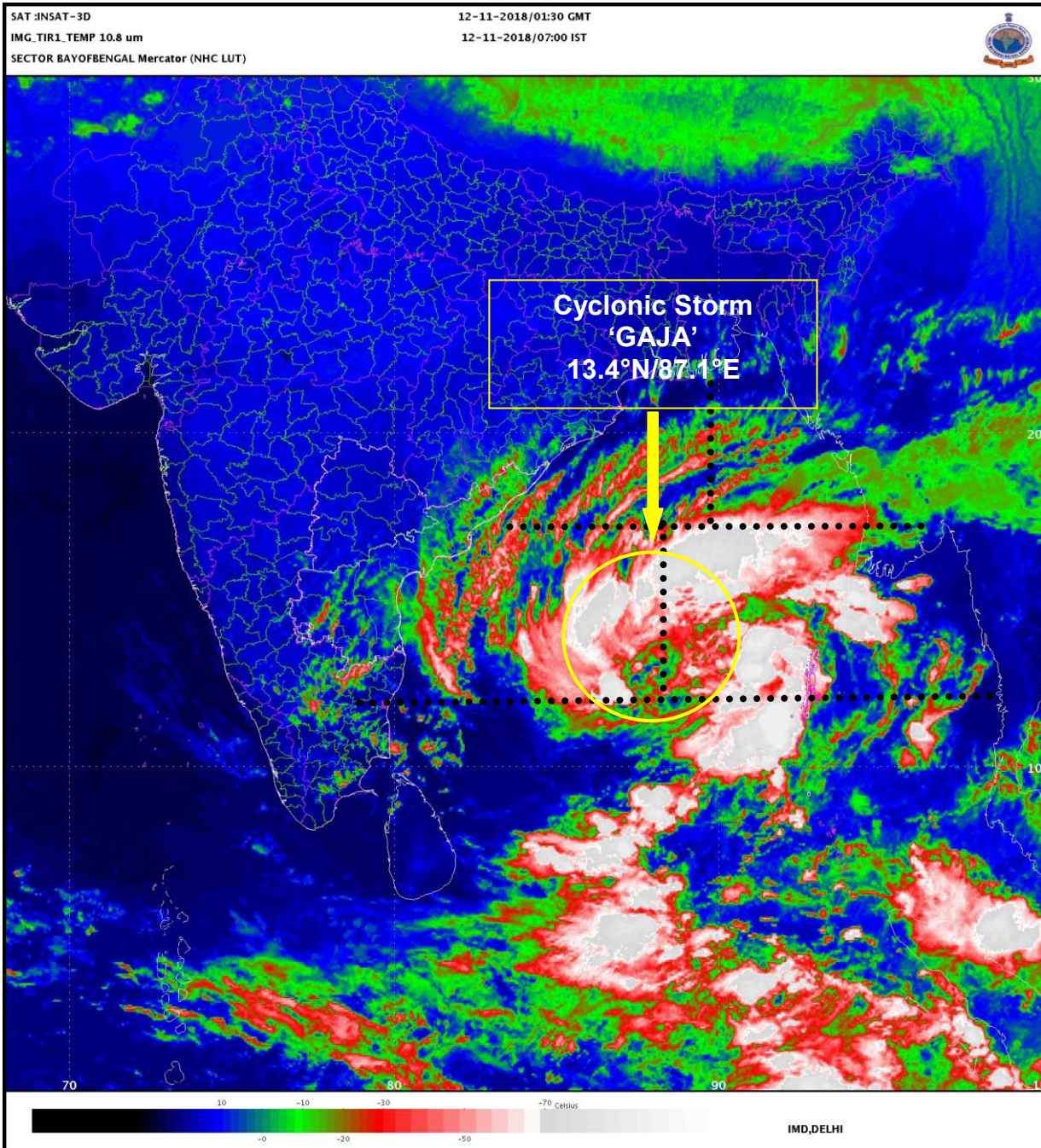
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED IN PAST 06 HOURS AND IS OF ORDER  $100 \times 10^{-6}$  SECOND<sup>-1</sup> TO THE SOUTH AND SOUTHWEST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) TO THE NORTH AND NORTHEAST OF THE SYSTEM CENTRE. IT INCREASES AND BECOMES HIGH NEAR NORTH TAMILNADU AND SOUTH ANDHRA PRADESH COASTS. AS THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE IN THE SOUTHEAST SECTOR OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N AND THUS FAVOURS WESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 12 HOURS. IT IS LIKELY TO MOVE WEST-SOUTHWESTWARD THEREAFTER AS THE SYSTEM WILL COME UNDER THE INFLUENCE OF ANOTHER ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW DURING NEXT 24 HOURS AND THE SPEED WILL INCREASE AS IT WILL TRACK WEST-SOUTHWESTWARD THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE HIGH WIND SHEAR AND LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(ANANDA K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

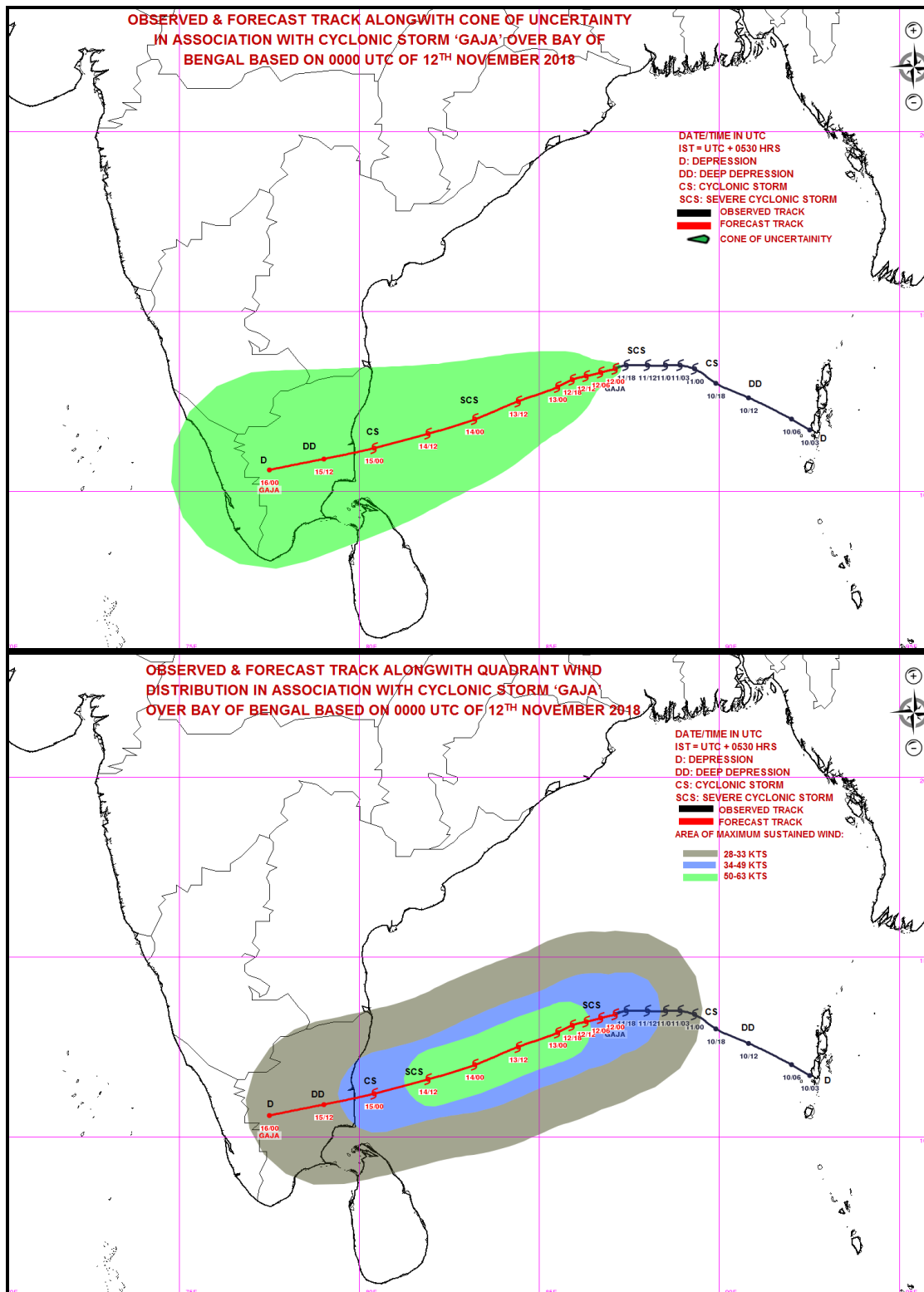


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 09**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 09 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 12.11.2018 BASED ON 0300 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED SOUTH-SOUTHWESTWARDS WITH A SPEED OF 08 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 13.1°N AND LONGITUDE 87.0°E, ABOUT 730 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 820 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS NORTH TAMIL NADU COAST BETWEEN NAGAPPATTINAM (43347) AND CHENNAI (43278) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12.11.18/0300	13.1/87.0	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/0600	12.9/86.7	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/1200	12.8/86.3	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/1800	12.7/85.9	80-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/0000	12.6/85.5	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/1200	12.3/84.4	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/0000	11.9/83.2	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1200	11.5/81.9	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
15.11.18/0000	11.2/80.4	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	10.9/79.0	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0000	10.6/77.5	35-45 GUSTING TO 55	DEPRESSION

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10°N TO 20°N AND LONGITUDE 84.0°E TO 95.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

A BOUY LOCATED AT 13.5°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.5 HPA. ANOTHER BUOY LOCATED AT 14.0°N/ 87.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.0 HPA AND MEAN SURFACE WIND SPEED OF 020°/ 08 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 45 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE HAS INCREASED AND IS OF ORDER 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTH THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF ORDER 100X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE ALSO INCREASED AND IS OF THE ORDER OF 40X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. THE SYSTEM IS LIKELY TO MOVE WEST-SOUTHWESTWARD AS THE SYSTEM IS UNDER THE INFLUENCE OF AN ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW FURTHER DURING NEXT 12 HOURS AND THE SPEED WILL INCREASE THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

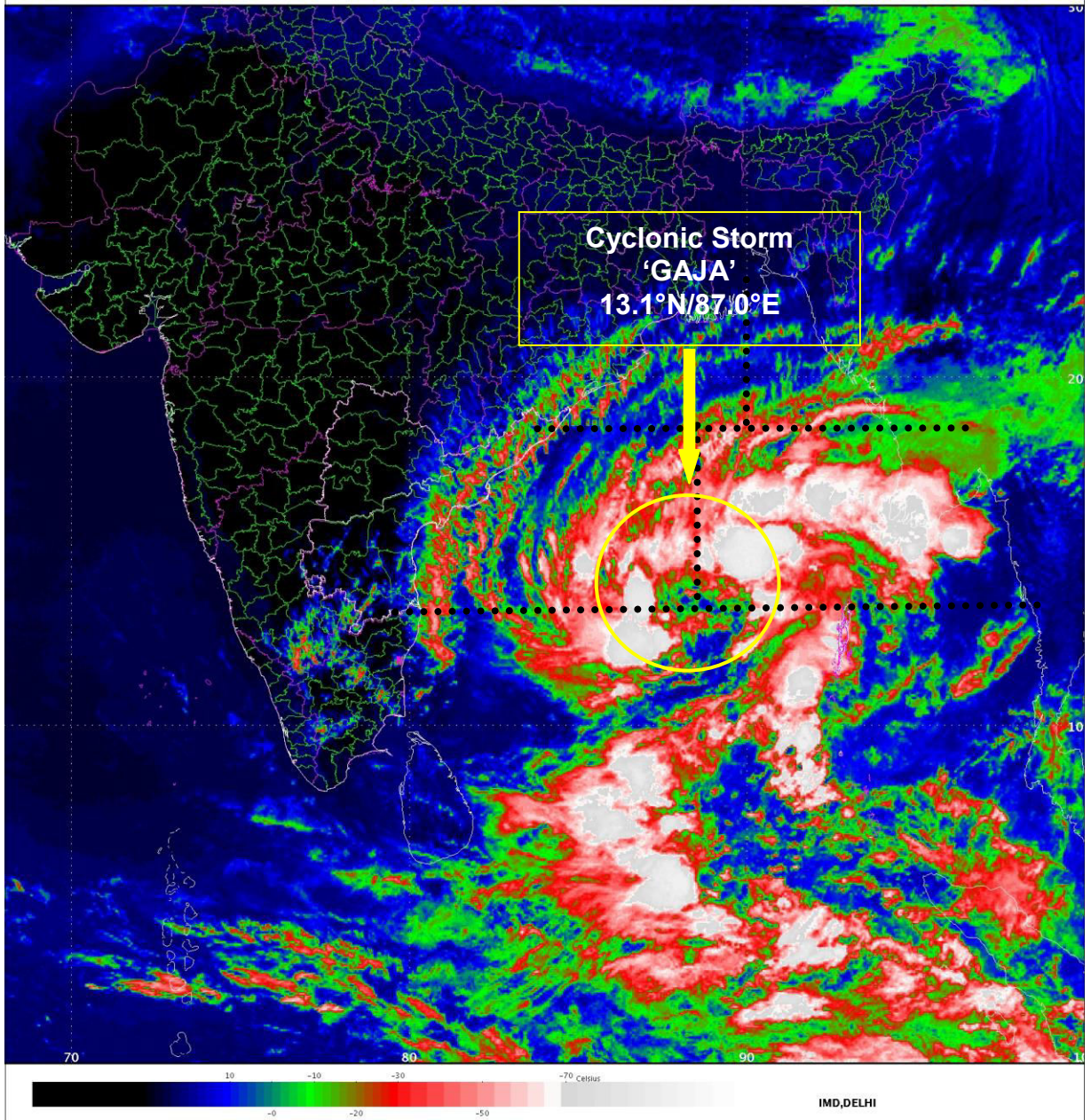
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



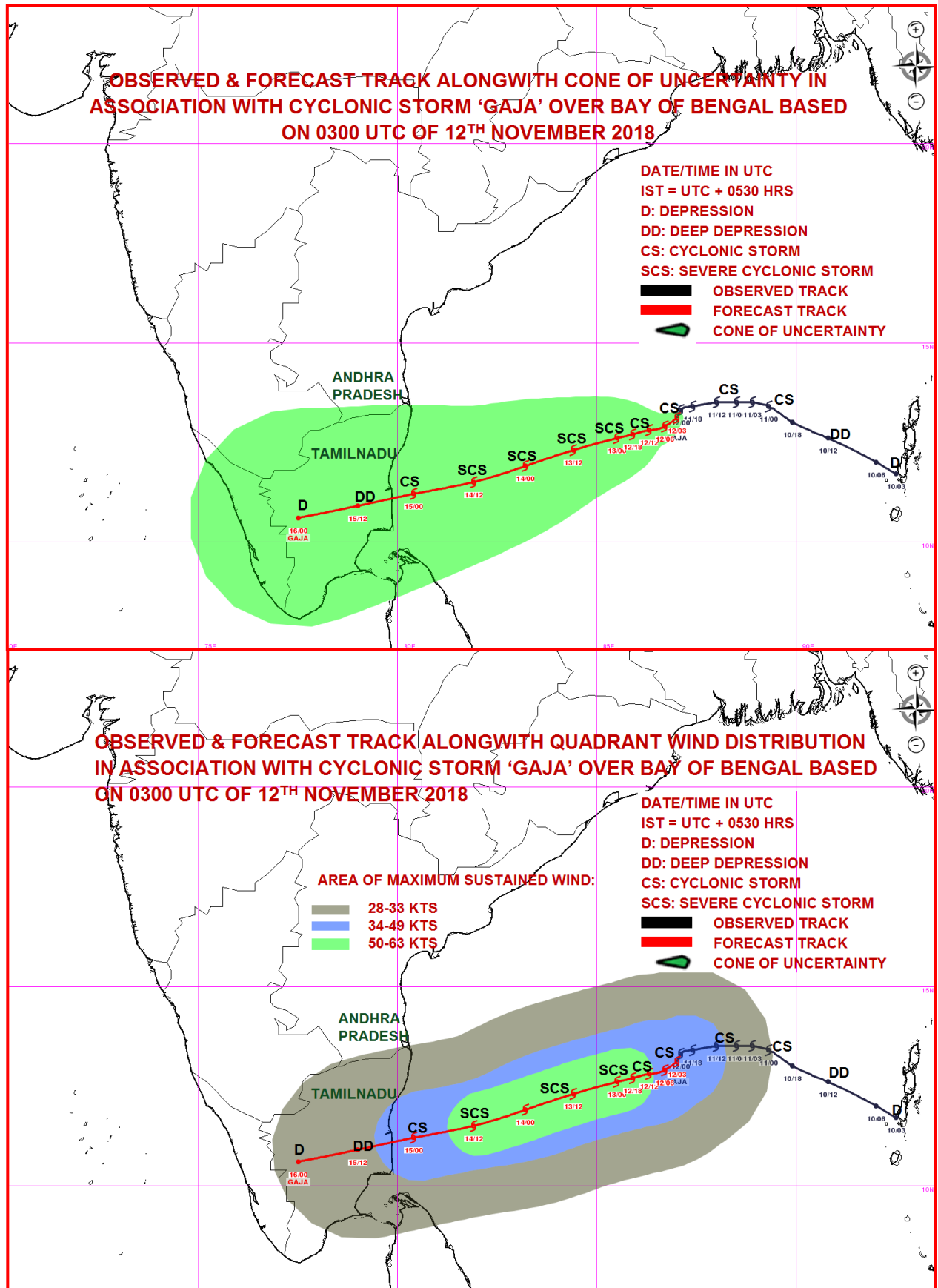
SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

12-11-2018/05:30 GMT  
12-11-2018/11:00 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 10**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 10 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 12.11.2018 BASED ON 0600 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED SOUTH-SOUTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.9°N AND LONGITUDE 86.9°E, ABOUT 720 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 800 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS TAMIL NADU COAST BETWEEN CUDDALORE (43329) AND PAMBAN (43363) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12.11.18/0600	12.9/86.9	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/1200	12.6/86.3	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/1800	12.4/85.9	80-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/0000	12.2/85.5	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/0600	12.0/85.1	90-105 GUSTING TO 115	SEVERE CYCLONIC STORM
13.11.18/1800	11.6/84.4	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/0600	11.1/83.2	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1800	10.7/81.8	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
15.11.18/0600	10.3/80.1	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.0/78.3	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	9.8/76.3	35-45 GUSTING TO 55	DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10°N TO 20°N AND LONGITUDE 84.0°E TO 95.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

A BOUY LOCATED AT 14°N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.0 HPA AND MEAN SURFACE WIND SPEED OF 060°/ 10 KNOTS. A SHIP LOCATED AT 10.0°N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.4 HPA AND MEAN SURFACE WIND SPEED OF 240°/ 14 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF THE ORDER OF 50X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. THE SYSTEM IS LIKELY TO MOVE WEST-SOUTHWESTWARD AS THE SYSTEM IS UNDER THE INFLUENCE OF AN ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW FURTHER DURING NEXT 12 HOURS AND THE SPEED WILL INCREASE THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

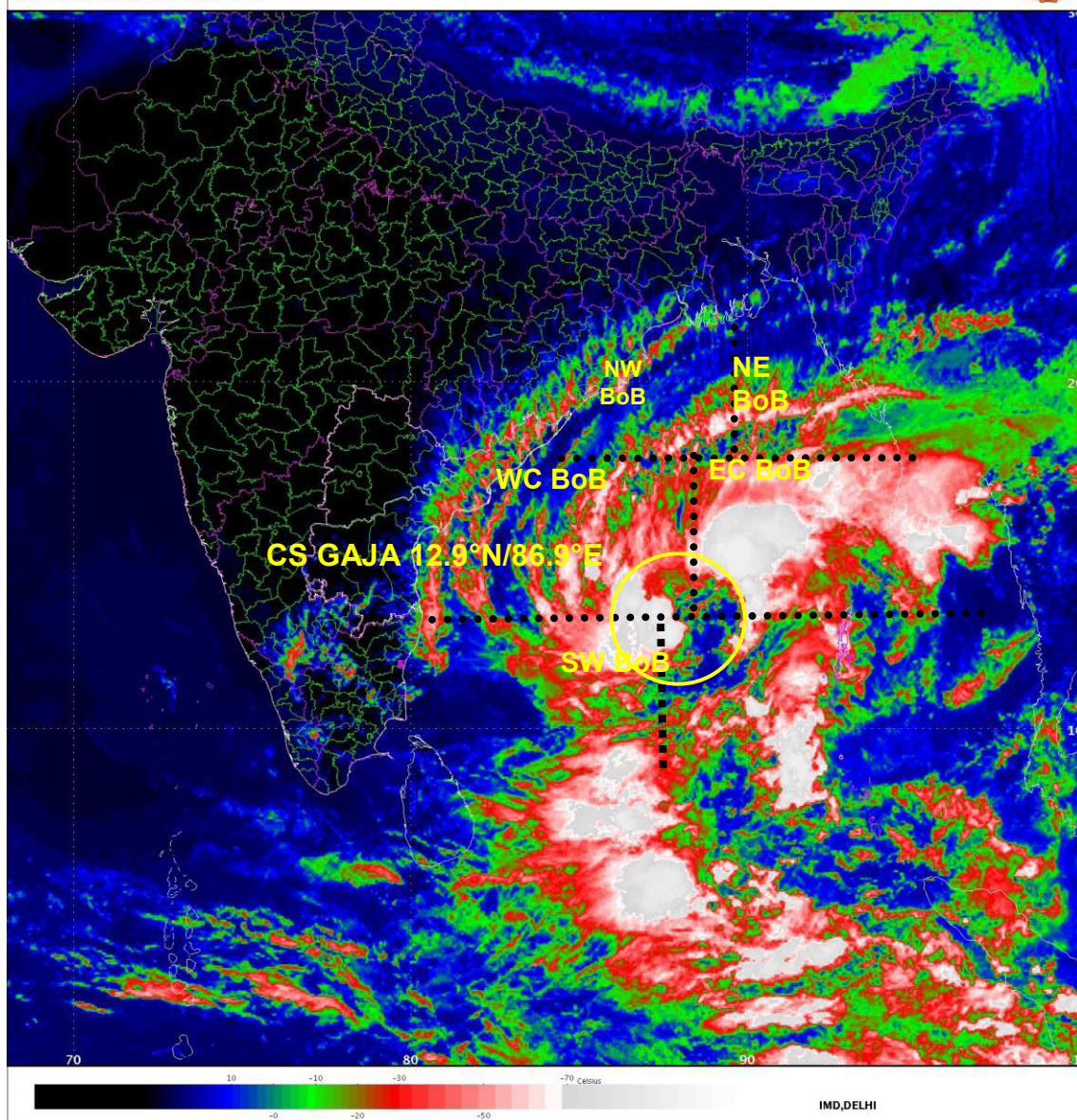
---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

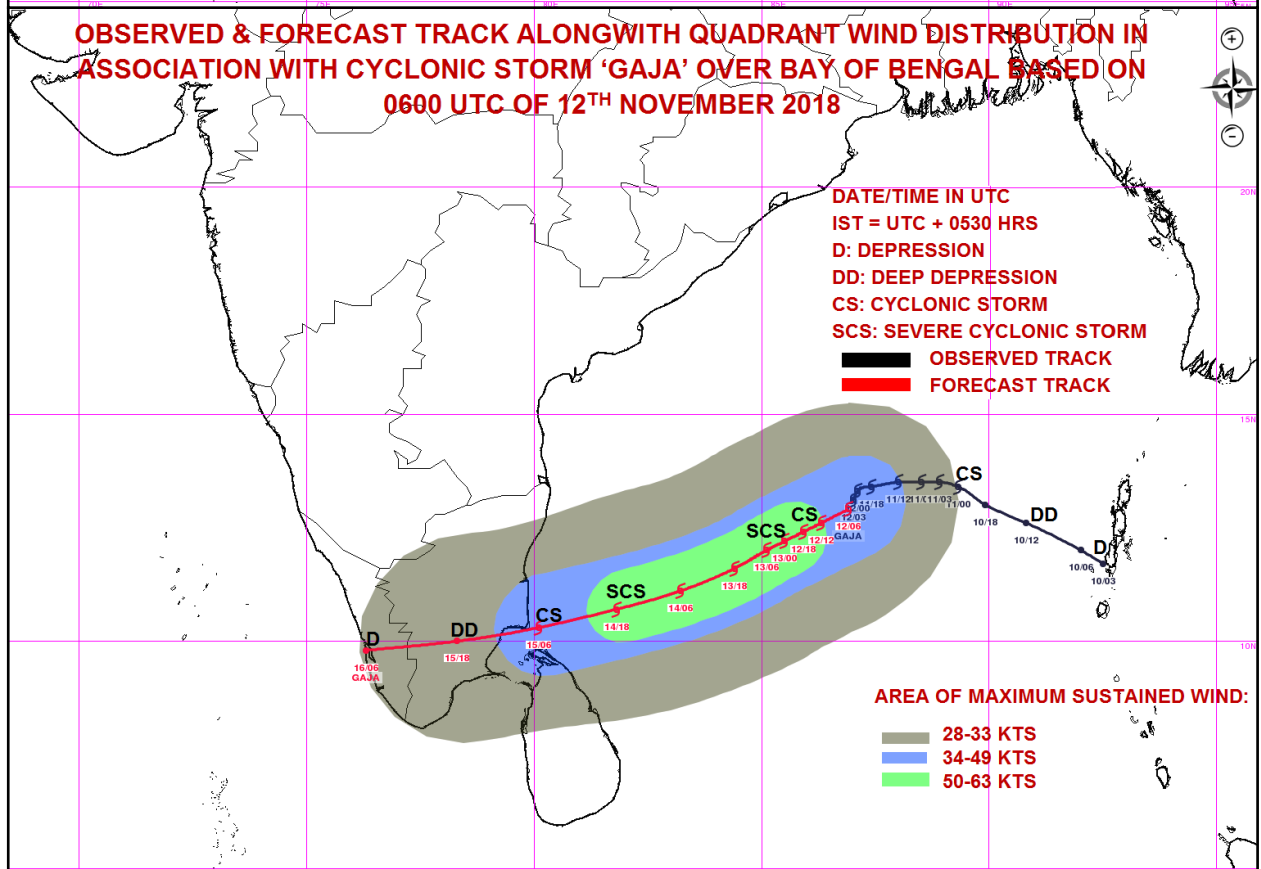
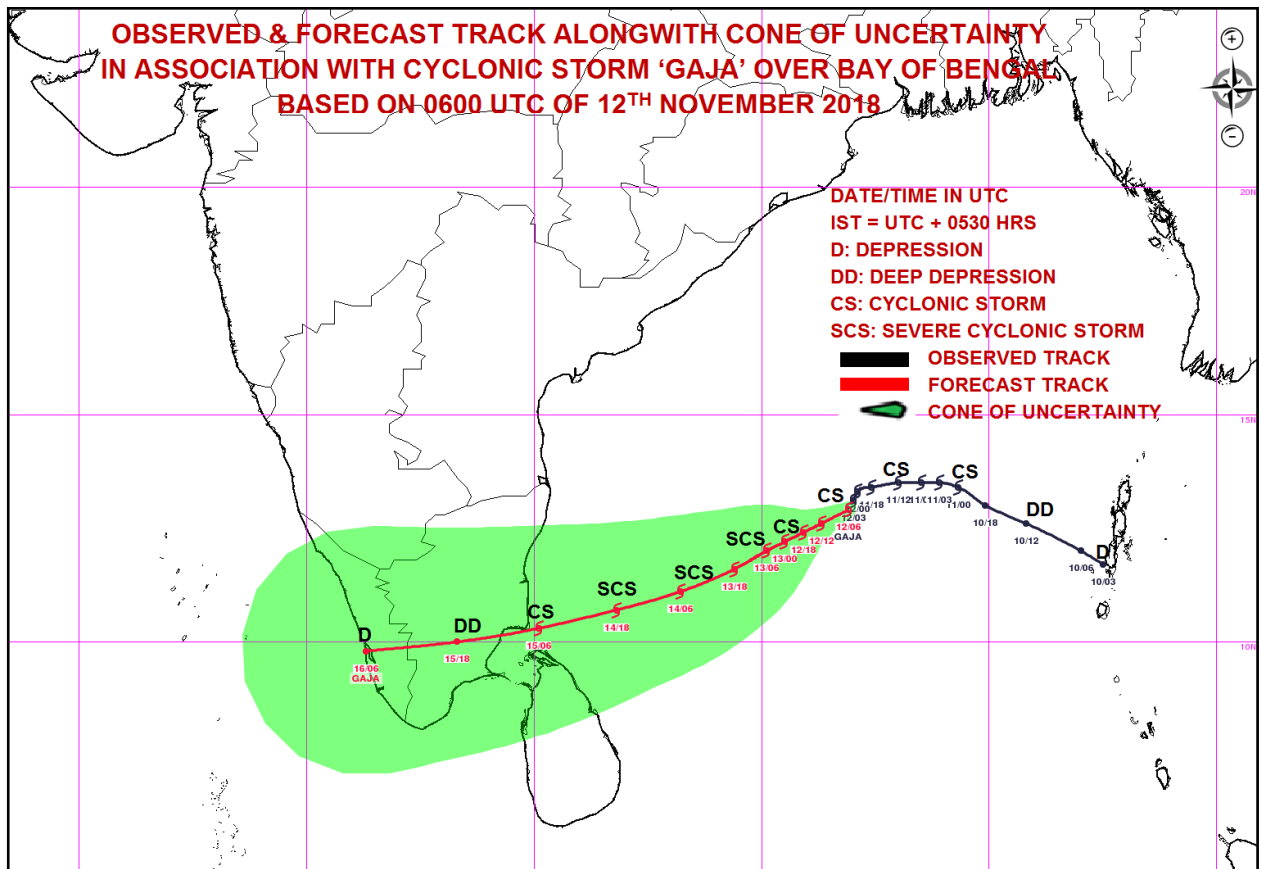
SAT :INSAT-3D  
IMG.TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

12-11-2018/07:00 GMT  
12-11-2018/12:30 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 11**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 11 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1200 UTC OF 12.11.2018 BASED ON 0900 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL REMAINED PRACTICALLY STATIONARY IN PAST 03 HOURS AND LAY CENTRED AT 0900 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL NEAR LATITUDE 12.9°N AND LONGITUDE 86.9°E, ABOUT 720 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 800 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS TAMIL NADU COAST BETWEEN CUDDALORE (43329) AND PAMBAN (43363) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
12.11.18/0900	12.9/86.9	70-80 GUSTING TO 90	CYCLONIC STORM
12.11.18/1200	12.6/86.3	75-85 GUSTING TO 95	CYCLONIC STORM
12.11.18/1800	12.4/85.9	80-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/0000	12.2/85.5	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
13.11.18/0600	12.0/85.1	90-105 GUSTING TO 115	SEVERE CYCLONIC STORM
13.11.18/1800	11.6/84.4	95-105 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/0600	11.1/83.2	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1800	10.7/81.8	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
15.11.18/0600	10.3/80.1	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.0/78.3	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	9.8/76.3	35-45 GUSTING TO 55	DEPRESSION

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0900 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10°N TO 20°N AND LONGITUDE 84.0°E TO 95.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

A BOUY LOCATED AT 14°N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.0 HPA AND MEAN SURFACE WIND SPEED OF 060°/ 10 KNOTS. A SHIP LOCATED AT 10.0°N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.4 HPA AND MEAN SURFACE WIND SPEED OF 240°/ 14 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF THE ORDER OF 50X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. THE SYSTEM IS LIKELY TO MOVE WEST-SOUTHWESTWARD AS THE SYSTEM IS UNDER THE INFLUENCE OF AN ANTI-CYCLONIC CIRCULATION TO THE NORTHWEST OF THE SYSTEM CENTER. DUE TO THIS TRANSITION IN STEERING FLOW, THE SYSTEM IS EXPECTED TO MOVE SLOW FURTHER DURING NEXT 12 HOURS AND THE SPEED WILL INCREASE THEREAFTER. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(NARESH KUMAR)  
SCIENTIST-E, RSMC, NEW DELHI

---

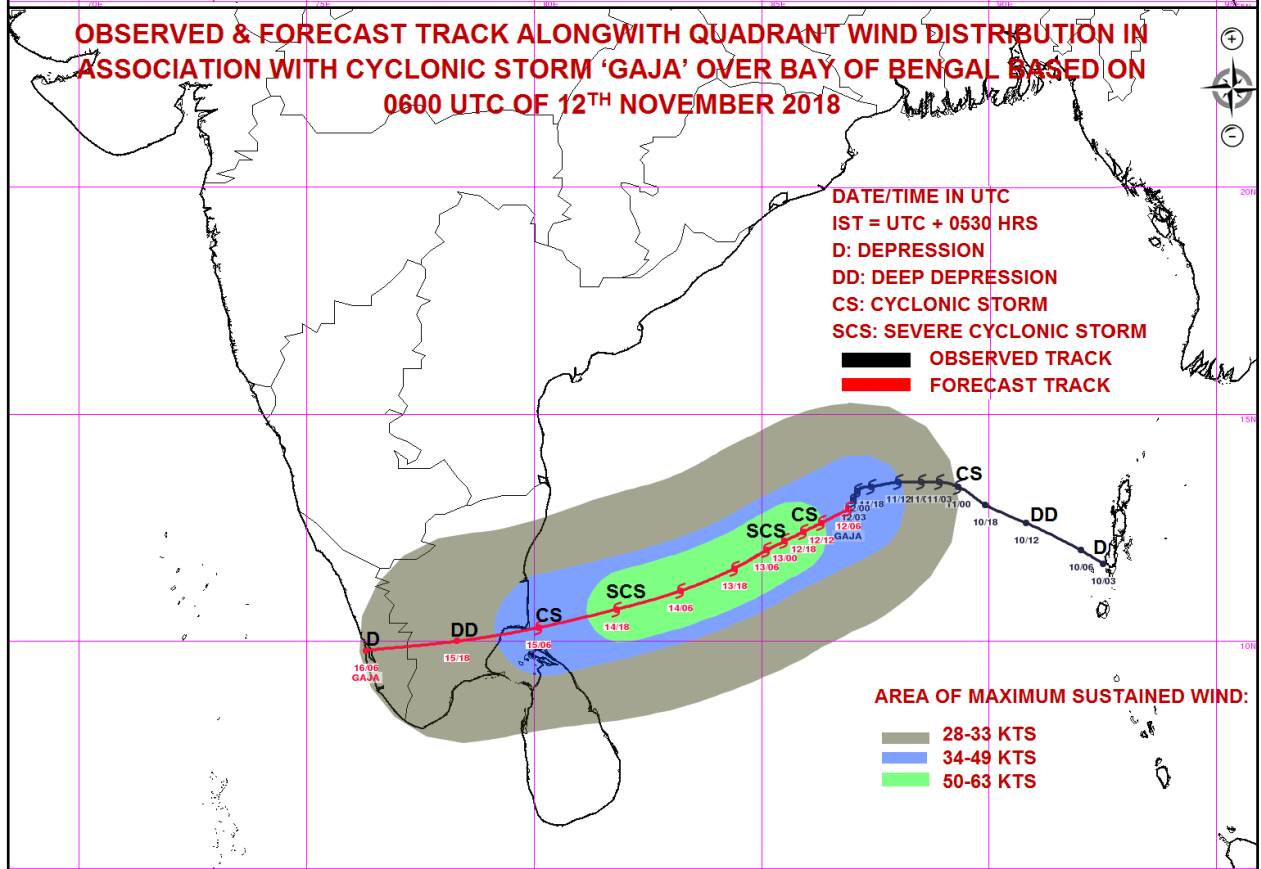
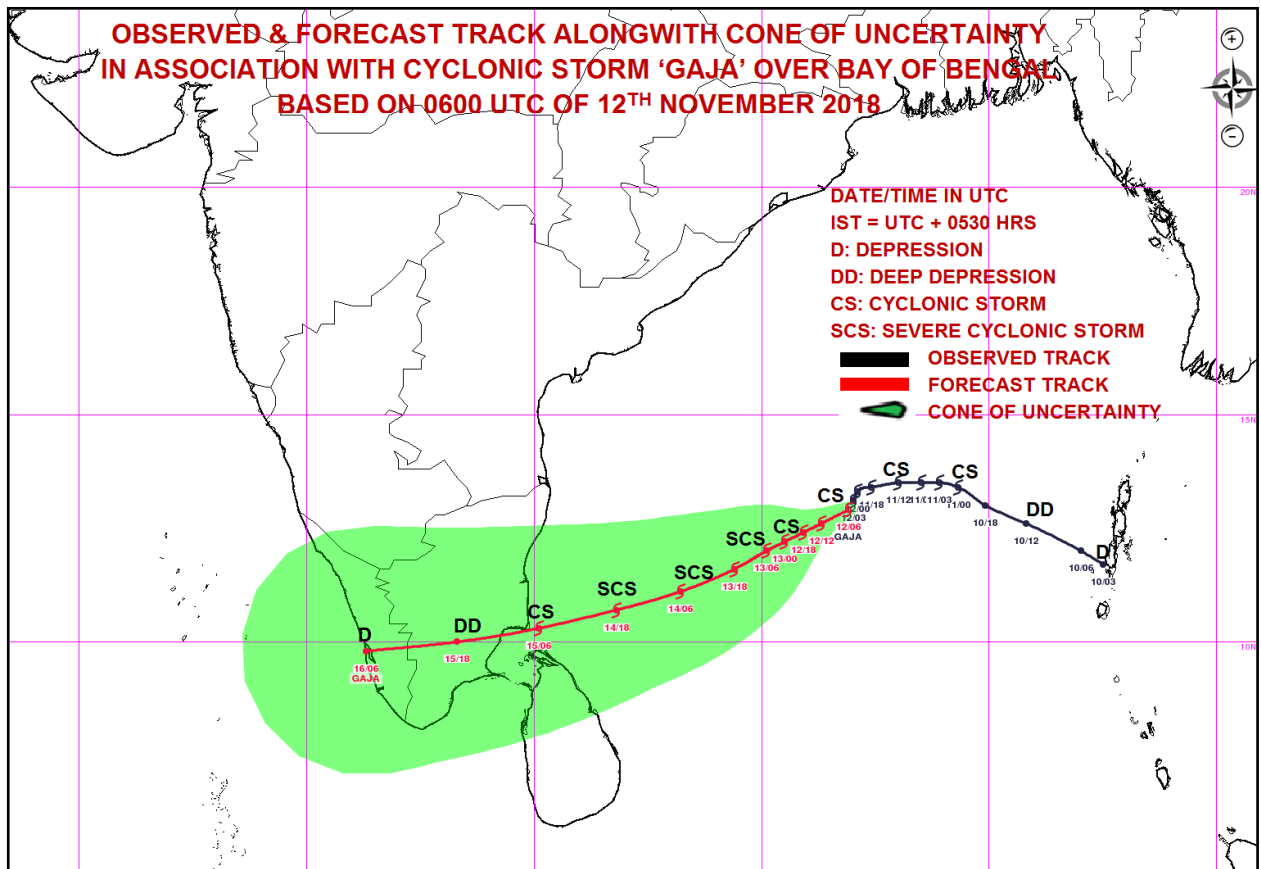
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 12**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 12 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 12.11.2018 BASED ON 1200 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER SOUTHEAST AND ADJOINING CENTRAL & SOUTHWEST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED SOUTHEASTWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST AND ADJOINING CENTRAL & SOUTHWEST BAY OF BENGAL NEAR LATITUDE 12.6°N AND LONGITUDE 87.3°E, ABOUT 760 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 830 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY AND CROSS TAMIL NADU COAST BETWEEN CUDDALORE (43329) AND PAMBAN (43363) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
12.11.18/1200	12.6/87.3	70-80 gusting to 90	Cyclonic Storm
12.11.18/1800	12.4/87.3	75-85 gusting to 95	Cyclonic Storm
13.11.18/0000	12.2/86.8	80-90 gusting to 100	Cyclonic Storm
13.11.18/0600	12.0/86.2	85-95 gusting to 105	Cyclonic Storm
13.11.18/1200	11.6/85.3	90-105 gusting to 115	Severe Cyclonic Storm
14.11.18/0000	11.1/83.4	100-110 gusting to 125	Severe Cyclonic Storm
14.11.18/1200	10.7/81.8	95-105 gusting to 120	Severe Cyclonic Storm
15.11.18/0000	10.3/80.1	80-90 gusting to 105	Cyclonic Storm
15.11.18/1200	10.0/78.3	50-60 gusting to 70	Deep Depression
16.11.18/0000	9.8/76.3	35-45 gusting to 55	Depression
16.11.18/1200	9.6/74.3	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

OF BENGAL BETWEEN LATITUDE 10°N TO 22°N AND LONGITUDE 84.0°E TO 95.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

A BOUY LOCATED AT 13.5 °N/ 84.2° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.5 HPA AND MEAN SURFACE WIND SPEED OF 010°/ 16 KNOTS. ANOTHER BOUY LOCATED AT 14 °N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.3 HPA AND MEAN SURFACE WIND SPEED OF 040°/ 10 KNOTS. A THIRD BOUY LOCATED AT 15 °N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.4 HPA AND MEAN SURFACE WIND SPEED OF 060°/ 25 KNOTS. A SHIP LOCATED AT 9.8 °N/ 88° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.4 HPA AND MEAN SURFACE WIND SPEED OF 220°/ 20 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF THE ORDER OF 50X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. CONSIDERING THE DEEP LAYER MEAN WIND BETWEEN 850 AND 500 HPA LEVELS, THE SYSTEM LIES IN A COL REGION BETWEEN TWO ANTICYCLONIC CIRCULATIONS TO THE WEST AND EAST OF THE SYSTEM RESPECTIVELY. AS A RESULT THE SYSTEM IS MOVING SLOWLY AND MEANDERING OVER THE REGION. IT IS EXPECTED TO MOVE SLOWLY FOR FURTHER NEXT 12 HOURS. THEREAFTER, ITS SPEED OF MOVEMENT WILL INCREASE GRADUALLY AND MOVE WEST-SOUTHWESTWARDS AS IT WILL BE GUIDED BY THE ANCTICYCLONE TO THE WEST OF THE CYCLONIC STORM. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

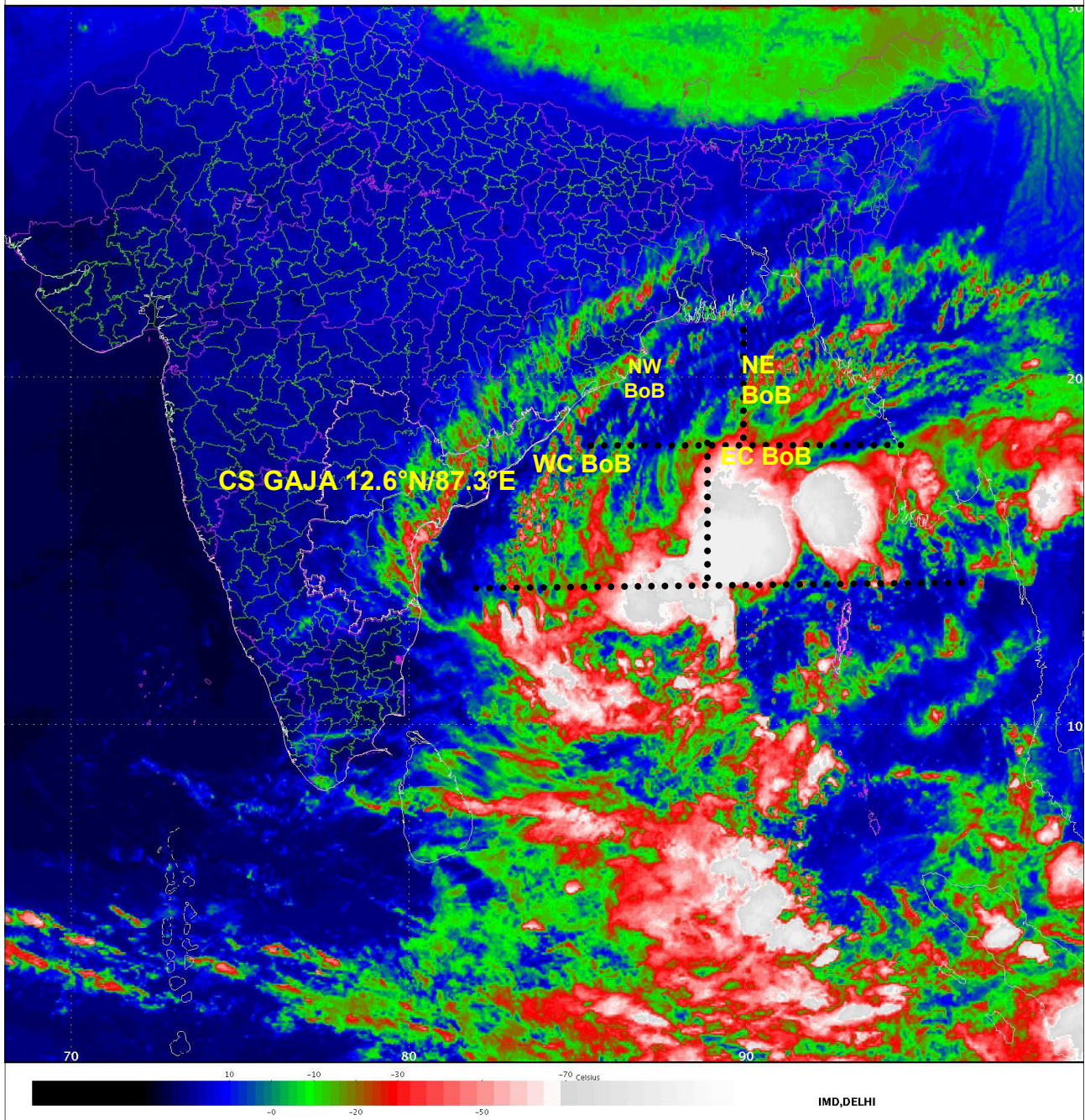
(NARESH KUMAR)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

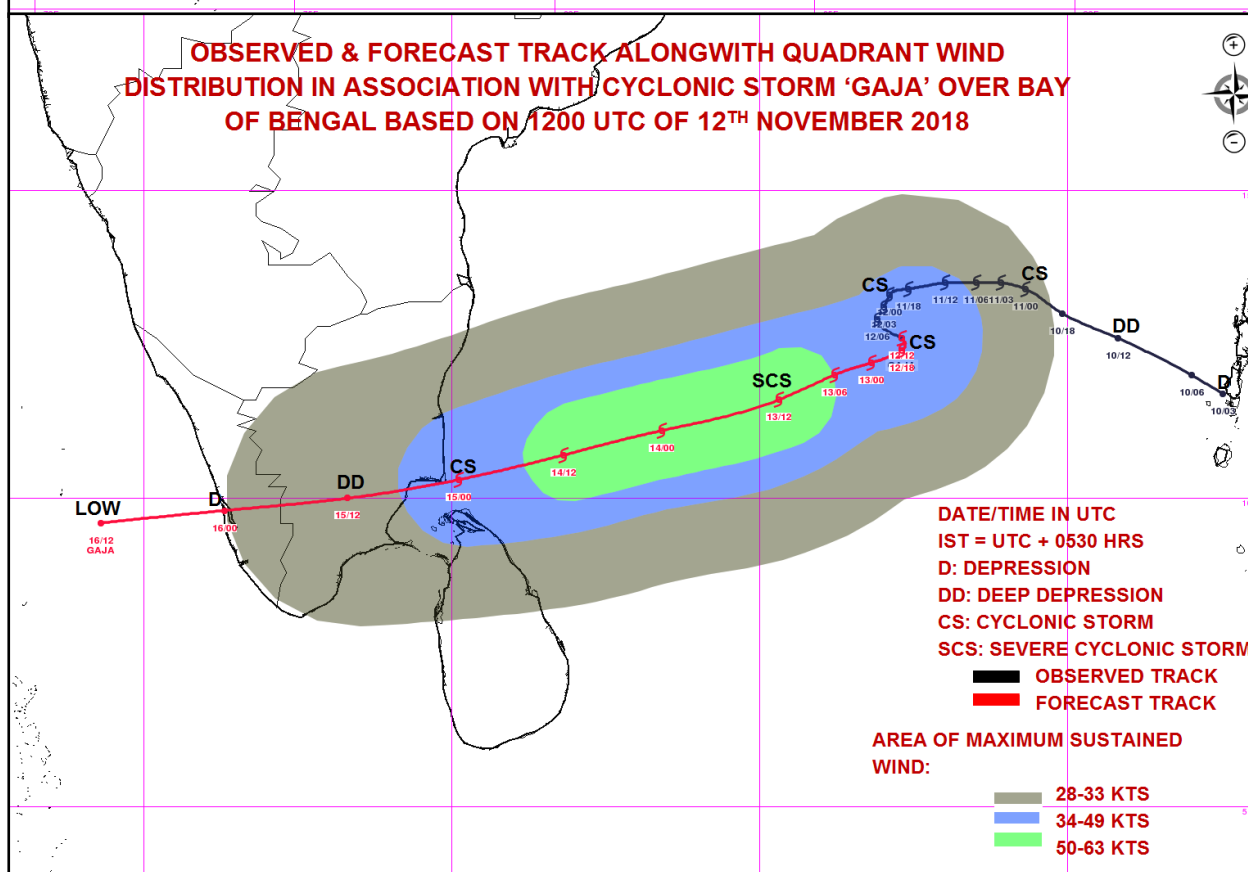
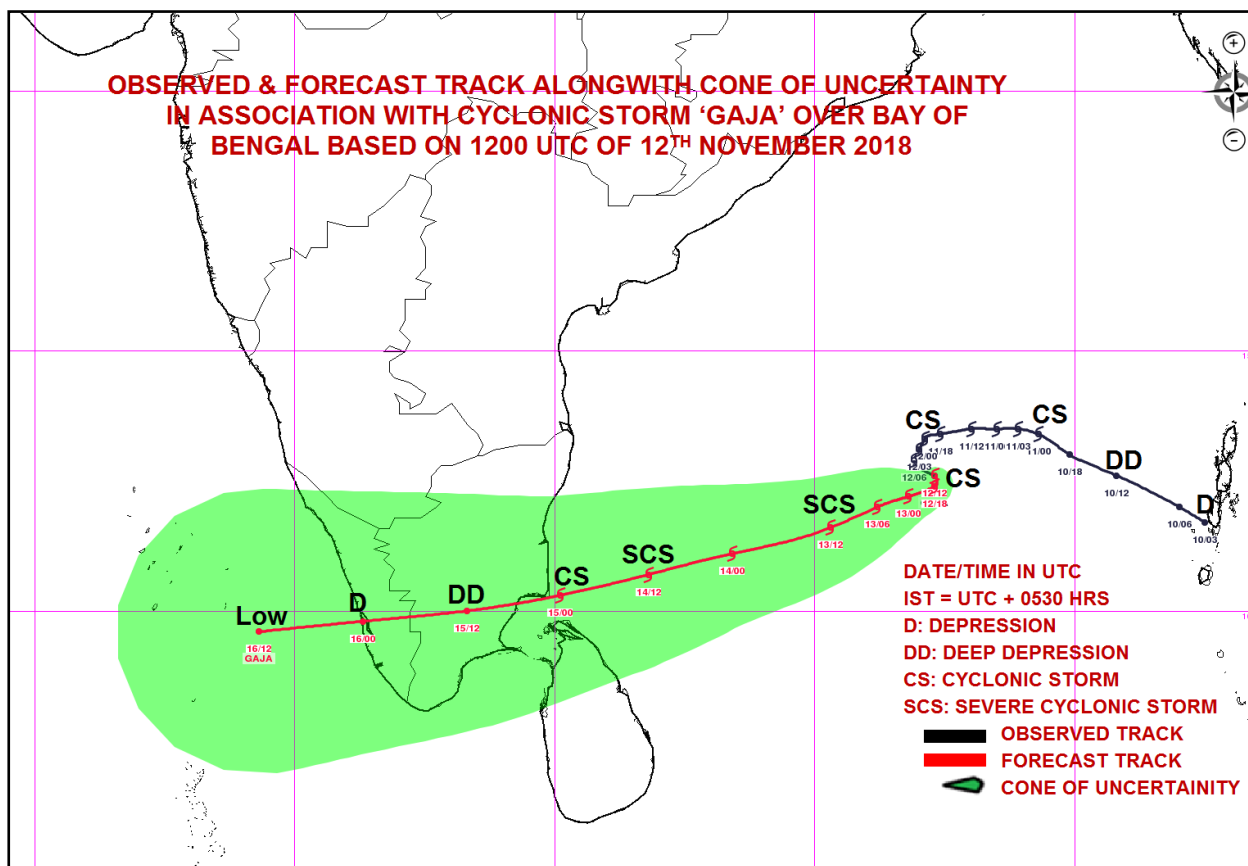
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 13**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 13 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1700 UTC OF 12.11.2018 BASED ON 1500 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER SOUTHEAST AND ADJOINING CENTRAL & SOUTHWEST BAY OF BENGAL:**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTHEAST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 13 KMPH DURING PAST 03 HOURS AND LAY CENTRED AT 1500 UTC OF THE 12<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST AND ADJOINING CENTRAL & SOUTHWEST BAY OF BENGAL NEAR LATITUDE 12.9°N AND LONGITUDE 87.5°E, ABOUT 780 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 860 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS DURING NEXT 12 HRS AND THEN WEST-SOUTHWESTWARDS. WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
12.11.18/1500	12.9/87.5	70-80 gusting to 90	Cyclonic Storm
12.11.18/1800	13.0/87.3	75-85 gusting to 95	Cyclonic Storm
13.11.18/0000	12.7/86.8	80-90 gusting to 100	Cyclonic Storm
13.11.18/0600	12.4/86.2	85-95 gusting to 105	Cyclonic Storm
13.11.18/1200	11.8/85.3	90-105 gusting to 115	Severe Cyclonic Storm
14.11.18/0000	11.1/83.4	100-110 gusting to 125	Severe Cyclonic Storm
14.11.18/1200	10.7/81.8	95-105 gusting to 120	Severe Cyclonic Storm
15.11.18/0000	10.3/80.1	80-90 gusting to 105	Cyclonic Storm
15.11.18/1200	10.0/78.3	50-60 gusting to 70	Deep Depression
16.11.18/0000	9.8/76.3	35-45 gusting to 55	Depression
16.11.18/1200	9.6/74.3	20-30 gusting to 40	Low

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 1500 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 13.5°N TO 15.5°N AND LONGITUDE 87.50°E TO 91.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

A BOUY LOCATED AT 13.5 °N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.2 HPA AND MEAN SURFACE WIND SPEED OF 020°/ 16 KNOTS. ANOTHER BOUY LOCATED AT 15 °N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.6 HPA AND MEAN SURFACE WIND SPEED OF 150°/ 14 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

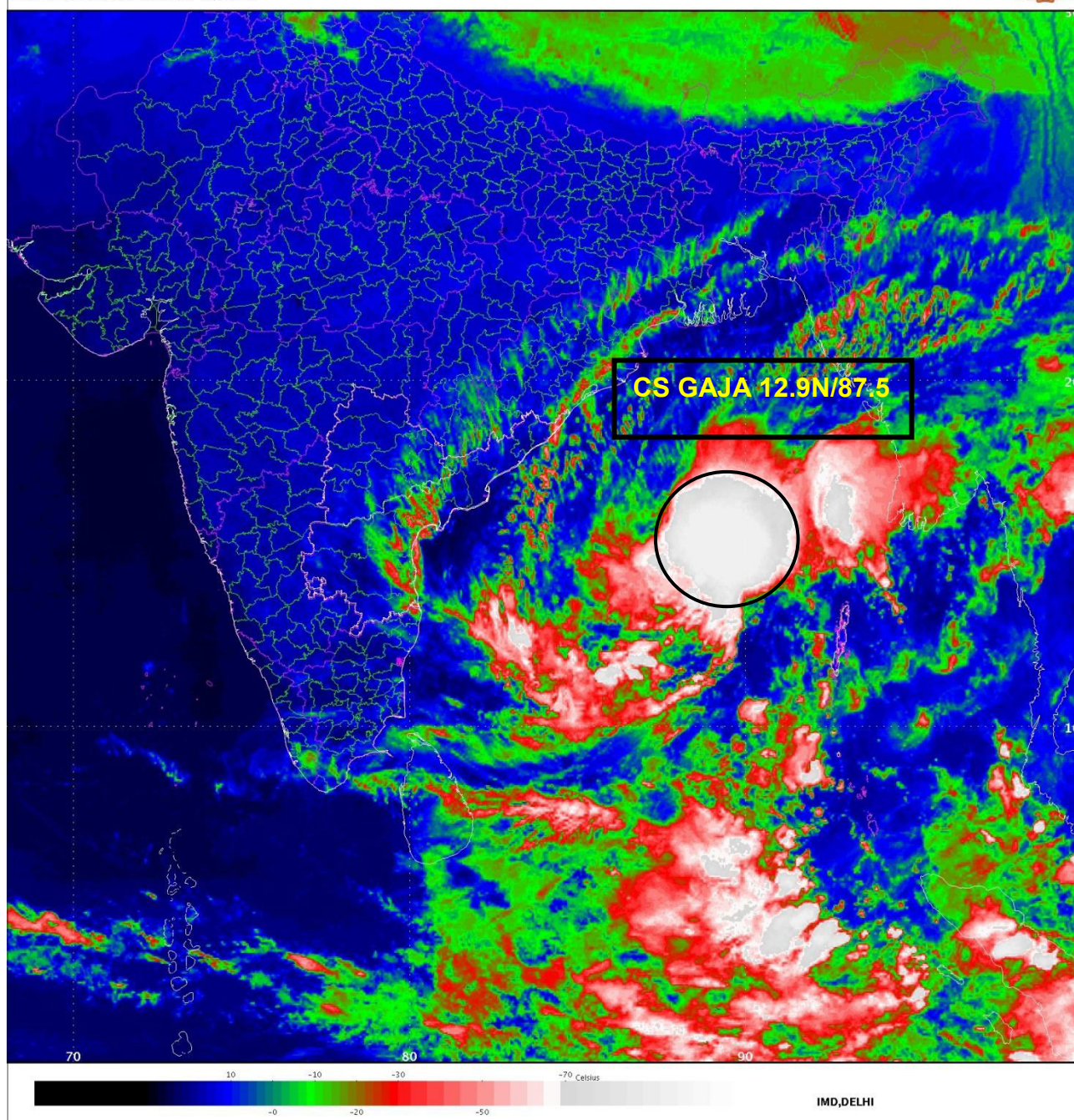
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF THE ORDER OF 50X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. CONSIDERING THE DEEP LAYER MEAN WIND BETWEEN 850 AND 500 HPA LEVELS, THE SYSTEM LIES IN A COL REGION BETWEEN TWO ANTICYCLONIC CIRCULATIONS TO THE WEST AND EAST OF THE SYSTEM RESPECTIVELY. AS A RESULT THE SYSTEM IS MOVING SLOWLY AND MEANDERING OVER THE REGION. IT IS EXPECTED TO MOVE SLOWLY FOR FURTHER NEXT 12 HOURS. THEREAFTER, ITS SPEED OF MOVEMENT WILL INCREASE GRADUALLY AND MOVE WEST-SOUTHWESTWARDS AS IT WILL BE GUIDED BY THE ANCTICYCLONE TO THE WEST OF THE CYCLONIC STORM. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(SD KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

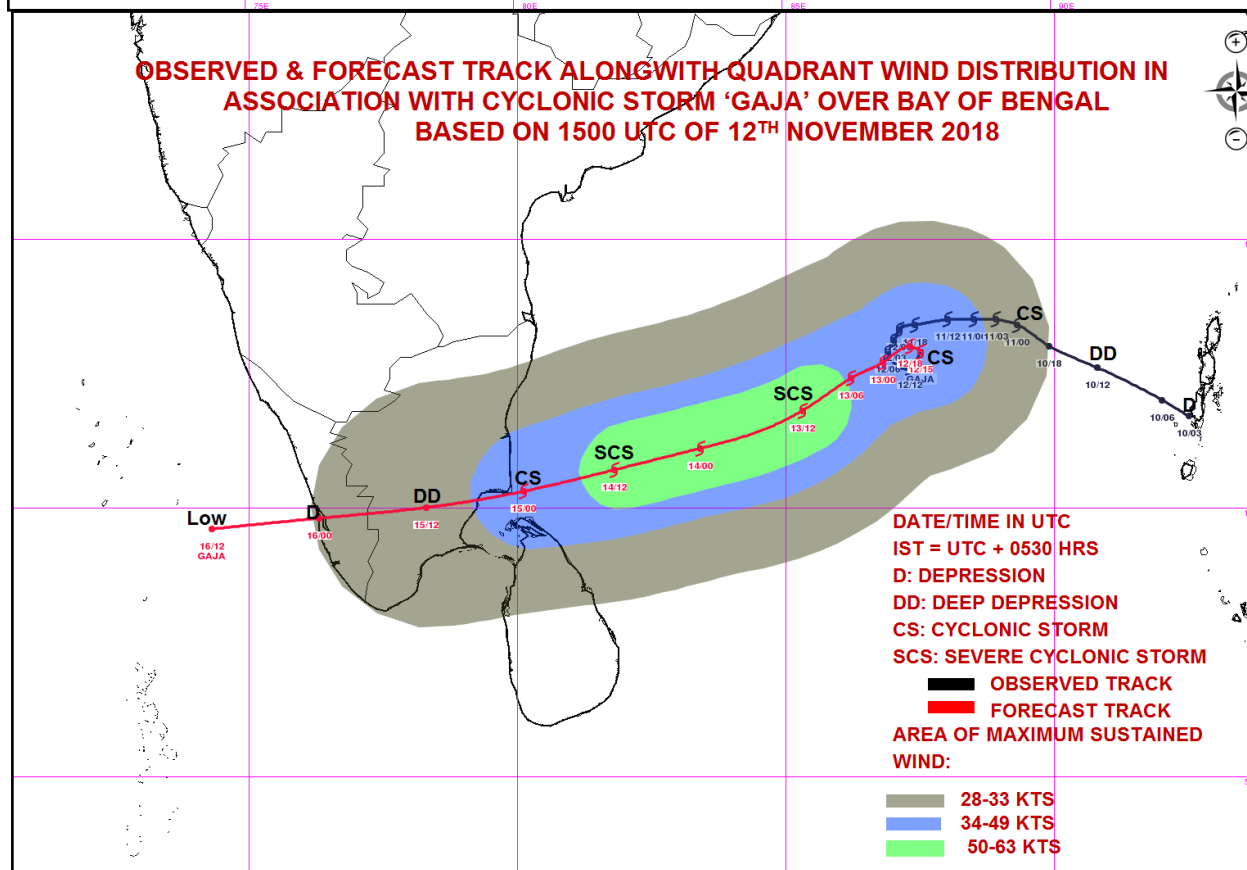
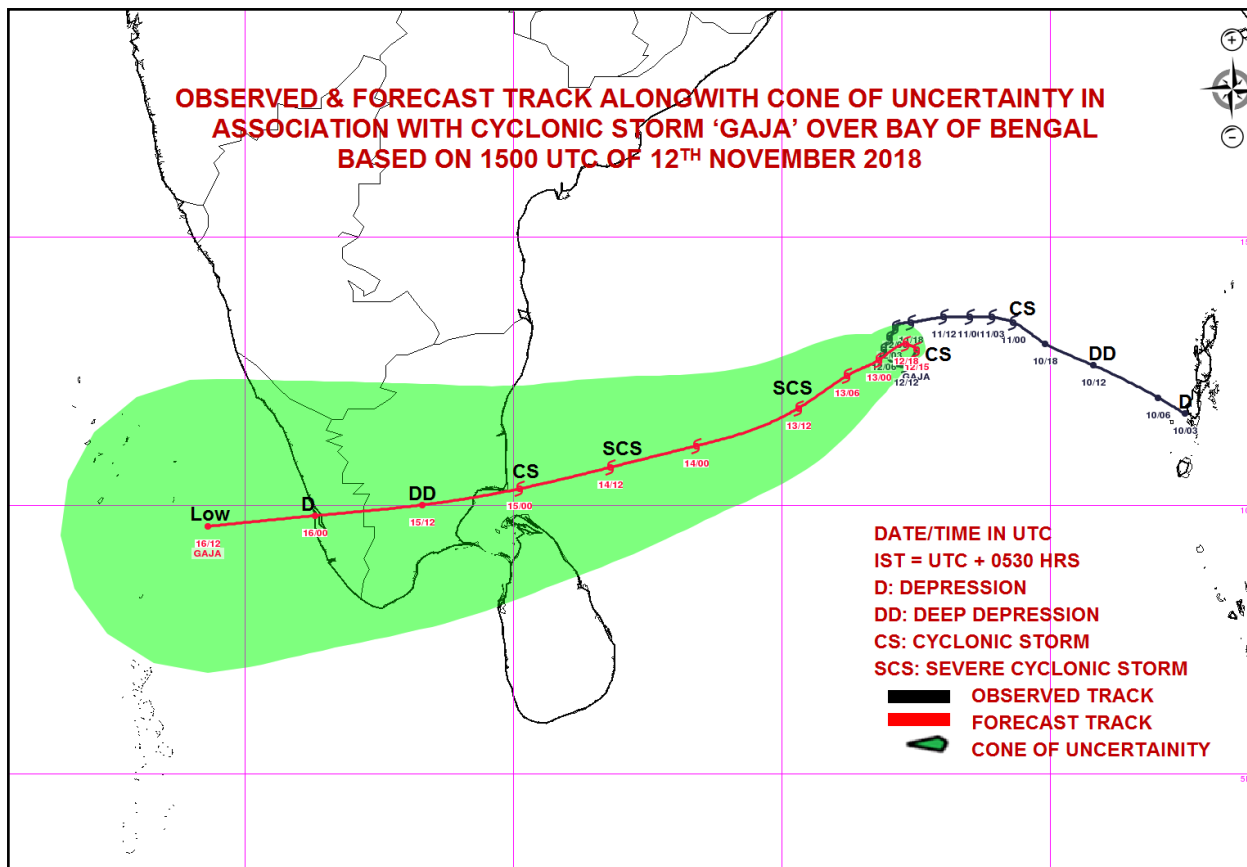
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 14**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 14 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2100 UTC OF 12.11.2018 BASED ON 1800 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER SOUTHEAST AND ADJOINING CENTRAL & SOUTHWEST BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.2°N AND LONGITUDE 87.5°E, ABOUT 780 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 870 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS DURING NEXT 06 HRS AND THEN WEST-SOUTHWESTWARDS. WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

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
12.11.18/1800	13.2/87.5	75-85 gusting to 95	Cyclonic Storm
13.11.18/0000	13.1/87.0	80-90 gusting to 100	Cyclonic Storm
13.11.18/0600	12.6/86.4	85-95 gusting to 105	Cyclonic Storm
13.11.18/1200	12.0/85.5	90-100 gusting to 110	Severe Cyclonic Storm
13.11.18/1800	11.4/84.3	100-110 gusting to 125	Severe Cyclonic Storm
14.11.18/0600	10.9/82.6	95-105 gusting to 120	Severe Cyclonic Storm
14.11.18/1800	10.5/80.9	85-95 gusting to 105	Cyclonic Storm
15.11.18/0600	10.1/79.2	80-90 gusting to 100	Cyclonic Storm
15.11.18/1800	9.9/77.3	50-60 gusting to 70	Deep Depression
16.11.18/0600	9.7/75.3	35-45 gusting to 55	Depression
16.11.18/1200	9.6/74.3	20-30 gusting to 40	Low

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 1700 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 13.5°N TO 17.5°N AND LONGITUDE 87.5°E TO 91.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 1800 UTC OF TODAY, A SHIP LOCATED AT 09.8 °N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.8 HPA AND MEAN SURFACE WIND SPEED OF 250°/ 16 KNOTS. AT 1500 UTC OF TODAY, A BOUY LOCATED AT 13.5 °N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.2 HPA AND MEAN SURFACE WIND SPEED OF 020°/ 16 KNOTS AND ANOTHER BOUY LOCATED AT 15 °N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.6 HPA AND MEAN SURFACE WIND SPEED OF 150°/ 14 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

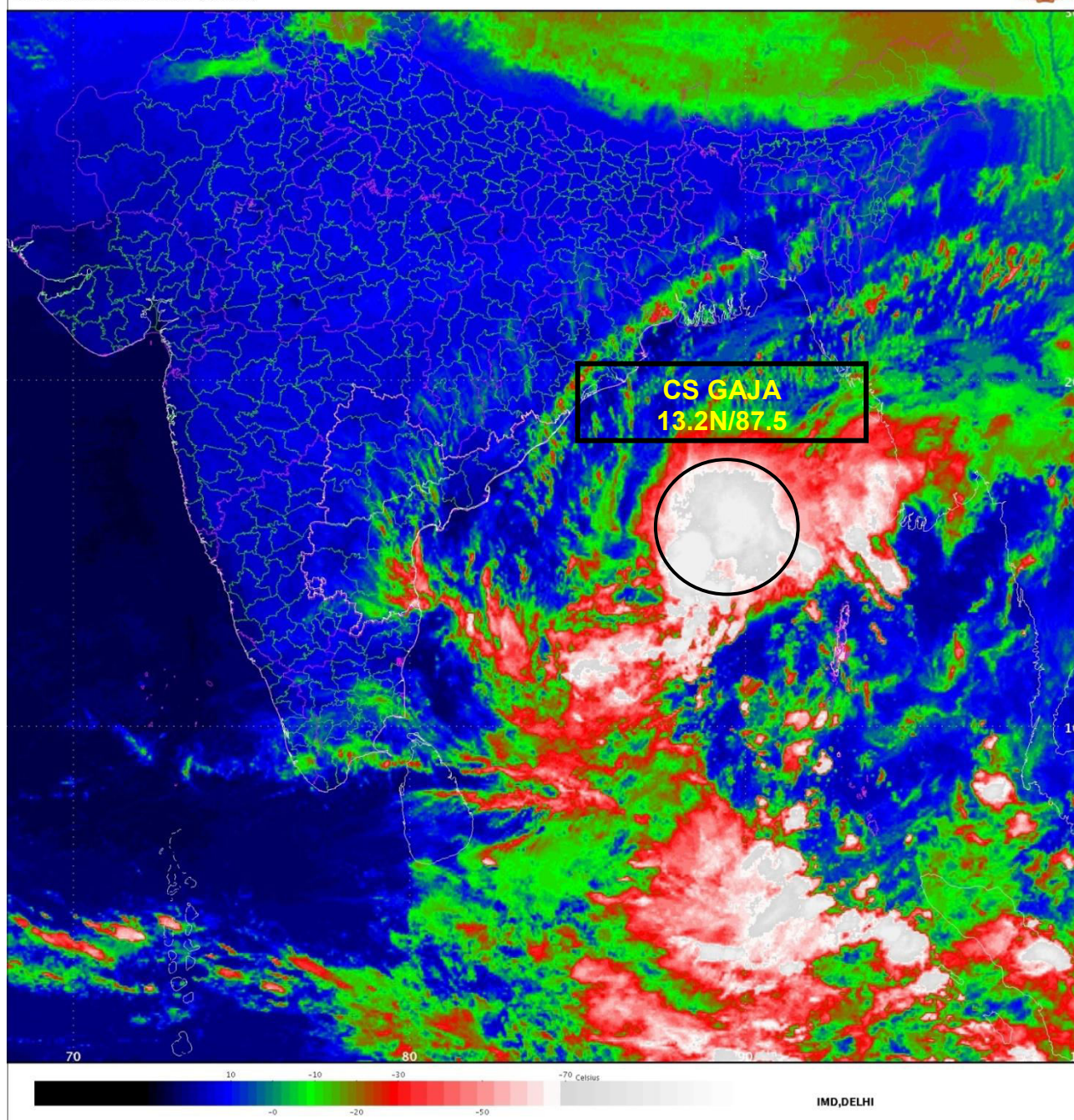
**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF THE ORDER OF 50X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. CONSIDERING THE DEEP LAYER MEAN WIND BETWEEN 850 AND 500 HPA LEVELS, THE SYSTEM LIES IN A COL REGION BETWEEN TWO ANTICYCLONIC CIRCULATIONS TO THE WEST AND EAST OF THE SYSTEM RESPECTIVELY. AS A RESULT THE SYSTEM IS MOVING SLOWLY AND MEANDERING OVER THE REGION. IT IS EXPECTED TO MOVE SLOWLY FOR FURTHER NEXT 12 HOURS. THEREAFTER, ITS SPEED OF MOVEMENT WILL INCREASE GRADUALLY AND MOVE WEST-SOUTHWESTWARDS AS IT WILL BE GUIDED BY THE ANCTICYCLONE TO THE WEST OF THE CYCLONIC STORM. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(SD KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

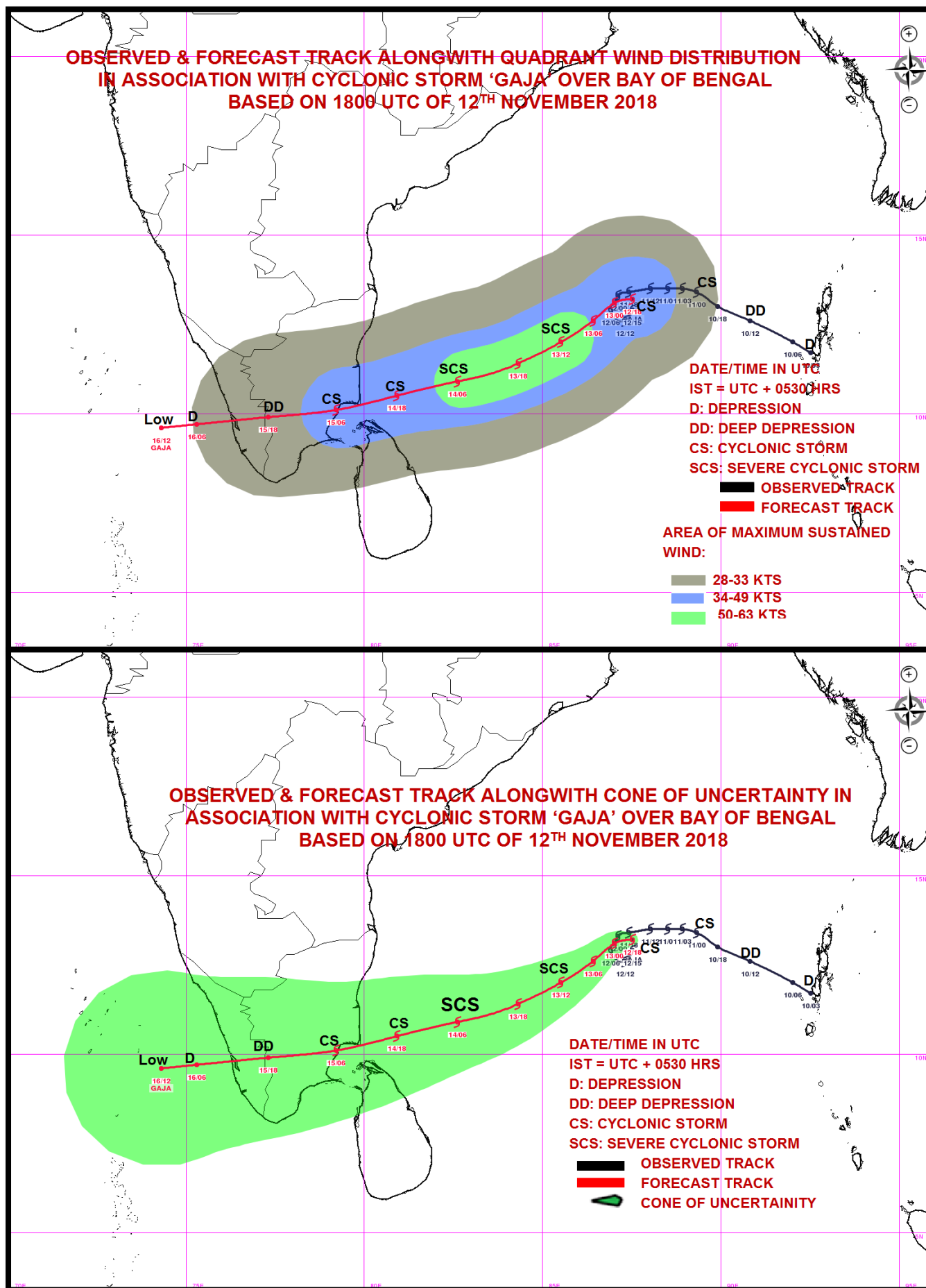
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 15**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 15 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0000 UTC OF 13.11.2018 BASED ON 2100 UTC OF 12.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 07 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF YESTERDAY, THE 12<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.2°N AND LONGITUDE 87.3°E, ABOUT 760 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 850 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS. WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
12.11.18/2100	13.2/87.3	75-85 gusting to 95	Cyclonic Storm
13.11.18/0000	13.1/87.0	80-90 gusting to 100	Cyclonic Storm
13.11.18/0600	12.6/86.4	85-95 gusting to 105	Cyclonic Storm
13.11.18/1200	12.0/85.5	90-100 gusting to 110	Severe Cyclonic Storm
13.11.18/1800	11.4/84.3	100-110 gusting to 125	Severe Cyclonic Storm
14.11.18/0600	10.9/82.6	95-105 gusting to 120	Severe Cyclonic Storm
14.11.18/1800	10.5/80.9	85-95 gusting to 105	Cyclonic Storm
15.11.18/0600	10.1/79.2	80-90 gusting to 100	Cyclonic Storm
15.11.18/1800	9.9/77.3	50-60 gusting to 70	Deep Depression
16.11.18/0600	9.7/75.3	35-45 gusting to 55	Depression
16.11.18/1200	9.6/74.3	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 2200 UTC OF 12<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 17.5°N AND LONGITUDE 85.5°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 1800 UTC OF YESTERDAY, A SHIP LOCATED AT 09.8 °N/ 87.9° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.8 HPA AND MEAN SURFACE WIND SPEED OF 250°/ 16 KNOTS. AT 2100 UTC OF YESTERDAY, A BOUY LOCATED AT 15 °N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.1 HPA AND MEAN SURFACE WIND SPEED OF 060°/ 16 KNOTS AND ANOTHER BOUY LOCATED AT 14 °N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1003.5 HPA AND MEAN SURFACE WIND SPEED OF 050°/ 10 KNOTS. A THIRD BOUY LOCATED AT 13.5 °N/ 84.2° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.7 HPA AND MEAN SURFACE WIND SPEED OF 010°/ 14 KNOTS

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (15-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 17°N. CONSIDERING THE DEEP LAYER MEAN WIND BETWEEN 850 AND 500 HPA LEVELS, THE SYSTEM LIES IN A COL REGION BETWEEN TWO ANTICYCLONIC CIRCULATIONS TO THE WEST AND EAST OF THE SYSTEM RESPECTIVELY. AS A RESULT THE SYSTEM IS MOVING SLOWLY AND MEANDERING OVER THE REGION. IT IS EXPECTED TO MOVE SLOWLY FOR FURTHER NEXT 12 HOURS. THEREAFTER, ITS SPEED OF MOVEMENT WILL INCREASE GRADUALLY AND MOVE WEST-SOUTHWESTWARDS AS IT WILL BE GUIDED BY THE ANCTICYCLONE TO THE WEST OF THE CYCLONIC STORM. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(SD KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

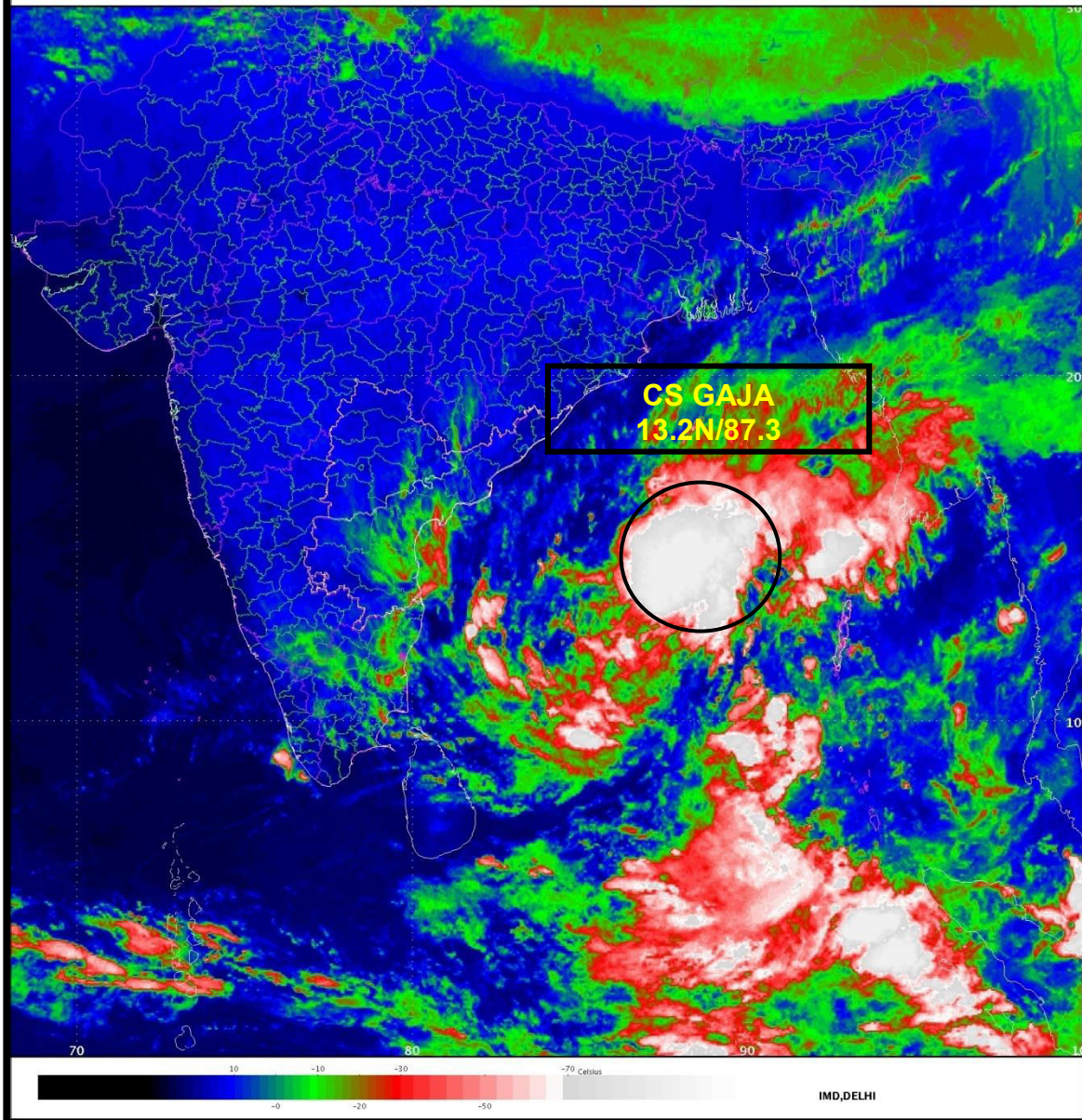
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



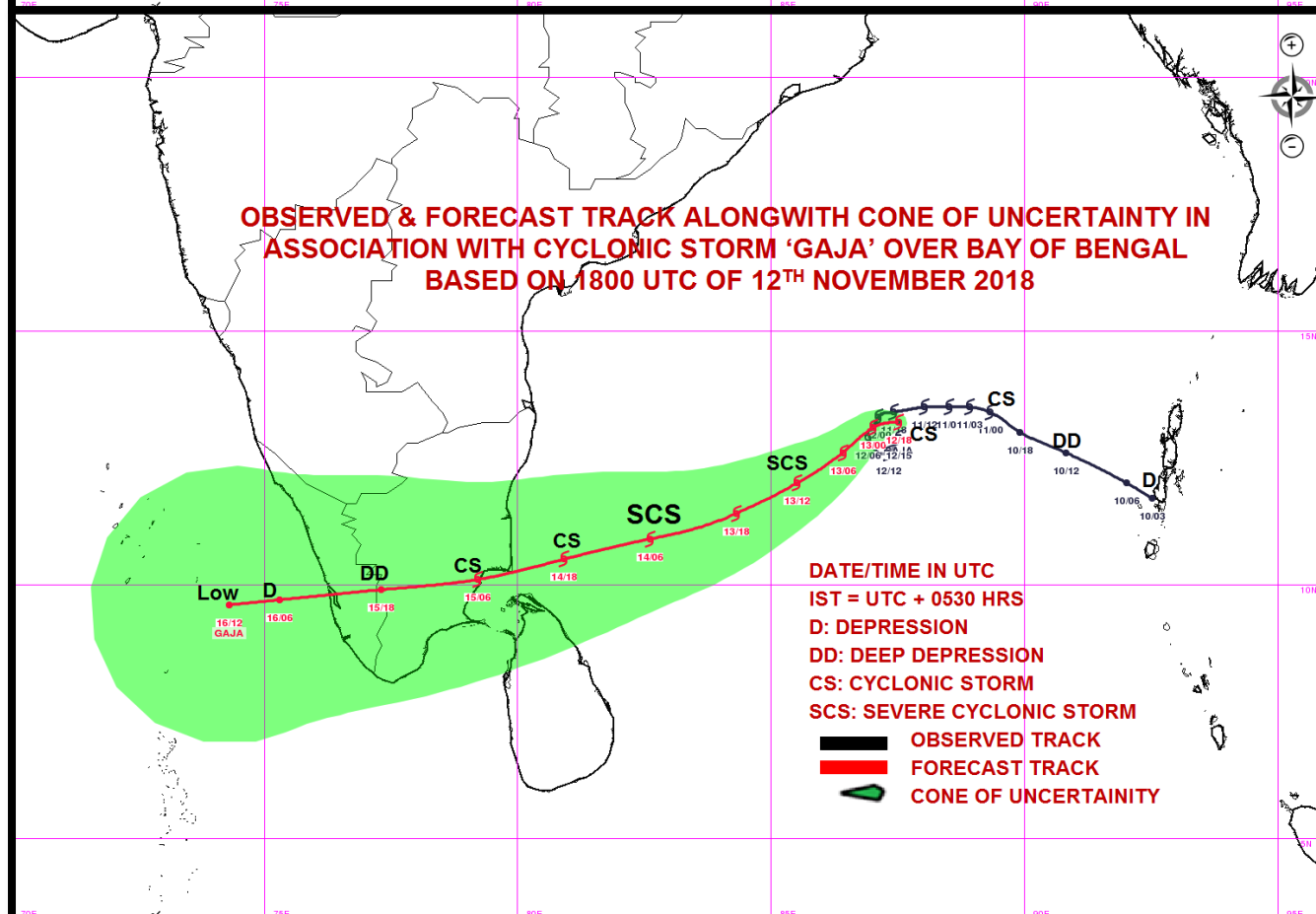
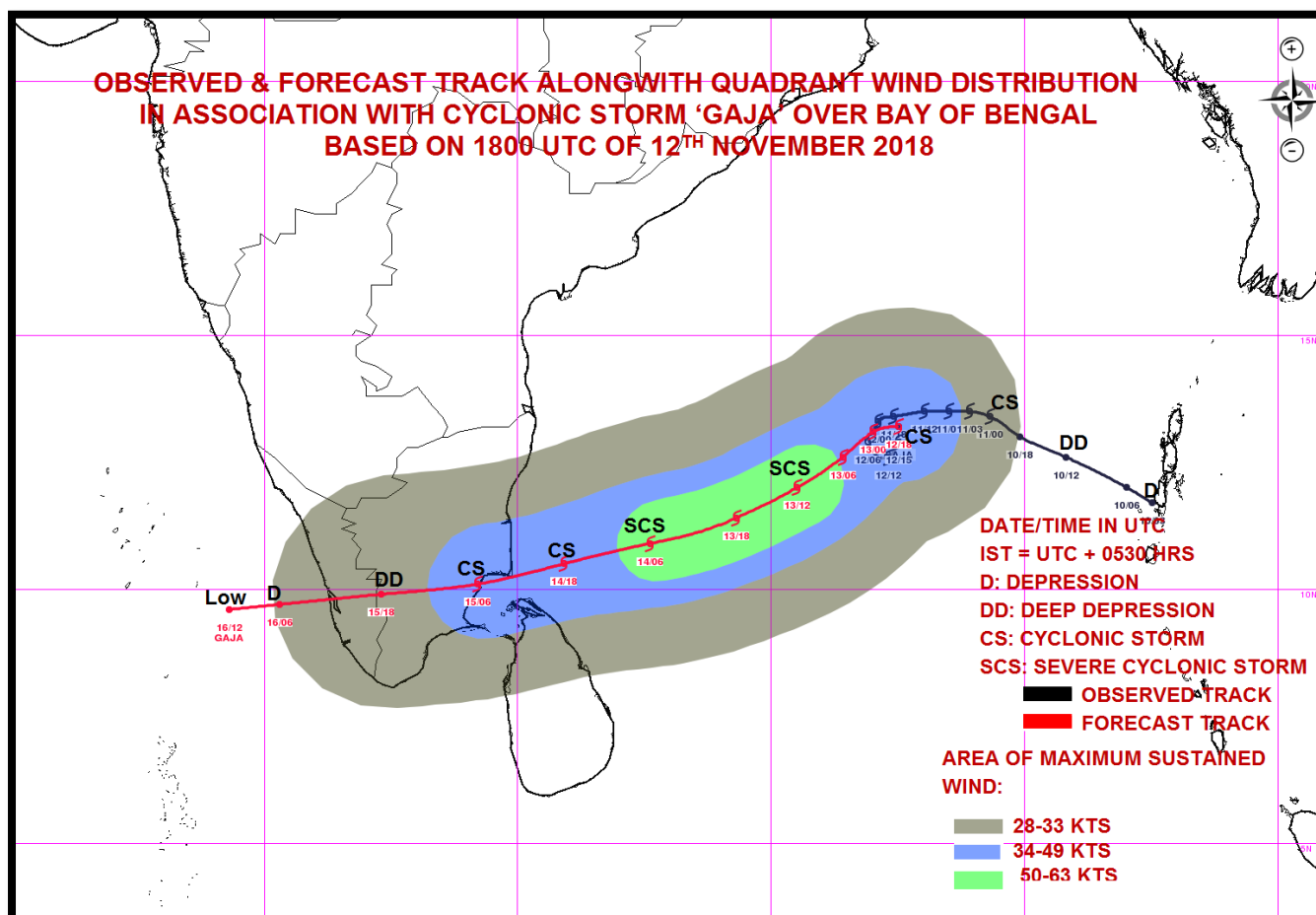
SAT :INSAT-3D  
IMG. TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

12-11-2018/22:00 GMT  
13-11-2018/03:30 IST



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 16**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 16 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 13.11.2018 BASED ON 0000 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WESTWARDS WITH A SPEED OF 05 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF TODAY, THE 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.2°N AND LONGITUDE 87.2°E, ABOUT 750 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 840 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS AND MAINTAIN THE INTENSITY DURING SUBSEQUENT 24 HOURS. IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS. WHILE MOVING WEST-SOUTHWESTWARDS, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0300-0600 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
13.11.18/0000	13.2/87.2	70-80 gusting to 90	Cyclonic Storm
13.11.18/0600	13.0/86.6	75-85 gusting to 95	Cyclonic Storm
13.11.18/1200	12.6/85.6	80-90 gusting to 100	Cyclonic Storm
13.11.18/1800	12.2/84.7	90-100 gusting to 110	Severe Cyclonic Storm
14.11.18/0000	11.7/83.7	100-110 gusting to 125	Severe Cyclonic Storm
14.11.18/1200	11.1/82.3	100-110 gusting to 125	Severe Cyclonic Storm
15.11.18/0000	10.6/80.7	80-90 gusting to 100	Cyclonic Storm
15.11.18/1200	10.1/78.8	50-60 gusting to 70	Deep Depression
16.11.18/0000	9.8/76.7	35-45 gusting to 55	Depression
16.11.18/1200	9.6/74.2	20-30 gusting to 40	Low

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 17.5°N AND LONGITUDE 85.5°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 0000 UTC OF TODAY, A SHIP LOCATED AT 09.8 °N/ 88° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.5 HPA AND MEAN SURFACE WIND SPEED OF 220°/ 18XZ C KNOTS. AT 0000 UTC OF TODAY, A BOUY LOCATED AT 15 °N/ 89° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.8 HPA AND MEAN SURFACE WIND SPEED OF 080°/ 14 KNOTS AND ANOTHER BOUY LOCATED AT 14 °N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1002.0 HPA AND MEAN SURFACE WIND SPEED OF 030°/ 14 KNOTS. A THIRD BOUY LOCATED AT 13.5 °N/ 84.2° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.8 HPA AND MEAN SURFACE WIND SPEED OF 010°/ 16 KNOTS

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. UPPER LEVEL RIDGE RUNS ALONG LAT 16°N. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY HAS INCREASED AND NOW IS OF THE ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 14<sup>TH</sup> NOVEMBER. MOST OF THE NWP MODELS ARE ALSO IN AGREEMENT WITH THE ABOVE.

(SD KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

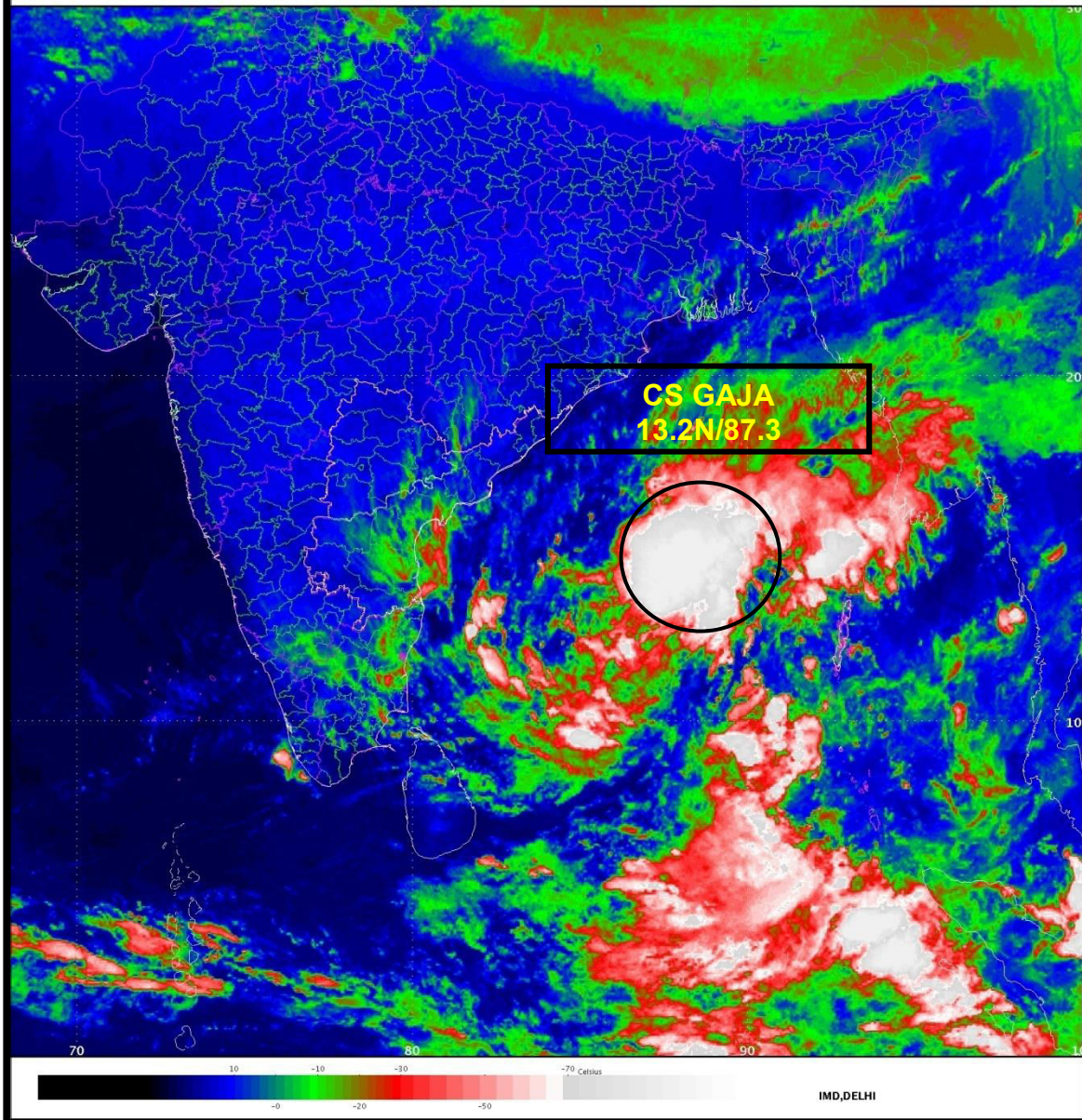
---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

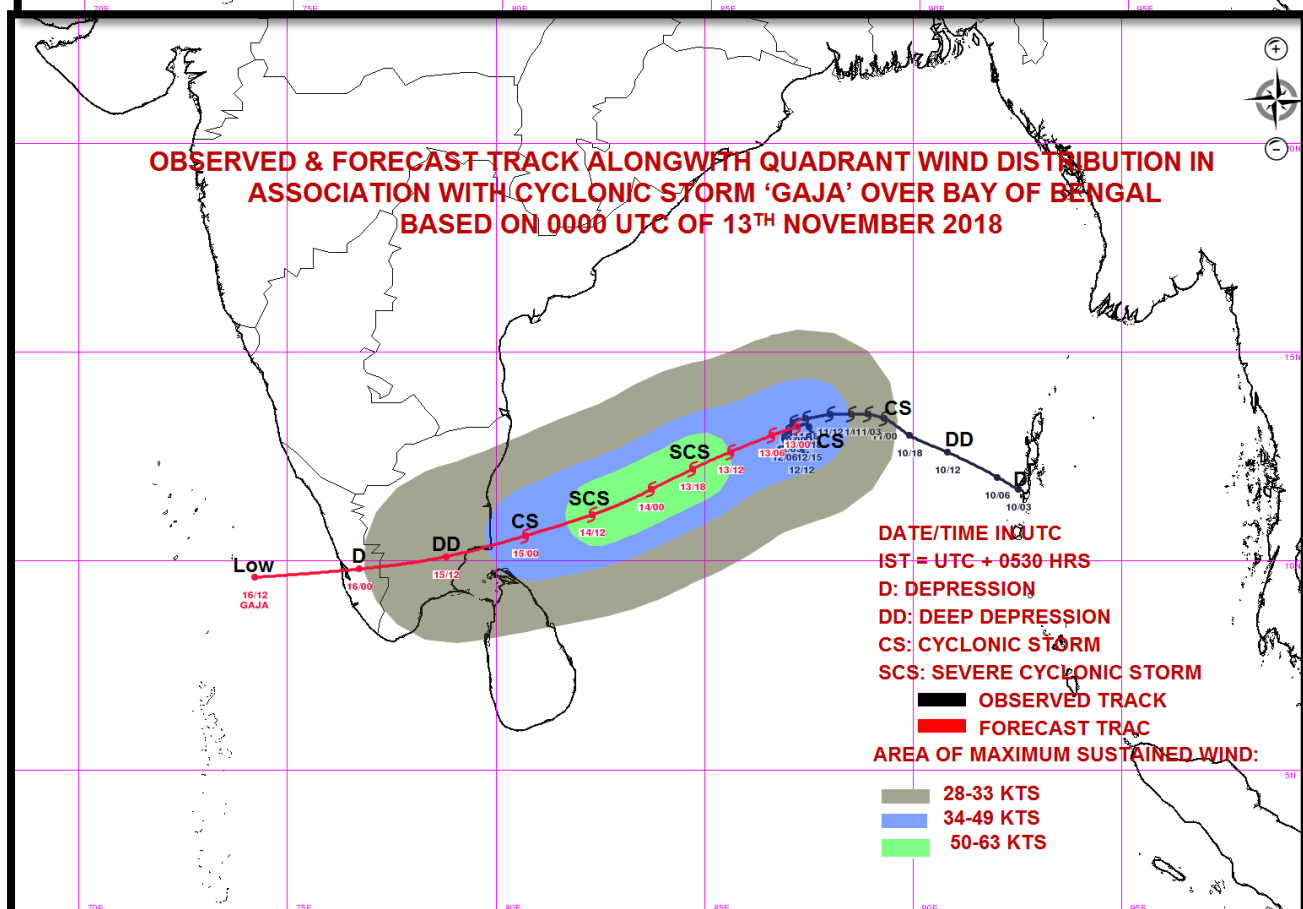
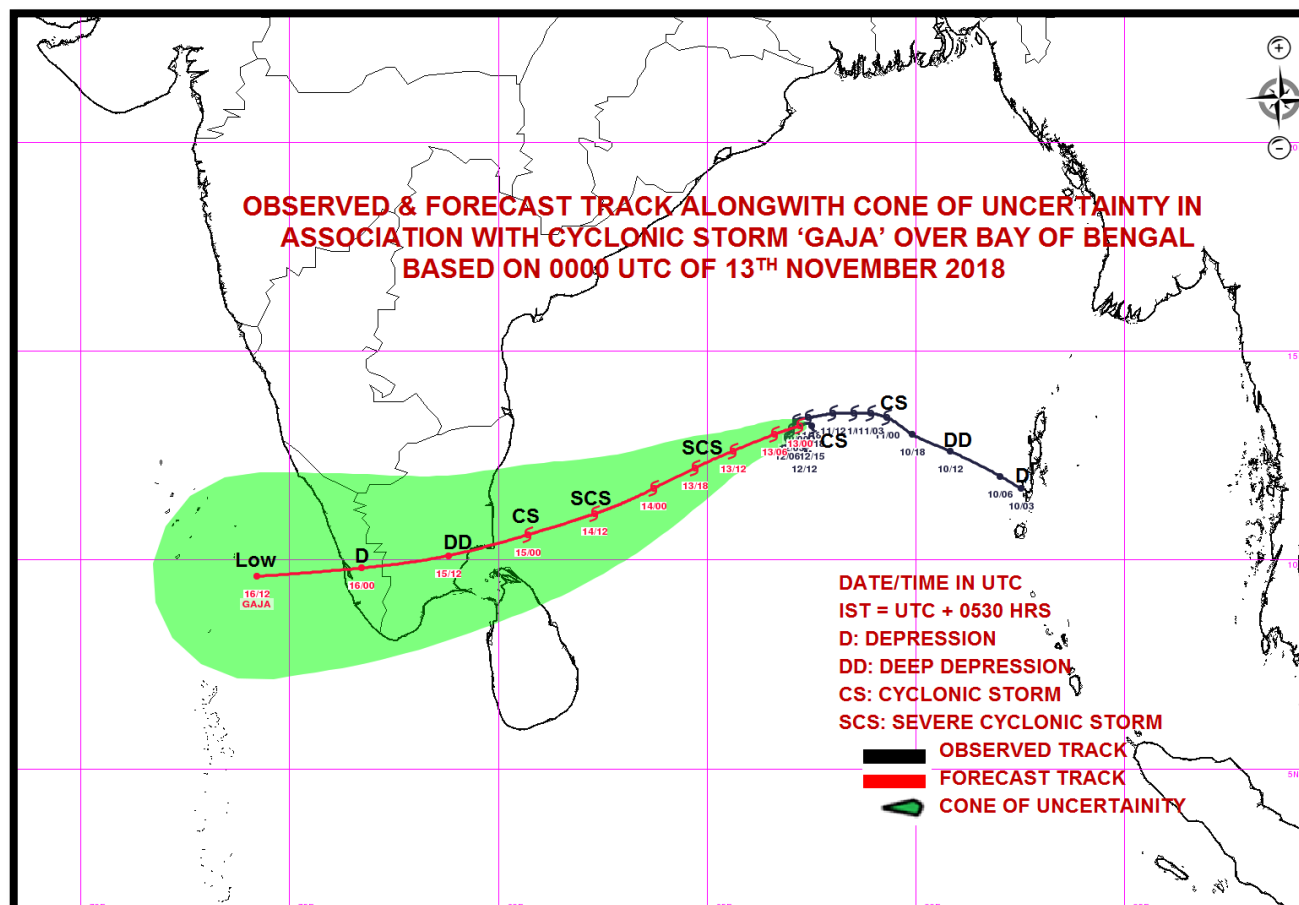
SAT :INSAT-3D  
IMG. TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

12-11-2018/22:00 GMT  
13-11-2018/03:30 IST



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 17**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 17 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 13.11.2018 BASED ON 0300 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 04 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 UTC OF TODAY, THE 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.3°N AND LONGITUDE 87.1°E, ABOUT 740 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 830 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0900-1200 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/0300	13.3/87.1	70-80 GUSTING TO 90	CYCLONIC STORM
13.11.18/0600	13.0/86.6	75-85 GUSTING TO 95	CYCLONIC STORM
13.11.18/1200	12.6/85.6	80-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/1800	12.2/84.7	90-100 GUSTING TO 110	SEVERE CYCLONIC STORM
14.11.18/0000	11.7/83.7	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
14.11.18/1200	11.1/82.3	100-110 GUSTING TO 125	SEVERE CYCLONIC STORM
15.11.18/0000	10.6/80.7	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	10.1/78.8	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0000	9.8/76.7	35-45 GUSTING TO 55	DEPRESSION
16.11.18/1200	9.6/74.2	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 17.5°N AND LONGITUDE 85.5°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 0300 UTC OF TODAY, A BOUY LOCATED AT 13.5°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.1 HPA AND MEAN SURFACE WIND SPEED OF 020°/14 KNOTS. ANOTHER BOUY LOCATED AT 14 °N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.9 HPA AND MEAN SURFACE WIND SPEED OF 110°/ 10 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 16°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY NOW IS OF THE ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

**(NEETHA K GOPAL)**  
**SCIENTIST-E, RSMC, NEW DELHI**

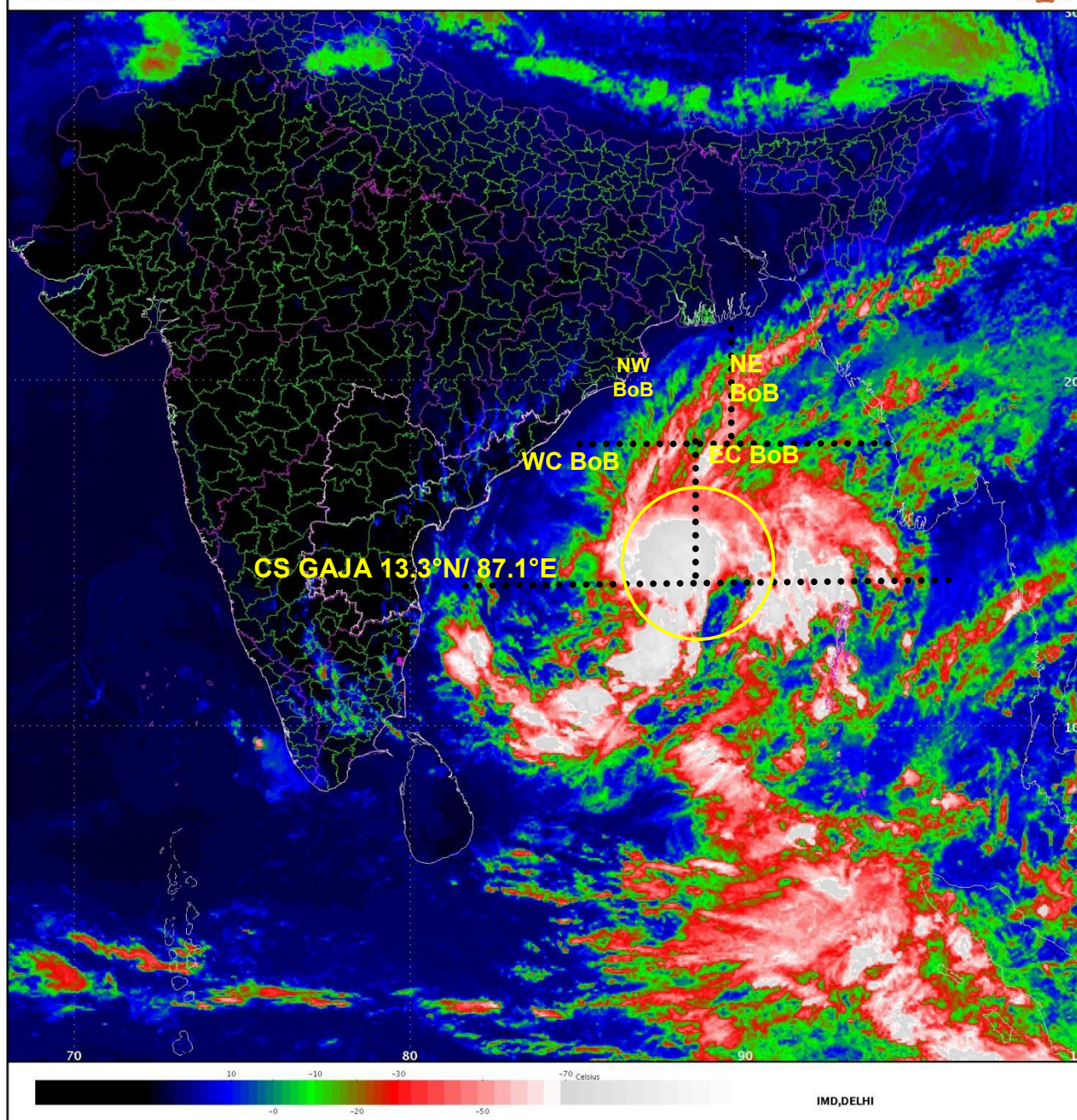
---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

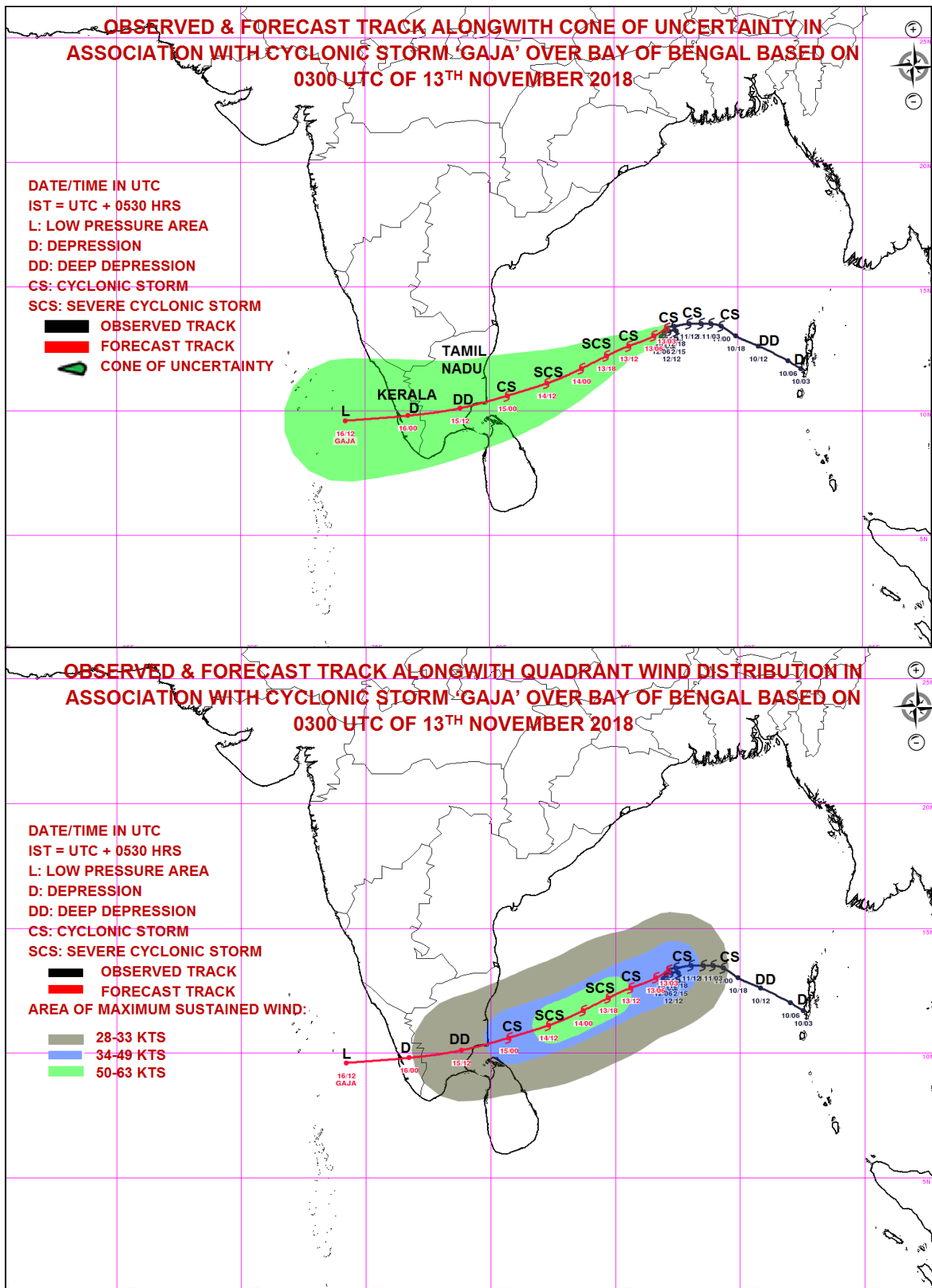
13-11-2018/05:30 GMT  
13-11-2018/11:00 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 18**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 18 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 13.11.2018 BASED ON 0600 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.5°N AND LONGITUDE 86.6°E, ABOUT 690 KM EAST-NORTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 790 KM EAST-NORTHEAST OF NAGAPPATTINAM (43347) (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 0900-1200 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/0600	13.5/86.6	70-80 GUSTING TO 90	CYCLONIC STORM
13.11.18/1200	13.1/85.8	70-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/1800	12.6/85.3	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/0000	12.1/84.7	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/0600	11.7/84.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/1800	11.2/82.5	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	10.6/80.2	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.3/78.7	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	10.0/77.1	35-45 GUSTING TO 55	DEPRESSION
16.11.18/1800	9.8/75.6	25-35 GUSTING TO 45	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 17.5°N AND LONGITUDE 85.5°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 0600 UTC OF TODAY, A BOUY LOCATED AT 14 °N/ 87° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.6 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 10 KNOTS. ANOTHER BOUY LOCATED AT 13.4°N/ 84.1° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.4 HPA. A SHIP LOCATED AT 8.6°N/ 88.0° E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.6 HPA AND MEAN SURFACE WIND SPEED OF 230°/16 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 16°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY NOW IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE EAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

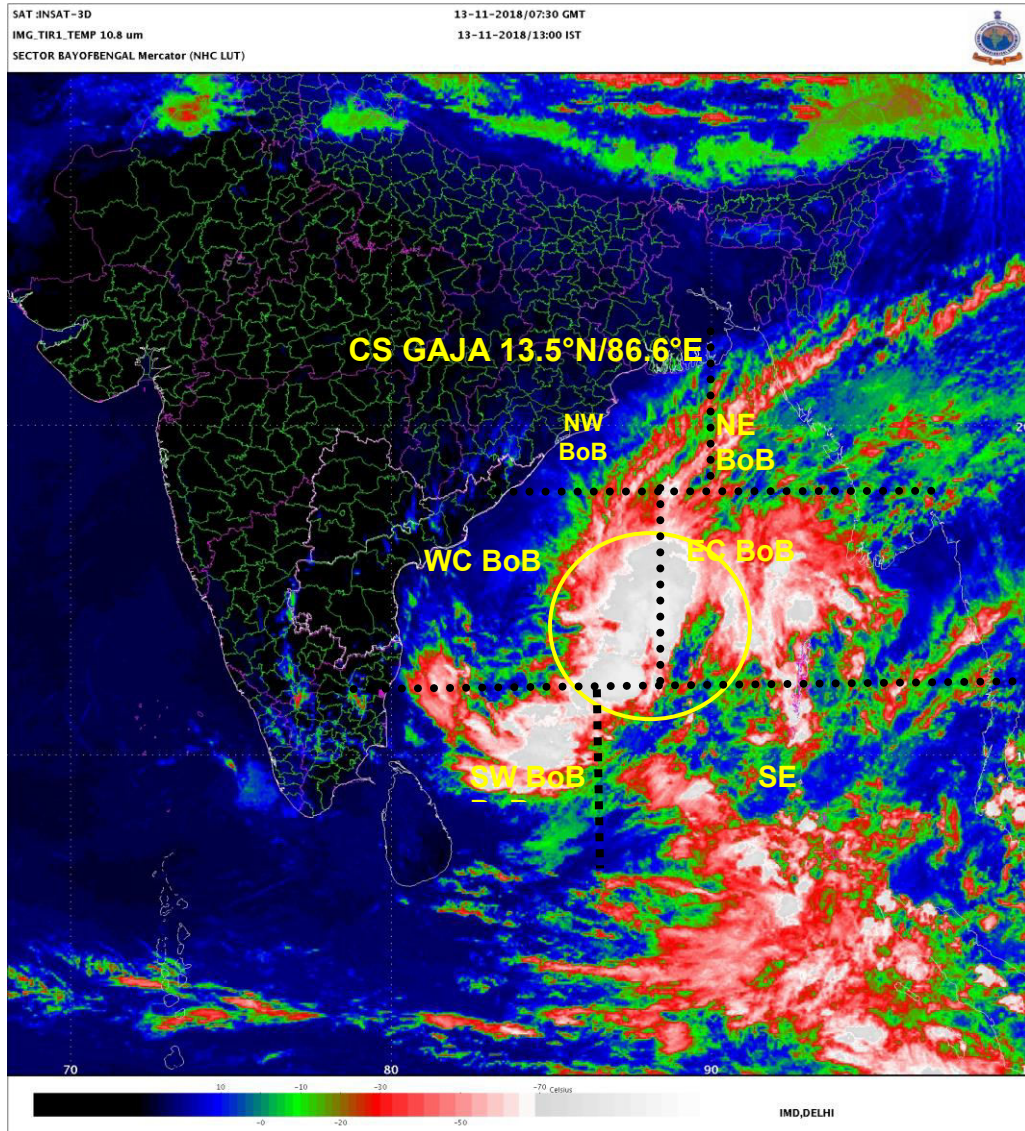
(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

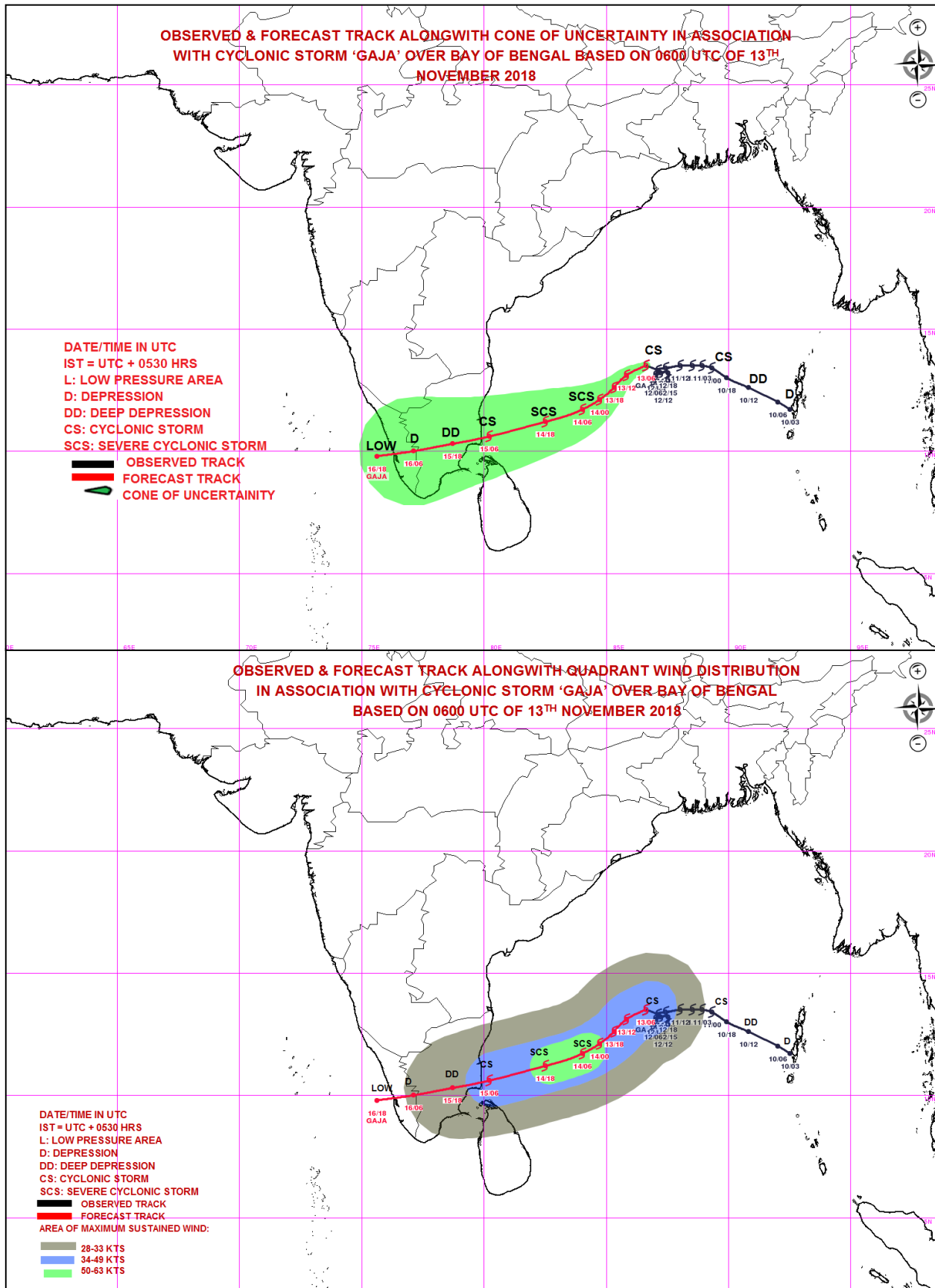




---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 19**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 19 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1130 UTC OF 13.11.2018 BASED ON 0900 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED NEARLY WESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF TODAY, THE 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.4°N AND LONGITUDE 86.4°E, ABOUT 660 KM EAST-NORTHEAST OF CHENNAI (TAMIL NADU) AND 760 KM EAST-NORTHEAST OF NAGAPPATTINAM (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER AFTERNOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/0900	13.4/86.4	70-80 GUSTING TO 90	CYCLONIC STORM
13.11.18/1200	13.1/85.8	70-90 GUSTING TO 100	CYCLONIC STORM
13.11.18/1800	12.6/85.3	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/0000	12.1/84.7	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/0600	11.7/84.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/1800	11.2/82.5	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	10.6/80.2	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.3/78.7	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	10.0/77.1	35-45 GUSTING TO 55	DEPRESSION
16.11.18/1800	9.8/75.6	25-35 GUSTING TO 45	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0900 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.5°N TO 17.5°N AND LONGITUDE 85.5°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AT 0900 UTC OF TODAY, A BOUY LOCATED AT 15°N/ 89°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.8 HPA AND MEAN SURFACE WIND SPEED OF 150°/ 20 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 16°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY NOW IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

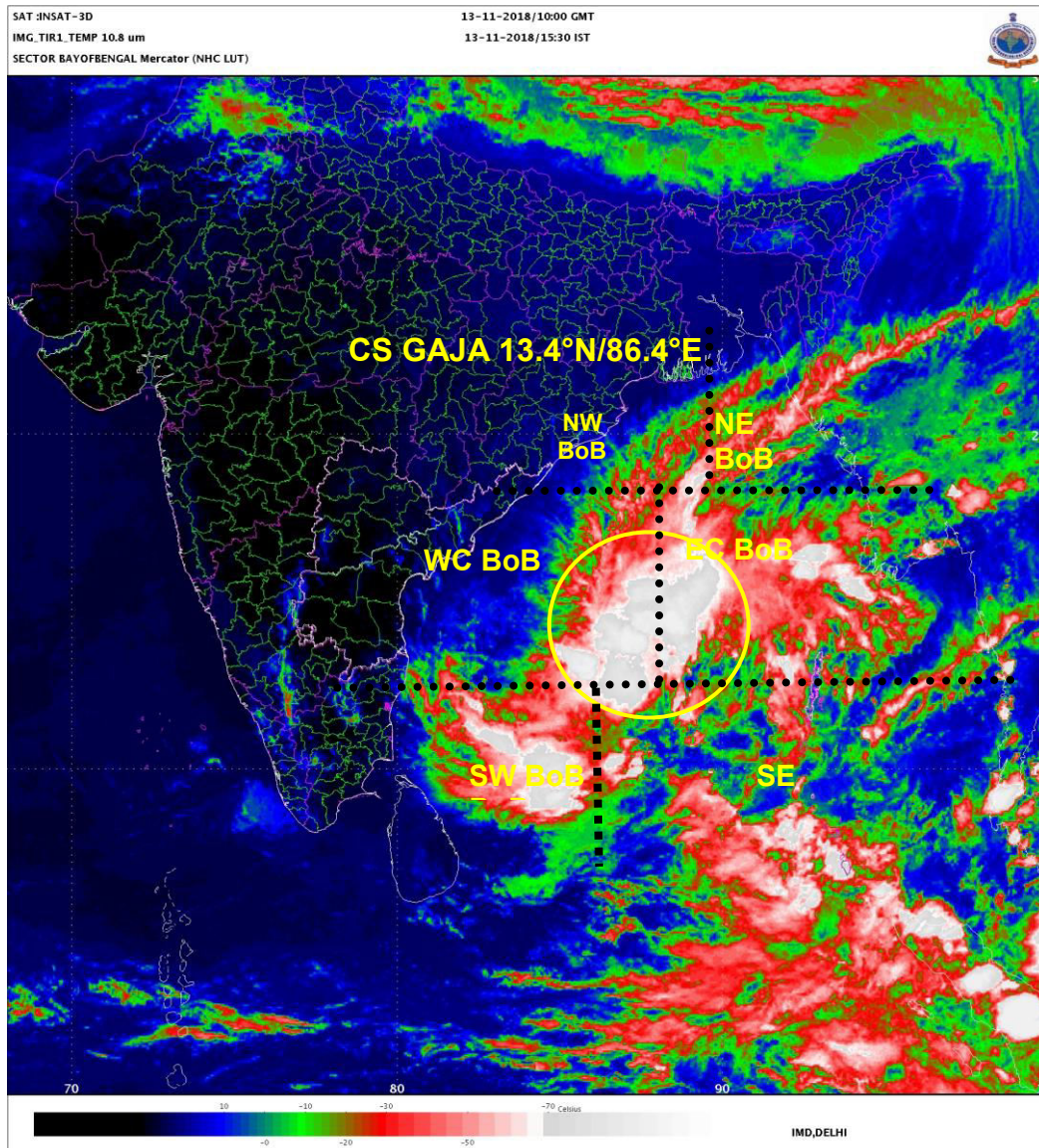
THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

(SUNITHA DEVI)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

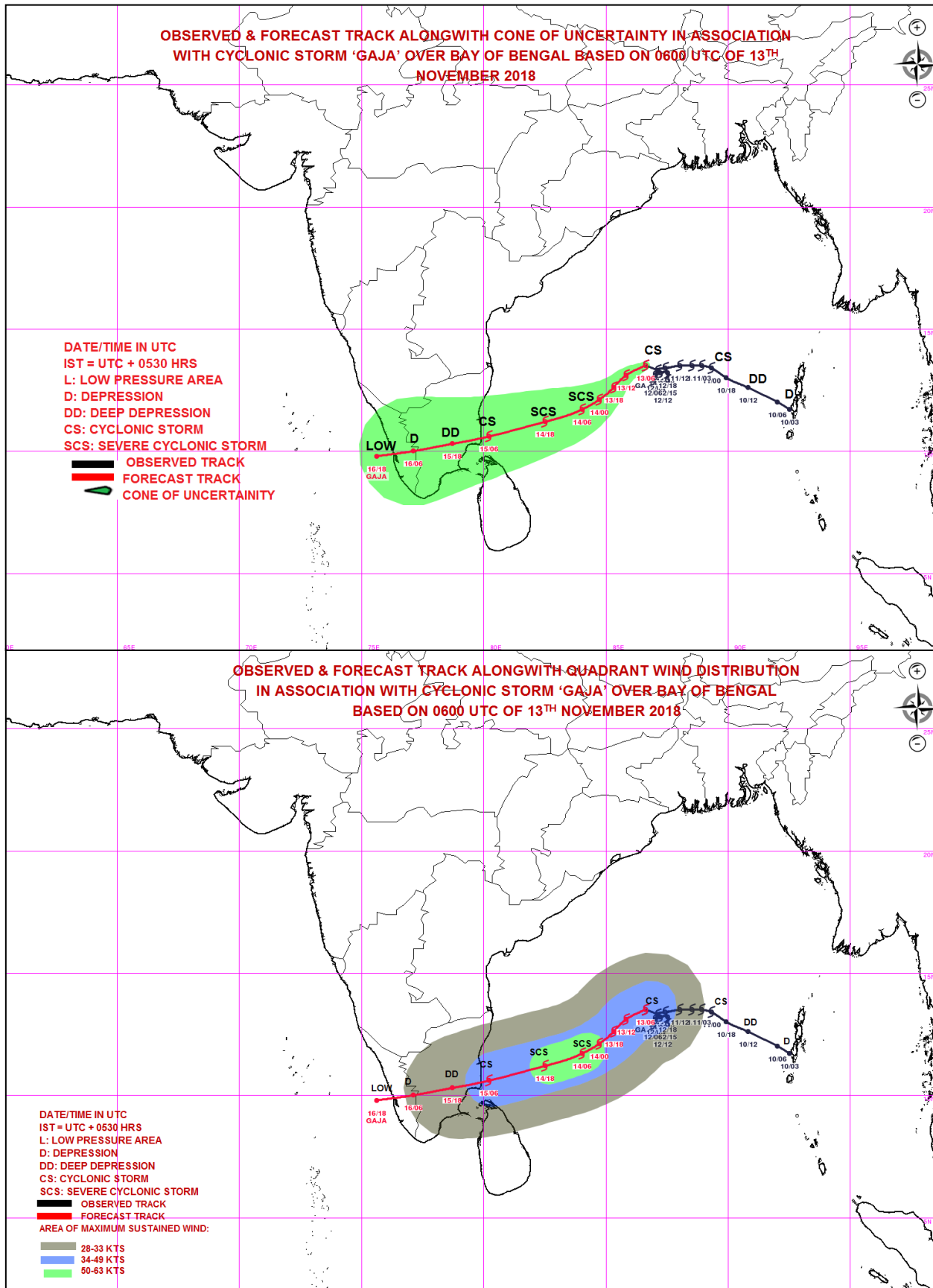
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 20**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 20 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1430 UTC OF 13.11.2018 BASED ON 1200 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF TODAY, THE 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.4°N AND LONGITUDE 86.0°E, ABOUT 620 KM EAST-NORTHEAST OF CHENNAI (TAMIL NADU) AND 720 KM NORTHEAST OF NAGAPATTINAM (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER AFTERNOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
13.11.18/1200	13.4/86.0	70-80 gusting to 90	Cyclonic Storm
13.11.18/1800	13.1/85.3	70-80 gusting to 90	Cyclonic Storm
14.11.18/0000	12.7/84.7	75-85 gusting to 95	Cyclonic Storm
14.11.18/0600	12.3/84.0	80-90 gusting to 100	Cyclonic Storm
14.11.18/1200	11.9/83.2	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0000	11.1/80.9	80-90 gusting to 100	Cyclonic Storm
15.11.18/1200	10.6/79.3	65-75 gusting to 85	Cyclonic Storm
16.11.18/0000	10.2/77.9	50-60 gusting to 70	Deep Depression
16.11.18/1200	9.9/76.3	40-50 gusting to 60	Depression
17.11.18/0000	9.7/74.7	25-35 gusting to 45	Low

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.0°N TO 17.5°N AND LONGITUDE 85.0°E TO 90.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 1200 UTC OF TODAY, A BOUY LOCATED AT 14°N/ 87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.7 HPA AND MEAN SURFACE WIND SPEED OF 113°/ 08 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 16°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 15X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

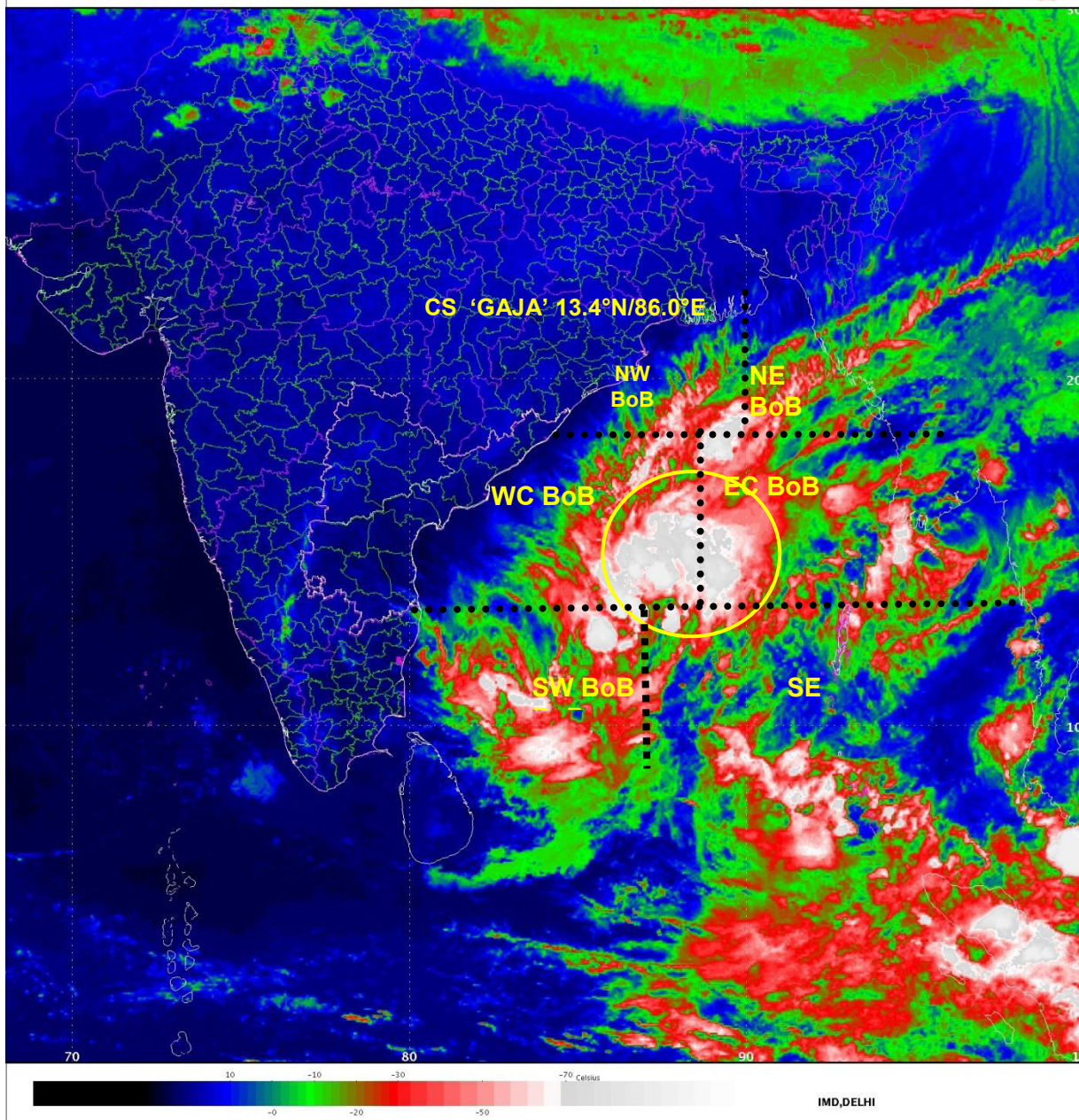
---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

SAT :INSAT-3D  
IMG.TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

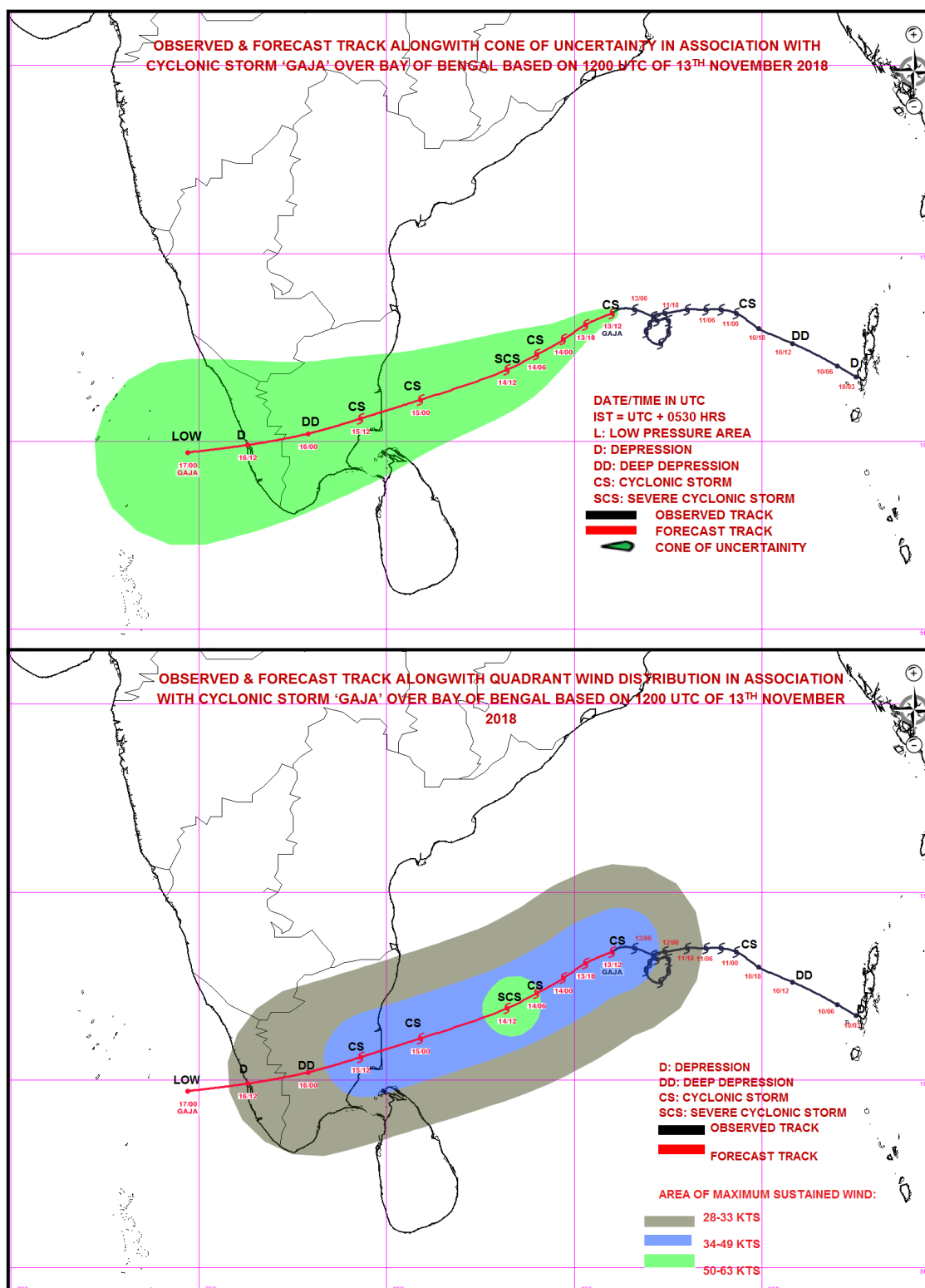
13-11-2018/13:30 GMT  
13-11-2018/19:00 IST



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 21**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 21 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1630 UTC OF 13.11.2018 BASED ON 1500 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.2°N AND LONGITUDE 85.8°E, ABOUT 600 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 700 KM NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER AFTERNOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/1500	13.2/85.8	70-80 GUSTING TO 90	CYCLONIC STORM
13.11.18/1800	13.1/85.3	70-80 GUSTING TO 90	CYCLONIC STORM
14.11.18/0000	12.7/84.7	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/0600	12.3/84.0	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1200	11.9/83.2	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	11.1/80.9	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1200	10.6/79.3	65-75 GUSTING TO 85	CYCLONIC STORM
16.11.18/0000	10.2/77.9	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/1200	9.9/76.3	40-50 GUSTING TO 60	DEPRESSION
17.11.18/0000	9.7/74.7	25-35 GUSTING TO 45	LOW

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 1500 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.0°N TO 17.0°N AND LONGITUDE 85.0°E TO 90.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 1500 UTC OF 13<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 14°N/ 87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.8 HPA AND MEAN SURFACE WIND SPEED OF 60°/ 06 KNOTS. ANOTHER BOUY LOCATED AT 13.5°N/ 84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.3 HPA AND MEAN SURFACE WIND SPEED OF 20°/ 15 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 15°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 15X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE EAST OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

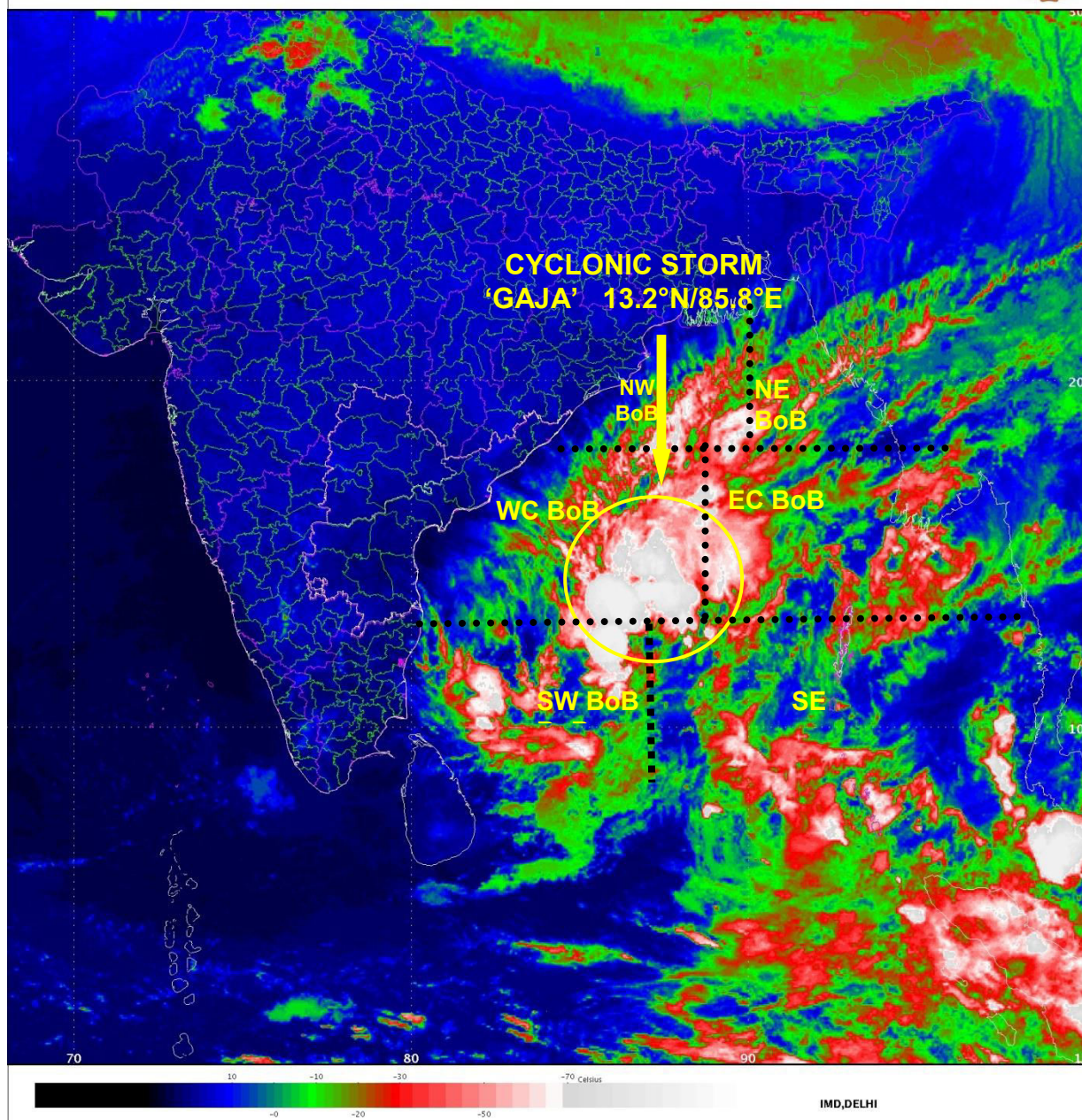
(ANANDA K DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

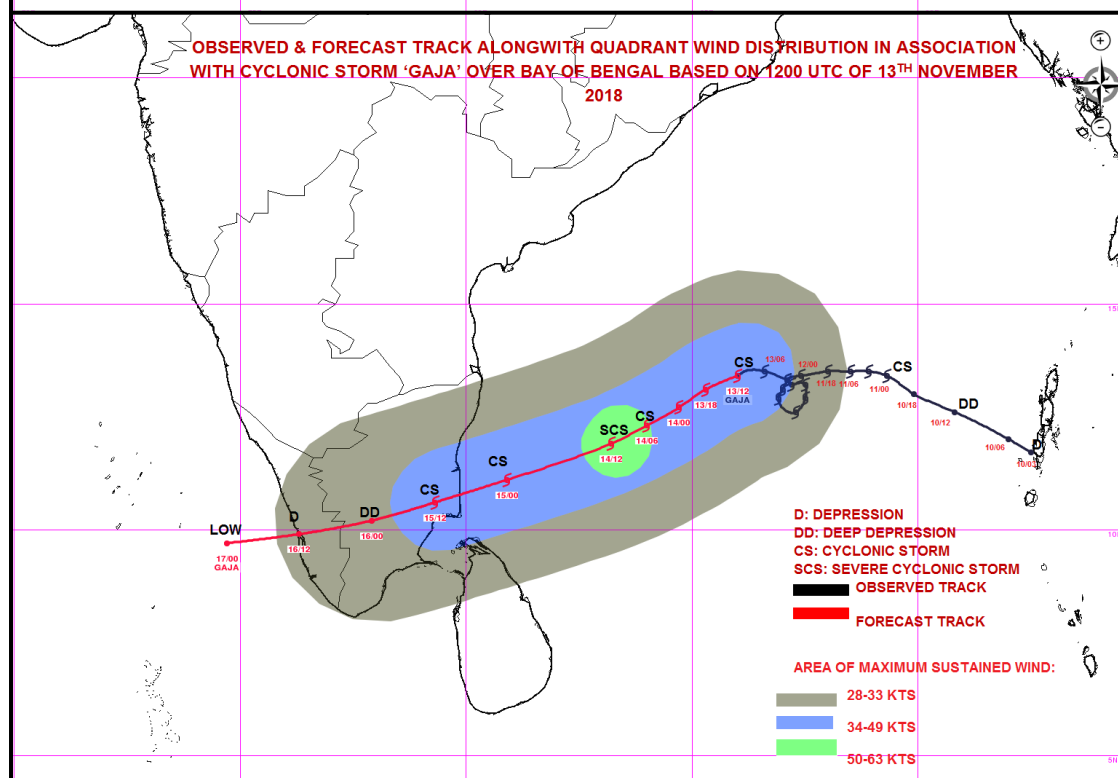
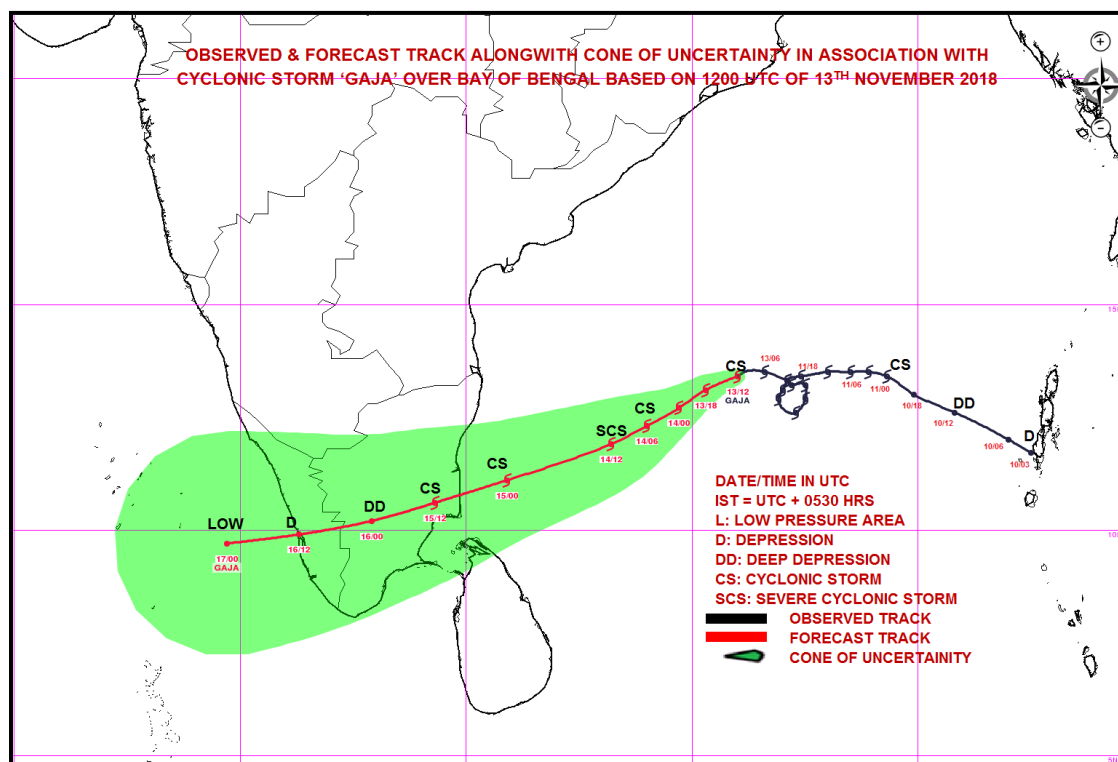
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 22**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 22 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 2030 UTC OF 13.11.2018 BASED ON 1800 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 08 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.2°N AND LONGITUDE 85.6°E, ABOUT 580 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 680 KM NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER AFTERNOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/1800	13.2/85.6	70-80 GUSTING TO 90	CYCLONIC STORM
14.11.18/0000	13.0/85.3	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/0600	12.6/84.8	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1200	12.2/84.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/1800	11.6/82.4	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	11.0/80.6	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.6/79.1	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	10.2/77.5	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	9.8/75.5	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.0°N TO 17.0°N AND LONGITUDE 85.0°E TO 89.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AT 1800 UTC OF 13<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 14°N/ 87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.1 HPA AND MEAN SURFACE WIND SPEED OF 110°/ 10 KNOTS. ANOTHER BOUY LOCATED AT 13.5°N/ 84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.4 HPA AND MEAN SURFACE WIND SPEED OF 20°/ 20 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 15°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 15X10<sup>-5</sup> SECOND<sup>-1</sup> TO NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH OF THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

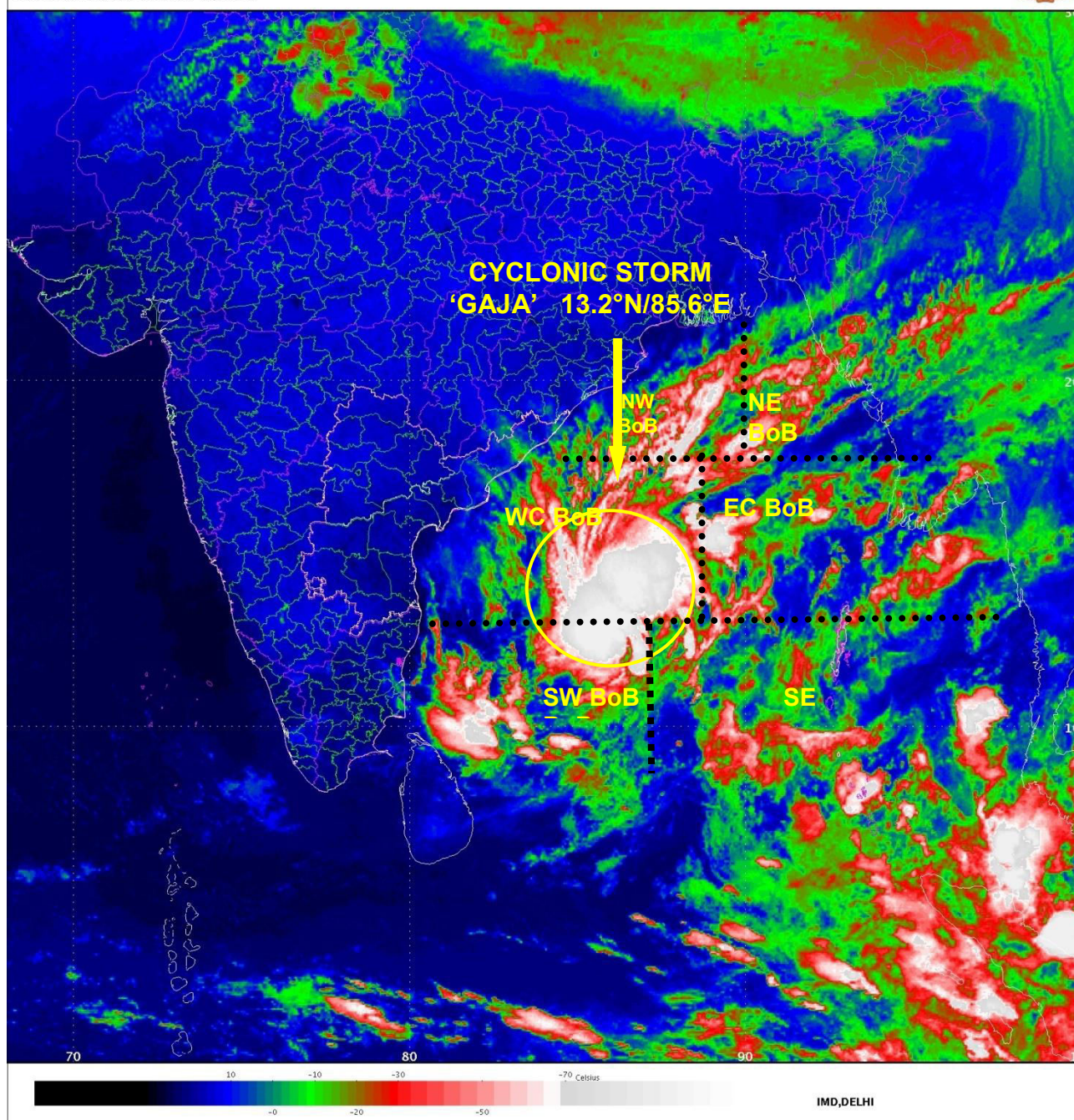
THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

(ANANDA K DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

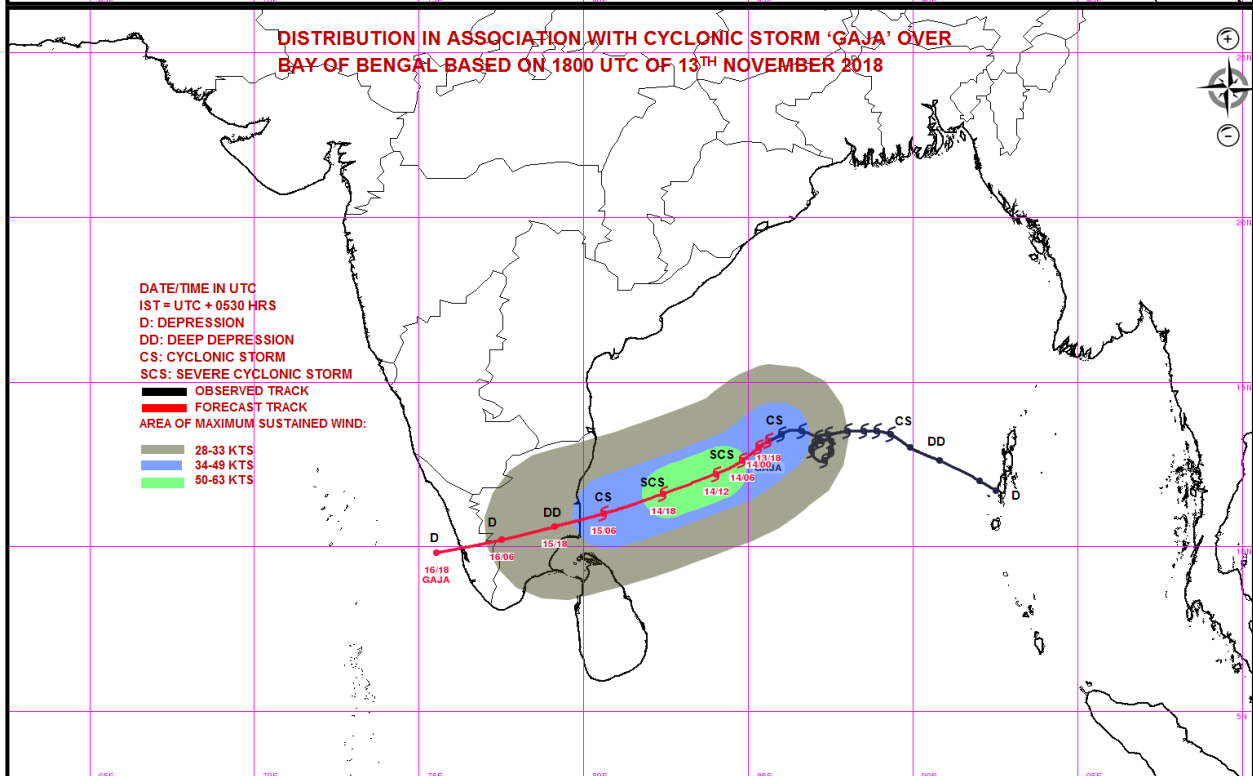
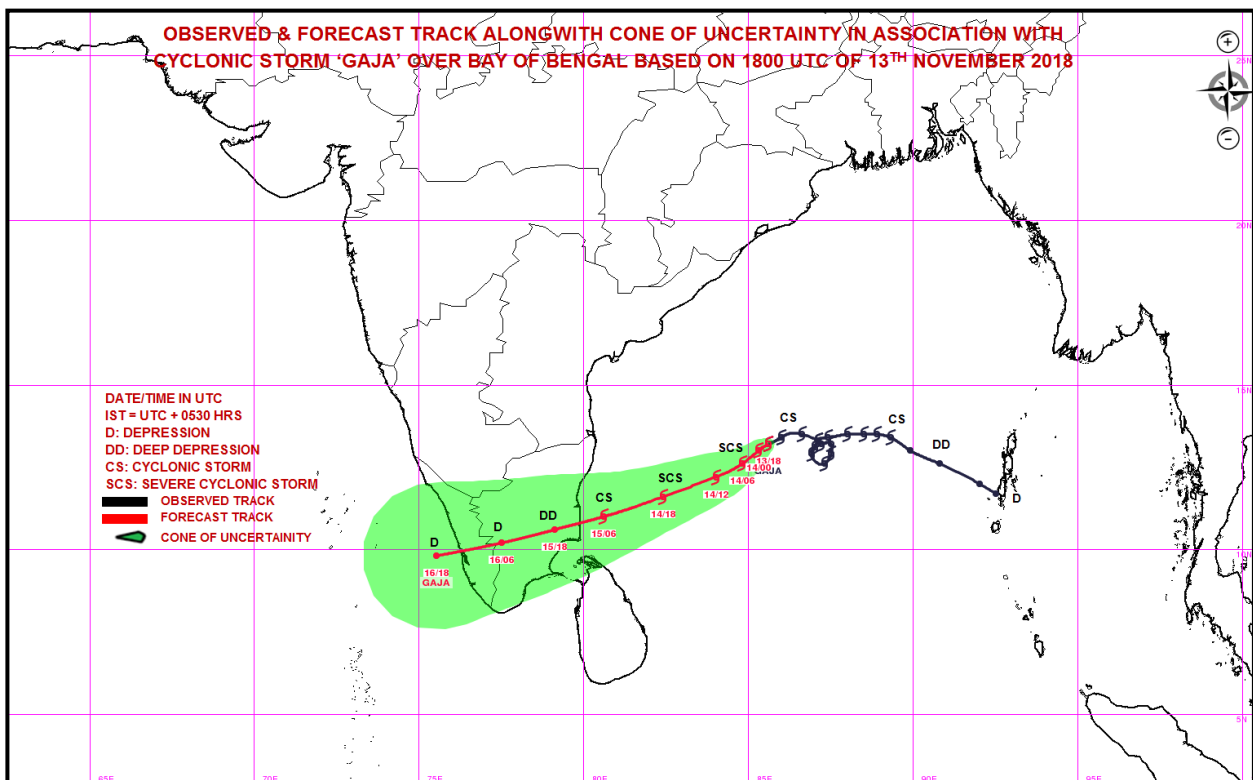
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 23**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 23 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0030 UTC OF 14.11.2018 BASED ON 2100 UTC OF 13.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 06 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF 13<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.1°N AND LONGITUDE 85.5°E, ABOUT 570 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 670 KM NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER AFTERNOON.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
13.11.18/2100	13.1/85.5	70-80 GUSTING TO 90	CYCLONIC STORM
14.11.18/0000	13.0/85.3	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/0600	12.6/84.8	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1200	12.2/84.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/1800	11.6/82.4	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	11.0/80.6	80-90 GUSTING TO 100	CYCLONIC STORM
15.11.18/1800	10.6/79.1	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/0600	10.2/77.5	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	9.8/75.5	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 13<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.0°N TO 16.0°N AND LONGITUDE 84.0°E TO 88.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 2100 UTC OF 13<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 14°N/ 87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.0 HPA AND MEAN SURFACE WIND SPEED OF 110°/8 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 15°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTHEAST OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

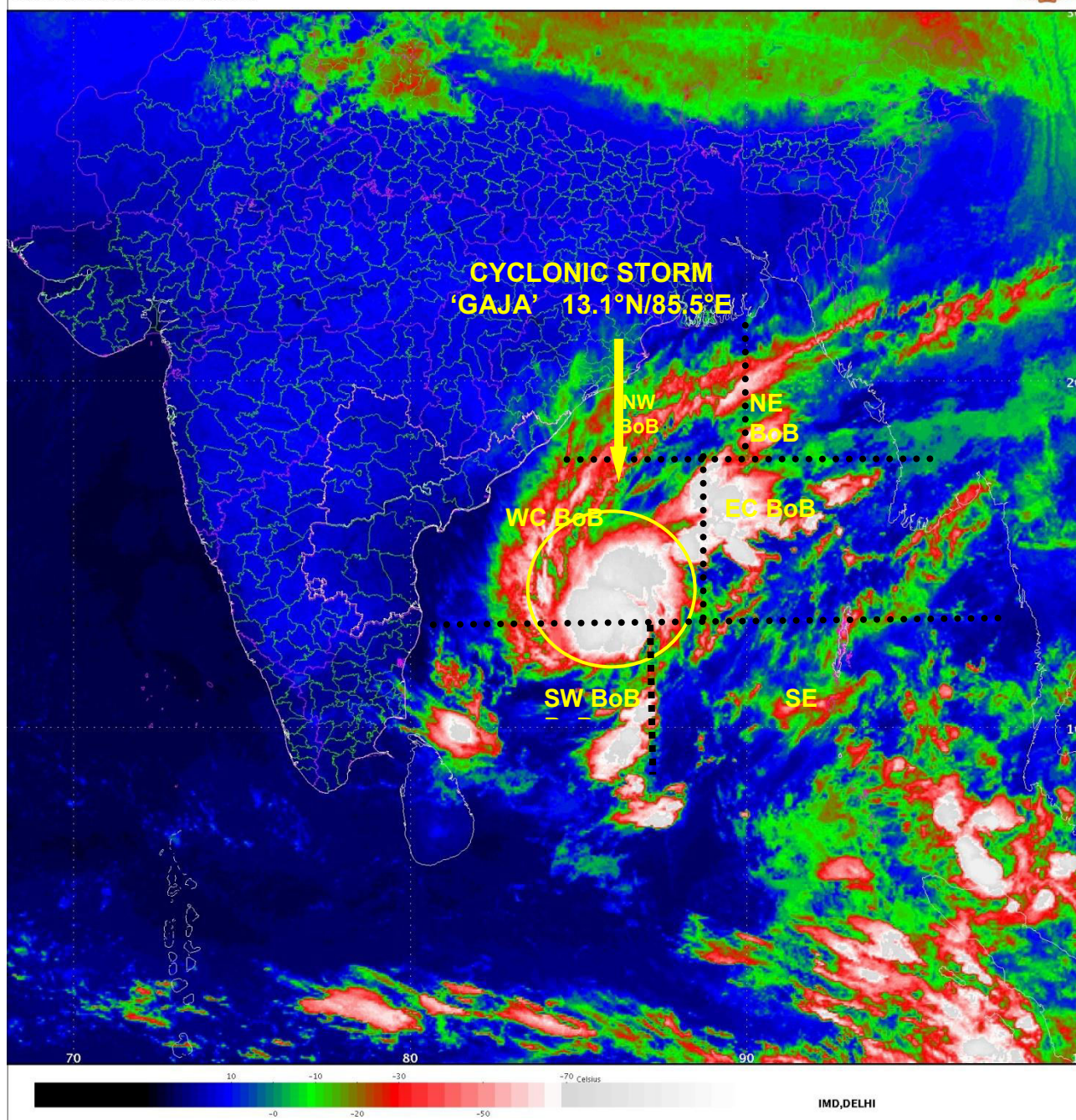
THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

(ANANDA K DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

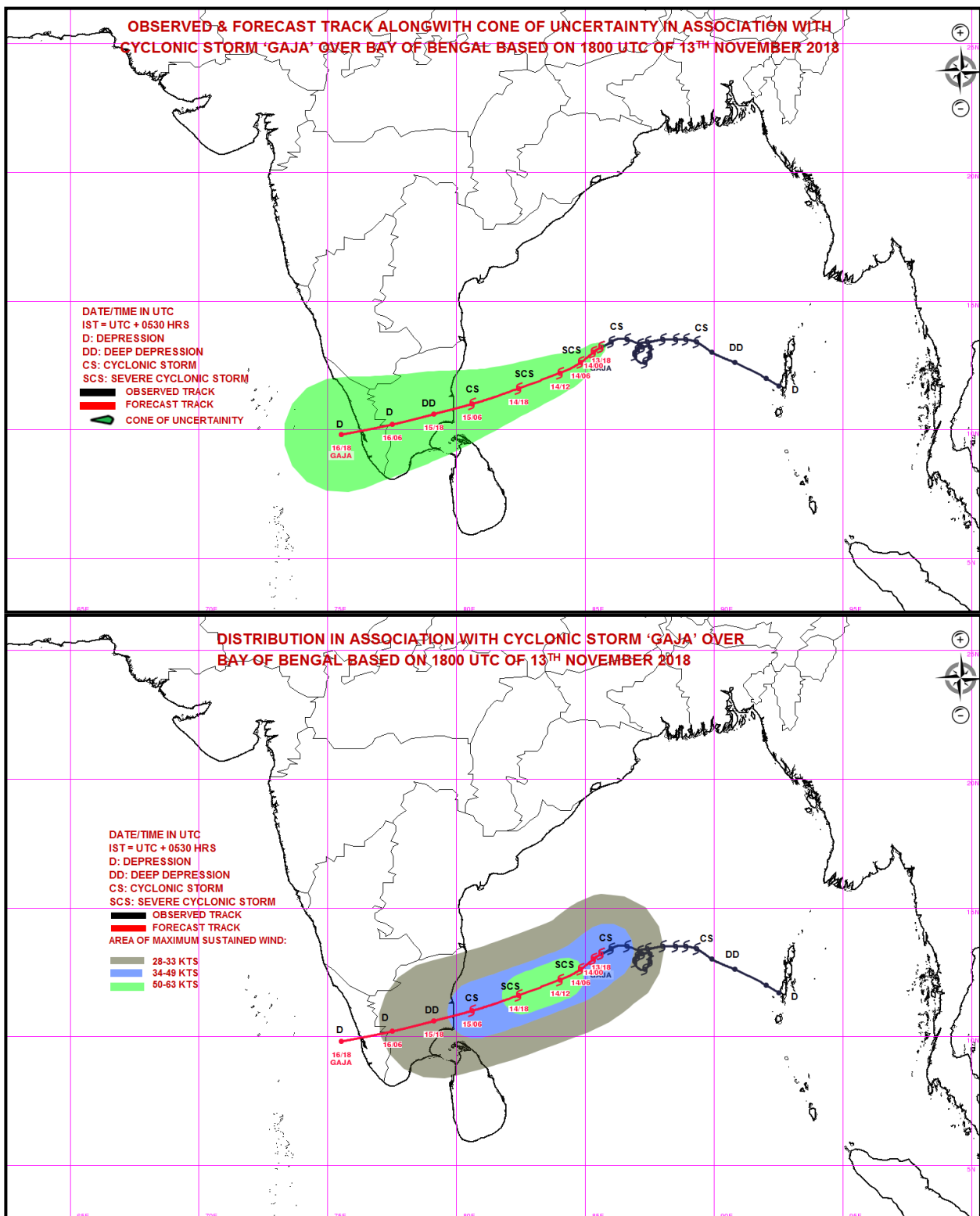
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 24**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 24 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 14.11.2018 BASED ON 0000 UTC OF 14.11.2018.**

**CYCLONIC STORM, 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL :**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 06 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL NEAR LATITUDE 13.1°N AND LONGITUDE 85.3°E, ABOUT 540 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 640 KM NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 24 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE AS A CYCLONIC STORM DURING 15<sup>TH</sup> NOVEMBER EVENING.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
14.11.18/0000	13.1/85.3	70-80 GUSTING TO 90	CYCLONIC STORM
14.11.18/0600	12.8/84.8	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1200	12.5/84.3	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
14.11.18/1800	12.1/83.6	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	11.4/82.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1200	10.9/80.5	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0000	10.6/78.8	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/1200	10.5/77.1	40-50 GUSTING TO 60	DEPRESSION
17.11.18/0000	10.4/75.3	25-35 GUSTING TO 45	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.0°N TO 16.0°N AND LONGITUDE 83.0°E TO 88.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 0000 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 15°N/ 89°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.3HPA AND MEAN SURFACE WIND SPEED OF 90°/ 12 KNOTS. ANOTHER BOUY LOCATED AT 13.5°N/ 84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.1 HPA AND MEAN SURFACE WIND SPEED OF 10°/ 18 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 4 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 4 DURING NEXT 3-4 DAYS WITH AMPLITUDE CLOSE TO 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 3-4 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL OFF NORTH TAMIL NADU COAST. UPPER LEVEL RIDGE RUNS ALONG LAT 15°N. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO NORTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-20 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HOURS. WHILE MOVING WEST SOUTHWESTWARDS, IT WILL EXPERIENCE LOWER OCEAN HEAT CONTENT LEADING TO GRADUAL WEAKENING OF THE SYSTEM ON 15<sup>TH</sup> NOVEMBER.

THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

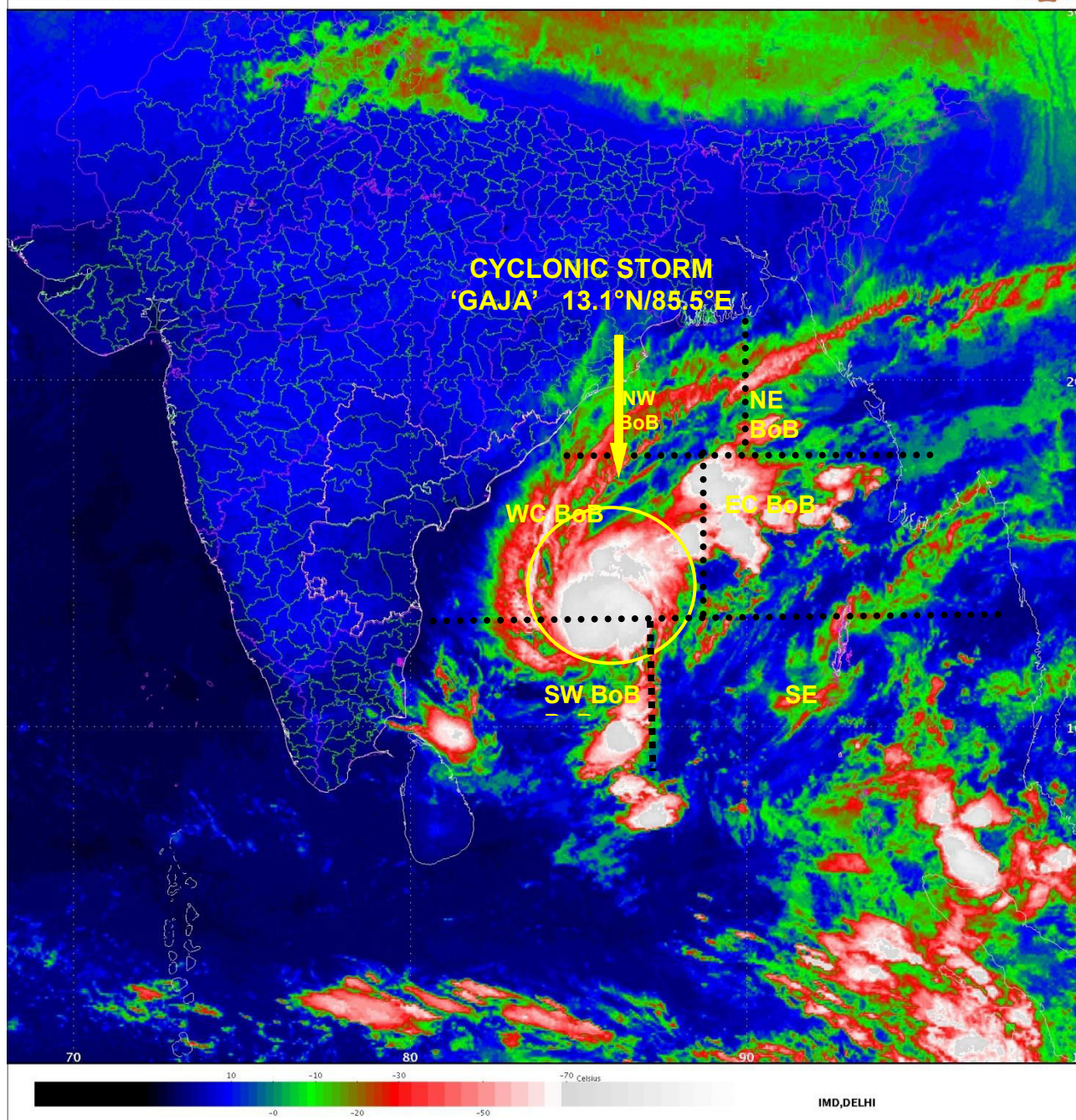
(ANANDA K DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

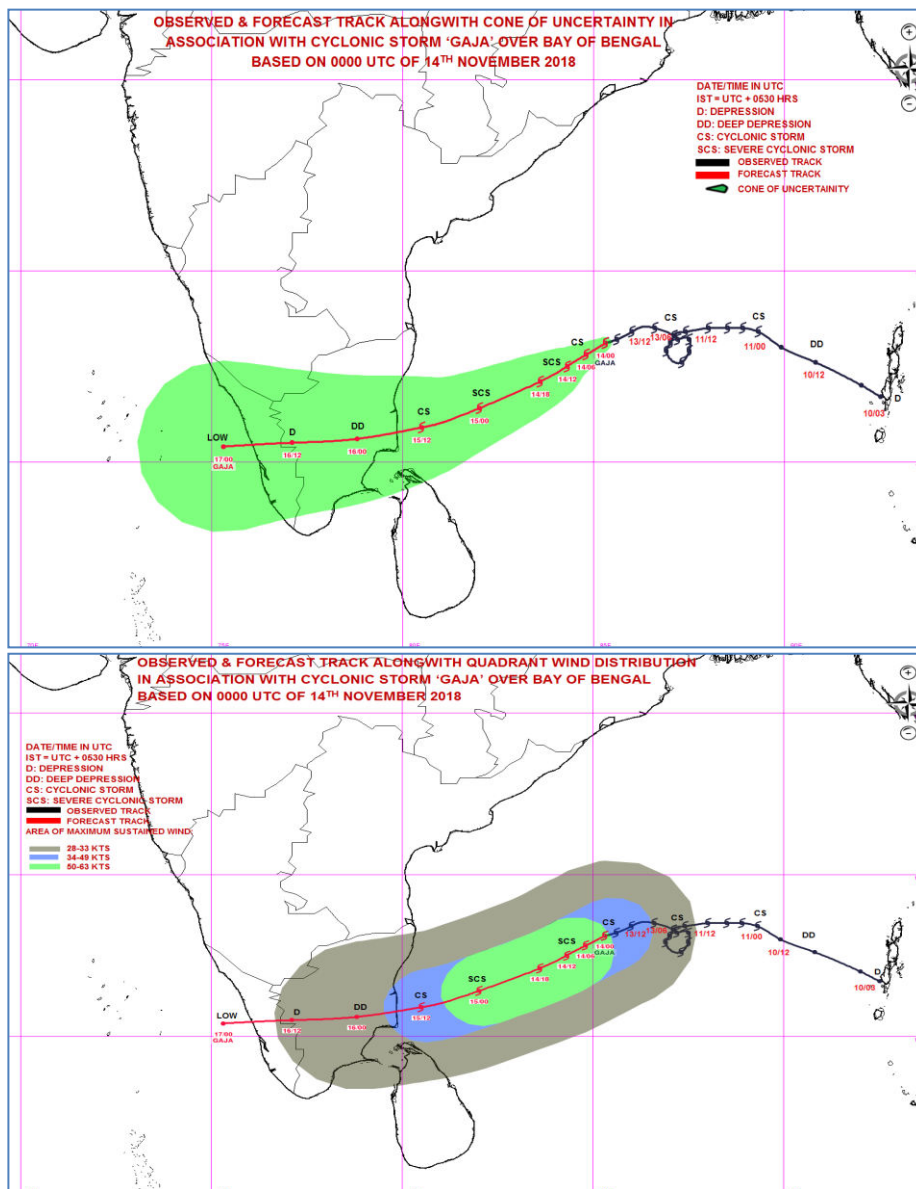
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**







**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 25**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 25 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 14.11.2018 BASED ON 0300 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER WESTCENTRAL AND ADJOINING EASTCENTRAL & SOUTH BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 07 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0300 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 13.0°N AND LONGITUDE 85.1°E, ABOUT 520 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 620 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AS A CYCLONIC STORM DURING 1200 TO 1500 UTC OF 15<sup>TH</sup> NOVEMBER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
14.11.18/0300	13.0/85.1	70-80 gusting to 90	Cyclonic Storm
14.11.18/0600	12.8/84.8	75-85 gusting to 95	Cyclonic Storm
14.11.18/1200	12.5/84.3	80-90 gusting to 100	Cyclonic Storm
14.11.18/1800	12.1/83.6	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0000	11.4/82.0	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.9/80.5	80-90 gusting to 100	Cyclonic Storm
16.11.18/0000	10.6/78.8	50-60 gusting to 70	Deep Depression
16.11.18/1200	10.5/77.1	40-50 gusting to 60	Depression
17.11.18/0000	10.4/75.3	25-35 gusting to 45	Low

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.0°N TO 15.0°N AND LONGITUDE 84.0°E TO 87.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 0300 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.6°N/ 84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.6 HPA AND MEAN SURFACE WIND SPEED OF

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

030°/ 18 KNOTS. ANOTHER BOUY LOCATED AT 14°N/ 86°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.2 HPA.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO SOUTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (05-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION DURING THE PAST 6 HOURS WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

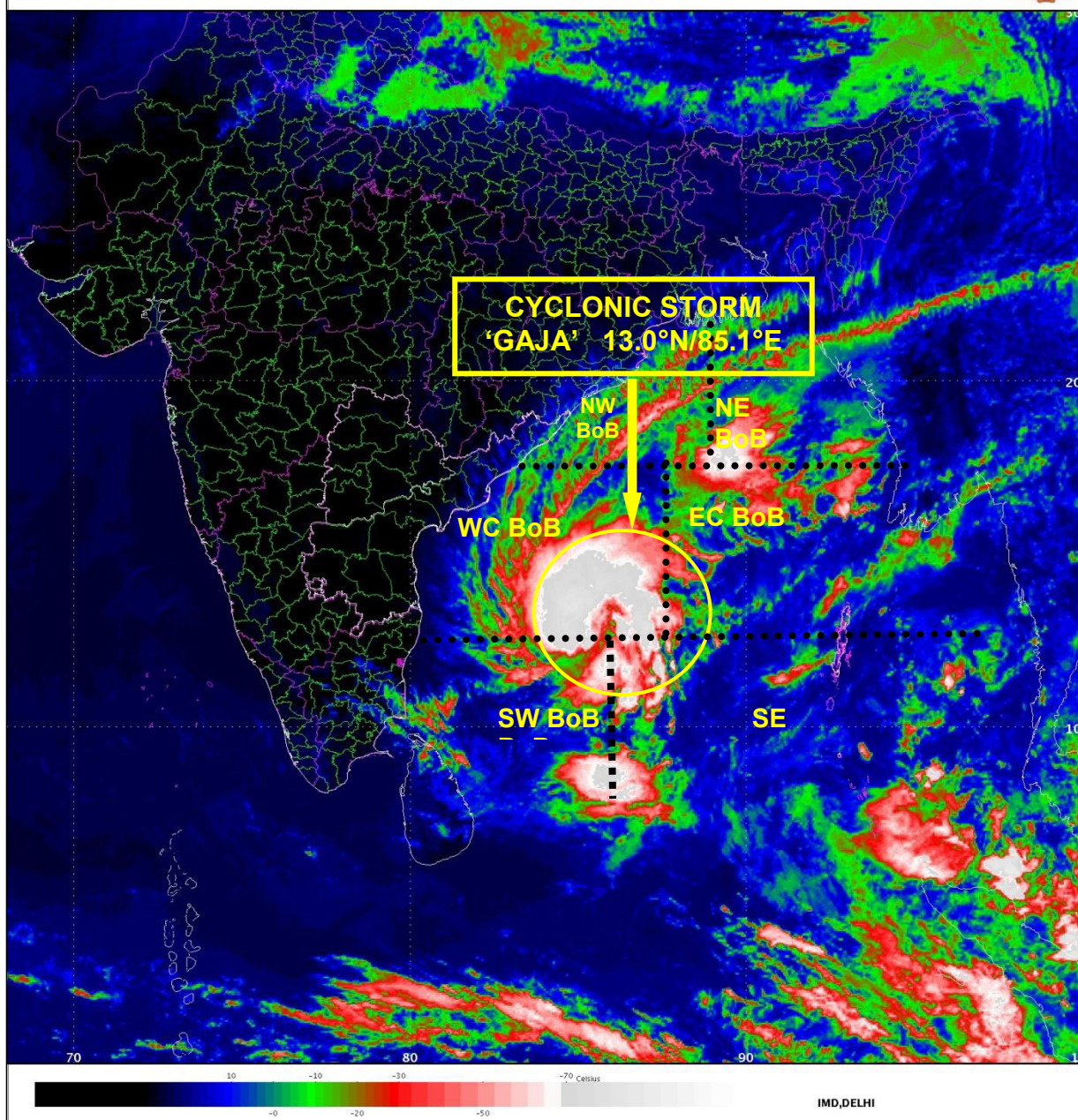
UPPER LEVEL RIDGE RUNS ALONG LAT 16°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WESTSOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



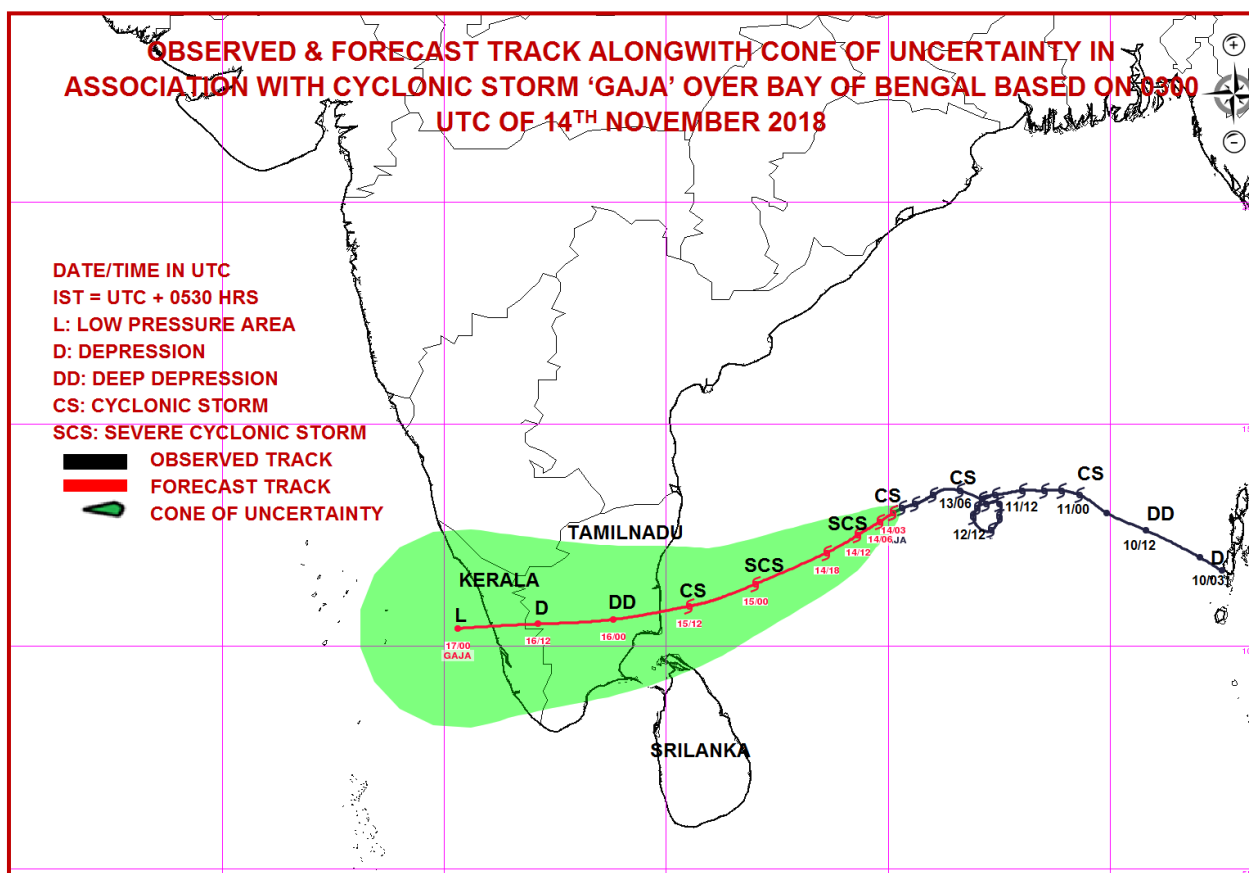
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



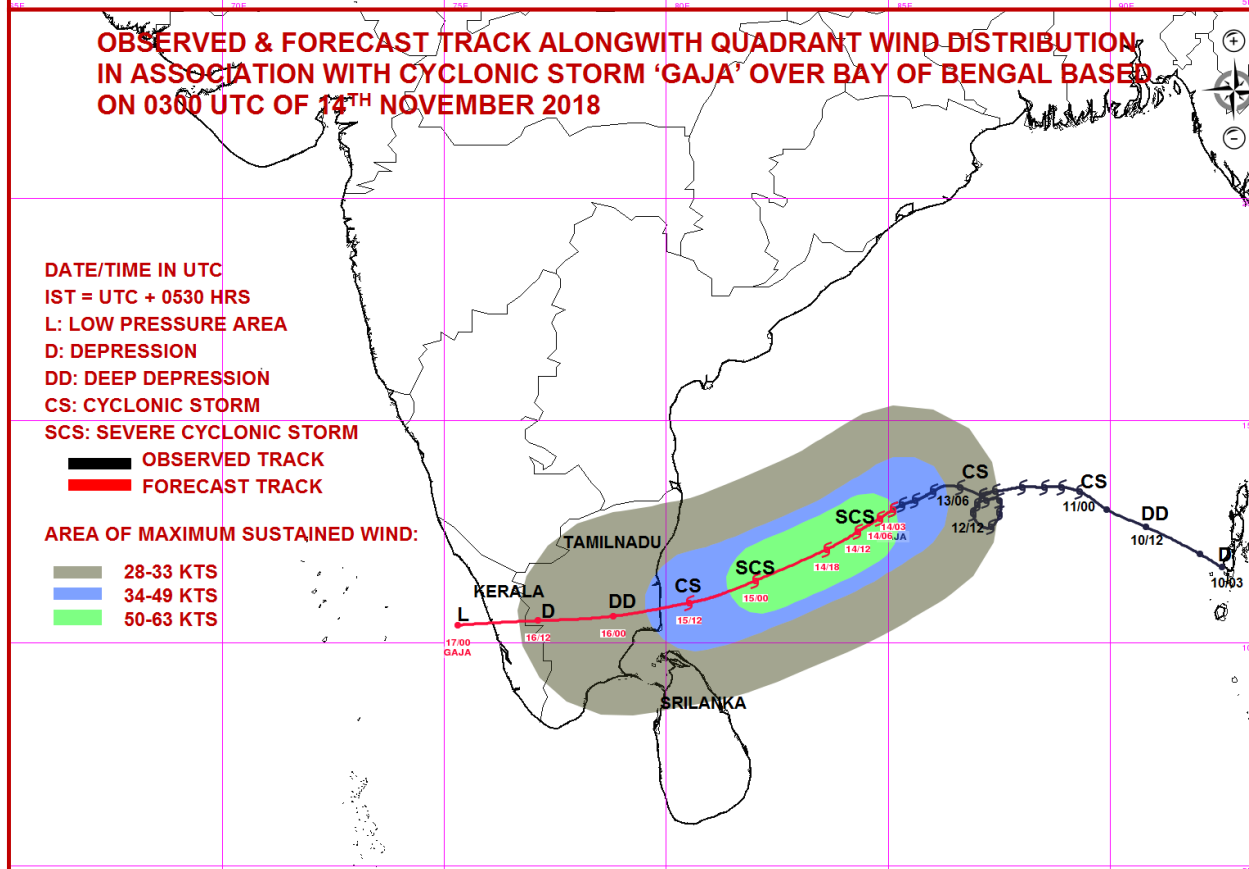
**OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY IN ASSOCIATION WITH CYCLONIC STORM 'GAJA' OVER BAY OF BENGAL BASED ON 0300 UTC OF 14<sup>TH</sup> NOVEMBER 2018**

DATE/TIME IN UTC  
 IST = UTC + 0530 HRS  
 L: LOW PRESSURE AREA  
 D: DEPRESSION  
 DD: DEEP DEPRESSION  
 CS: CYCLONIC STORM  
 SCS: SEVERE CYCLONIC STORM  
 — OBSERVED TRACK  
 — FORECAST TRACK  
 CONE OF UNCERTAINTY



**OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION IN ASSOCIATION WITH CYCLONIC STORM 'GAJA' OVER BAY OF BENGAL BASED ON 0300 UTC OF 14<sup>TH</sup> NOVEMBER 2018**

DATE/TIME IN UTC  
 IST = UTC + 0530 HRS  
 L: LOW PRESSURE AREA  
 D: DEPRESSION  
 DD: DEEP DEPRESSION  
 CS: CYCLONIC STORM  
 SCS: SEVERE CYCLONIC STORM  
 — OBSERVED TRACK  
 — FORECAST TRACK  
 AREA OF MAXIMUM SUSTAINED WIND:  
 28-33 KTS  
 34-49 KTS  
 50-63 KTS



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 26**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 26 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 14.11.2018 BASED ON 0600 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 12.8°N AND LONGITUDE 84.8°E, ABOUT 490 KM EAST OF CHENNAI (43278) (TAMIL NADU) AND 580 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) 1200 TO 1500 UTC OF 15<sup>TH</sup> NOVEMBER AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
14.11.18/0600	12.8/84.8	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/1200	12.5/84.3	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1800	12.1/83.6	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	11.7/82.7	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	11.2/81.2	85-95 GUSTING TO 110	CYCLONIC STORM
15.11.18/1800	10.7/79.7	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0600	10.6/78.0	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/1800	10.5/76.2	40-50 GUSTING TO 60	DEPRESSION
17.11.18/0600	10.4/74.4	25-35 GUSTING TO 45	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 12.0°N TO 15.0°N AND LONGITUDE 83.5°E TO 87.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 0600 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/ 84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.8 HPA AND MEAN SURFACE WIND SPEED OF 030°/ 21 KNOTS. ANOTHER BOUY LOCATED AT 14°N/ 87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.1 HPA AND MEAN SURFACE WIND SPEED OF 100°/ 10 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 5-10X10<sup>-5</sup> SECOND<sup>-1</sup> TO NORTHWEST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (05-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 16°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WESTSOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

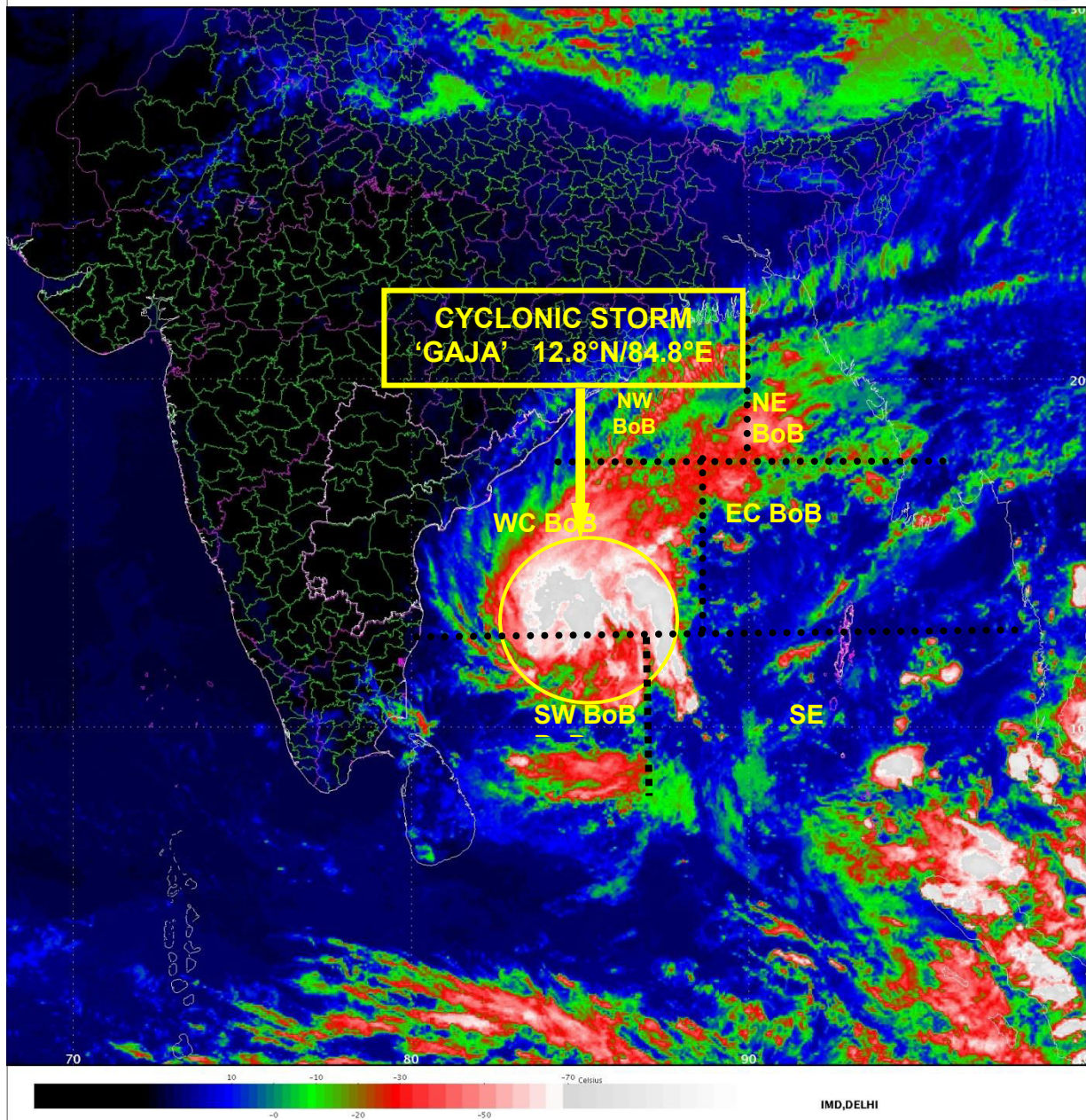
(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

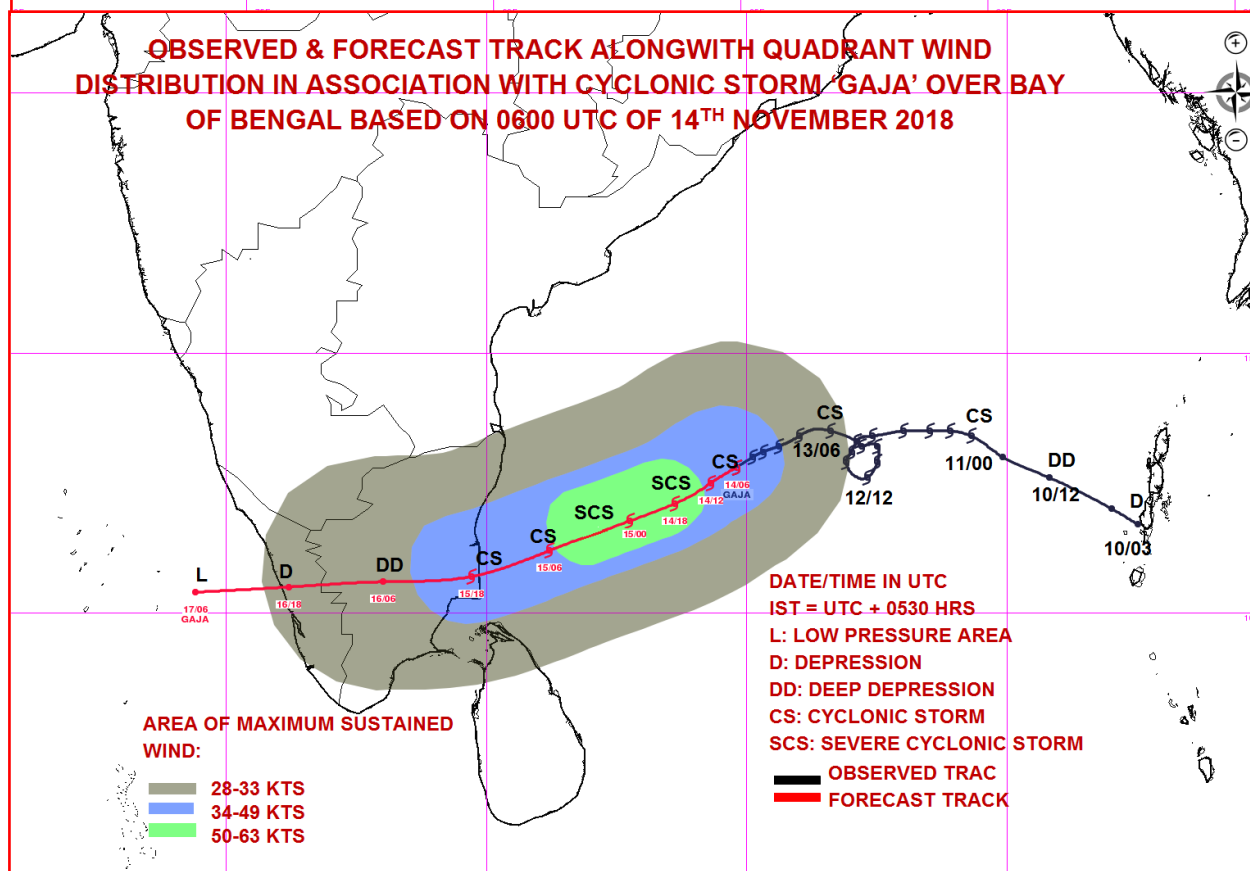
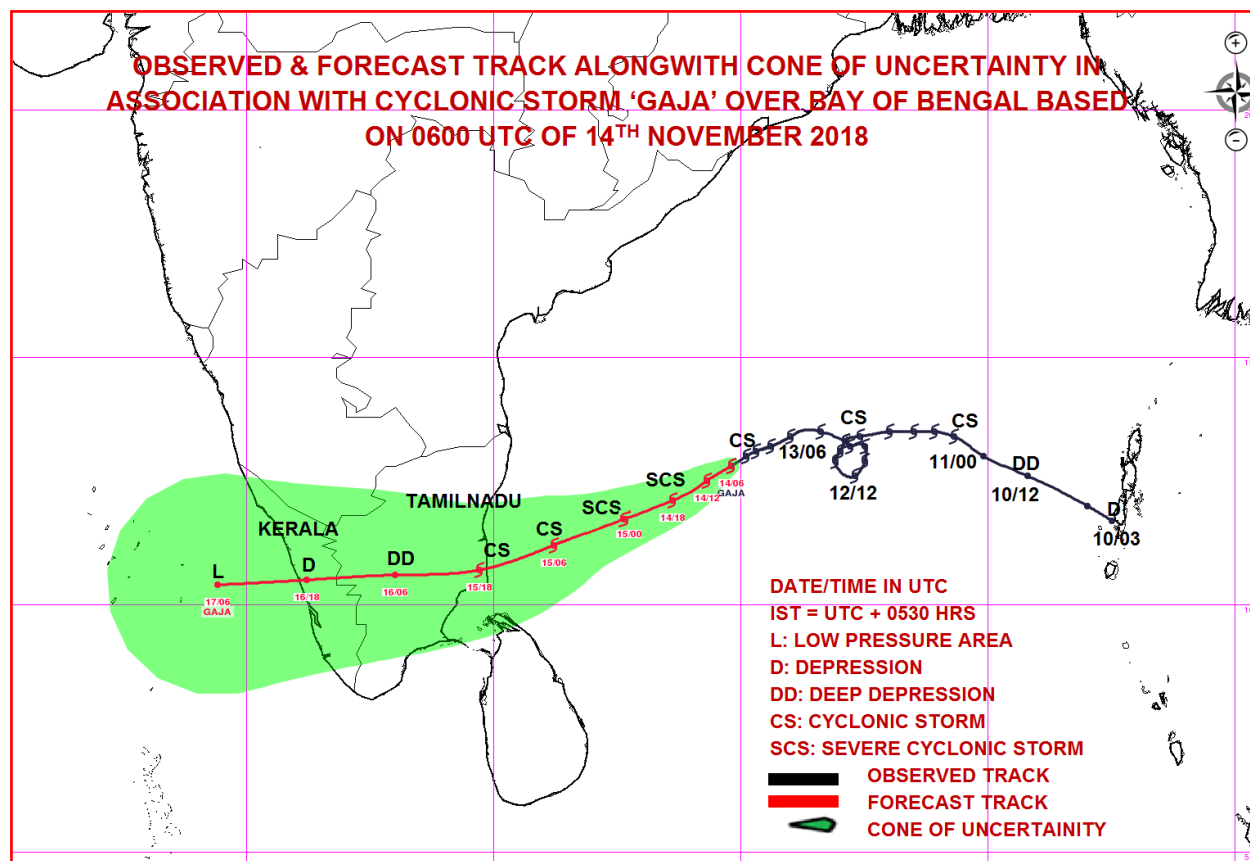
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 27**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 27 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1130 UTC OF 14.11.2018 BASED ON 0900 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL MOVED SOUTHWESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 12.6°N AND LONGITUDE 84.6°E, ABOUT 470 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 550 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS FURTHER, IT IS LIKELY TO WEAKEN GRADUALLY ON 15<sup>TH</sup> NOVEMBER AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) DURING 1200 & 1500 UTC OF 15<sup>TH</sup> NOVEMBER AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
14.11.18/0900	12.6/84.6	75-85 GUSTING TO 95	CYCLONIC STORM
14.11.18/1200	12.5/84.3	80-90 GUSTING TO 100	CYCLONIC STORM
14.11.18/1800	12.1/83.6	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0000	11.7/82.7	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	11.2/81.2	85-95 GUSTING TO 110	CYCLONIC STORM
15.11.18/1800	10.7/79.7	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0600	10.6/78.0	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/1800	10.5/76.2	40-50 GUSTING TO 60	DEPRESSION
17.11.18/0600	10.4/74.4	25-35 GUSTING TO 45	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0900 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.0°N TO 15.0°N AND LONGITUDE 83.5°E TO 88.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 88°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AT 0900 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 6.5°N/ 88.3°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.4 HPA AND MEAN SURFACE WIND SPEED OF 200°/ 10 KNOTS. ANOTHER BOUY LOCATED AT 15°N/ 89°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.0 HPA AND MEAN SURFACE WIND SPEED OF 100°/ 10 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHWEST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COAST. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

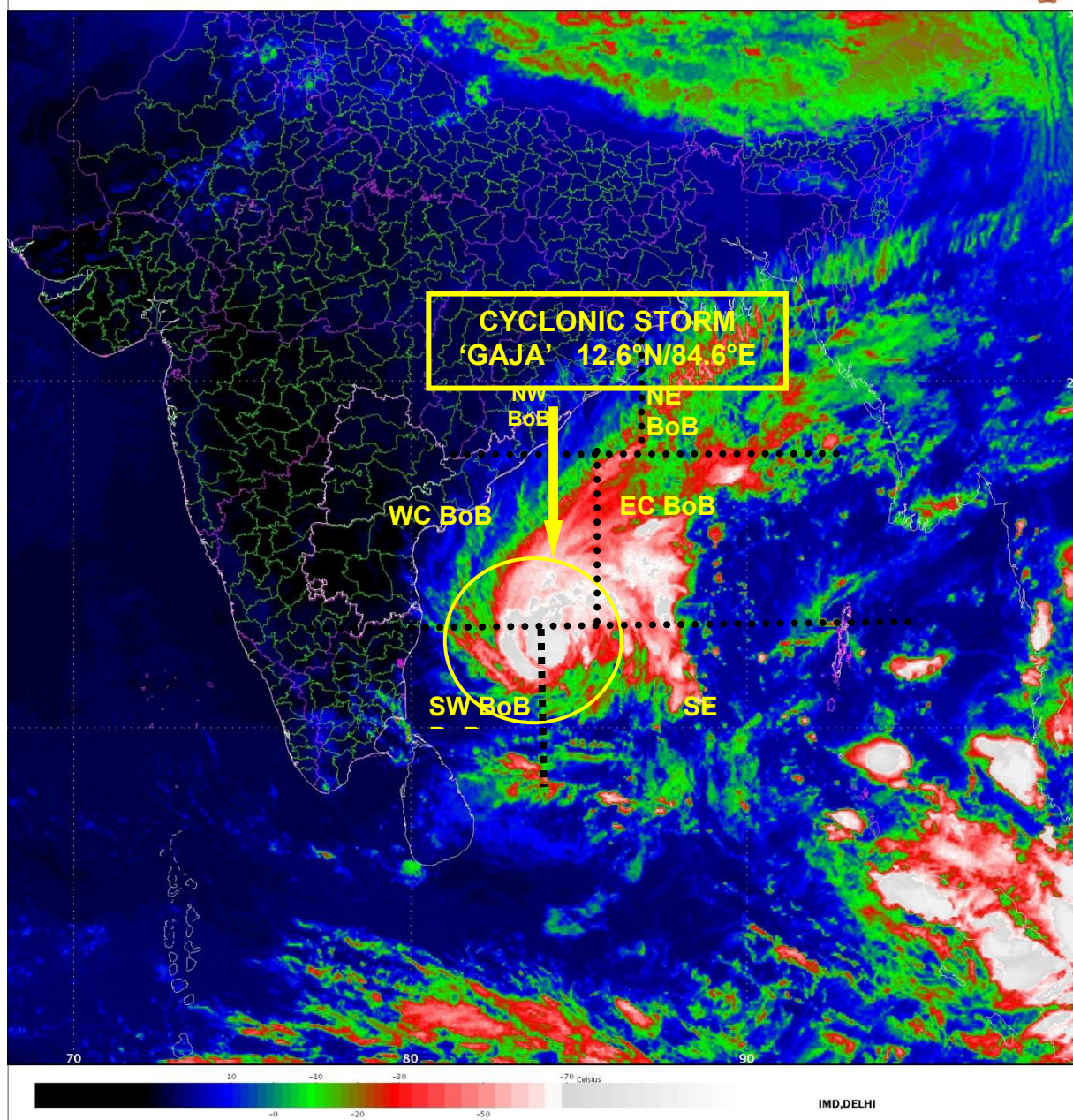
UPPER LEVEL RIDGE RUNS ALONG LAT 16°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(SUNITHA DEVI)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

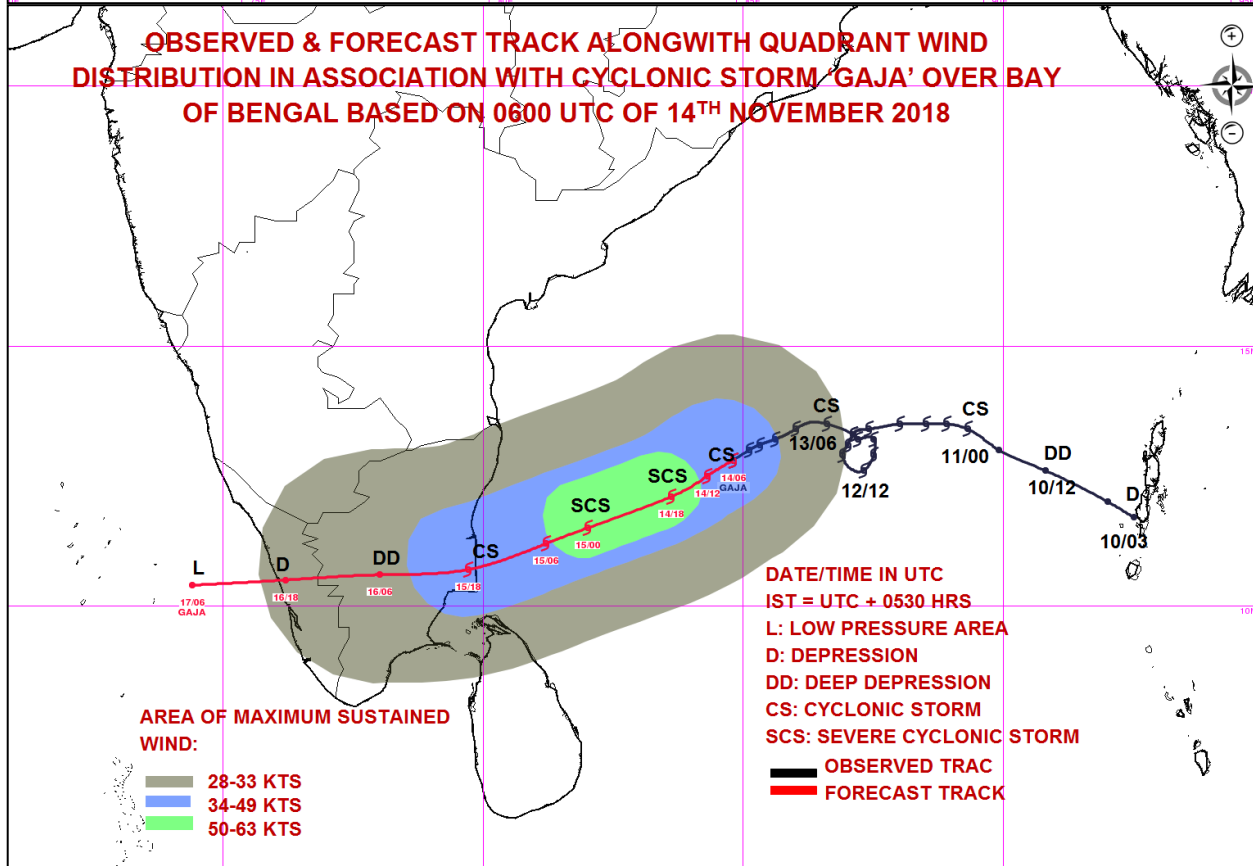
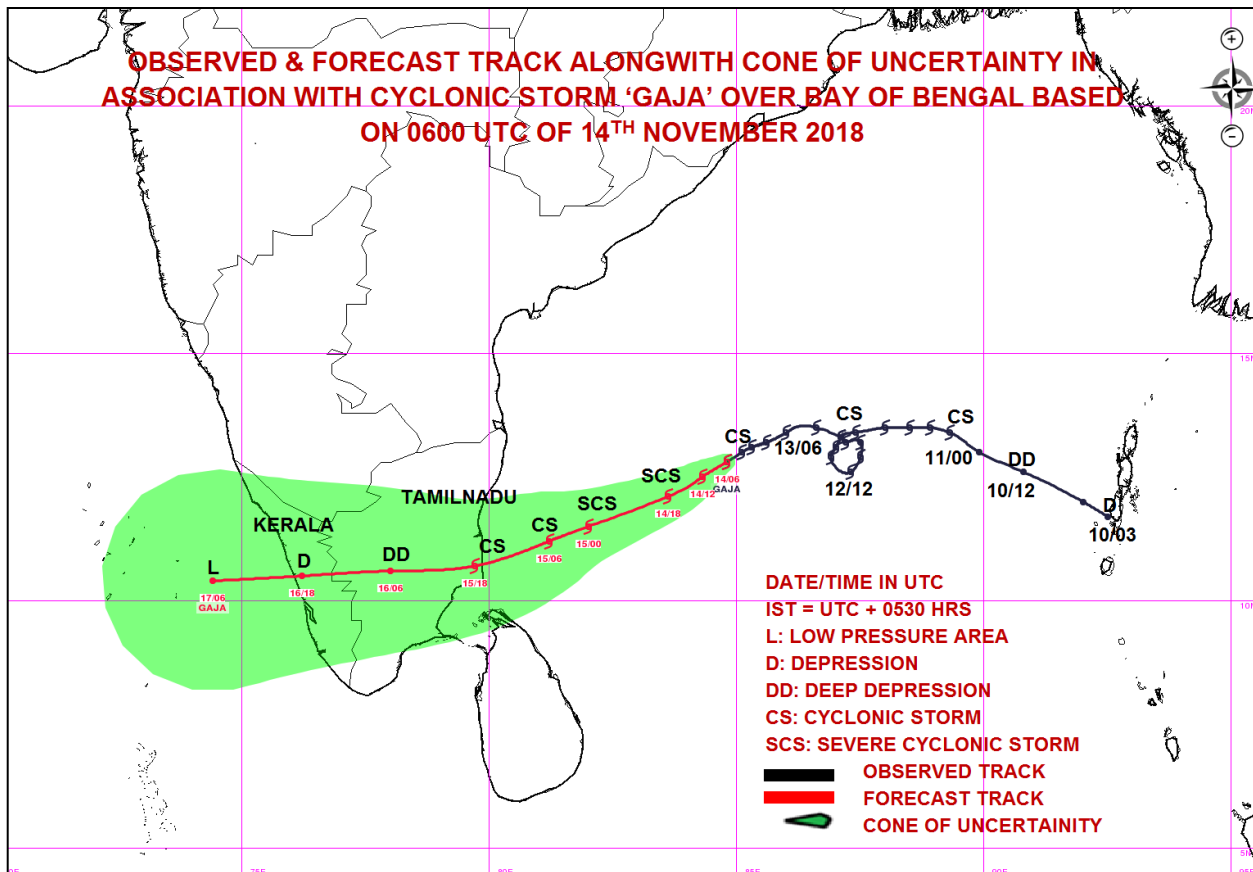
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 28**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 28 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 60 HOURS ISSUED AT 1430 UTC OF 14.11.2018 BASED ON 1200 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING SOUTHEAST & WESTCENTRAL BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 13 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL NEAR LATITUDE 12.4°N AND LONGITUDE 84.2°E, ABOUT 430 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 510 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS THEREAFTER, IT IS LIKELY TO WEAKEN AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) DURING 1200 & 1500 UTC OF 15<sup>TH</sup> NOVEMBER AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
14.11.18/1200	12.4/84.2	75-85 gusting to 95	Cyclonic Storm
14.11.18/1800	12.1/83.6	80-90 gusting to 100	Cyclonic Storm
15.11.18/0000	11.7/82.7	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0600	11.2/81.8	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.8/80.5	80-90 gusting to 100	Cyclonic Storm
16.11.18/0000	10.6/78.9	50-60 gusting to 70	Deep Depression
16.11.18/1200	10.5/77.1	40-50 gusting to 60	Depression
17.11.18/0000	10.4/75.3	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.0°N TO 16.0°N AND LONGITUDE 82.0°E TO 88.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 88°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 1200 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1004.2 HPA AND MEAN SURFACE WIND SPEED OF 50°/ 20 KNOTS. ANOTHER BOUY LOCATED AT 15°N/89°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.4 HPA AND MEAN SURFACE WIND SPEED OF 120°/12 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 15°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

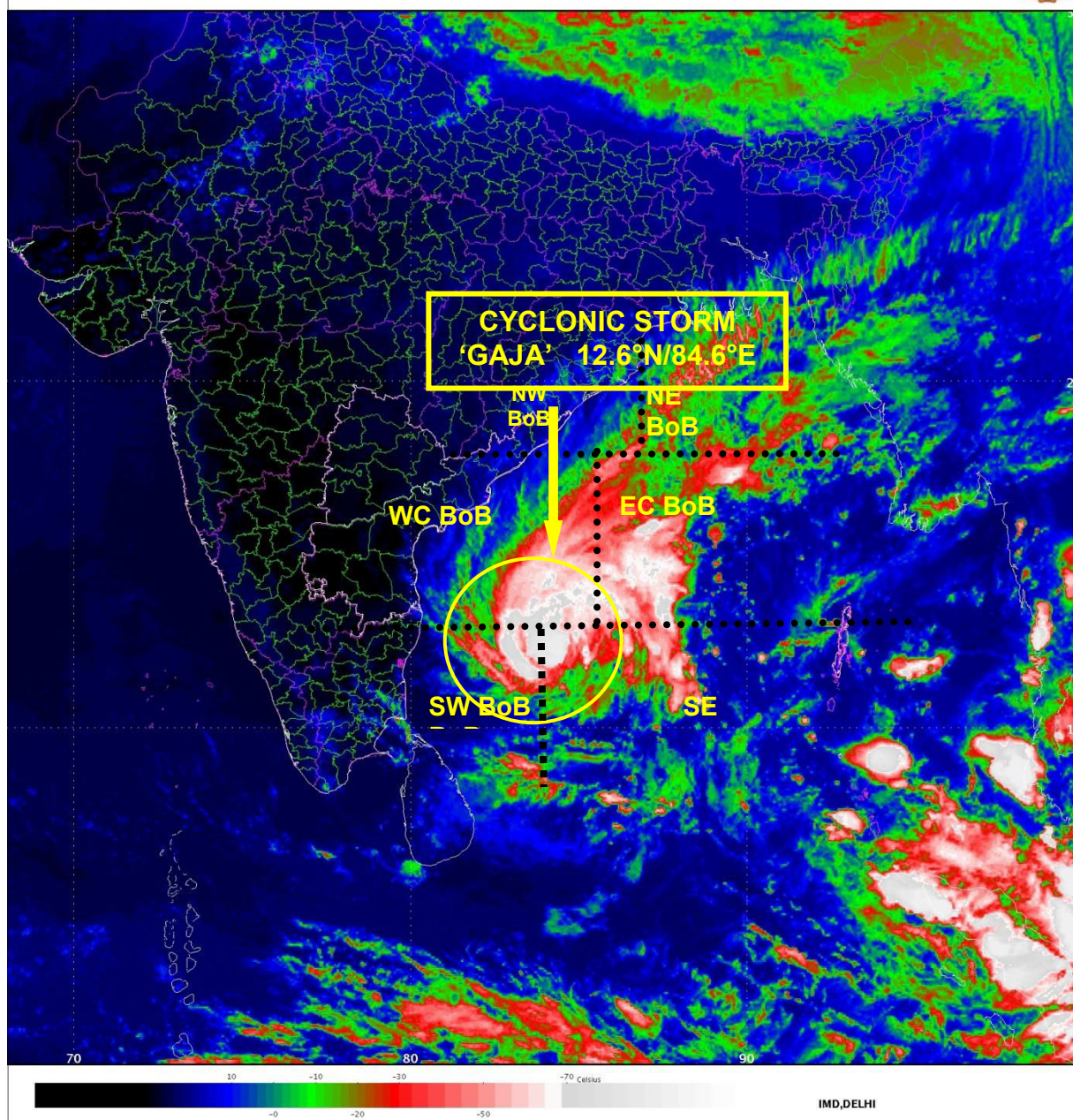
(SUNITHA DEVI)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

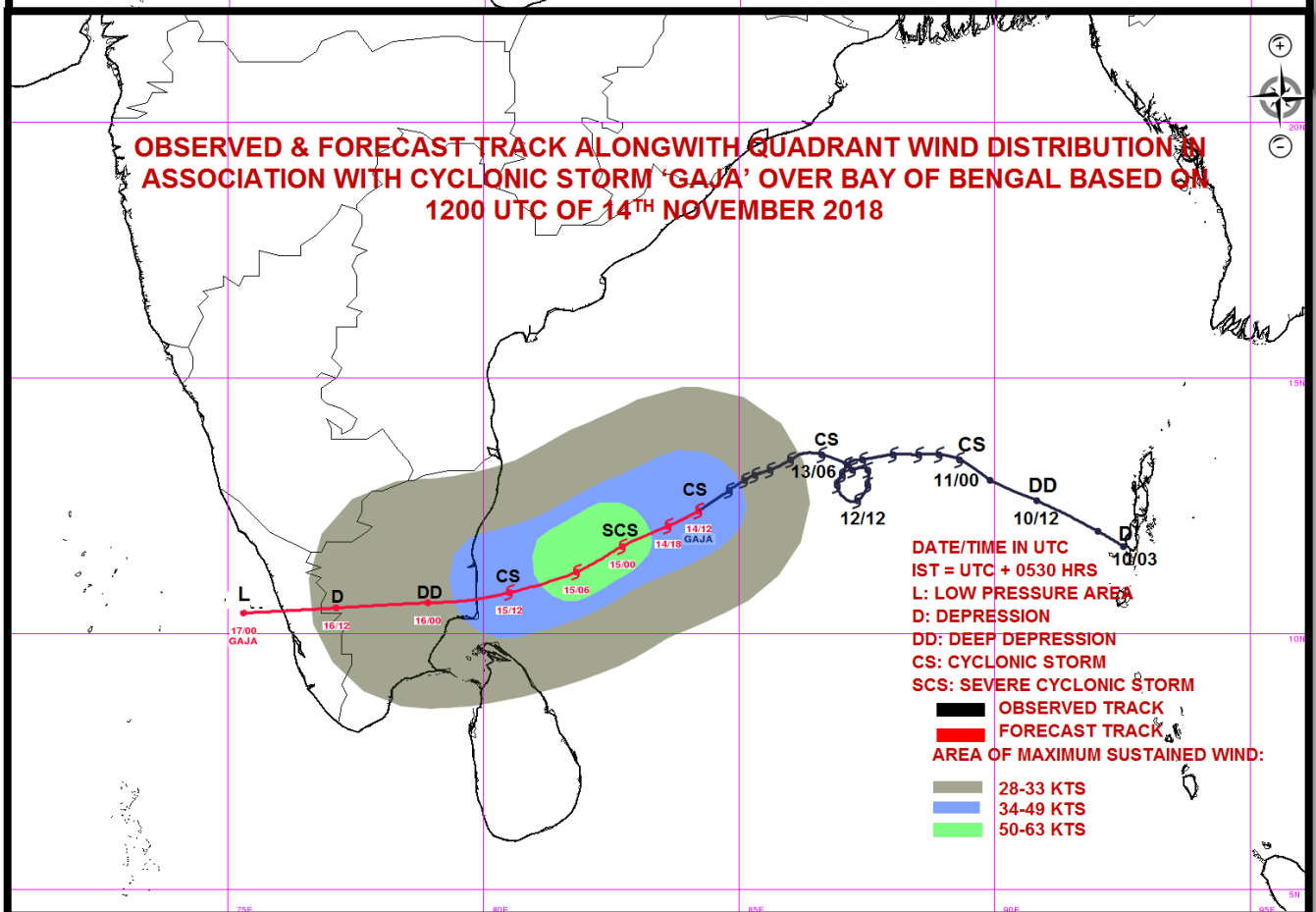
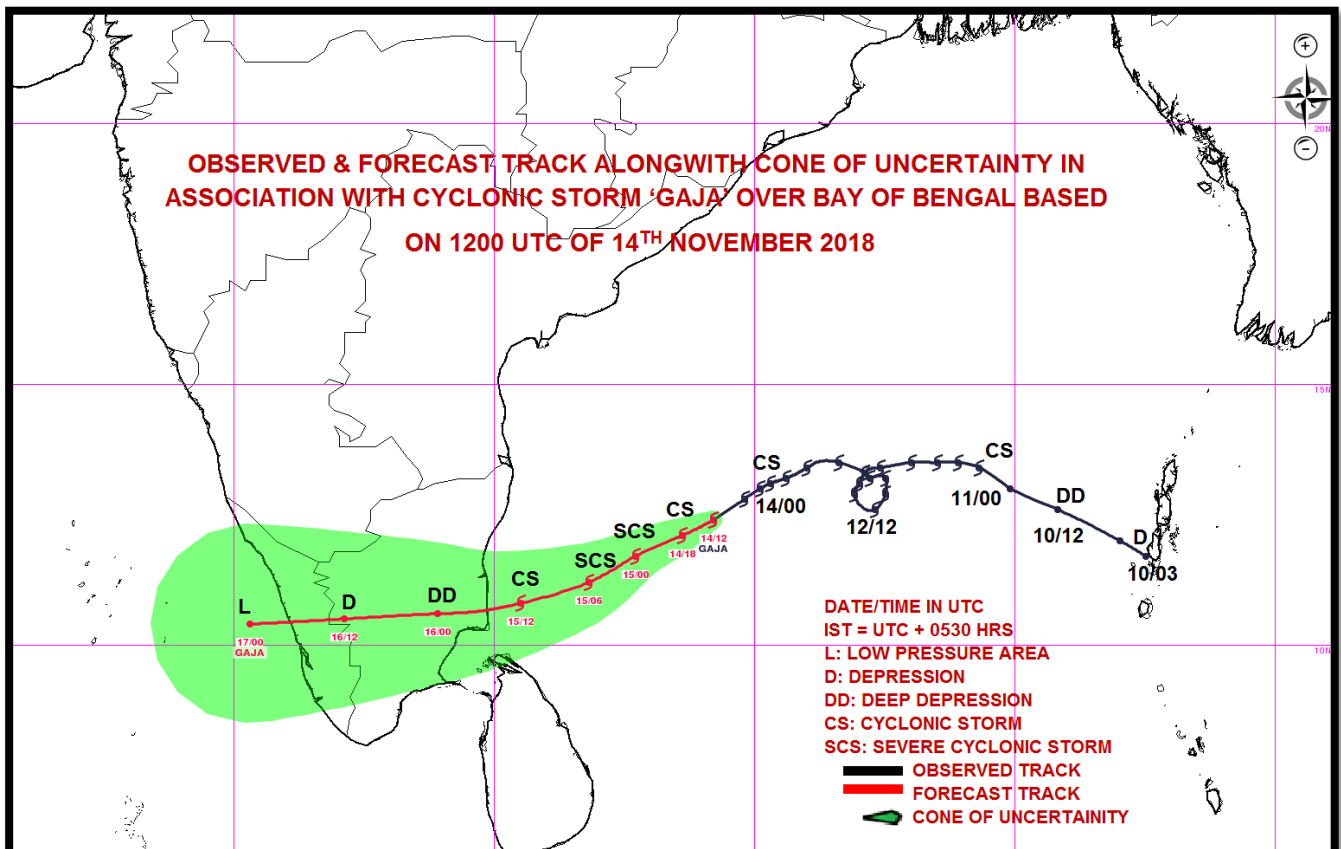
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 29**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 29 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 60 HOURS ISSUED AT 1600 UTC OF 14.11.2018 BASED ON 1500 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 13 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 12.2°N AND LONGITUDE 84.0°E, ABOUT 410 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 480 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS THEREAFTER, IT IS LIKELY TO WEAKEN AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) DURING 1200 & 1500 UTC OF 15<sup>TH</sup> NOVEMBER AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
14.11.18/1500	12.2/84.0	75-85 gusting to 95	Cyclonic Storm
14.11.18/1800	12.1/83.6	80-90 gusting to 100	Cyclonic Storm
15.11.18/0000	11.7/82.7	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0600	11.2/81.8	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.8/80.5	80-90 gusting to 100	Cyclonic Storm
16.11.18/0000	10.6/78.9	50-60 gusting to 70	Deep Depression
16.11.18/1200	10.5/77.1	40-50 gusting to 60	Depression
17.11.18/0000	10.4/75.3	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1500 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 11.0°N TO 16.0°N AND LONGITUDE 82.0°E TO 86.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AT 1500 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1005.8 HPA AND MEAN SURFACE WIND SPEED OF 50°/ 23 KNOTS. ANOTHER BOUY LOCATED AT 14°N/87°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009 HPA AND MEAN SURFACE WIND SPEED OF 110°/8 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 998 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 15°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(D.JOARDAR)  
SCIENTIST-E, RSMC, NEW DELHI

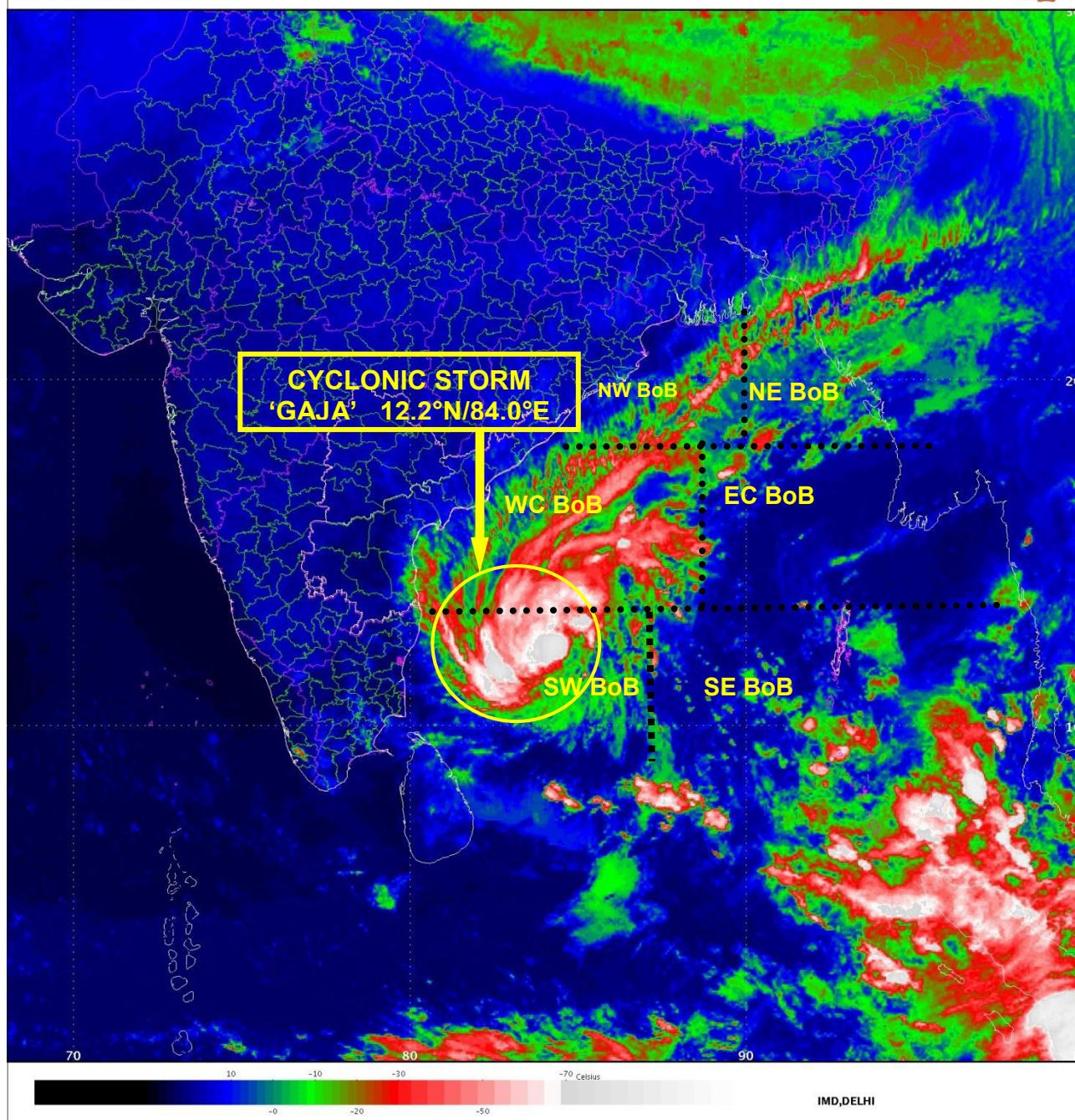
---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

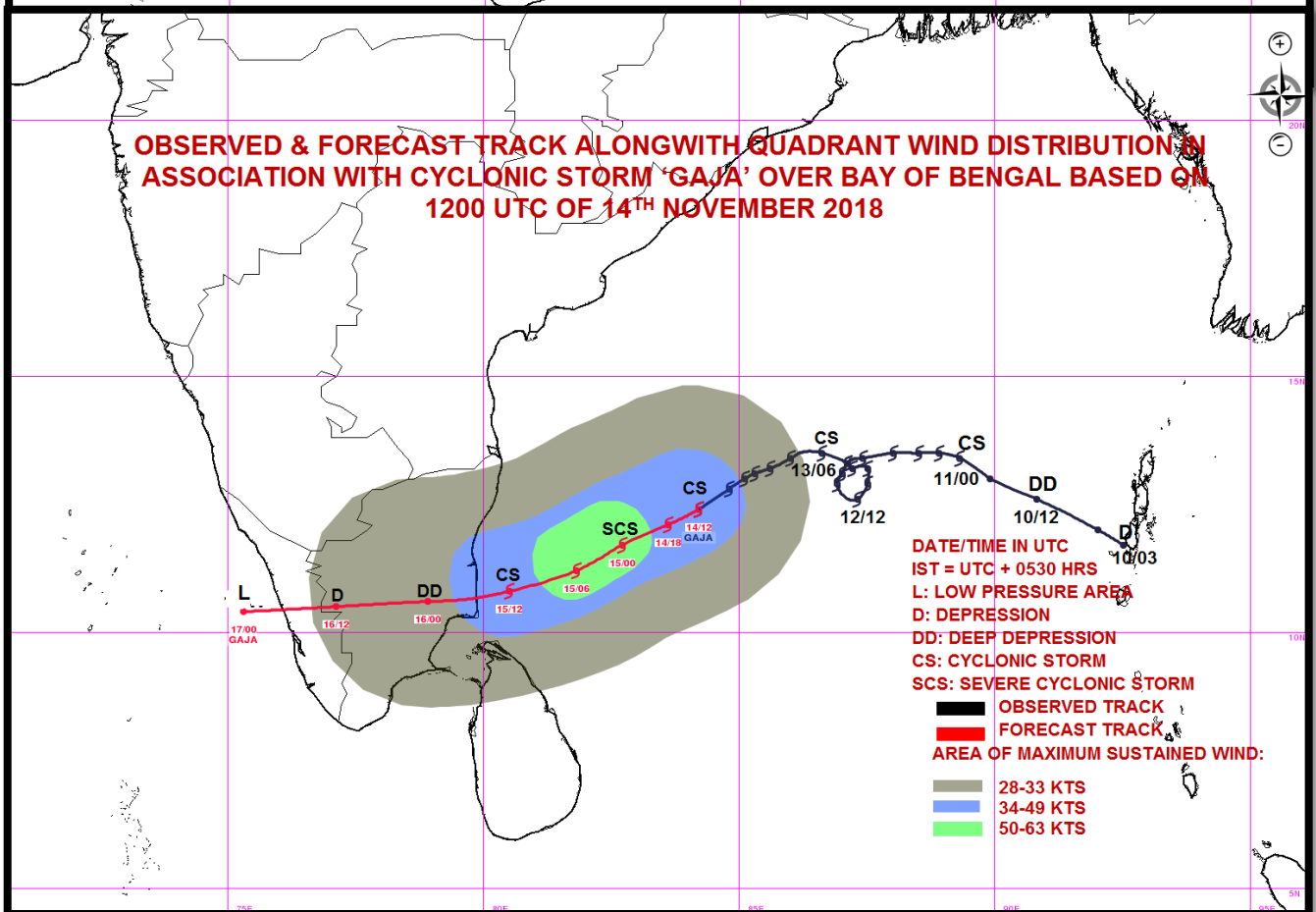
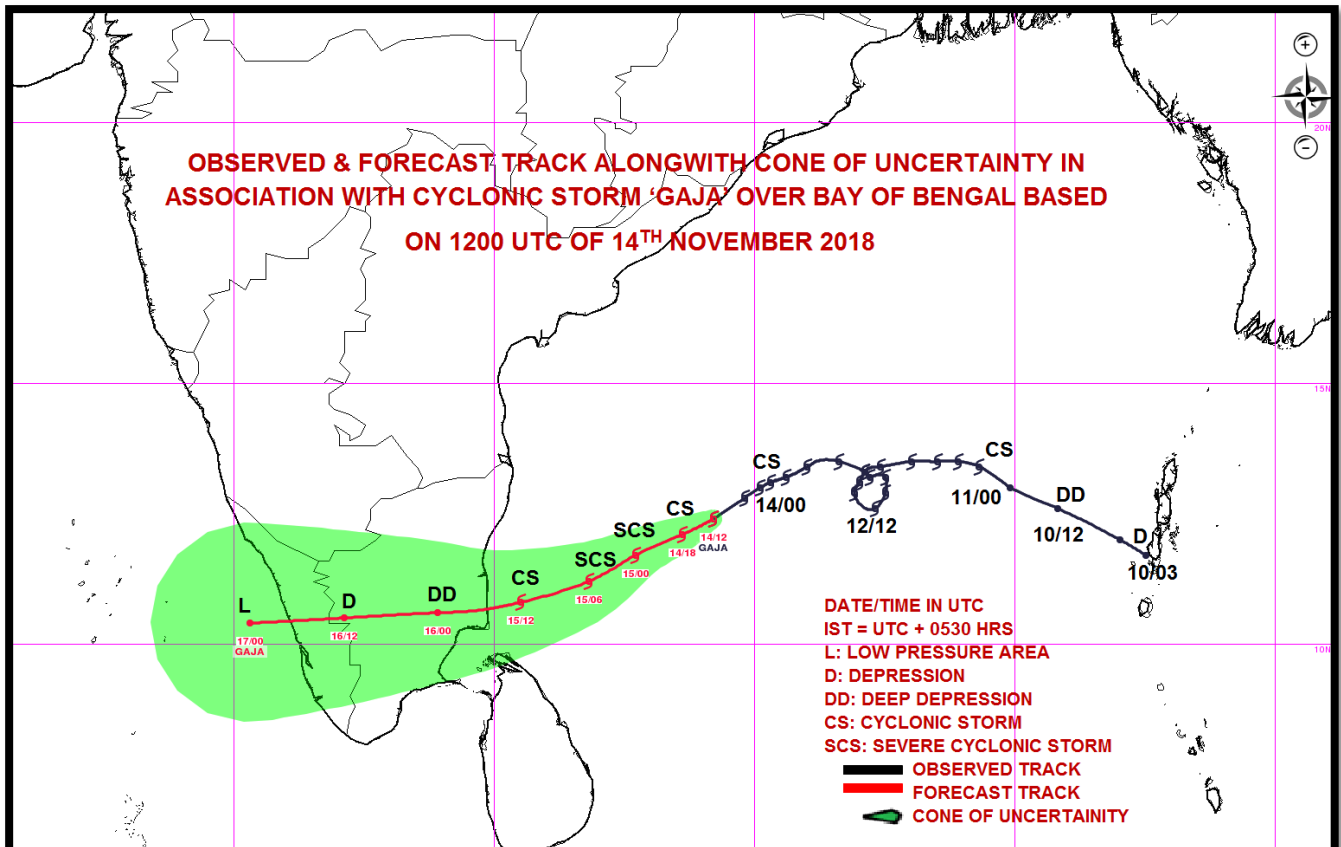
SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

14-11-2018/15:00 GMT  
14-11-2018/20:30 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 30**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 30 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 60 HOURS ISSUED AT 2100 UTC OF 14.11.2018 BASED ON 1800 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 12.0°N AND LONGITUDE 83.8°E, ABOUT 410 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 450 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS THEREAFTER, IT IS LIKELY TO WEAKEN AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329) AROUND NAGAPATTINAM DURING 15<sup>TH</sup> NOVEMBER EVENING AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
14.11.18/1800	12.0/83.8	80-90 gusting to 100	Cyclonic Storm
15.11.18/0000	11.6/83.0	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0600	11.2/82.0	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.8/80.7	80-90 gusting to 100	Cyclonic Storm
15.11.18/1800	10.7/79.7	80-90 gusting to 100	Cyclonic Storm
16.11.18/0600	10.5/78.0	50-60 gusting to 70	Deep Depression
16.11.18/1800	10.4/76.2	40-50 gusting to 60	Depression
17.11.18/0600	10.3/74.4	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1700 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 14.5°N AND LONGITUDE 80.5°E TO 86.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 84°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 1800 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.3 HPA AND MEAN SURFACE WIND SPEED OF 90°/ 21 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

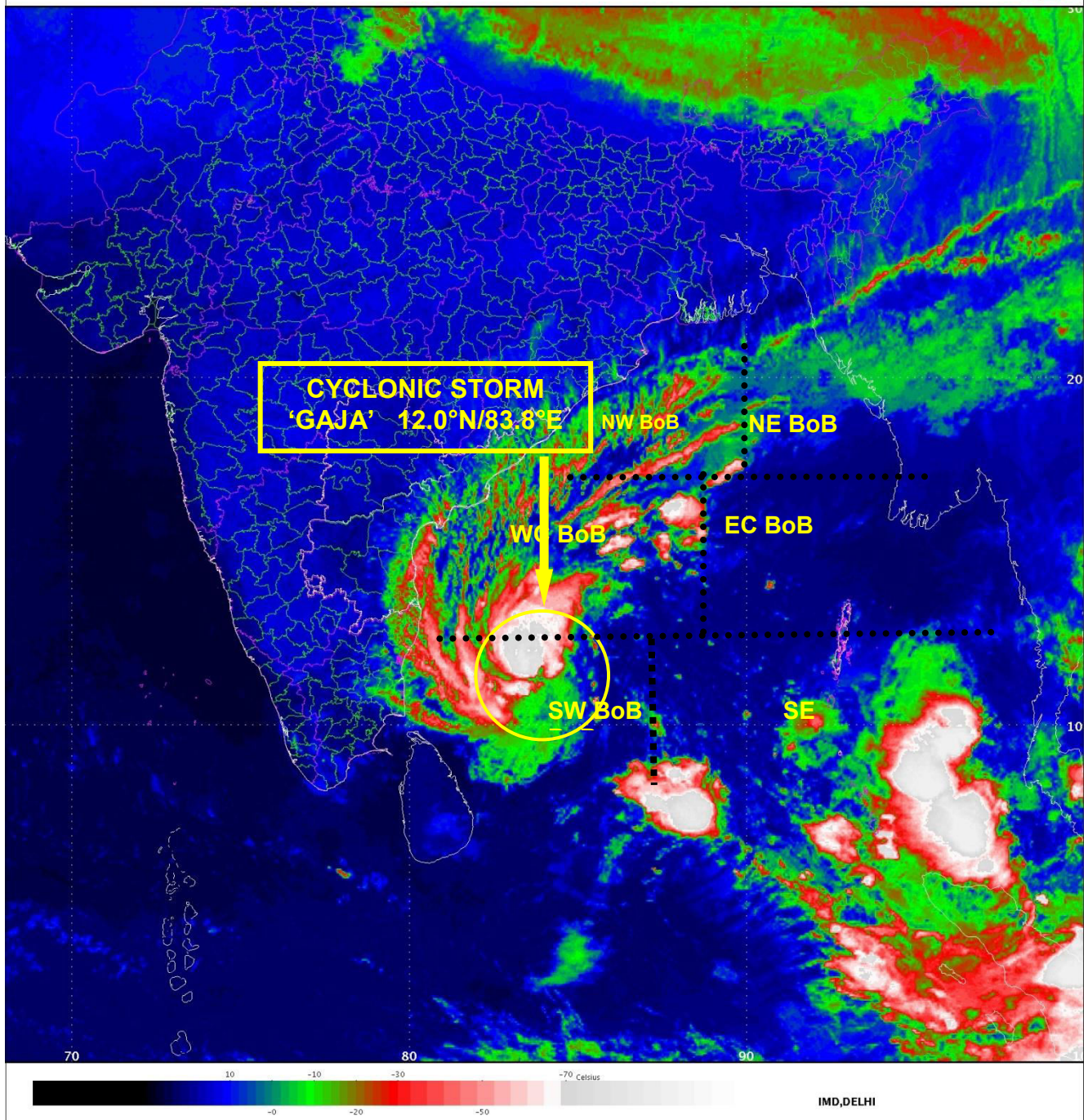
UPPER LEVEL RIDGE RUNS ALONG LAT 15°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(D.JOARDAR)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

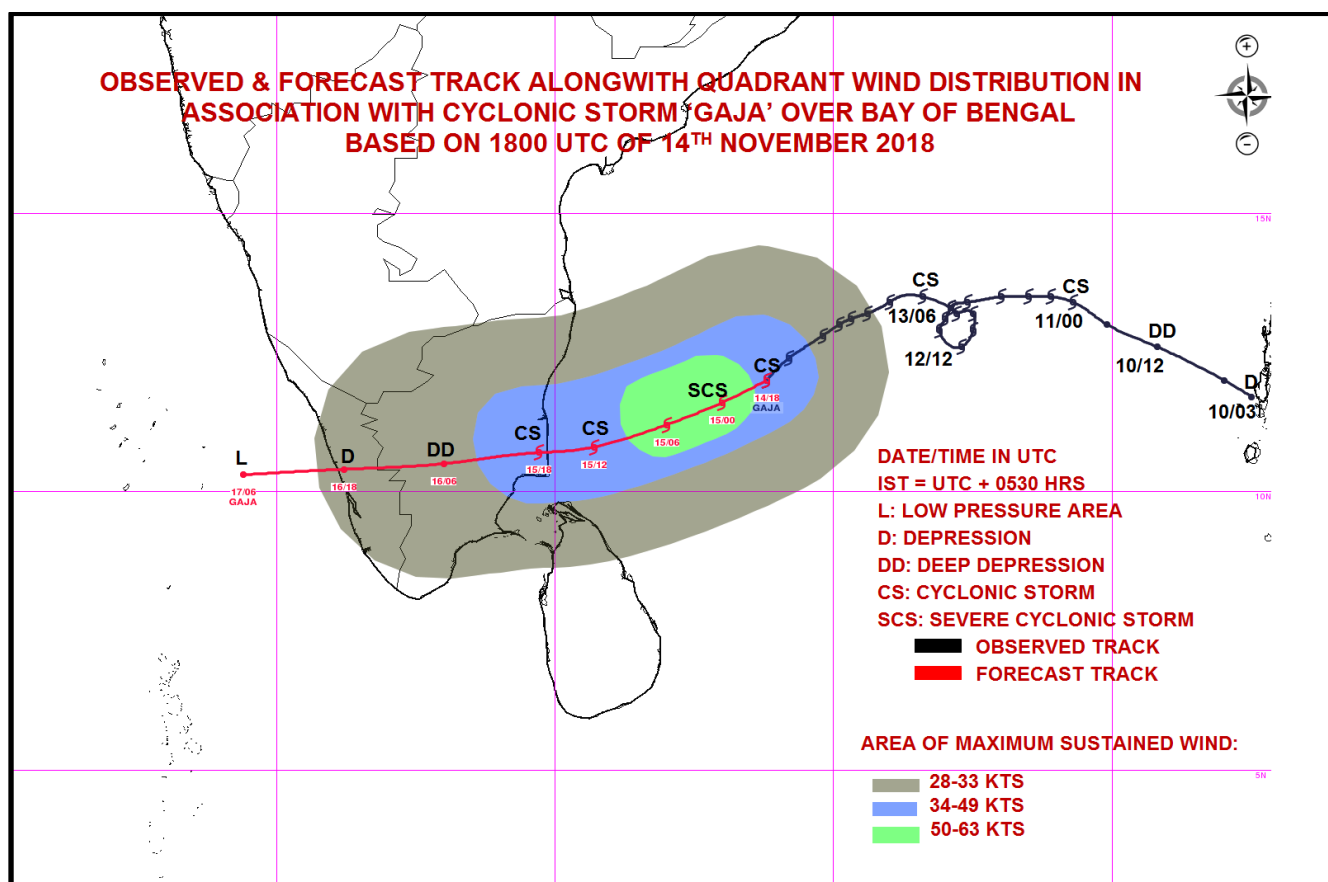
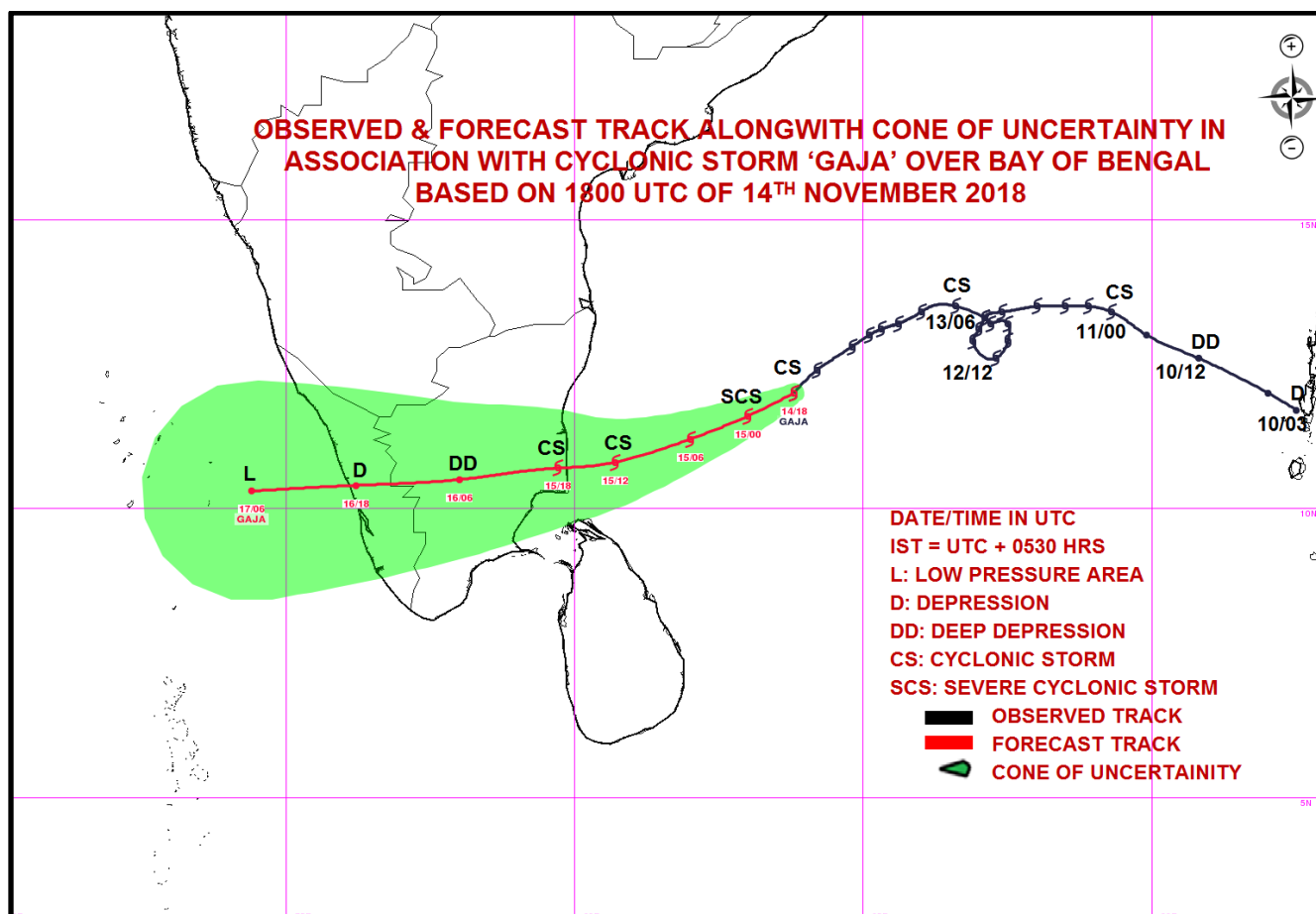
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 31**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 31 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 60 HOURS ISSUED AT 0000 UTC OF 15.11.2018 BASED ON 2100 UTC OF 14.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED WEST-SOUTHWESTWARDS WITH A SPEED OF 08 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 2100 UTC OF 14<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 11.8°N AND LONGITUDE 83.4°E, ABOUT 380 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 400 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 12 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS THEREAFTER, IT IS LIKELY TO WEAKEN AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), AROUND NAGAPATTINAM DURING 15<sup>TH</sup> NOVEMBER EVENING AS A CYCLONIC STORM WITH A WIND SPEED OF 80 KMPH-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
14.11.18/2100	11.8/83.4	80-90 gusting to 100	Cyclonic Storm
15.11.18/0000	11.6/83.0	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/0600	11.2/82.0	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.8/80.7	80-90 gusting to 100	Cyclonic Storm
15.11.18/1800	10.7/79.7	80-90 gusting to 100	Cyclonic Storm
16.11.18/0600	10.5/78.0	50-60 gusting to 70	Deep Depression
16.11.18/1800	10.4/76.2	40-50 gusting to 60	Depression
17.11.18/0600	10.3/74.4	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 2100 UTC OF 14<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 14.5°N AND LONGITUDE 80.5°E TO 85.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 1800 UTC OF 14<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.0°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.3 HPA AND MEAN SURFACE WIND SPEED OF 90°/ 21 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER  $120 \times 10^{-6}$  SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE NORTHEAST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 15°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

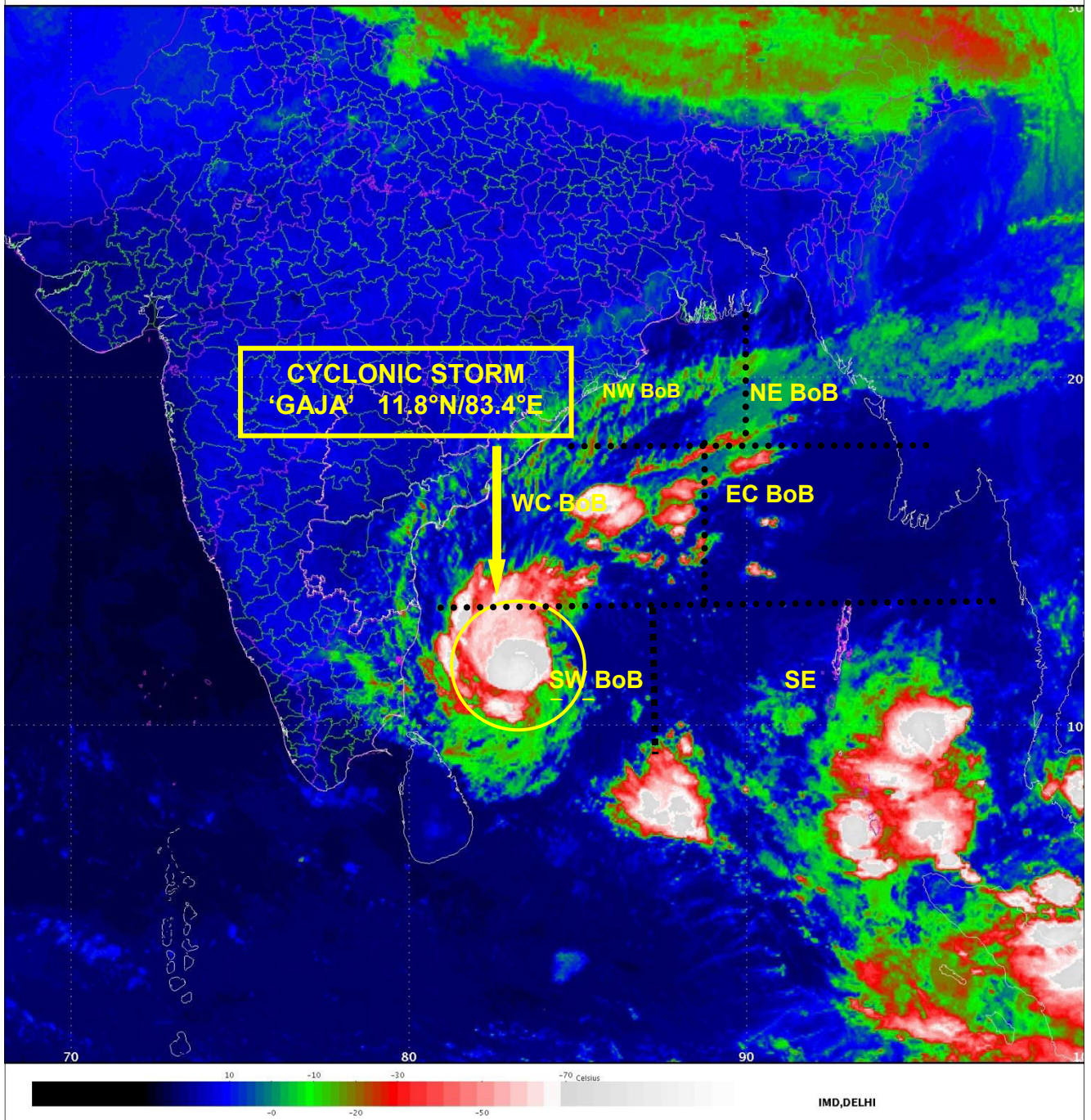
(D.JOARDAR)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

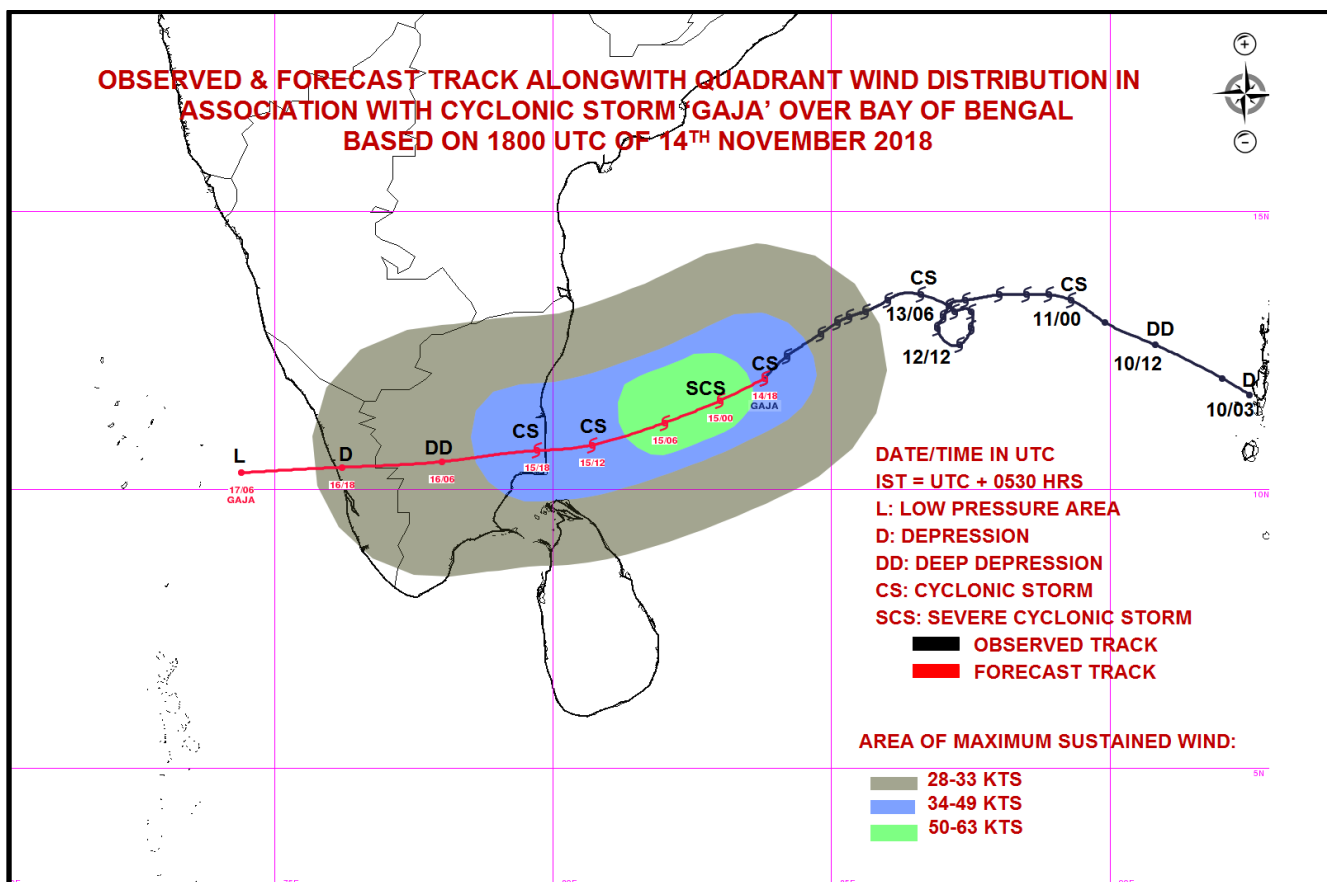
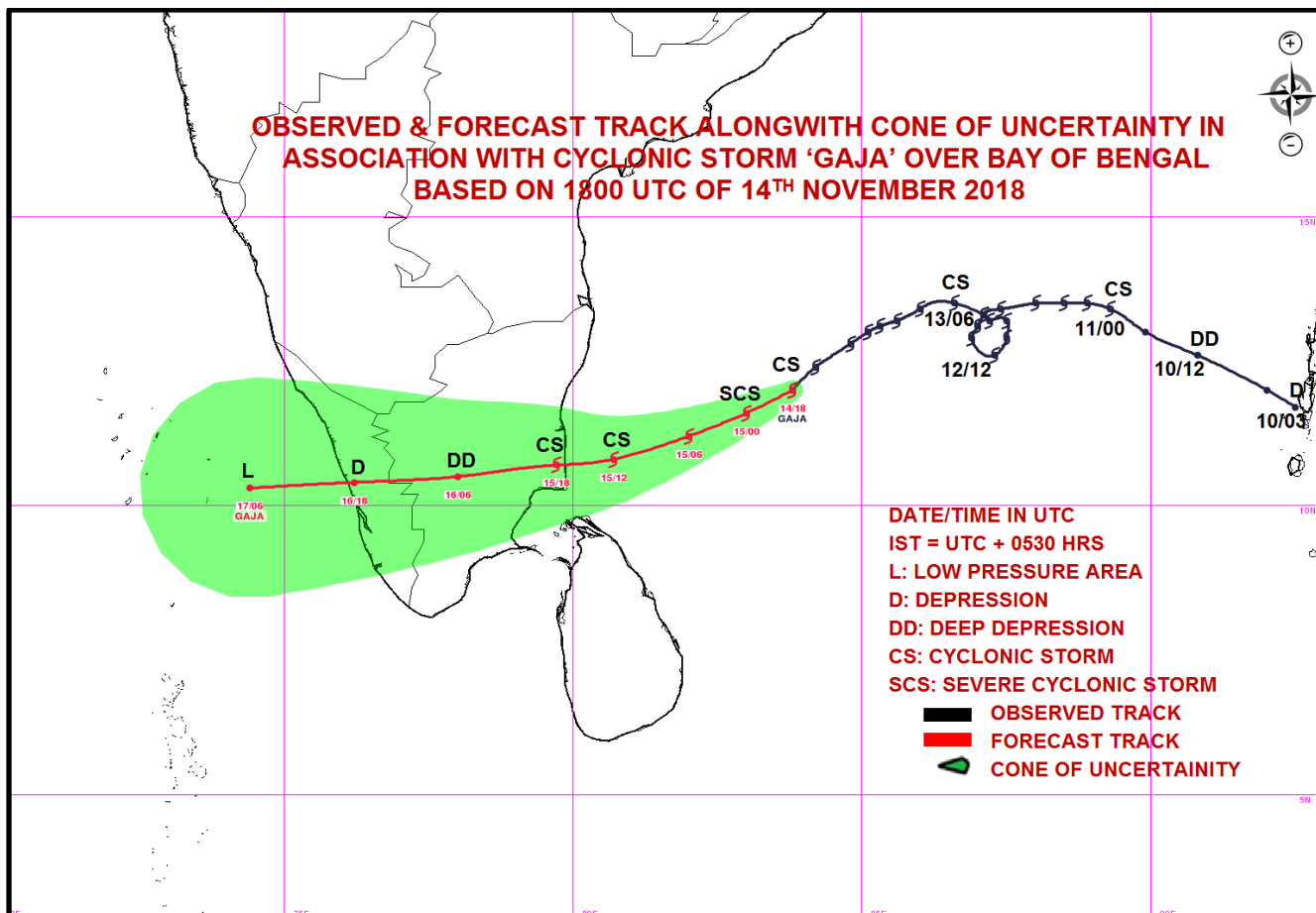
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 32**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 32 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0300 UTC OF 15.11.2018 BASED ON 0000 UTC OF 15.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 11.5°N AND LONGITUDE 83.2°E, ABOUT 370 KM EAST-SOUTHEAST OF CHENNAI(43278) (TAMIL NADU) AND 370 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND INTENSIFY FURTHER INTO A SEVERE CYCLONIC STORM DURING NEXT 06 HOURS. WHILE MOVING WEST-SOUTHWESTWARDS THEREAFTER, IT IS LIKELY TO CROSS TAMIL NADU COAST BETWEEN PAMBAN AND CUDDALORE, AROUND NAGAPATTINAM DURING 15<sup>TH</sup> NOVEMBER EVENING/NIGHT AS A CYCLONIC STORM WITH A WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
15.11.18/0000	11.5/83.2	80-90 gusting to 100	Cyclonic Storm
15.11.18/0600	11.1/82.2	90-100 gusting to 115	Severe Cyclonic Storm
15.11.18/1200	10.8/81.1	80-90 gusting to 100	Cyclonic Storm
15.11.18/1800	10.6/79.8	80-90 gusting to 100	Cyclonic Storm
16.11.18/0000	10.5/78.6	55-65 gusting to 75	Deep Depression
16.11.18/1200	10.4/77.0	40-50 gusting to 60	Depression
17.11.18/0000	10.4/75.3	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 2.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 14.5°N AND LONGITUDE 80.5°E TO 84.0°E.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

AT 0000 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.4°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1006.9 HPA AND MEAN SURFACE WIND SPEED OF 90°/ 19 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 40 KNOTS GUSTING TO 50 KNOTS. STATE OF SEA IS HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER 120X10<sup>-6</sup> SECOND<sup>-1</sup> TO SOUTH OF THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE NORTHEAST SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN FOR THE SYSTEM. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE WHICH CAN LEAD TO FURTHER INTENSIFICATION OF THE SYSTEM. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 12 HOURS INTO A MARGINAL SEVERE CYCLONIC STORM. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA WHICH CAN INHIBIT SIGNIFICANT INTENSIFICATION OF THE SYSTEM AND RATHER CAN CAUSE SLIGHT WEAKENING BEFORE LANDFALL.

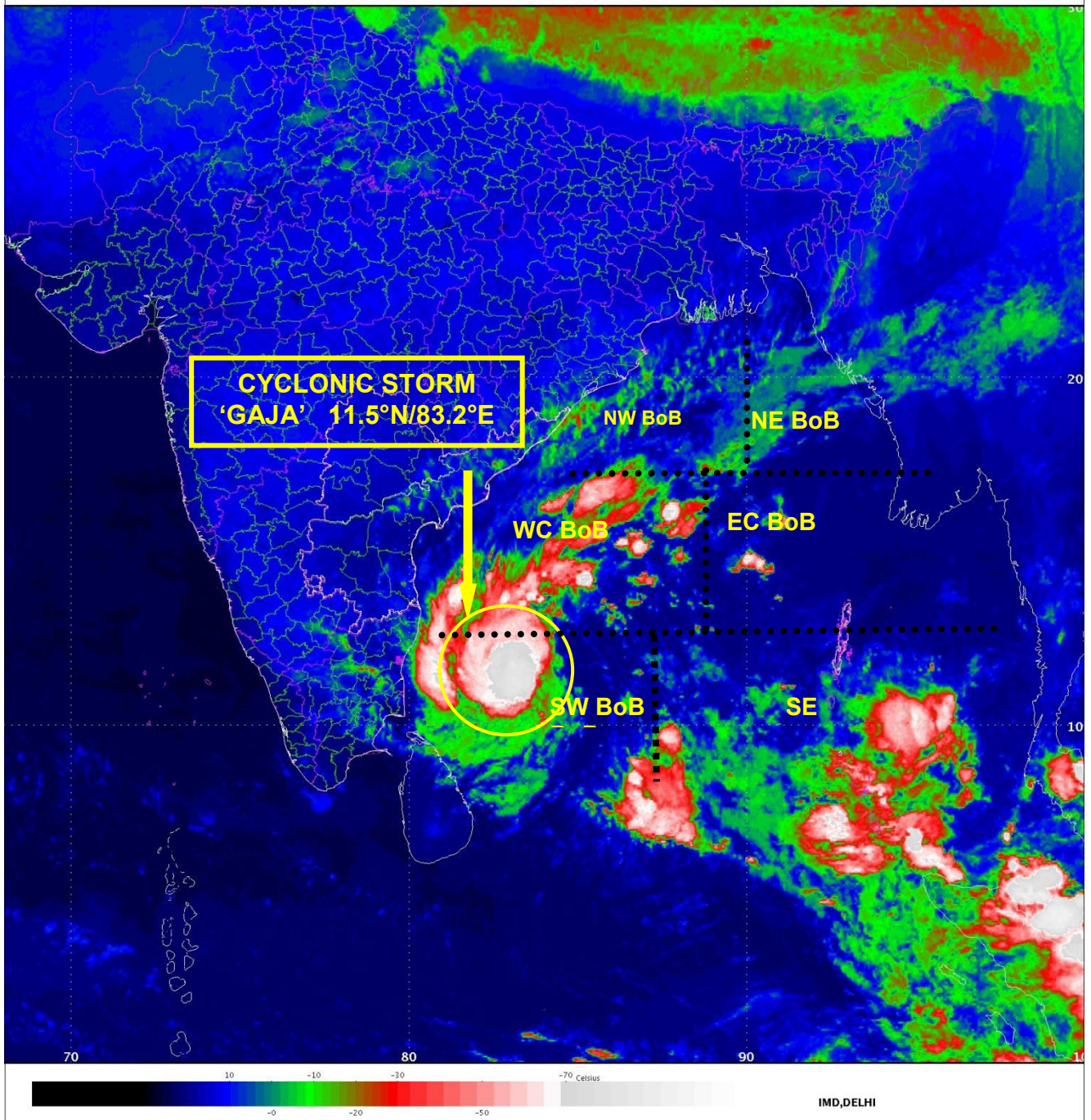
UPPER LEVEL RIDGE RUNS ALONG LAT 15°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. HOWEVER, THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) AND THE COL REGION TO THE NORTH OF THE SYSTEM CENTRE. THE SYSTEM WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(D.JOARDAR)  
SCIENTIST-E, RSMC, NEW DELHI

---

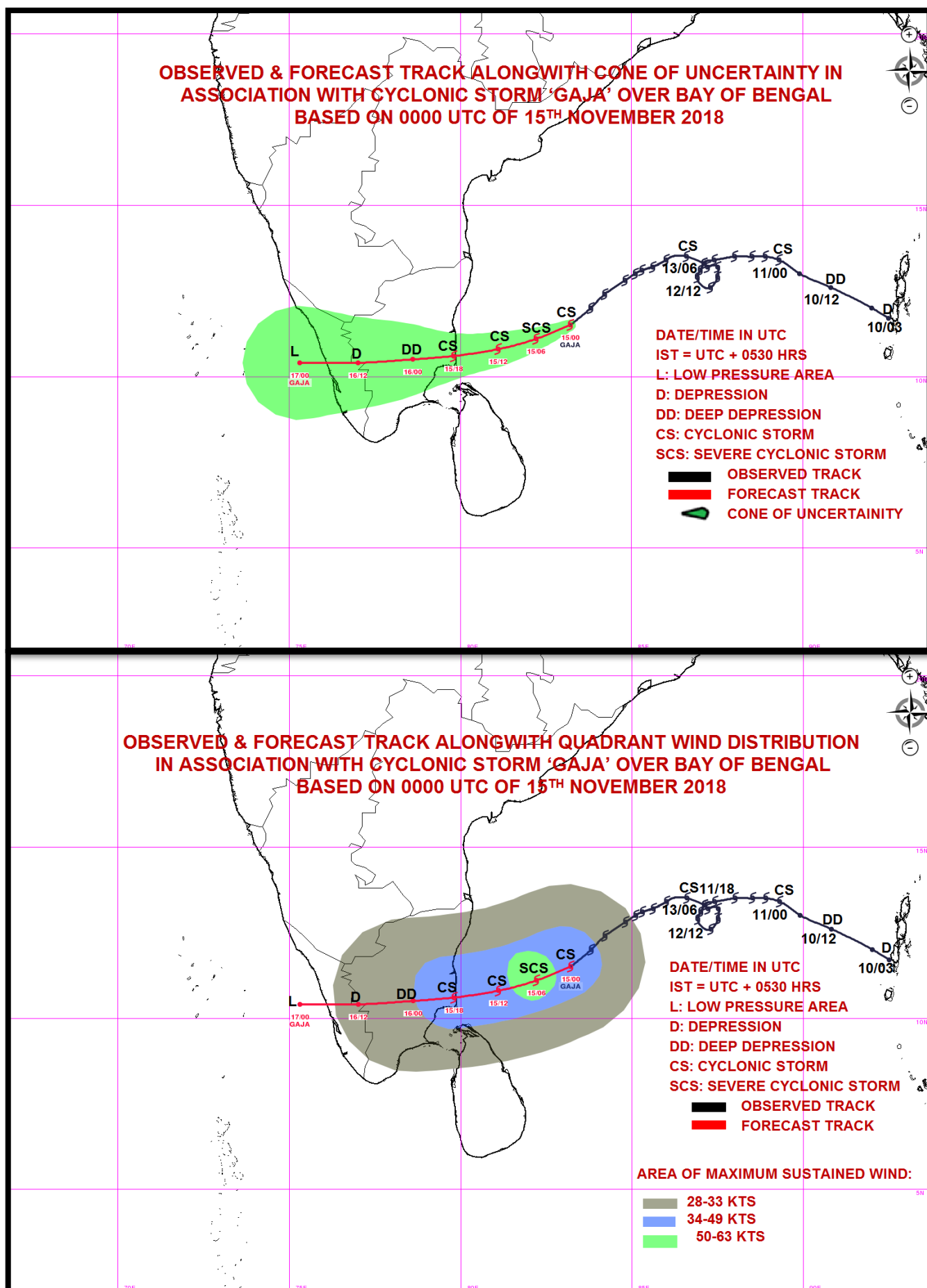
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 33**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 33 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0600 UTC OF 15.11.2018 BASED ON 0300 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM '**GAJA**' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS, INTENSIFIED INTO A **SEVERE CYCLONIC STORM** AND LAY CENTRED AT 0300 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 11.3°N AND LONGITUDE 82.6°E, ABOUT 320 KM EAST-SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 300 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), AROUND NAGAPATTINAM (43347) DURING 1500-1800 UTC OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018 AS A CYCLONIC STORM WITH A WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
15.11.18/0300	11.3/82.6	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/0600	11.1/82.2	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1200	10.8/81.1	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1800	10.6/79.8	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0000	10.5/78.6	55-65 GUSTING TO 75	DEEP DEPRESSION
16.11.18/1200	10.4/77.0	40-50 GUSTING TO 60	DEPRESSION
17.11.18/0000	10.4/75.3	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 13.0°N AND LONGITUDE 81.0°E TO 84.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

AT 0300 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1010.4 HPA AND MEAN SURFACE WIND SPEED OF 100°/ 18 KNOTS. NAGAPATTINAM (43347) (TAMIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1009.3 HPA AND MEAN SURFACE WIND SPEED OF 340°/ 04 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 995 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15 X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20-30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS TOWARDS TAMIL NADU COAST, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA AND LAND INTERACTION WHICH CAN CAUSE SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

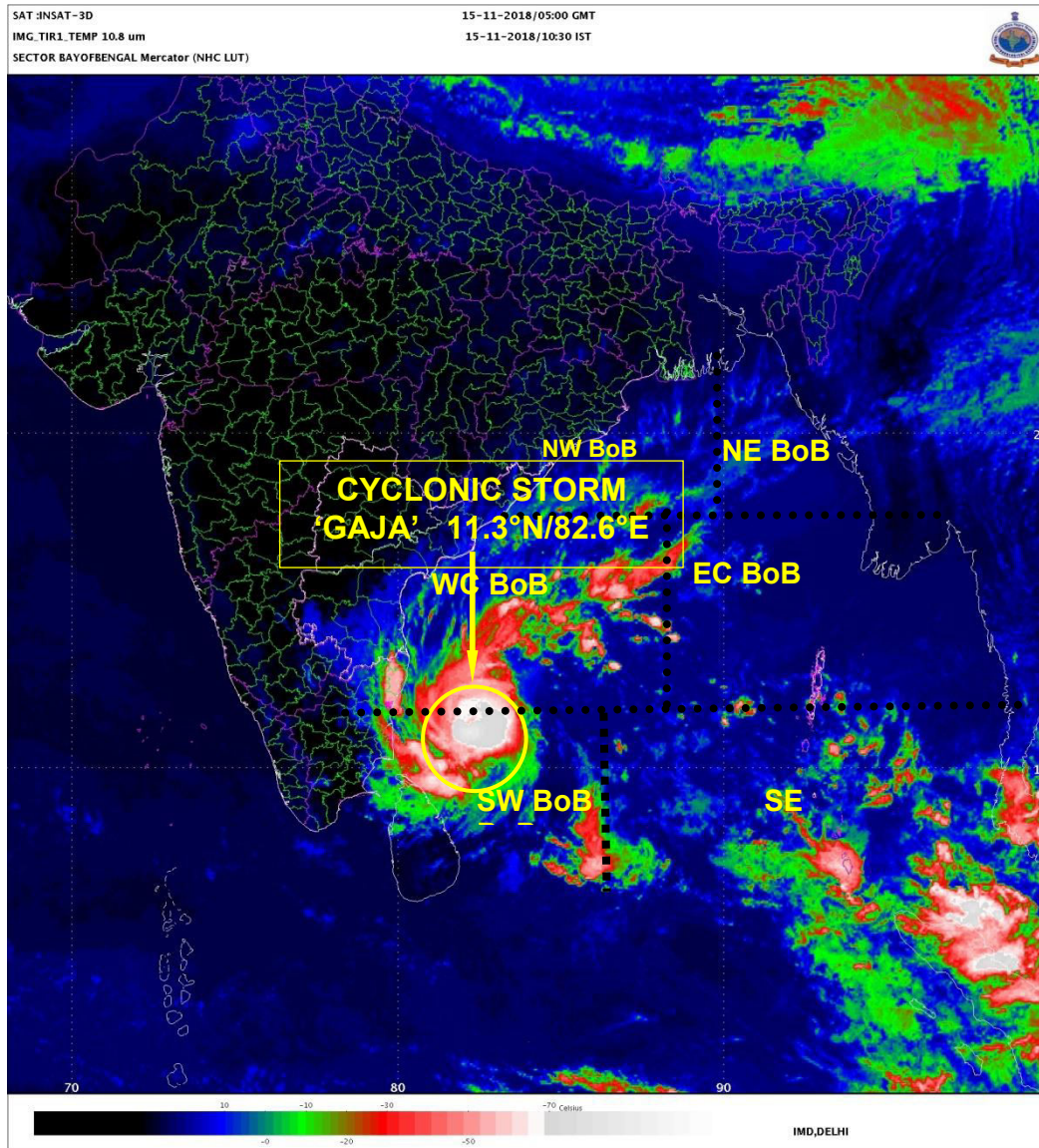
UPPER LEVEL RIDGE RUNS ALONG LAT 13°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

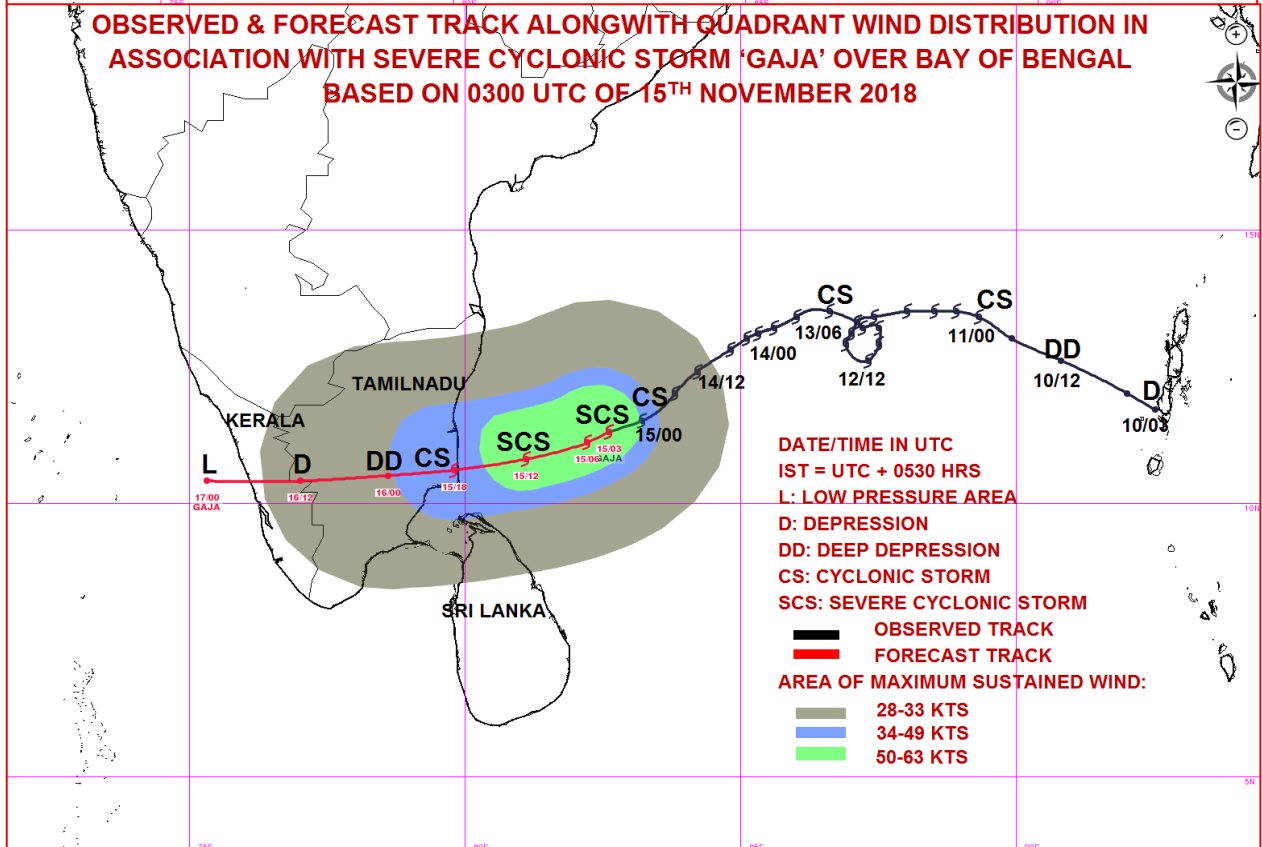
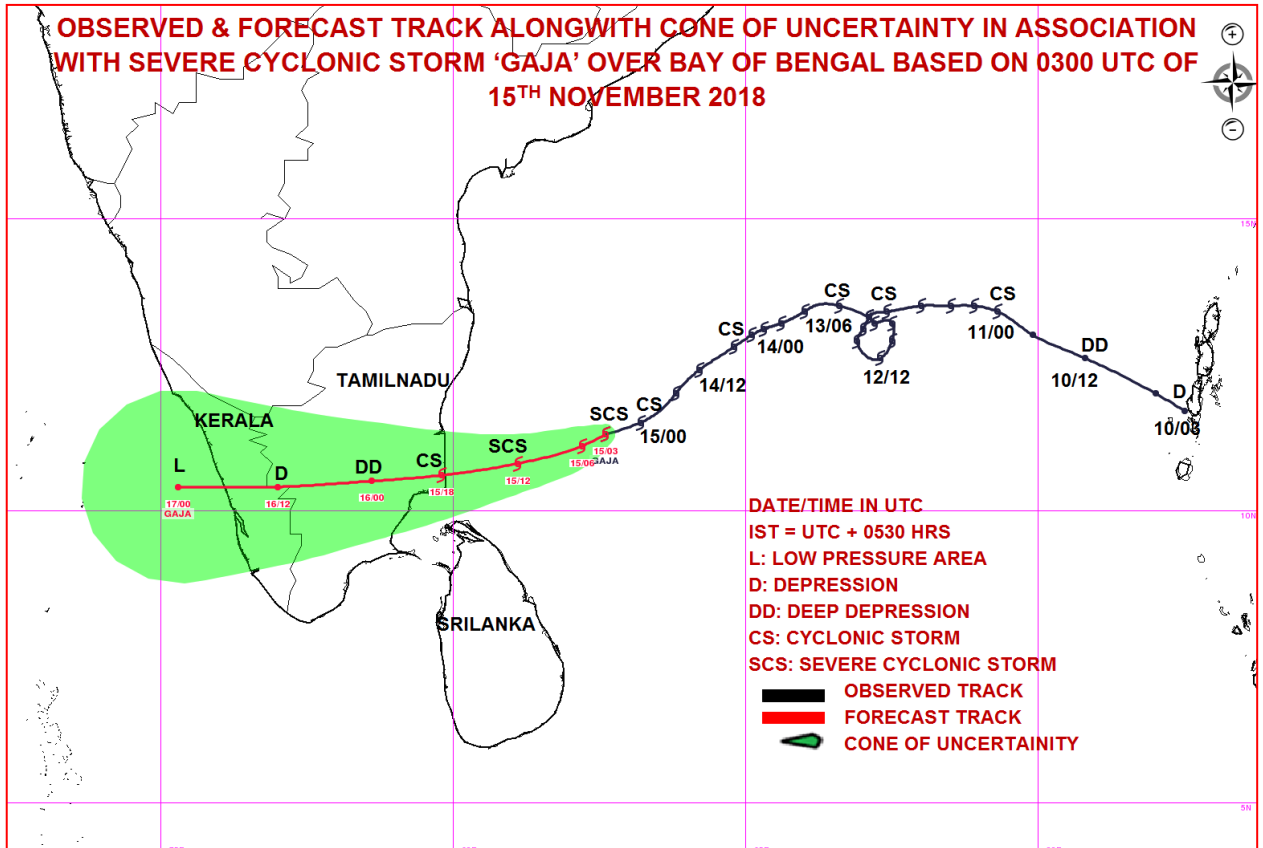


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 34**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 34 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0900 UTC OF 15.11.2018 BASED ON 0600 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 22 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0600 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 11.2°N AND LONGITUDE 82.0°E, ABOUT 280 KM SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 240 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), AROUND NAGAPATTINAM DURING LATE EVENING OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018 AS A CYCLONIC STORM WITH A WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH. THE SEVERE CYCLONIC STORM 'GAJA' IS BEING MONITORED BY DOPPLER WEATHER RADAR CHENNAI AND KARAİKAL SINCE MORNING OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018. FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
15.11.18/0600	11.2/82.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1200	10.9/81.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1800	10.7/79.8	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0000	10.6/78.7	55-65 GUSTING TO 75	DEEP DEPRESSION
16.11.18/0600	10.5/77.6	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	10.5/75.4	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 13.0°N AND LONGITUDE 81.0°E TO 84.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 89°C.

AT 0600 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.3 HPA AND MEAN SURFACE WIND SPEED OF 110°/ 12 KNOTS. NAGAPATTINAM (43347) (TAMIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1008.6 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 08 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 995 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15 X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY INCREASED AND IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20-30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS TOWARDS TAMIL NADU COAST, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA AND LAND INTERACTION WHICH CAN CAUSE SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 13°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

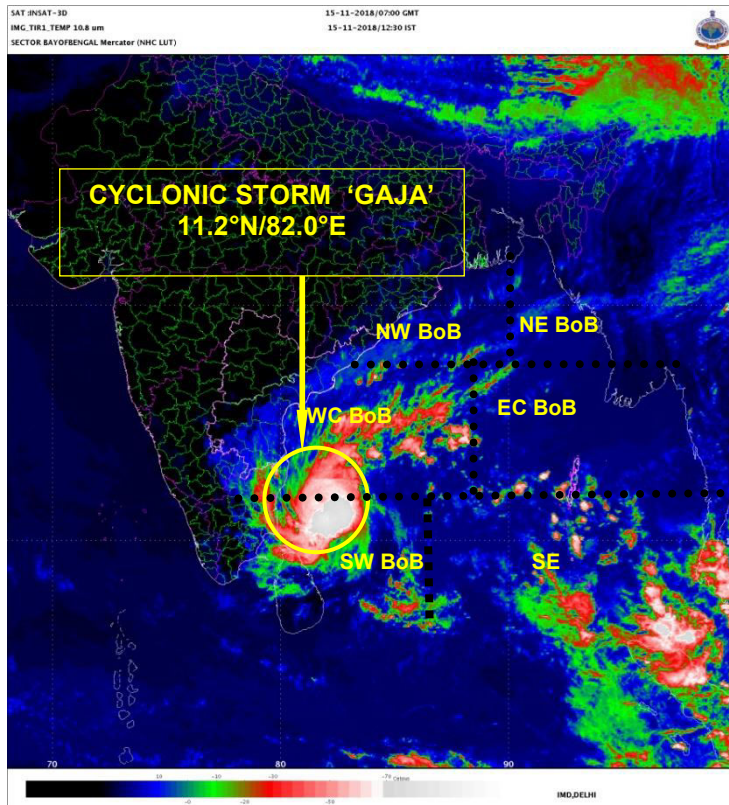
(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

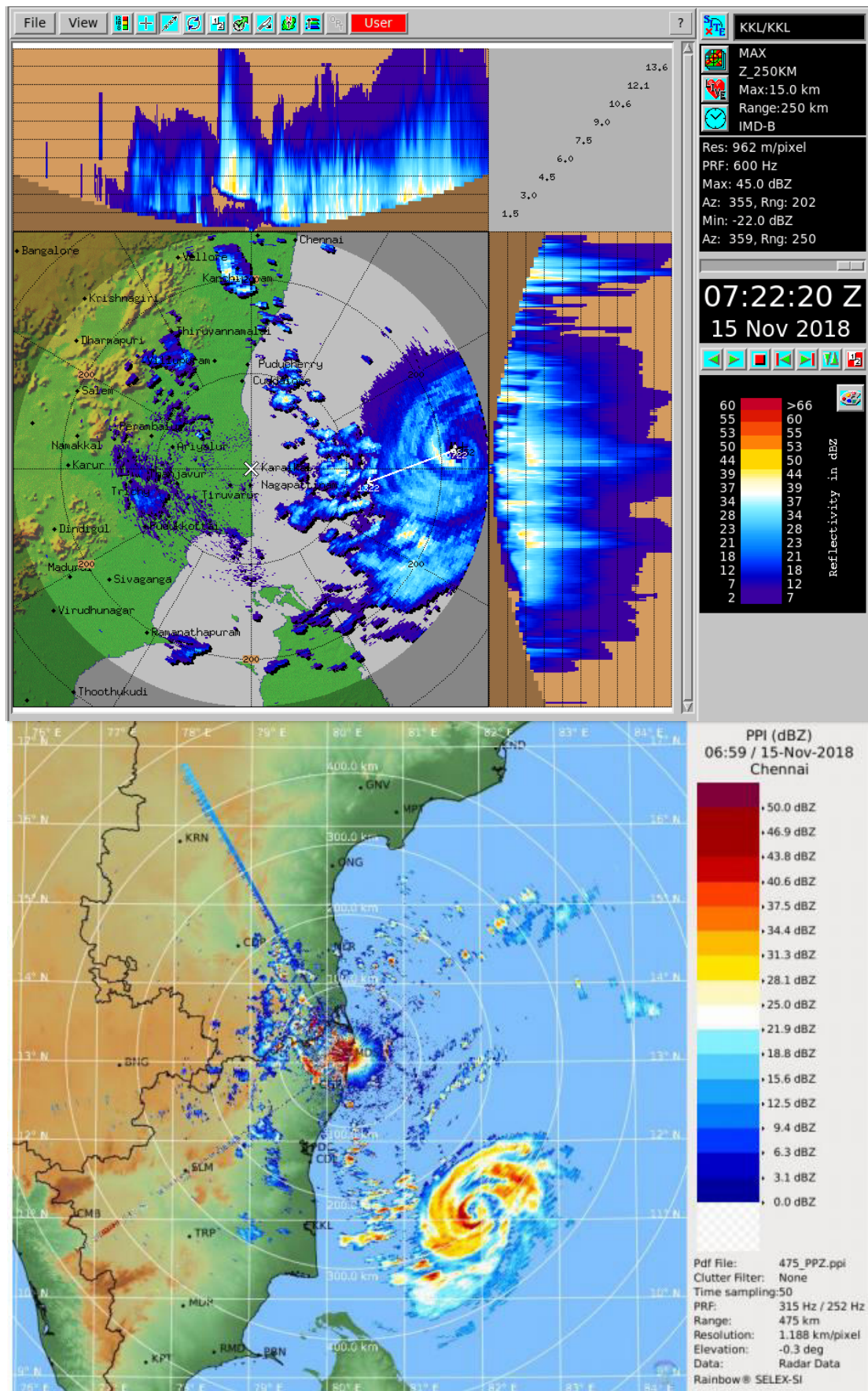




---

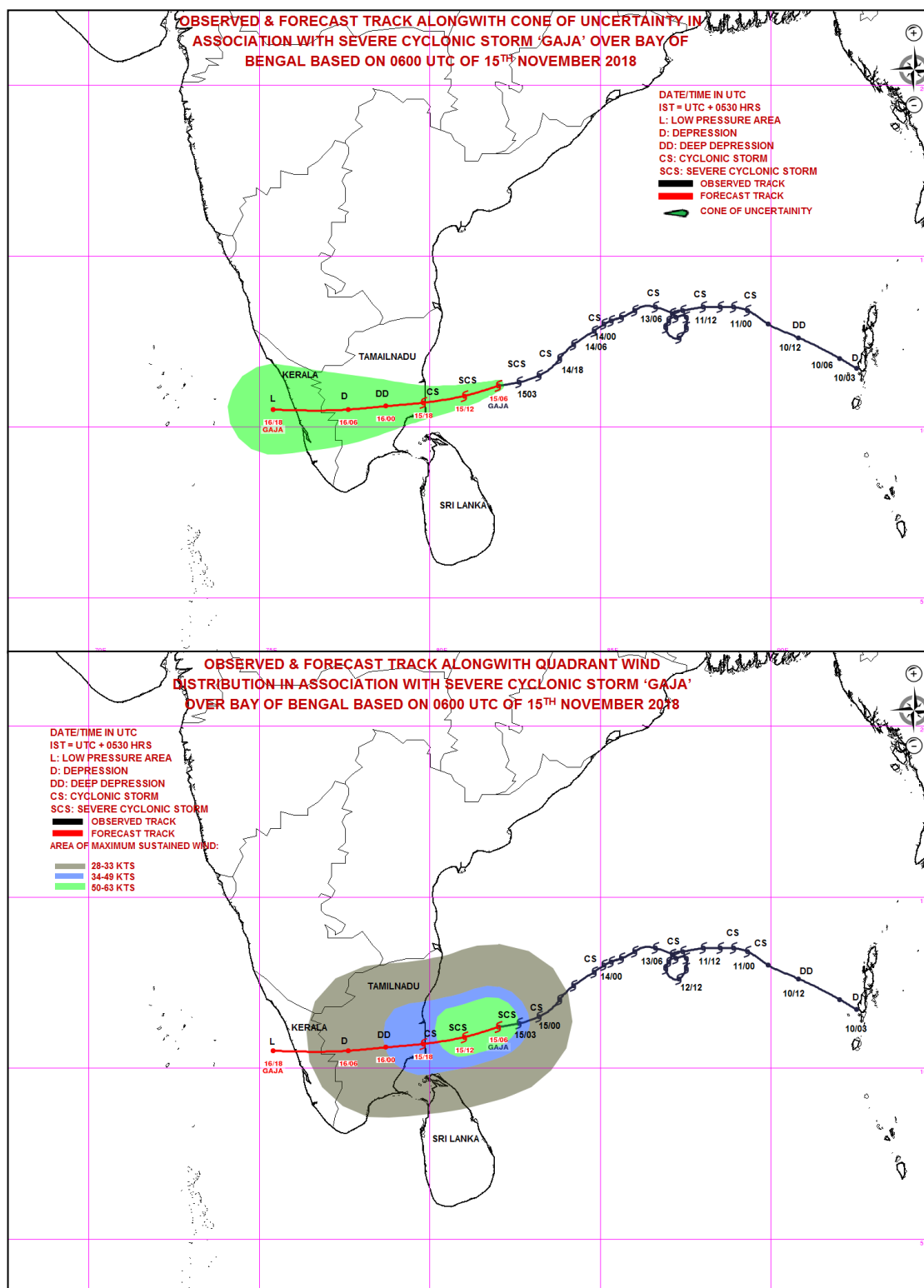
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 35**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 35 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 1100 UTC OF 15.11.2018 BASED ON 0900 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM '**GAJA**' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 21 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0900 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 11.0°N AND LONGITUDE 81.5°E, ABOUT 260 KM SOUTHEAST OF CHENNAI (43278) (TAMIL NADU) AND 180 KM EAST-NORTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), AROUND NAGAPATTINAM (43347) DURING 1500-1800 UTC OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018 AS A CYCLONIC STORM WITH A WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH. THE SEVERE CYCLONIC STORM '**GAJA**' IS BEING MONITORED BY DOPPLER WEATHER RADAR CHENNAI AND KARAİKAL SINCE MORNING OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	AXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
15.11.18/0900	11.0/81.5	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1200	10.9/81.0	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1800	10.7/79.8	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0000	10.6/78.7	55-65 GUSTING TO 75	DEEP DEPRESSION
16.11.18/0600	10.5/77.6	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	10.5/75.4	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I. 3.0. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 10.5°N TO 13.0°N AND LONGITUDE 81.0°E TO 84.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 89°C.

AT 0900 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1007.8 HPA AND MEAN SURFACE WIND SPEED OF 080°/ 10 KNOTS. NAGAPATTINAM (43347) (TAMIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1005.0 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 12 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 995 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15 X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20-30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS TOWARDS TAMIL NADU COAST, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA AND LAND INTERACTION WHICH CAN CAUSE SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

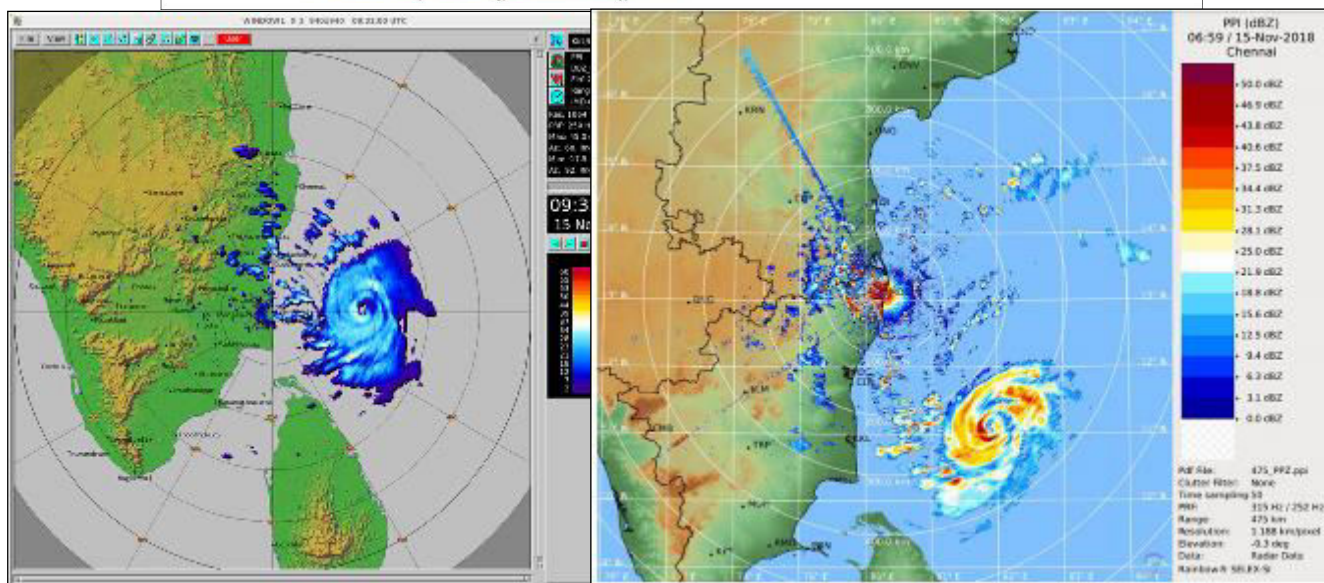
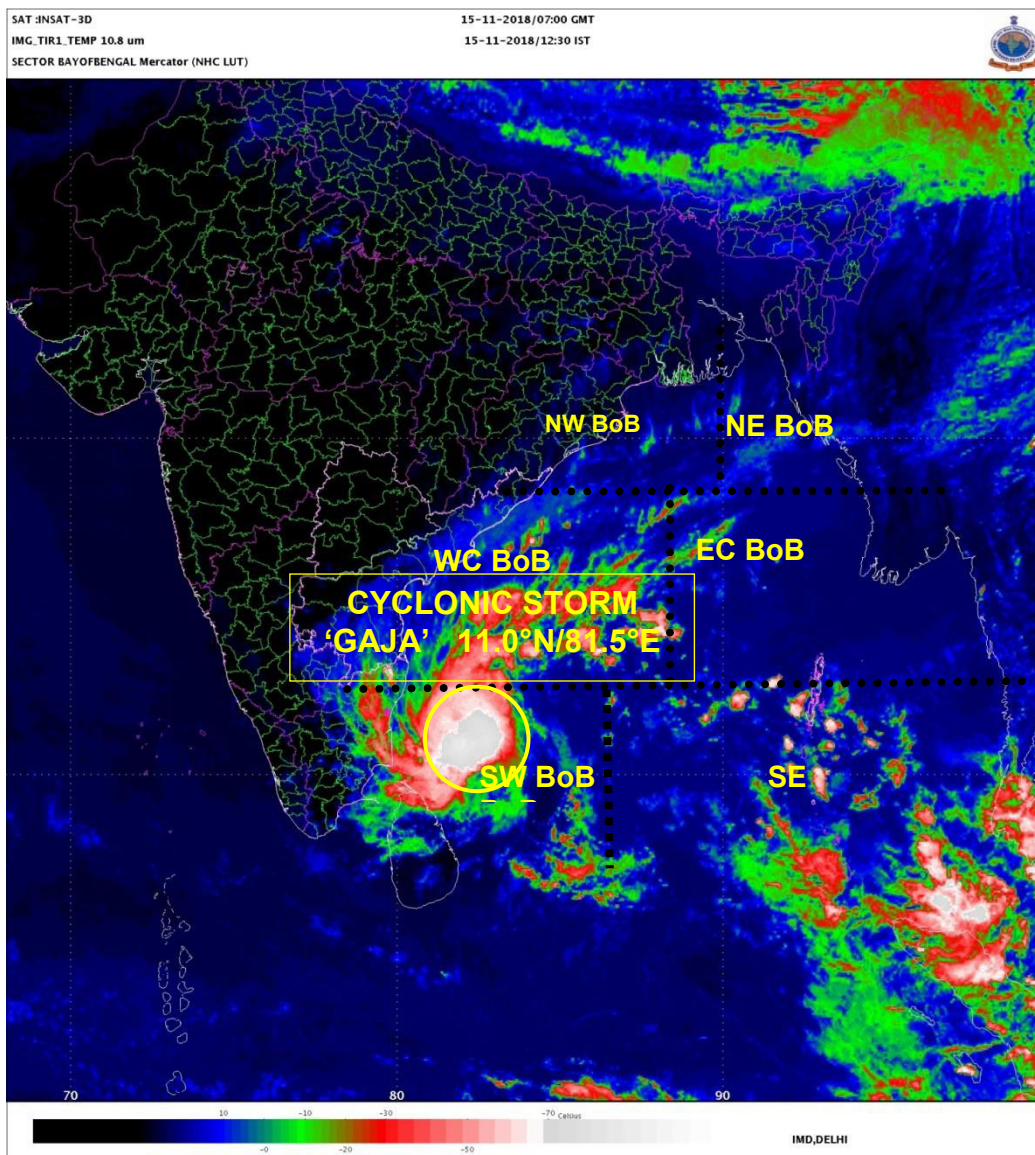
UPPER LEVEL RIDGE RUNS ALONG LAT 13°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

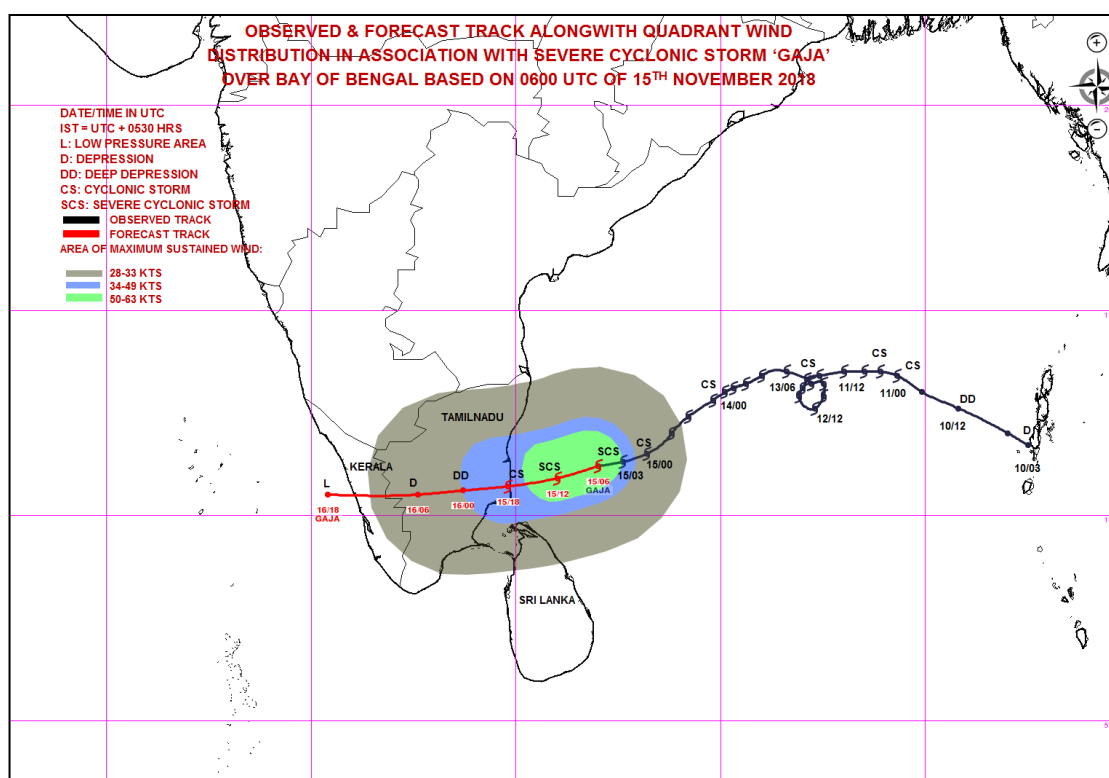
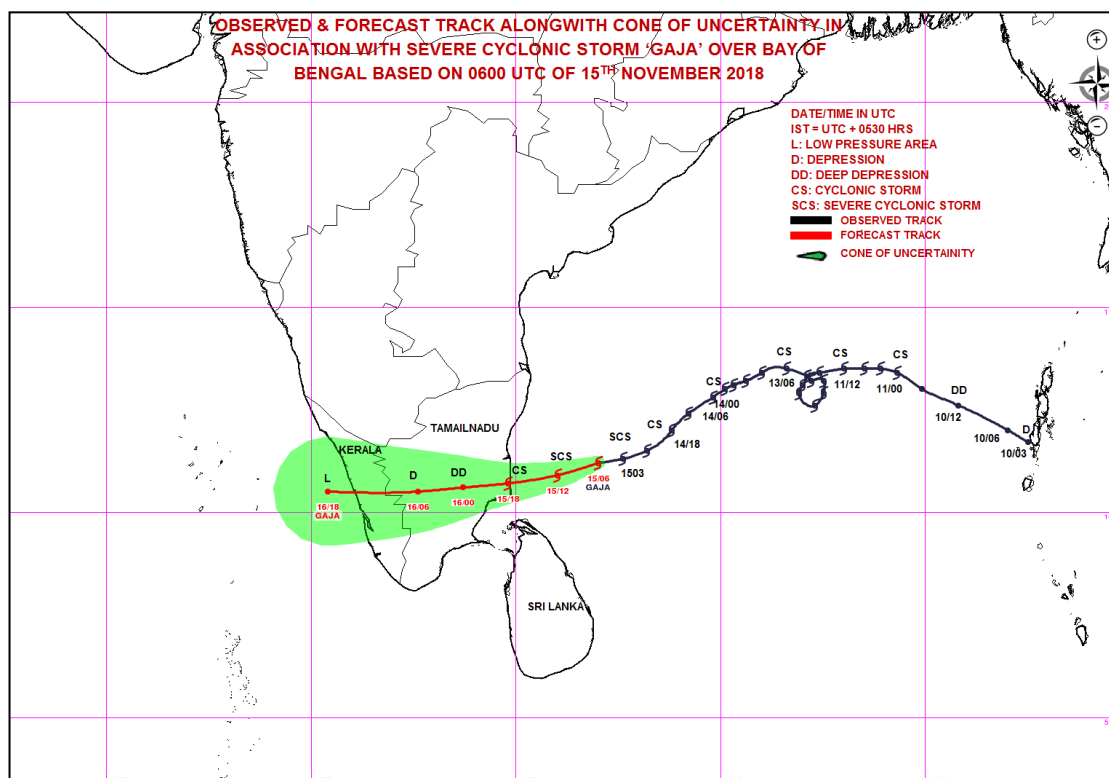
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 36**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 36 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 1400 UTC OF 15.11.2018 BASED ON 1200 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM '**GAJA**' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 16 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1200 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 10.8°N AND LONGITUDE 81.2°E, ABOUT 150 KM EAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), AROUND NAGAPATTINAM (43347) DURING 1500-1800 UTC OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018 AS A CYCLONIC STORM WITH A WIND SPEED OF 80-90 KMPH GUSTING TO 100 KMPH. THE SEVERE CYCLONIC STORM '**GAJA**' IS BEING MONITORED BY DOPPLER WEATHER RADAR CHENNAI AND KARAİKAL SINCE MORNING OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	AXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
15.11.18/1200	10.8/81.2	90-100 GUSTING TO 115	SEVERE CYCLONIC STORM
15.11.18/1800	10.5/79.8	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0000	10.4/78.7	55-65 GUSTING TO 75	DEEP DEPRESSION
16.11.18/0600	10.4/77.6	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1200	10.5/76.4	35-45 GUSTING TO 55	DEPRESSION
17.11.18/0000	10.5/74.0	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 3.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 9.5°N TO 13.0°N AND LONGITUDE 80.0°E TO 83.0°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 1200 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.0 HPA AND MEAN SURFACE WIND SPEED OF

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

080°/ 14 KNOTS. NAGAPATTINAM (43347) (TAMIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1005.4 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 13 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 995 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 50 KNOTS GUSTING TO 60 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE. THE WINDS ARE STRONGER IN NORTHEAST SECTOR OF THE SYSTEM.

**REMARKS:**

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS CURRENTLY IN PHASE 5 WITH AMPLITUDE CLOSE TO 1. IT WILL REMAIN IN PHASE 5 DURING NEXT 2 DAYS WITH AMPLITUDE LESS THAN 1. HENCE MJO WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER SOUTH & ADJOINING CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THUS, IT WILL FAVOUR FURTHER INTENSIFICATION OF THE SYSTEM.

**THE ENVIRONMENTAL CONDITIONS:** SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 10-15 X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20-30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM CENTRE AND COLD AIR ADVECTION IS TAKING PLACE NEAR NORTH TAMIL NADU AND ANDHRA PRADESH COASTS. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE FROM NORTHWEST AND NORTHEAST SECTORS RESULTING IN CURVED BAND PATTERN. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE. ALL THESE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 3 HOURS. HOWEVER, WHILE MOVING WESTSOUTHWESTWARDS TOWARDS TAMIL NADU COAST, THE SYSTEM WILL EXPERIENCE LOWER OCEAN HEAT CONTENT, COLD AIR ADVECTION IN ASSOCIATION WITH THE ANTICYCLONE OVER THE ARABIAN SEA AND LAND INTERACTION WHICH CAN CAUSE SLIGHT WEAKENING OF THE SYSTEM BEFORE LANDFALL.

UPPER LEVEL RIDGE RUNS ALONG LAT 13°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

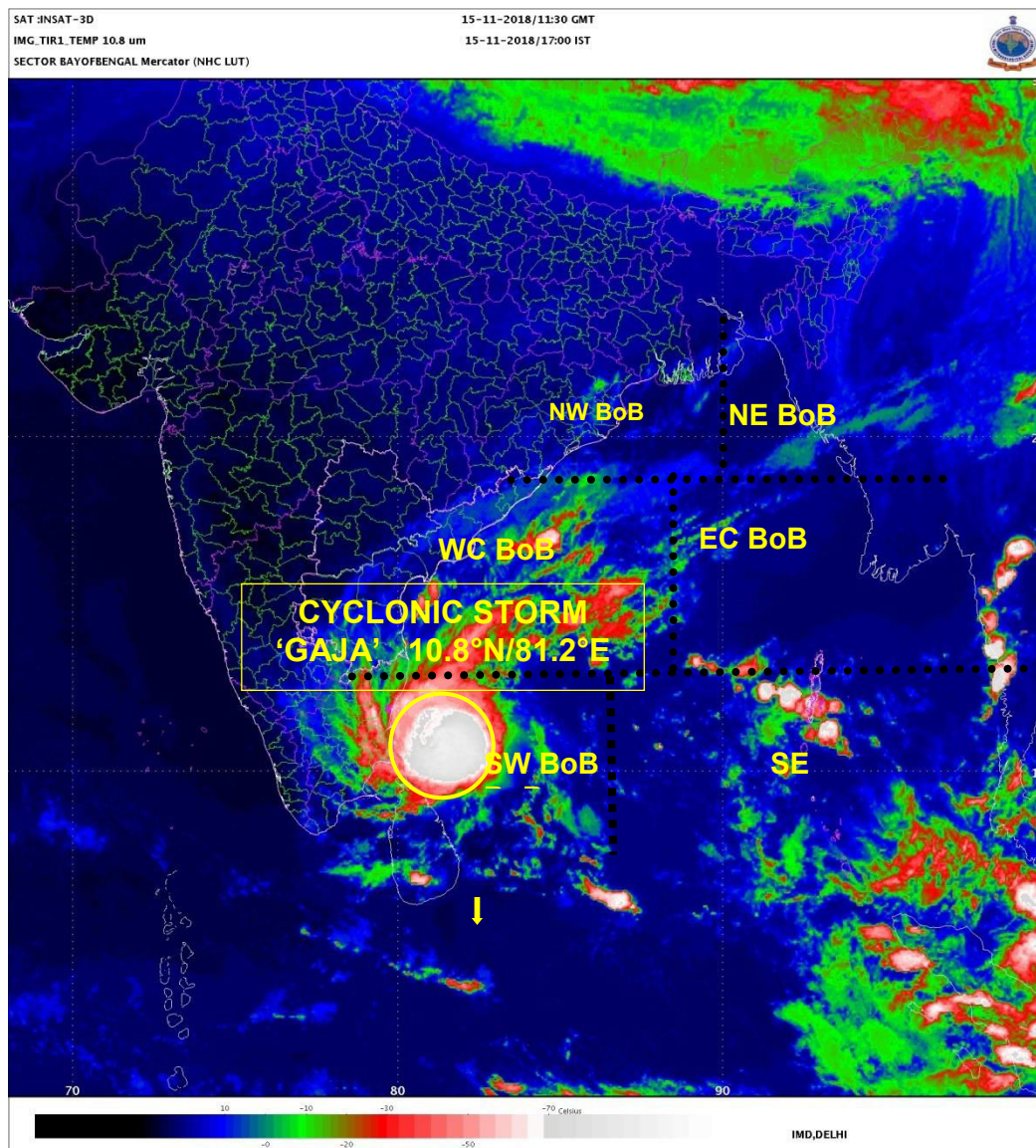
(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

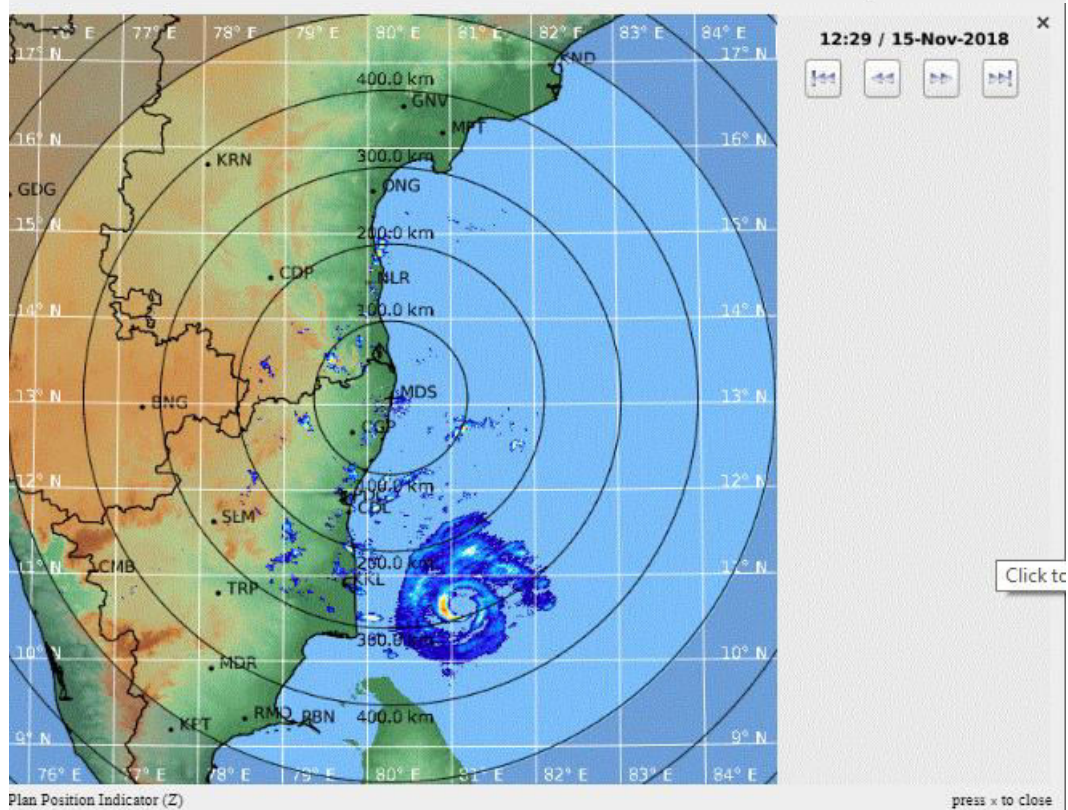
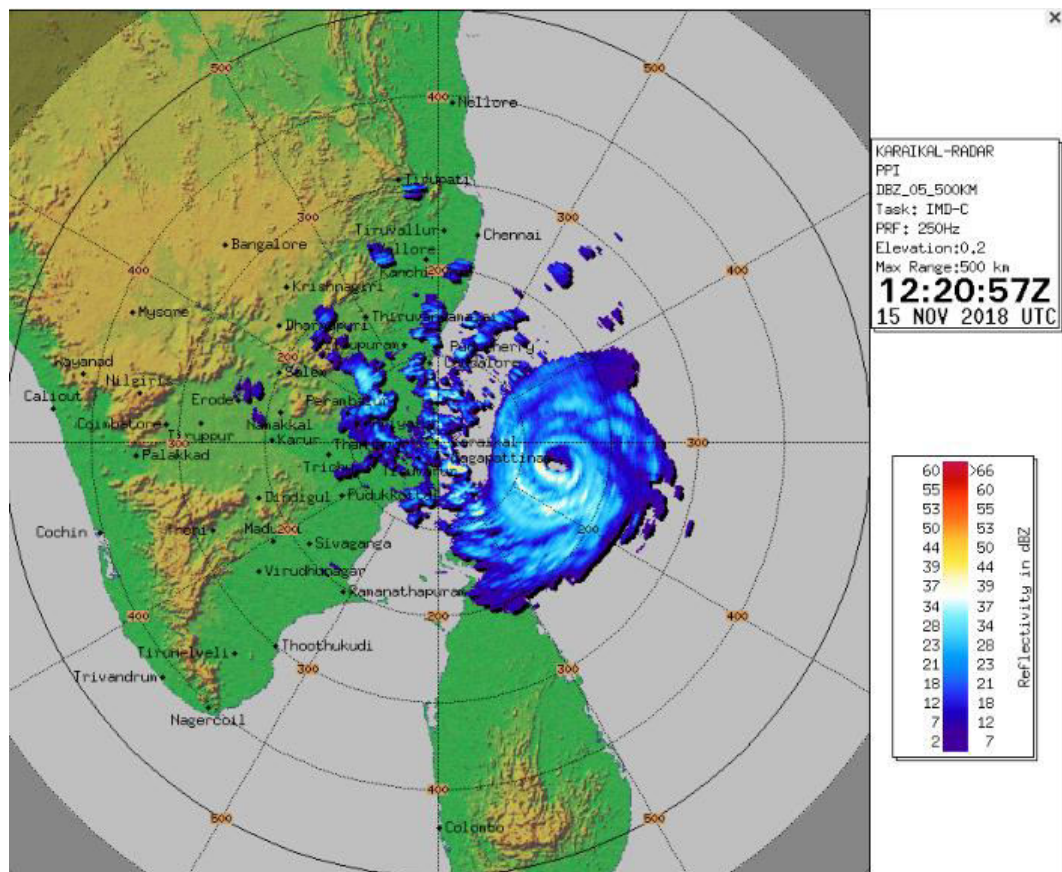




---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

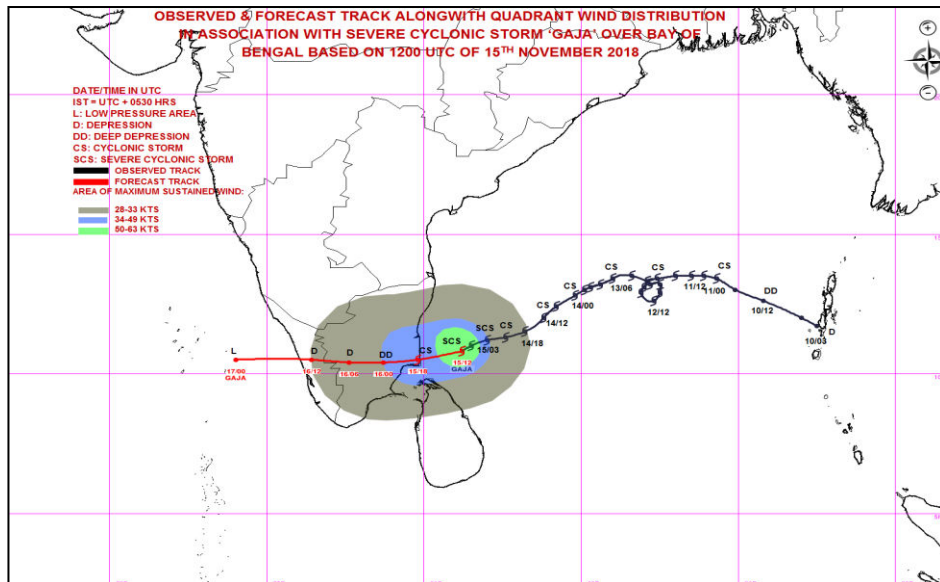
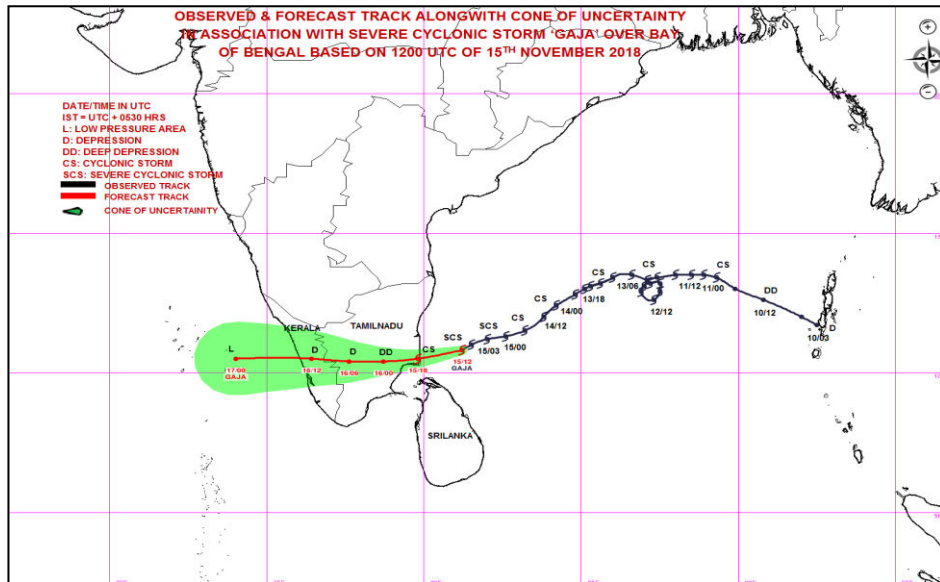
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 37**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 37 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 1700 UTC OF 15.11.2018 BASED ON 1500 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 16 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1500 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 10.6°N AND LONGITUDE 80.7°E, ABOUT 95 KM EAST-SOUTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST BETWEEN PAMBAN (43363) AND CUDDALORE (43329), SOUTH OF NAGAPATTINAM IN EARLY HOURS OF TOMORROW, THE 16<sup>TH</sup> NOVEMBER, 2018 AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100-110 GUSTING TO 120. THE SYSTEM MOVED SLOWLY DURING SIX HOURS LEADING TO DELAY IN EXPECTED TIME OF LANDFALL TO EARLY HOURS OF TOMORROW. THE SEVERE CYCLONIC STORM 'GAJA' IS BEING MONITORED BY DOPPLER WEATHER RADAR CHENNAI AND KARAIKAL SINCE MORNING OF TODAY, THE 15<sup>TH</sup> NOVEMBER, 2018.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
15.11.18/1500	10.6/80.7	100-110 gusting to 120	Severe Cyclonic Storm
15.11.18/1800	10.5/80.3	100-110 gusting to 120	Severe Cyclonic Storm
16.11.18/0000	10.4/79.4	70-80 gusting to 90	Cyclonic Storm
16.11.18/0600	10.3/78.5	50-60 gusting to 60	Deep Depression
16.11.18/1200	10.4/77.6	35-45 gusting to 55	Depression
17.11.18/0000	10.5/75.8	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1500 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 3.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 9.5°N TO 12.5°N AND LONGITUDE 79.5°E TO 82.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AT 1500 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1011.2 HPA. NAGAPATTINAM (43347) (TAMAIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1006 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 15 KNOTS.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 60 KNOTS GUSTING TO 70 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE.

**REMARKS:**

SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. IT IS LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PARTS OF SOUTHWEST BAY OF BENGAL NORTH TAMIL NADU COAST. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 20-30 X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 30X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE IN CURVED BAND PATTERN. THE POLEWARD OUTFLOW IS FAVOURABLE FOR INCREASE IN DIVERGENCE. THE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS.

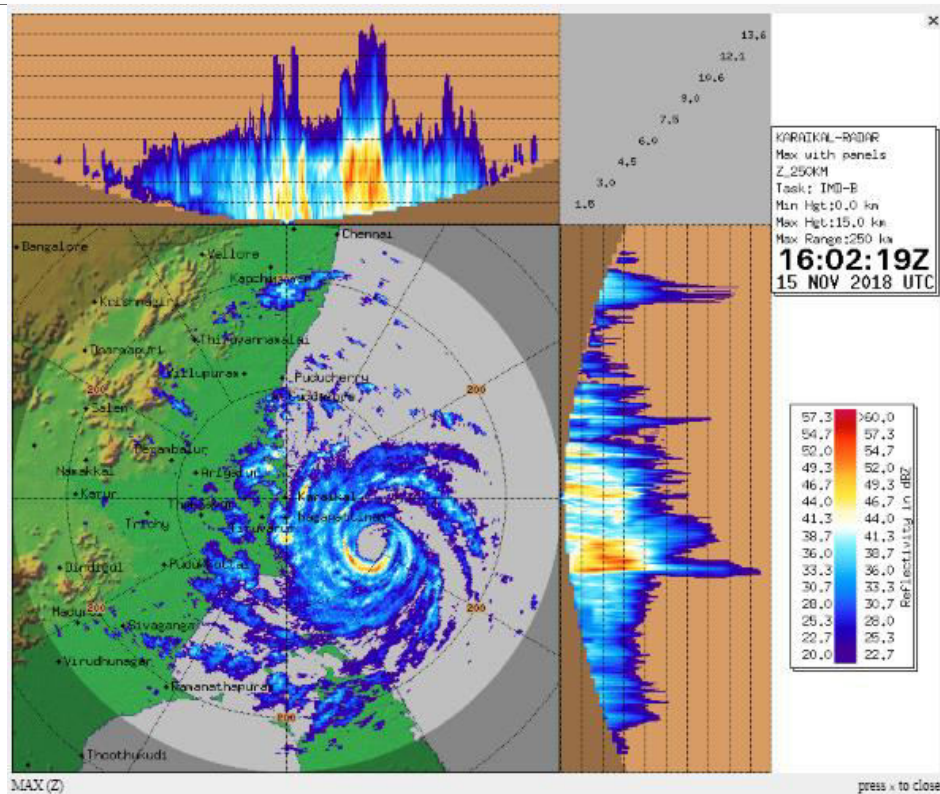
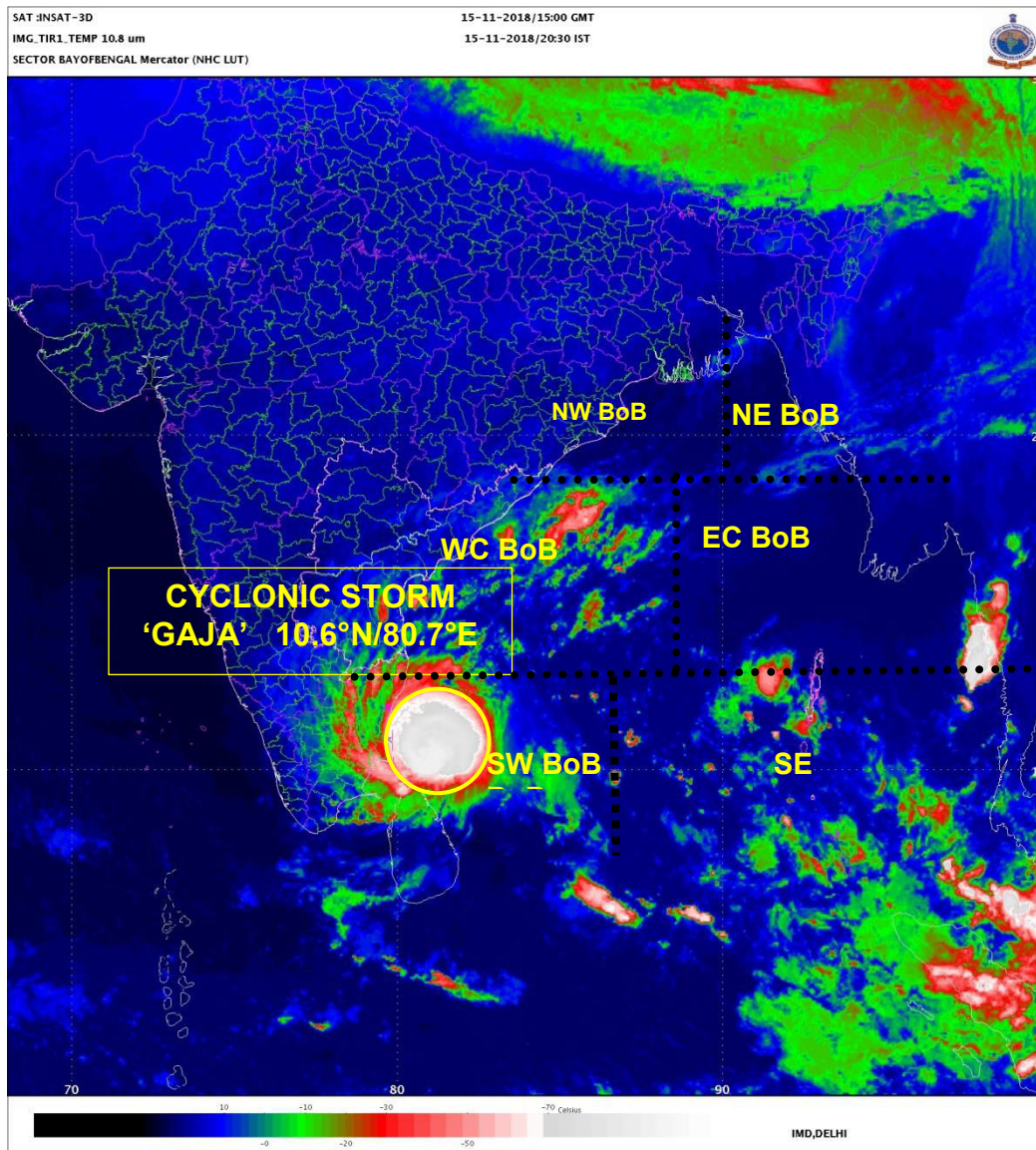
UPPER LEVEL RIDGE RUNS ALONG LAT 13°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION WITH INCREASE IN SPEED OF MOVEMENT.

(S.D. KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

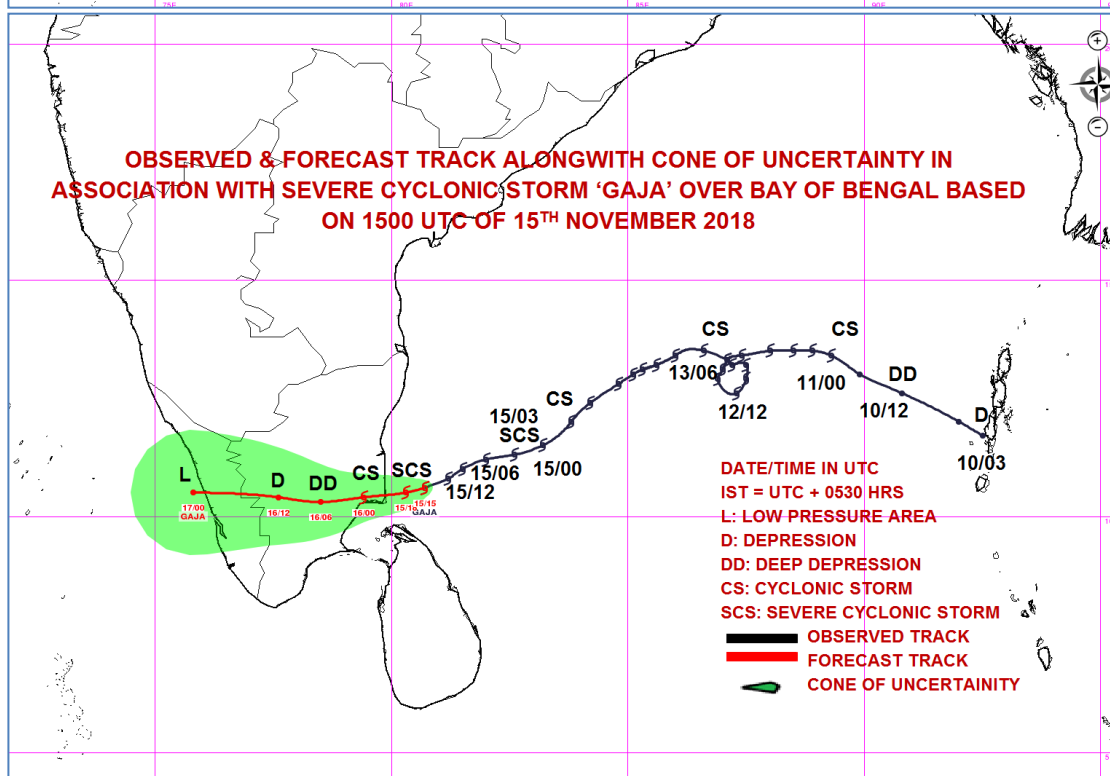
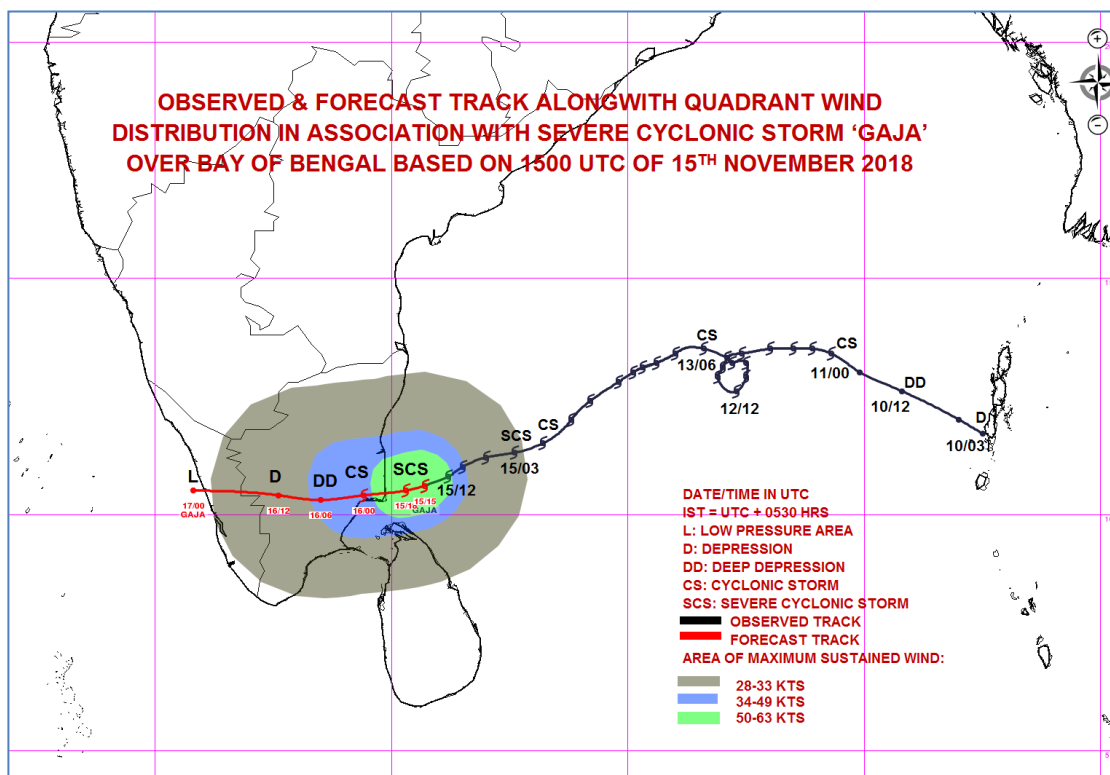
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 38**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 38 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 2000 UTC OF 15.11.2018 BASED ON 1800 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1800 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST BAY OF BENGAL NEAR LATITUDE 10.5°N AND LONGITUDE 80.3°E, ABOUT 55 KM EAST-SOUTHEAST OF NAGAPATTINAM (43347) (TAMIL NADU) AND 50 KM EAST-NORTHEAST OF VEDARANNIYAM (43349) (TAMIL NADU). IT IS VERY LIKELY TO MOVE WEST-SOUTHWESTWARDS AND CROSS TAMIL NADU COAST, SOUTH OF NAGAPATTINAM DURING NEXT 3 HOURS AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100-110 GUSTING TO 120.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
15.11.18/1800	10.5/80.3	100-110 gusting to 120	Severe Cyclonic Storm
16.11.18/0000	10.4/79.4	70-80 gusting to 90	Cyclonic Storm
16.11.18/0600	10.3/78.5	50-60 gusting to 70	Deep Depression
16.11.18/1200	10.4/77.6	40-50 gusting to 60	Depression
16.11.18/1800	10.5/76.7	35-45 gusting to 55	Depression
17.11.18/0000	10.6/74.9	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 15<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 3.5. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL BETWEEN LATITUDE 9.5°N TO 12.5°N AND LONGITUDE 78.5°E TO 82.5°E. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

AT 1800 UTC OF 15<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 13.5°N/84.1°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1011.0 HPA AND MEAN SURFACE WIND SPEED OF 080°/12 KNOTS. NAGAPATTINAM (43347) (TAMIL NADU) REPORTED MEAN SEA LEVEL PRESSURE OF 1003.1 HPA AND MEAN SURFACE WIND SPEED OF 360°/30 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 60 KNOTS GUSTING TO 70 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH AROUND THE SYSTEM CENTRE.

**REMARKS:**

SEA SURFACE TEMPERATURE IS AROUND 28-29°C AND TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 40-50 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL CONVERGENCE IS OF THE ORDER 20-30 X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF 20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. AS PER THE TOTAL PRECIPITABLE WATER (TPW) IMAGERY, WARM AIR ADVECTION IS TAKING PLACE FROM THE SOUTHEAST SECTOR TO THE CORE OF THE SYSTEM. CLOUD IMAGERY INDICATE IMPROVEMENT IN CLOUD ORGANISATION WITH BANDS WRAPPING TIGHTLY AROUND THE CENTRE IN CURVED BAND PATTERN. THE ENVIRONMENTAL CONDITIONS ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTESITY FOR ANOTHER 6 HOURS.

UPPER LEVEL RIDGE RUNS ALONG LAT 14°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE EAST AND WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING WEST-SOUTHWESTWARDS UNDER THE INFLUENCE OF THE ANTICYCLONE TO THE WEST (ARABIAN SEA) OF THE SYSTEM AND WILL CONTINUE TO MOVE WESTSOUTHWESTWARDS TILL LANDFALL. THEREAFTER IT WILL MOVE IN A NEAR WESTWARDS DIRECTION.

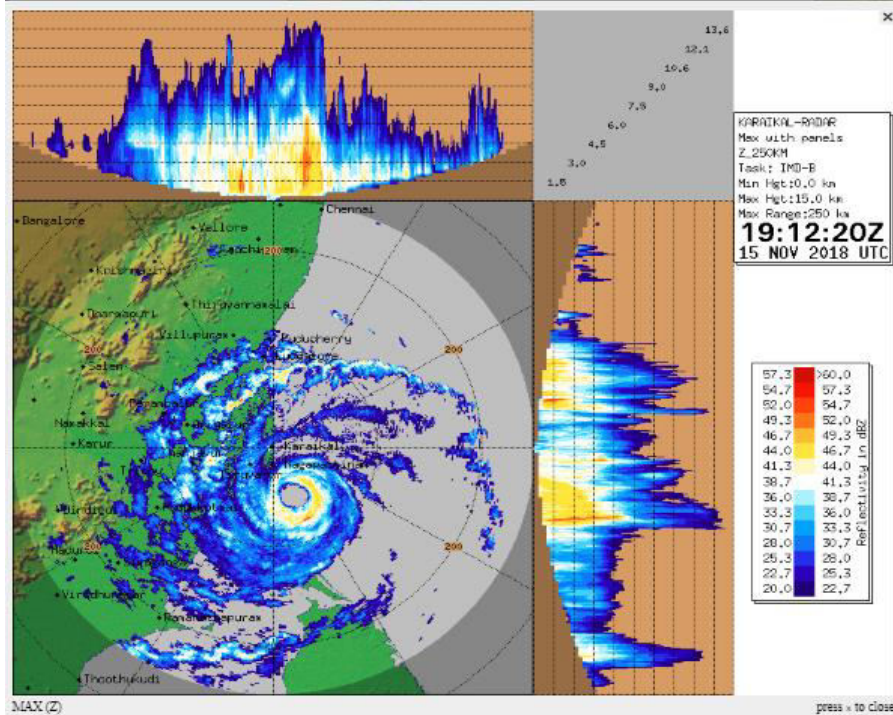
(S.D. KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

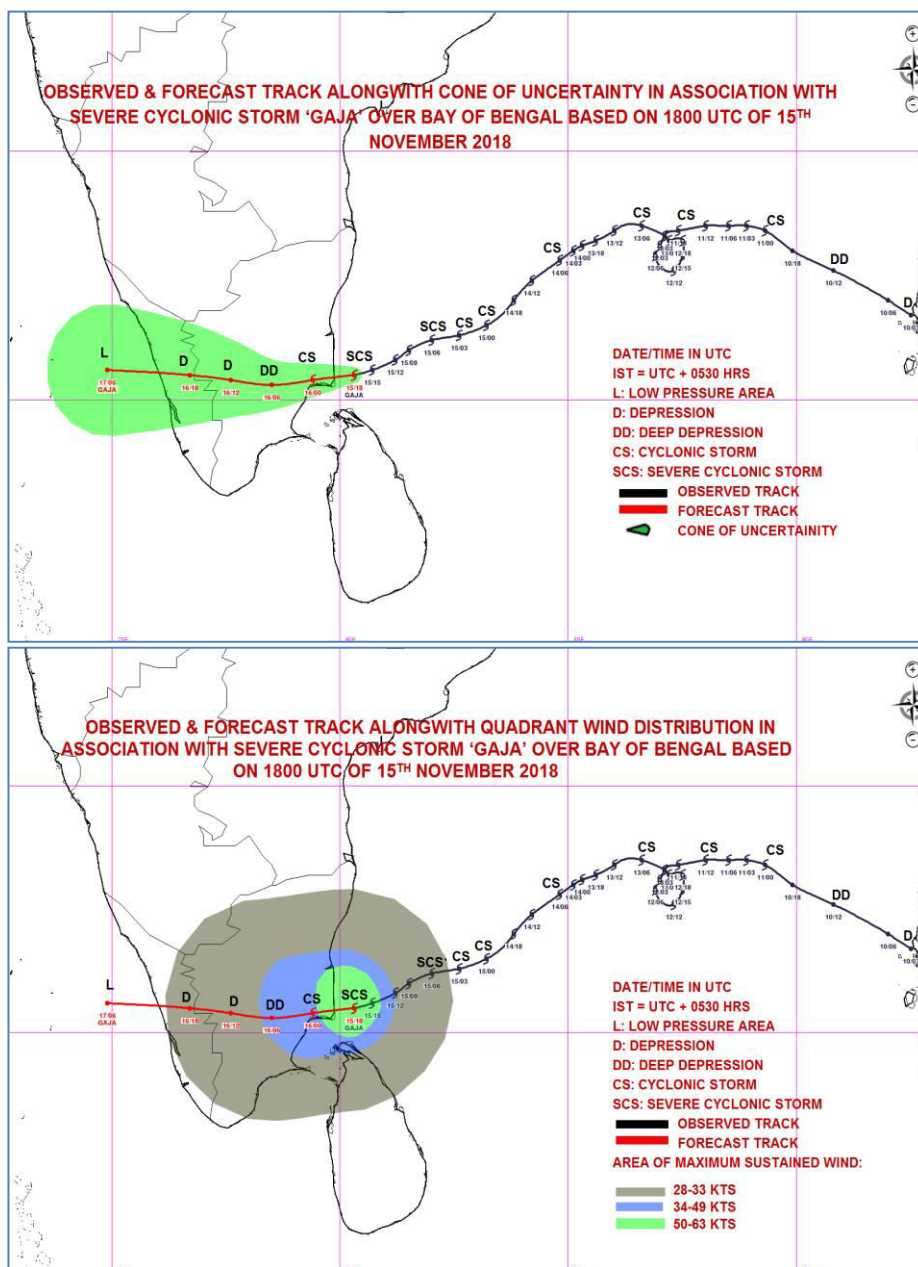
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 39**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 39 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 2300 UTC OF 15.11.2018 BASED ON 2100 UTC OF 15.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL MOVED FURTHER WEST-SOUTHWESTWARDS AND CROSSED TAMILNADU & PUDUCHERRY COAST BETWEEN NAGAPATTINAM AND VEDARANNIYAM NEAR LATITUDE 10.5 °N AND LONGITUDE 79.8 °E WITH WIND SPEED OF 100-110 KMPH GUSTING TO 120 KMPH DURING 1900 UTC TO 2100 UTC OF 15<sup>TH</sup> NOVEMBER, 2018. IT LAY CENTRED AT 2100 UTC OF 15<sup>TH</sup> NOVEMBER, 2018 OVER COASTAL TAMILNADU NEAR LATITUDE 10.4°N AND LONGITUDE 79.7°E ABOUT 15 KM WEST-NORTHWEST OF VEDARANNIYAM. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN GRADUALLY INTO A CYCLONIC STORM DURING NEXT 06 HOURS. THOUGH CENTER OF CYCLONE LIES OVER LAND, REAR SECTOR OF EYE WALL IS STILL OVER SEA. IT WILL TAKE ABOUT AN HOUR TO MOVE OVER LAND.

MAXIMUM WIND (TIME OF OCCURRENCE) REPORTED DURING LANDFALL ARE AS FOLLOWS:  
ATIRAMPATTINAM-111 KMPH (2100 UTC), NAGAPATTINAM-100 KMPH (2100 UTC) AND KARAIKAL-92 KMPH (2000 UTC).

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
15.11.18/2100	10.4/79.7	100-110 gusting to 120	Severe Cyclonic Storm
16.11.18/0000	10.4/79.3	80-90 gusting to 100	Cyclonic Storm
16.11.18/0600	10.5/78.5	55-65 gusting to 75	Deep Depression
16.11.18/1200	10.5/77.6	40-50 gusting to 60	Depression
16.11.18/1800	10.6/76.7	35-45 gusting to 55	Depression
17.11.18/0600	10.7/74.9	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 2100 UTC OF 15<sup>TH</sup> NOVEMBER 2018. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER BAY OF BENGAL ALONG AND OFF TAMILNADU COAST, PALK STRAIT, TAMILNADU AND PUDUCHERRY.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



THE ESTIMATED CENTRAL PRESSURE IS ABOUT 992 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 60 KNOTS GUSTING TO 70 KNOTS. STATE OF SEA IS HIGH TO VERY HIGH ALONG AND OFF COAST OF CENTRAL TAMILNADU AND PUDUCHERRY AND OVER PALK STRAIT.

**REMARKS:**

THE LOWER LEVEL CONVERGENCE IS OF THE ORDER  $20-30 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF  $20 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. CLOUD IMAGERY INDICATES DISORGANISATION IN CLOUD ORGANISATION DUE TO LAND INTERACTION. HOWEVER, THE ENVIRONMENTAL CONDITIONS LIKE WIND SHEAR, VORTICITY AND DIVERGENCE ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS AND WEAKEN GRDUALY THEREATER.

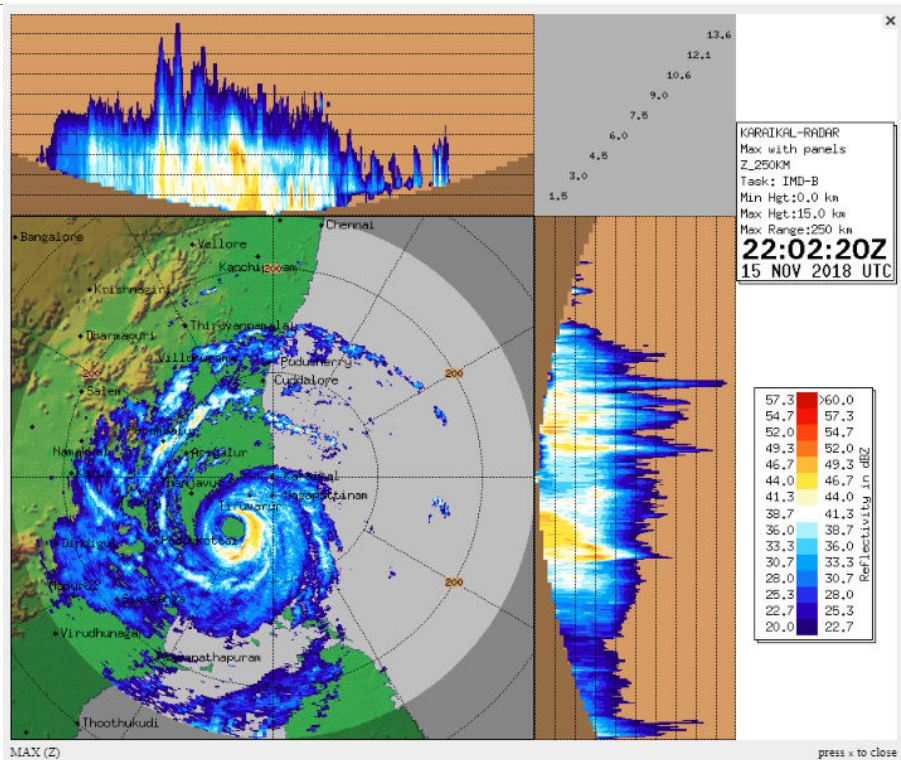
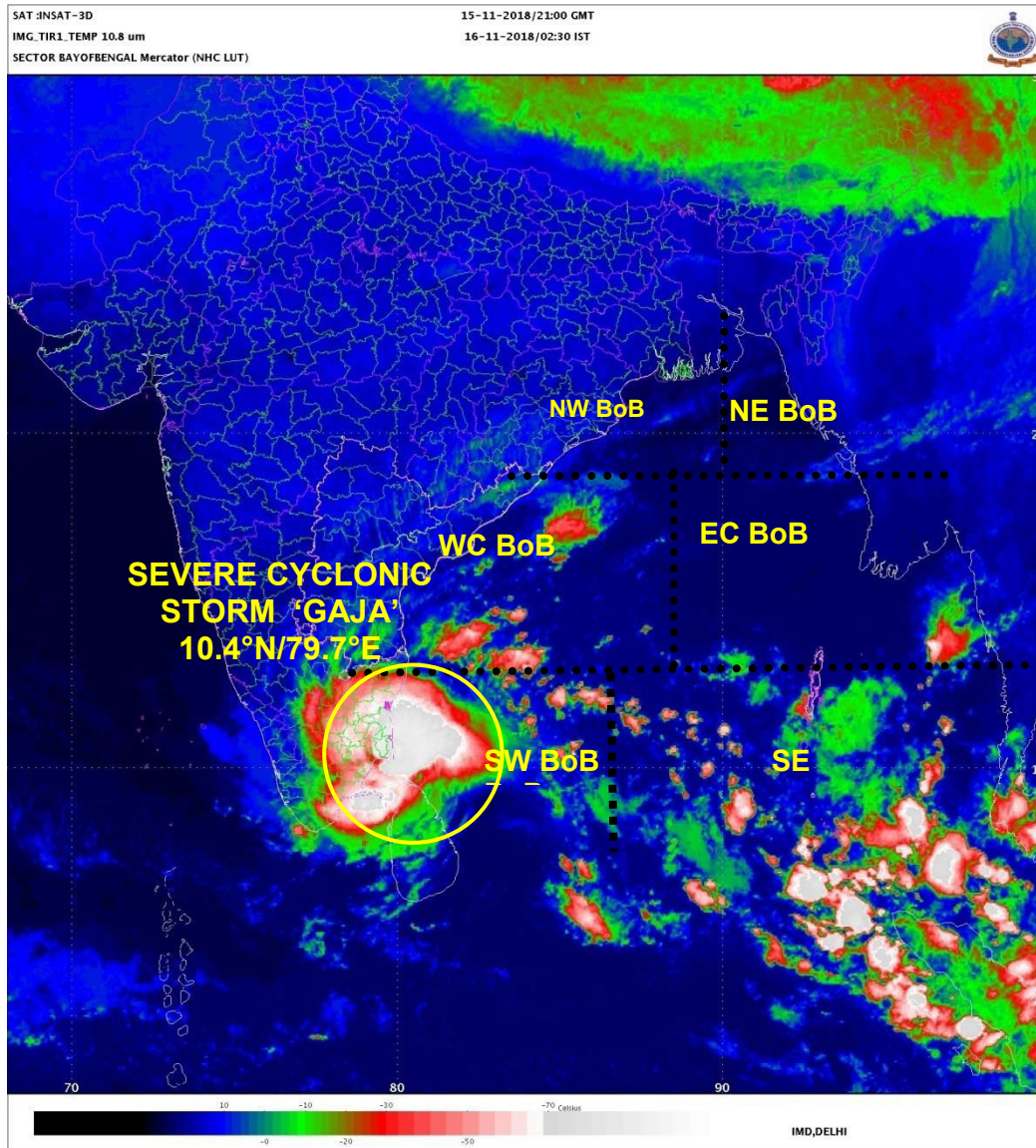
UPPER LEVEL RIDGE RUNS ALONG LAT 14°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING NEARLY WESTWARDS. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS AND EMERGE INTO SOUTHEAST ARABIAN SEA AS A LOW PRESSURE AREA BY MORNING OF 17<sup>TH</sup> NOVEMBER, 2018.

(S.D. KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

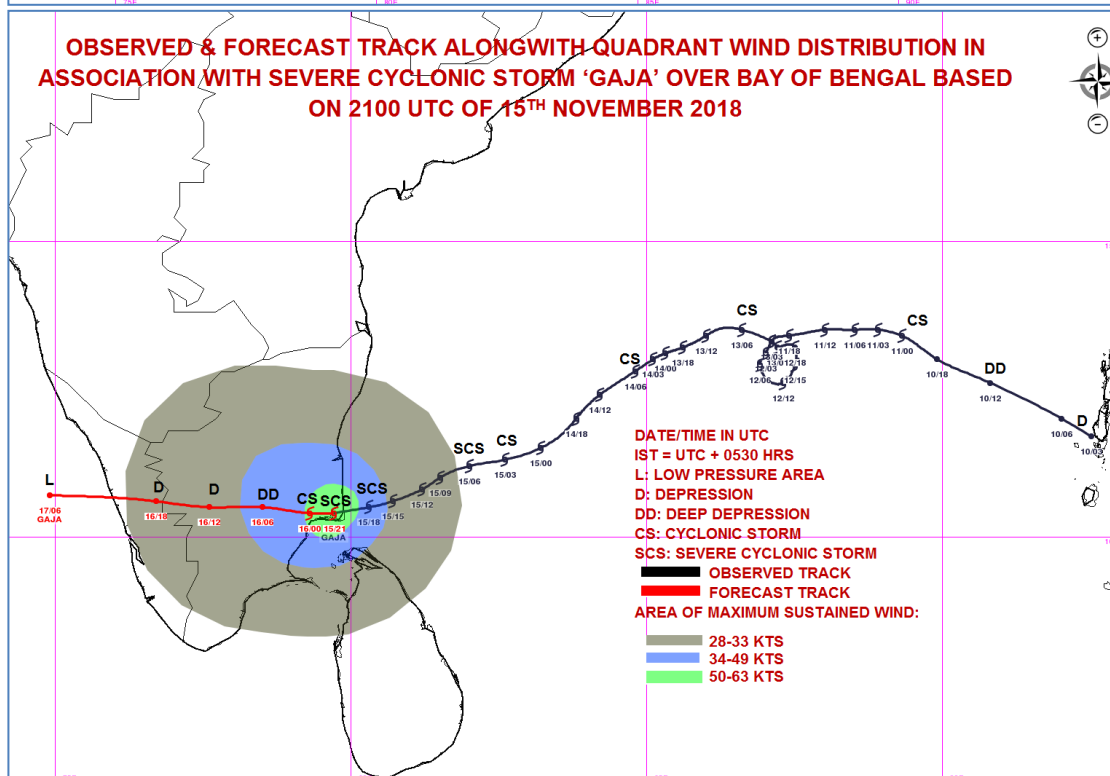
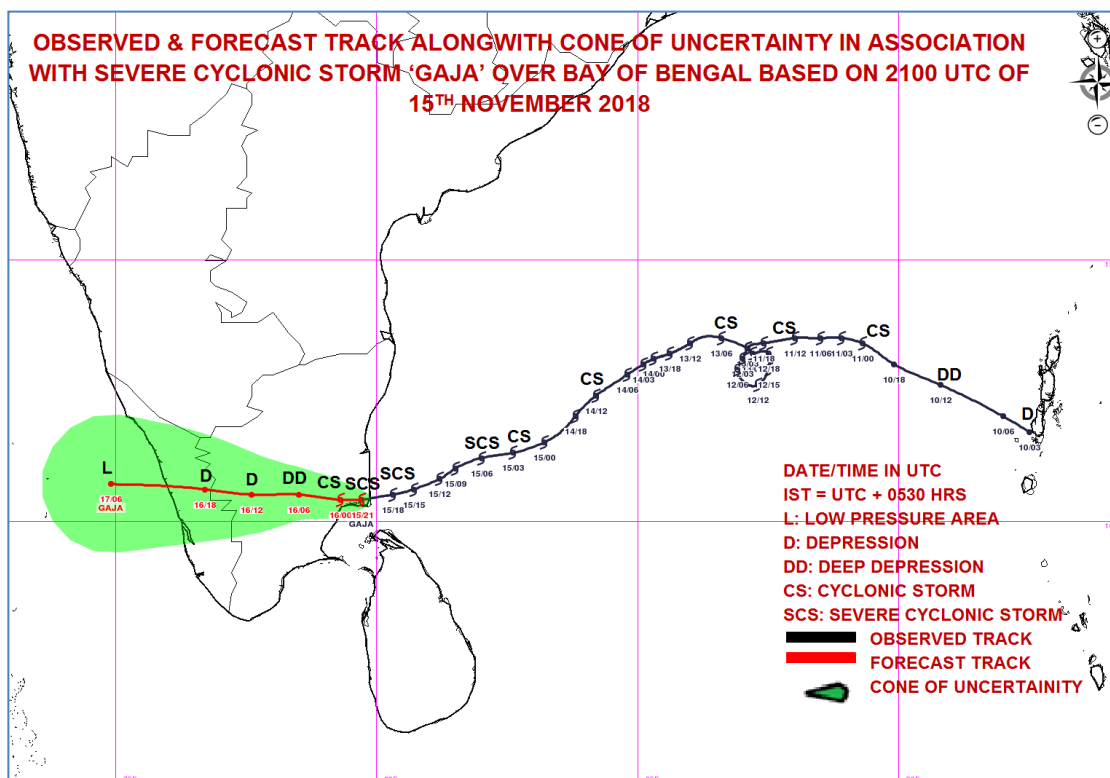
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 40**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 40 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0300 UTC OF 16.11.2018 BASED ON 0000 UTC OF 16.11.2018.**

**SEVERE CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE SEVERE CYCLONIC STORM '**GAJA**' OVER COASTAL TAMILNADU MOVED NEARLY WESTWARDS, WEAKENED INTO A CYCLONIC STORM AND LAY CENTRED AT 0000 UTC OF TODAY, THE 16<sup>TH</sup> NOVEMBER, 2018 OVER COASTAL TAMILNADU NEAR LATITUDE 10.4°N AND LONGITUDE 79.2°E ABOUT 20 KM WEST-NORTHWEST OF ATIRAMPATTINAM. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKENED INTO A DEEP DEPRESSION DURING NEXT SIX HOURS.

NAGAPATTINAM REPORTED WIND SPEED OF 44 KMPH AND KARAIKAL REPORTED 35 KMPH AT 0000 UTC OF TODAY.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
16.11.18/0000	10.4/79.2	80-90 gusting to 100	Cyclonic Storm
16.11.18/0600	10.5/78.5	55-65 gusting to 75	Deep Depression
16.11.18/1200	10.5/77.6	40-50 gusting to 60	Depression
16.11.18/1800	10.6/76.7	35-45 gusting to 55	Depression
17.11.18/0000	10.7/75.9	20-30 gusting to 40	Low

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF 16<sup>TH</sup> NOVEMBER 2018. ASSOCIATED BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION BETWEEN LATITUDE 9.5°N TO 12.5° N, WEST OF LONGITUDE 81.5°E PALK STRAIT, TAMILNADU AND SOUTH KERALA. MINIMUM CLOUD TO TEMPERATURE -89°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 996 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS. STATE OF SEA IS HIGH TO VERY ROUGH OVER SOUTHWEST BAY OF BENGAL AND ALONG AND OFF TAMIL NADU & PUDUCHERRY COAST, PALK STRAIT DURING NEXT 9 HOURS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**REMARKS:**

THE LOWER LEVEL CONVERGENCE IS OF THE ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF  $20 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (5-10 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. CLOUD IMAGERY INDICATES DISORGANISATION IN CLOUD ORGANISATION DUE TO LAND INTERACTION. HOWEVER, THE ENVIRONMENTAL CONDITIONS LIKE WIND SHEAR, VORTICITY AND DIVERGENCE ARE FAVOURABLE FOR RETAINING SEVERE CYCLONIC STORM INTENSITY FOR ANOTHER 6 HOURS AND WEAKEN GRDUALY THEREATER.

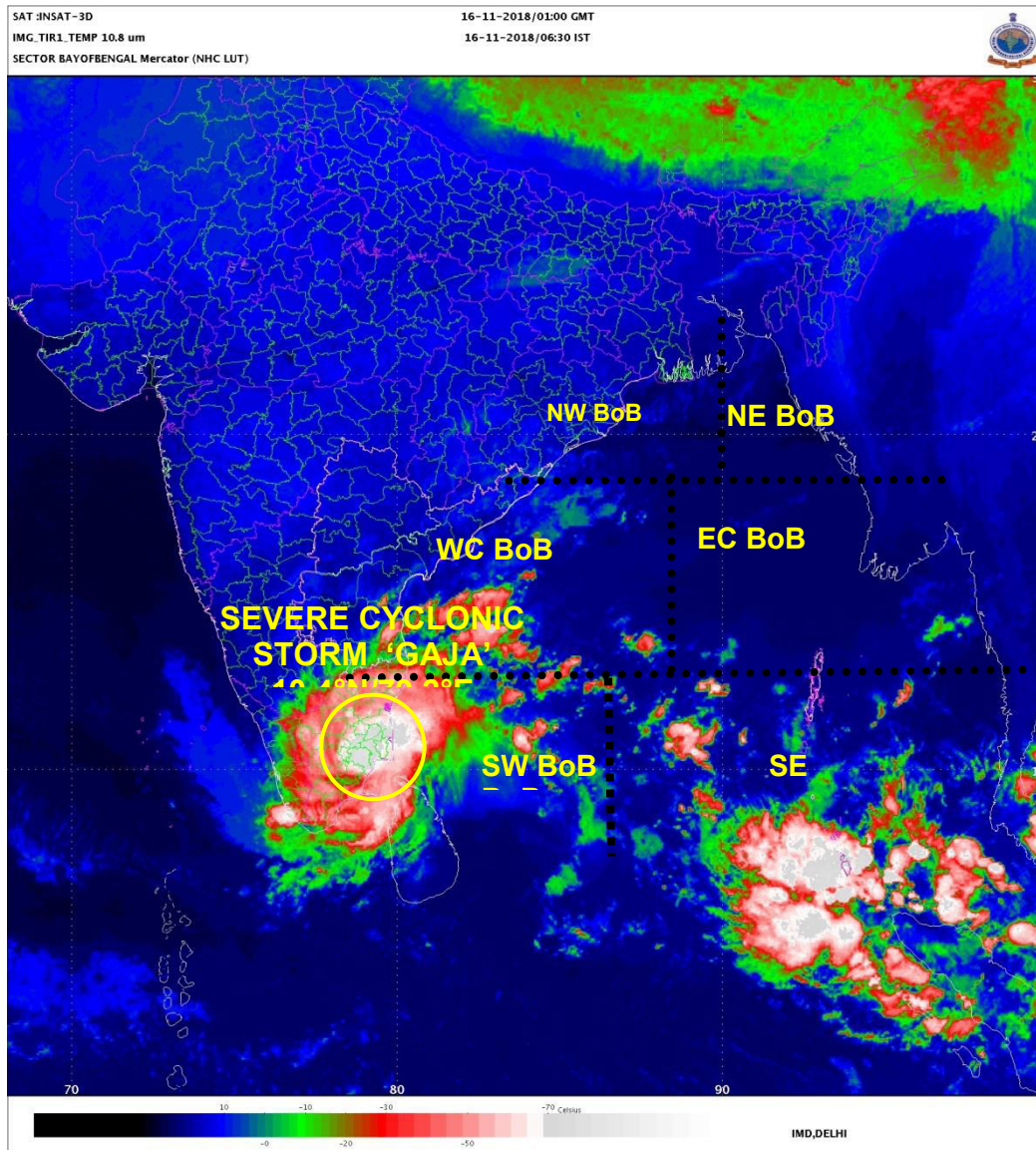
UPPER LEVEL RIDGE RUNS ALONG LAT 14°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING NEARLY WESTWARDS. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS AND EMERGE INTO SOUTHEAST ARABIAN SEA AS A LOW PRESSURE AREA BY MORNING OF 17<sup>TH</sup> NOVEMBER, 2018.

(S.D. KOTAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

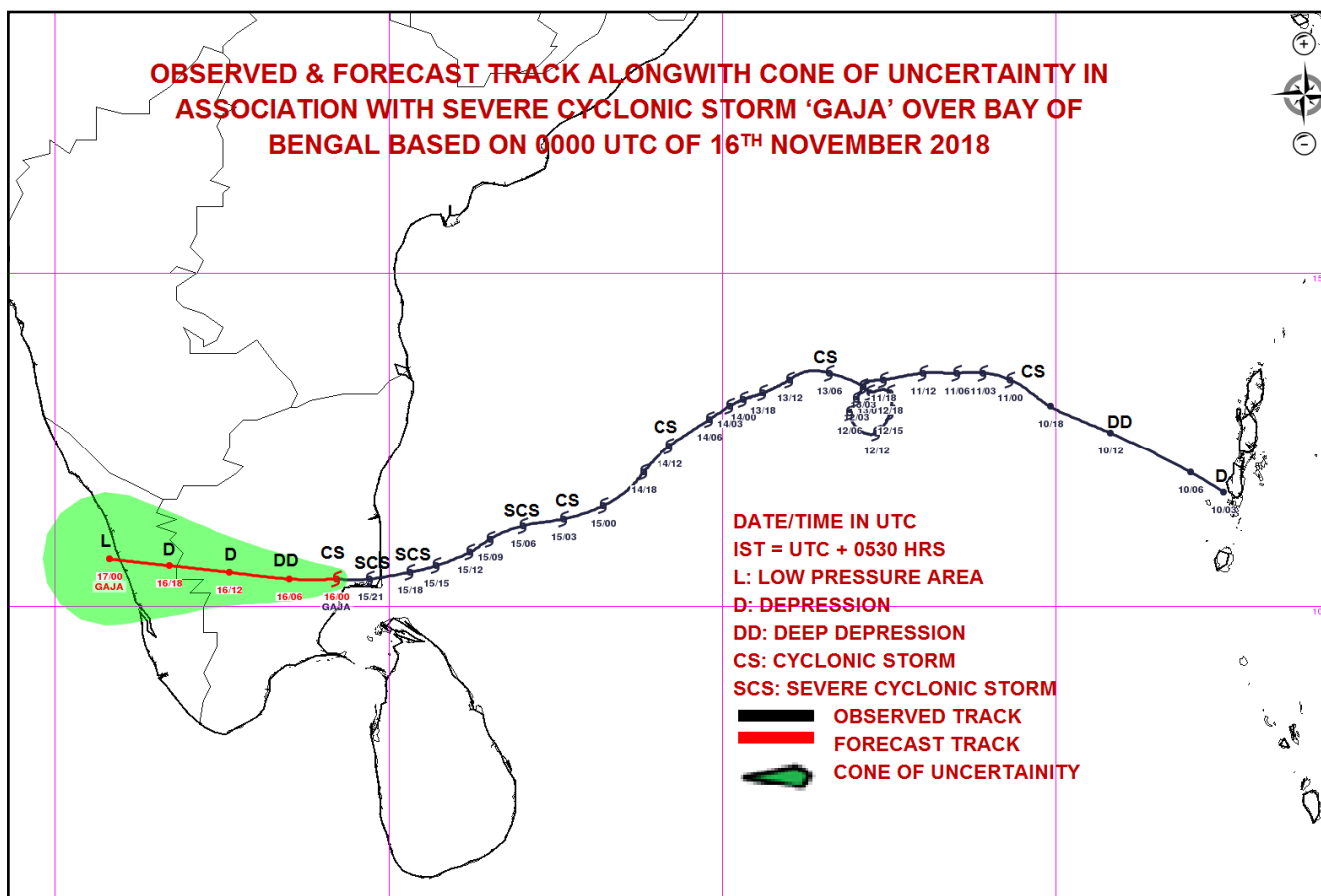
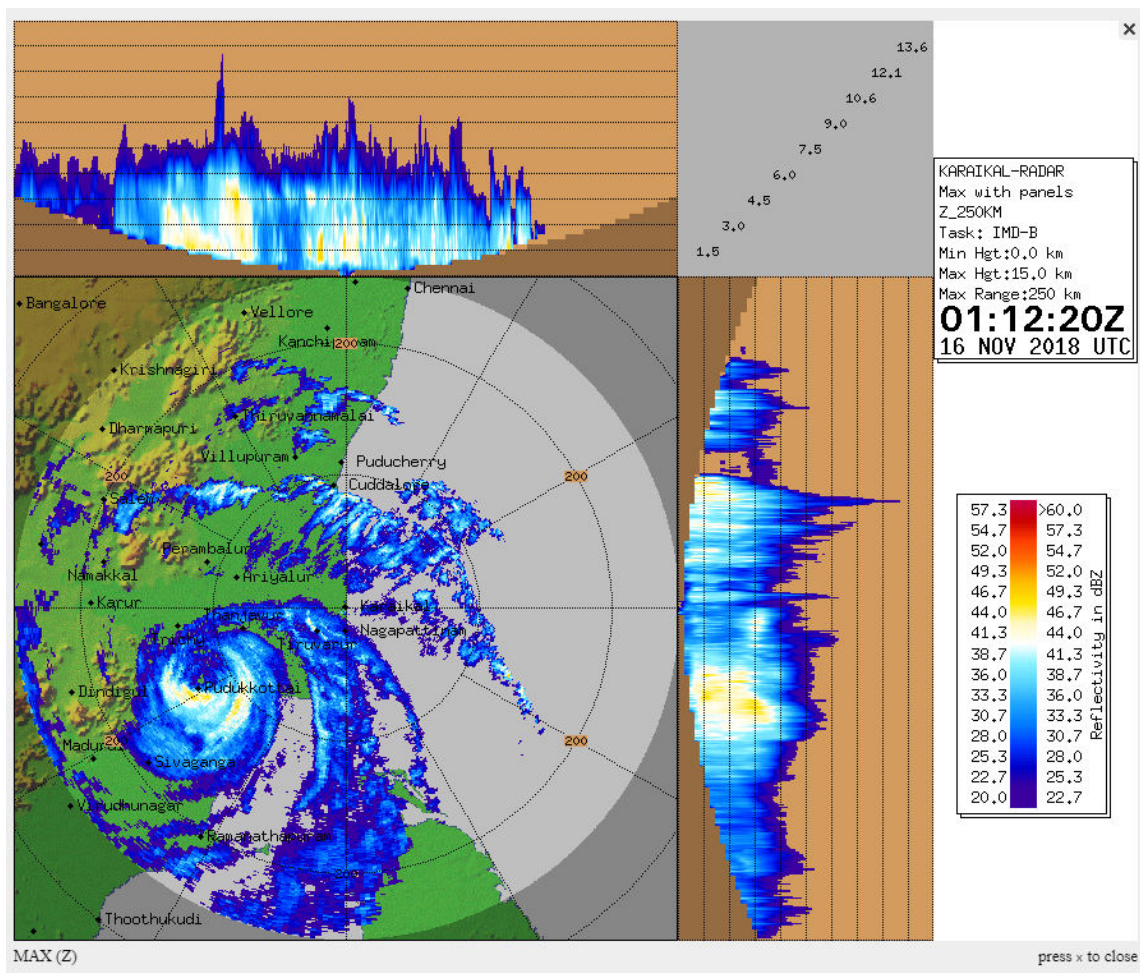


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

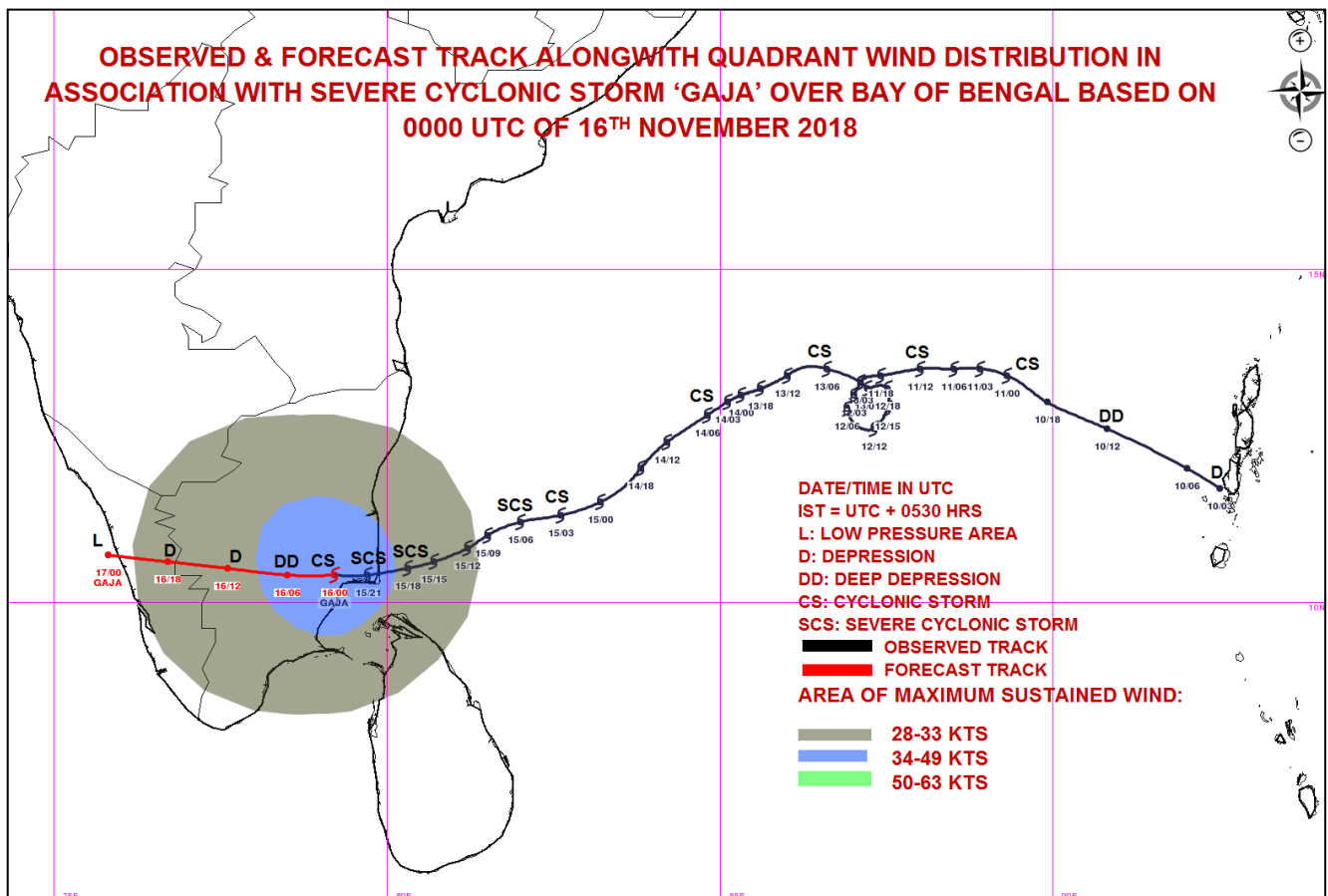
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 41**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 41 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 48 HOURS ISSUED AT 0600 UTC OF 16.11.2018 BASED ON 0300 UTC OF 16.11.2018.**

**CYCLONIC STORM 'GAJA' OVER SOUTHWEST BAY OF BENGAL**

THE CYCLONIC STORM 'GAJA' OVER COASTAL TAMILNADU MOVED NEARLY WESTWARDS, AND LAY CENTRED AT 0300 UTC OF TODAY, THE 16TH NOVEMBER, 2018 OVER INTERIOR TAMILNADU NEAR LATITUDE 10.4°N AND LONGITUDE 78.5°E ABOUT 95 KM WEST OF ATIRAMPATTINAM (43348) AND 110 KM EAST-NORTHEAST OF KODAIKANAL (43339). IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A DEEP DEPRESSION DURING NEXT THREE HOURS.

THONDI (43361) AND TIRUCHIRAPPALLI (43344) REPORTED WIND SPEED OF 55 KMPH AT 0030 UTC OF TODAY.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
16.11.18/0300	10.4/78.5	80-90 GUSTING TO 100	CYCLONIC STORM
16.11.18/0600	10.5/78.5	55-65 GUSTING TO 75	DEEP DEPRESSION
16.11.18/1200	10.5/77.6	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	10.6/76.7	35-45 GUSTING TO 55	DEPRESSION
17.11.18/0000	10.7/75.9	20-30 GUSTING TO 40	LOW

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF 16<sup>TH</sup> NOVEMBER 2018. IN ASSOCIATION WITH THE VORTEX OVER TAMIL NADU, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION BETWEEN LATITUDE 7.5°N TO 12.5° N, AND LONGITUDE 76.5°E TO 80.5°E. MINIMUM CLOUD TO TEMPERATURE -83°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1000 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REMARKS:**

THE LOWER LEVEL CONVERGENCE IS OF THE ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE LOWER LEVEL VORTICITY IS OF THE ORDER OF  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF  $20 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. THE VERTICAL WIND SHEAR IS LOW TO MODERATE (5-10 KNOTS) OVER THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. CLOUD IMAGERY INDICATES DISORGANISATION IN CLOUD DUE TO LAND INTERACTION. THE SYSTEM IS EXPECTED TO WEAKEN INTO A DEEP DEPRESSION DURING NEXT 3 HOURS.

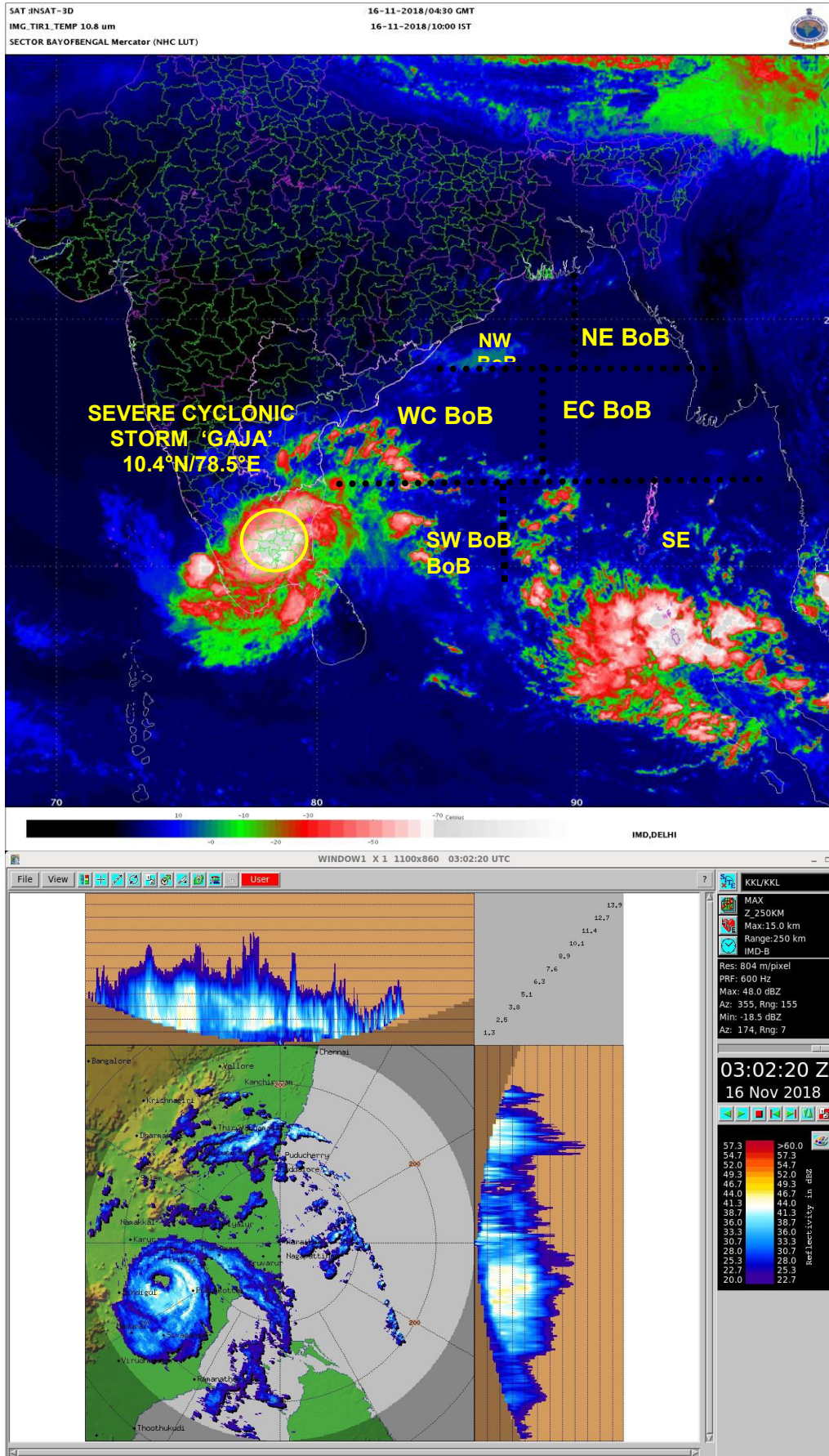
UPPER LEVEL RIDGE RUNS ALONG LAT 14°N IN ASSOCIATION WITH THE ANTICYCLONIC CIRCULATION TO THE WEST OF THE SYSTEM CENTRE. THE SYSTEM IS NOW MOVING NEARLY WESTWARDS. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS AND EMERGE INTO SOUTHEAST ARABIAN SEA AS A LOW PRESSURE AREA BY MORNING OF 17<sup>TH</sup> NOVEMBER, 2018.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

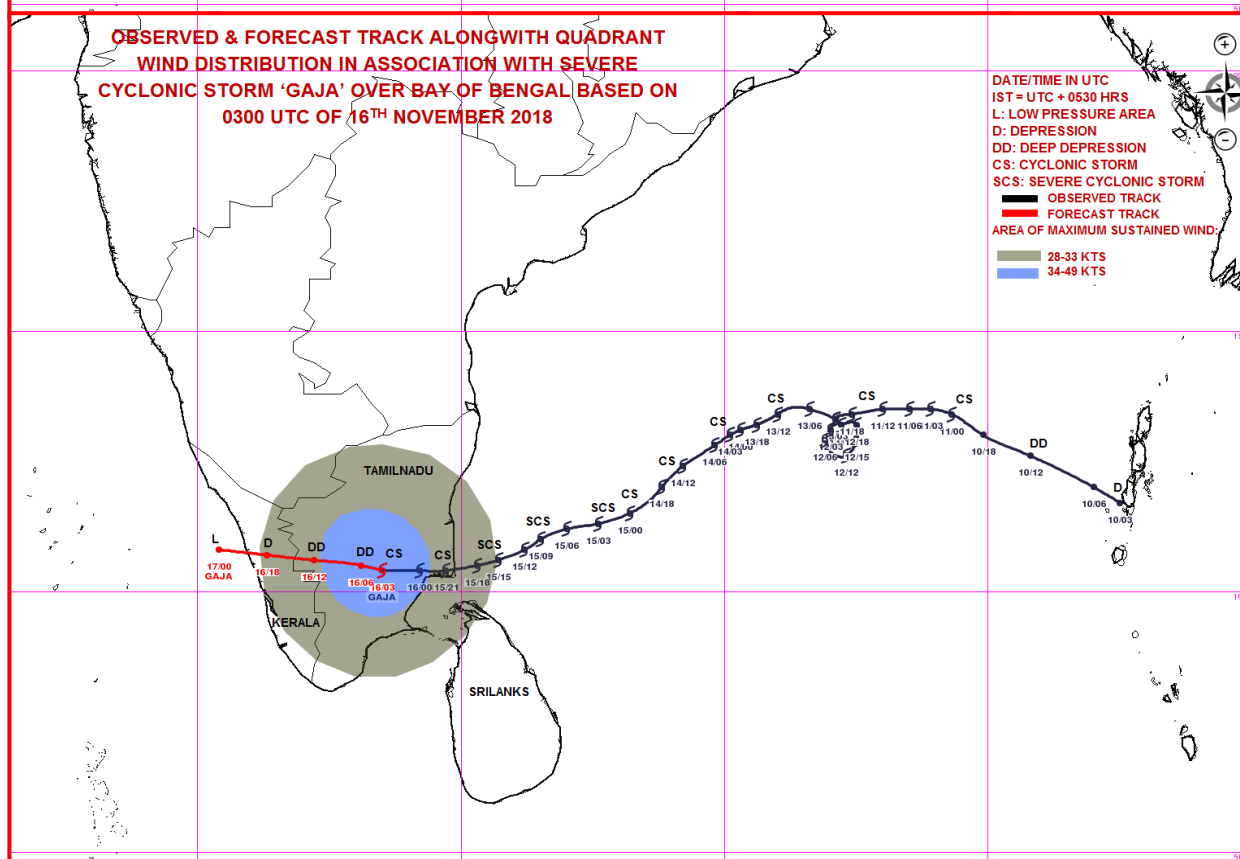
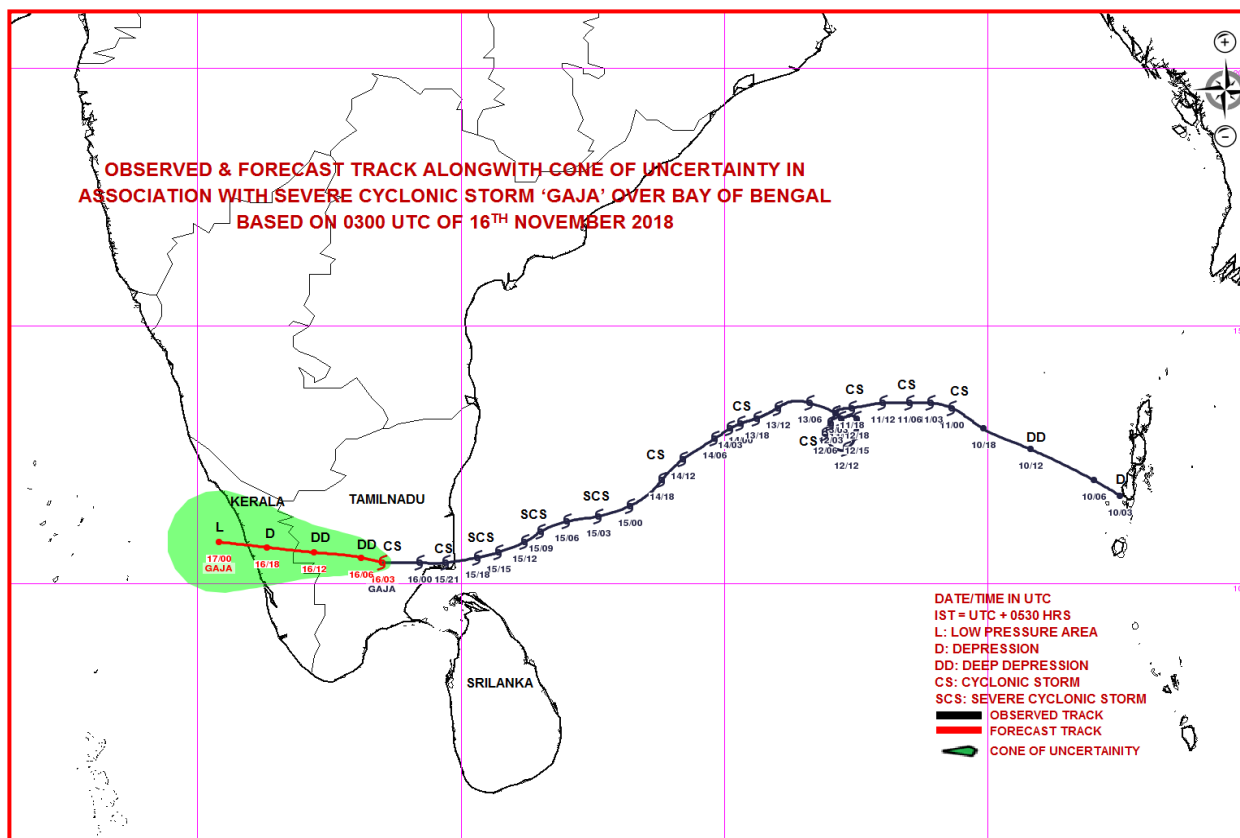
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**TROPICAL CYCLONE ADVISORY BULLETIN NO. 42**

**FROM: RSMC –TROPICAL CYCLONES, NEW DELHI**

**TO: STORM WARNING CENTRE, NAYPYI TAW (MYANMAR)**  
**STORM WARNING CENTRE, BANGKOK (THAILAND)**  
**STORM WARNING CENTRE, COLOMBO (SRILANKA)**  
**STORM WARNING CENTRE, DHAKA (BANGLADESH)**  
**STORM WARNING CENTRE, KARACHI (PAKISTAN)**  
**METEOROLOGICAL OFFICE, MALE (MALDIVES)**  
**OMAN METEOROLOGICAL DEPARTMENT, MUSCAT (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH)**  
**YEMEN METEOROLOGICAL SERVICES, REPUBLIC OF YEMEN (THROUGH RTH JEDDAH) NATIONAL**  
**CENTRE FOR METEOROLOGY, UAE (THROUGH RTH JEDDAH)**  
**PRESIDENCY OF METEOROLOGY AND ENVIRONMENT, SAUDI ARABIA (THROUGH RTH JEDDAH)**  
**IRAN METEOROLOGICAL ORGANISATION, (THROUGH RTH JEDDAH)**  
**QATAR METEOROLOGICAL DEPARTMENT (THROUGH RTH JEDDAH)**

**TROPICAL CYCLONE ADVISORY NO. 42 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 18 HOURS ISSUED AT 0800 UTC OF 16.11.2018 BASED ON 0600 UTC OF 16.11.2018.**

**CYCLONIC STORM 'GAJA' OVER INTERIOR TAMILNADU WEAKENED INTO A DEEP DEPRESSION**

THE CYCLONIC STORM 'GAJA' OVER INTERIOR TAMILNADU MOVED NEARLY WESTWARDS, WEAKENED INTO A DEEP DEPRESSION AND LAY CENTRED AT 0600 UTC OF TODAY, THE 16TH NOVEMBER, 2018 OVER INTERIOR TAMILNADU NEAR LATITUDE 10.5°N AND LONGITUDE 77.6°E, ABOUT 80 KM NORTH-WEST OF MADURAI (43359). IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN FURTHER INTO A DEPRESSION DURING NEXT SIX HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

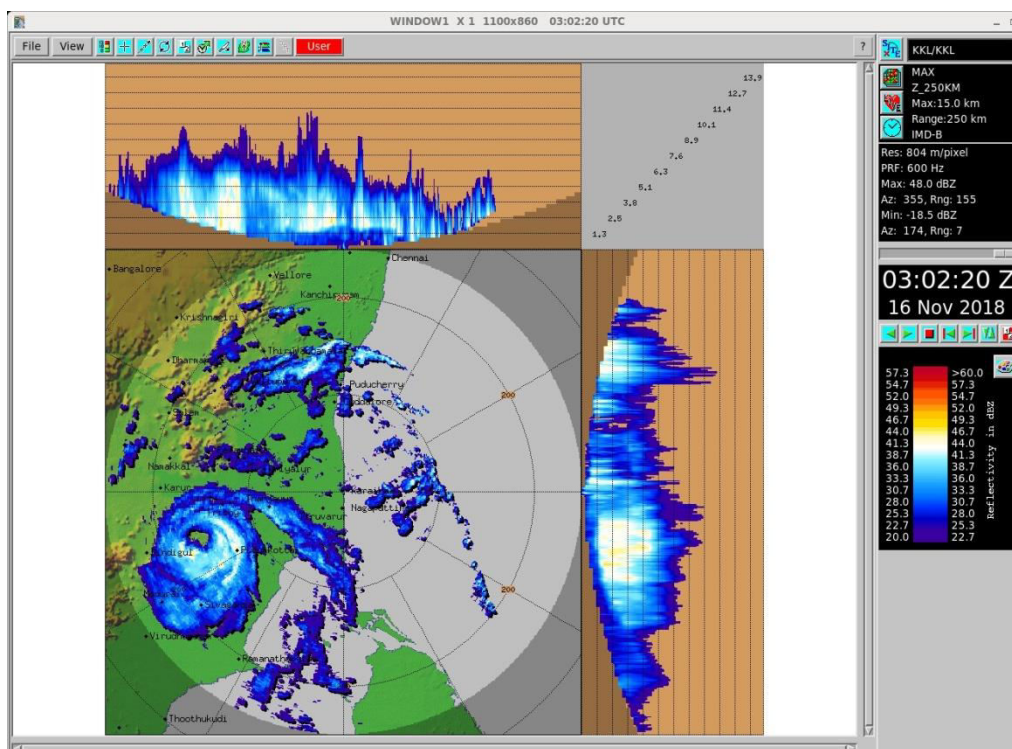
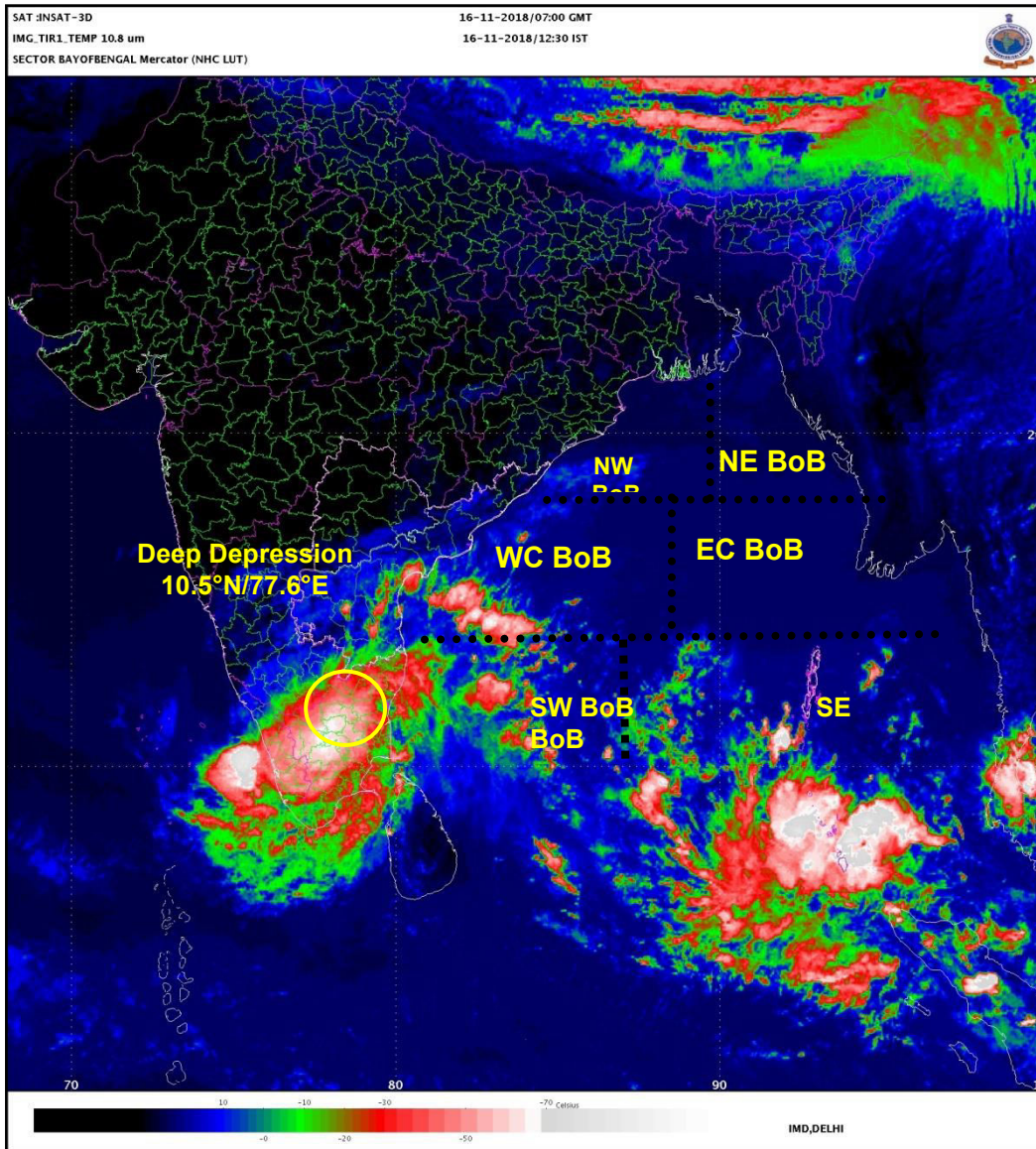
DATE/TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
16.11.18/0600	10.5/77.6	50-60 GUSTING TO 70	DEEP DEPRESSION
16.11.18/1200	10.6/76.5	40-50 GUSTING TO 60	DEPRESSION
16.11.18/1800	10.7/75.4	35-45 GUSTING TO 55	DEPRESSION
17.11.18/0000	10.8/74.3	20-30 GUSTING TO 40	WELL MARKED LOW

**THIS IS THE LAST BULLETIN FOR THIS SYSTEM.**

**(SUNITHA DEVI)**  
**SCIENTIST-E, RSMC, NEW DELHI**

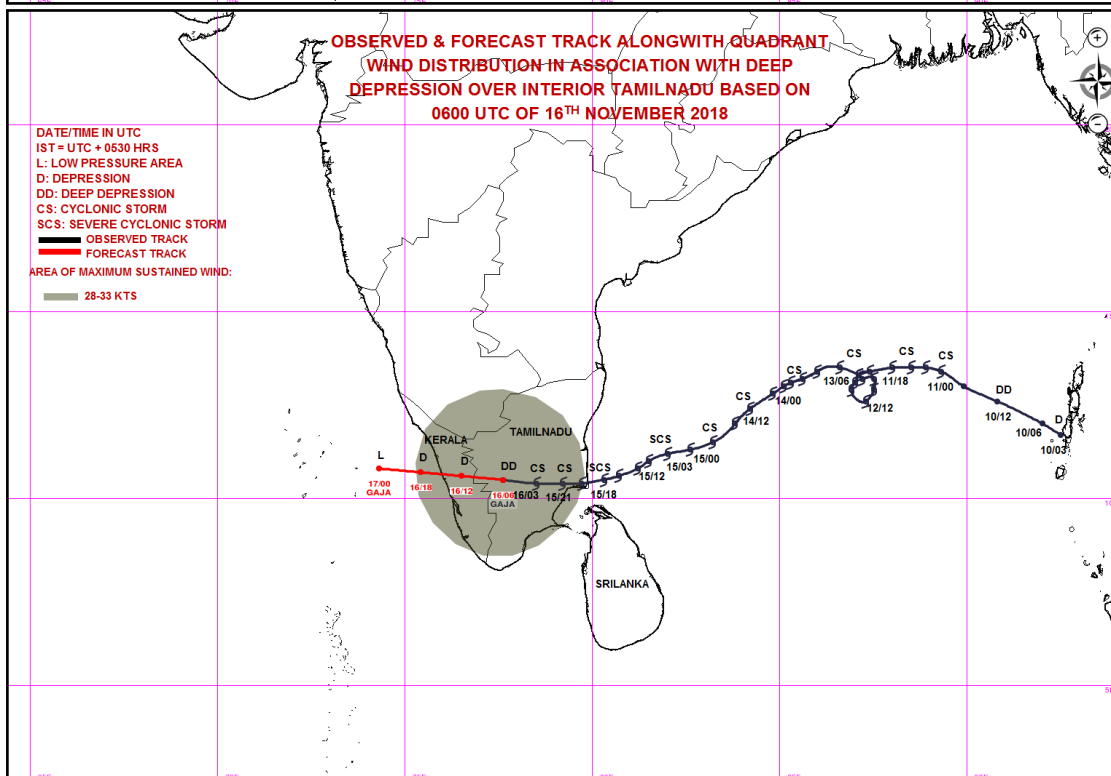
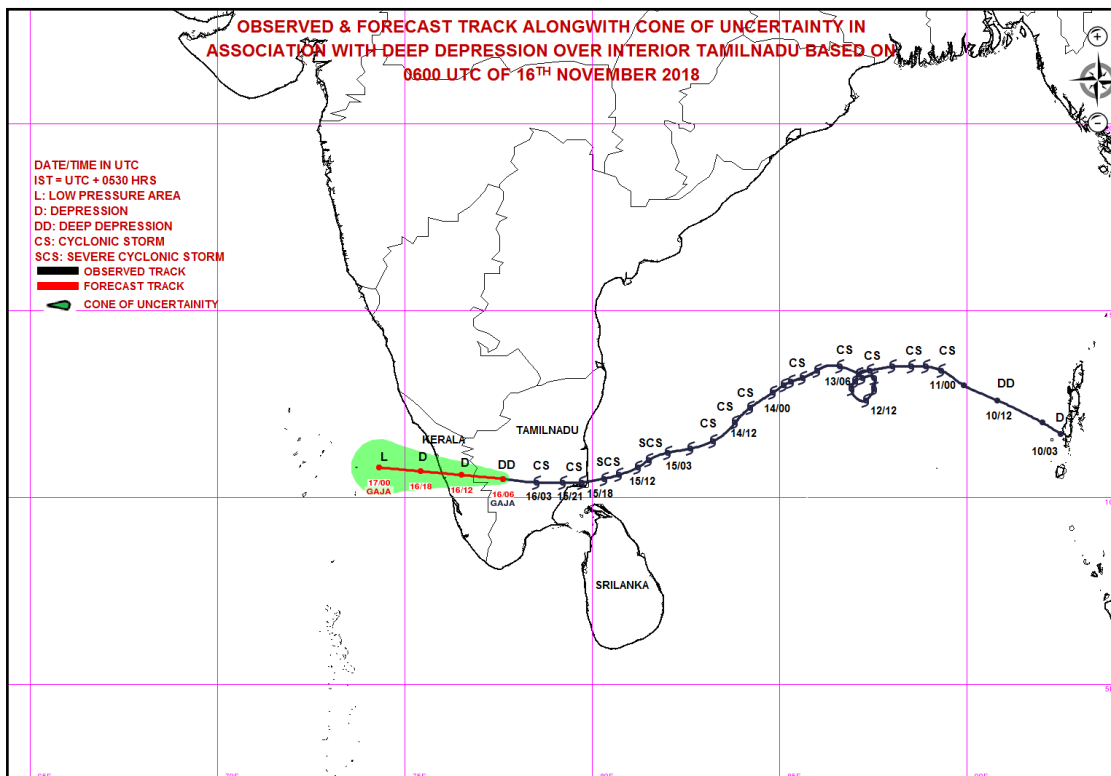
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI  
SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1500 UTC OF 16.11.2018 BASED ON 1200 UTC OF 16.11.2018.**

**DEEP DEPRESSION OVER INTERIOR TAMILNADU WEAKENED INTO A DEPRESSION OVER KERALA.**

THE DEEP DEPRESSION OVER INTERIOR TAMILNADU MOVED WEST-SOUTHWESTWARDS, WEAKENED INTO A DEPRESSION AND LAY CENTRED AT 1730 HRS IST OF TODAY, THE 16<sup>TH</sup> NOVEMBER, 2018 OVER CENTRAL KERALA NEAR LATITUDE 10.1°N AND LONGITUDE 76.4°E, ABOUT 20 KM EAST-NORTHEAST OF KOCHI (43353). IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND EMERGE INTO SOUTHEAST ARABIAN SEA DURING NEXT 12 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 16<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER KERALA AND ADJOINING SOUTHEAST ARABIAN SEA.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1004 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH ALONG AND OFF KERALA COAST AND ADJOINING SOUTHEAST ARABIAN SEA

**REMARKS:**

SEA SURFACE TEMPERATURE IS AROUND 28-29°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> OVER SOUTHEAST ARABIAN SEA. THE LOWER LEVEL CONVERGENCE IS OF ORDER  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO SOUTHWEST OF THE SYSTEM CENTRE, THE LOWER LEVEL VORTICITY IS OF ORDER  $100 \times 10^{-6}$  SECOND<sup>-1</sup> OVER THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER  $10 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW (5-10 KNOTS) AROUND THE SYSTEM CENTRE. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N AND THUS FAVOURS NEARLY WESTWARD MOVEMENT OF THE SYSTEM ACROSS SOUTHEAST ARABIAN SEA.

MOST OF THE NWP MODELS ALSO SUGGEST NEARLY WESTWARD MOVEMENT OF THE SYSTEM DURING NEXT 48 HRS.

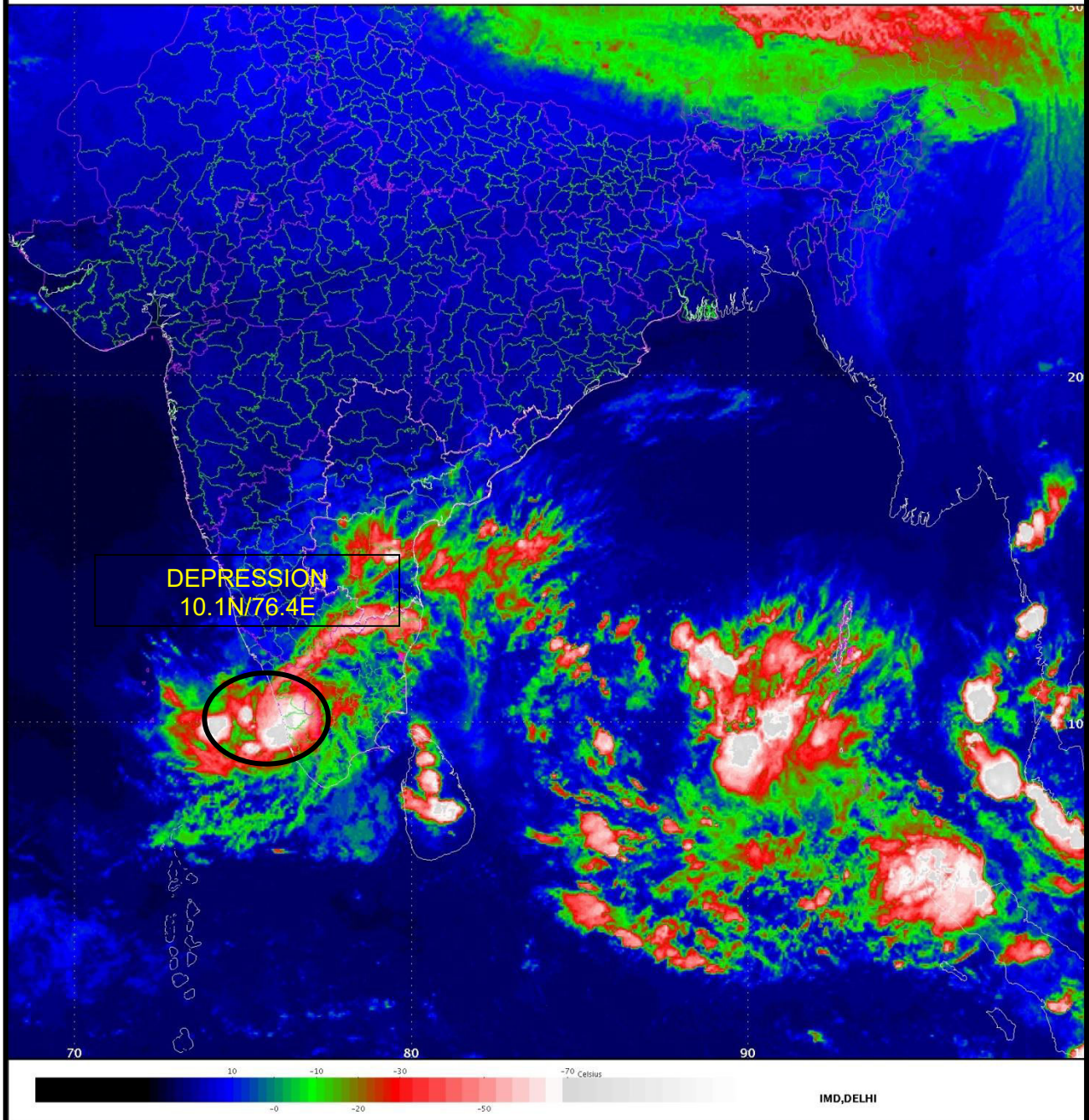
**(KRISHNA MISHRA)  
SCIENTIST-B, RSMC, NEW DELHI**

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

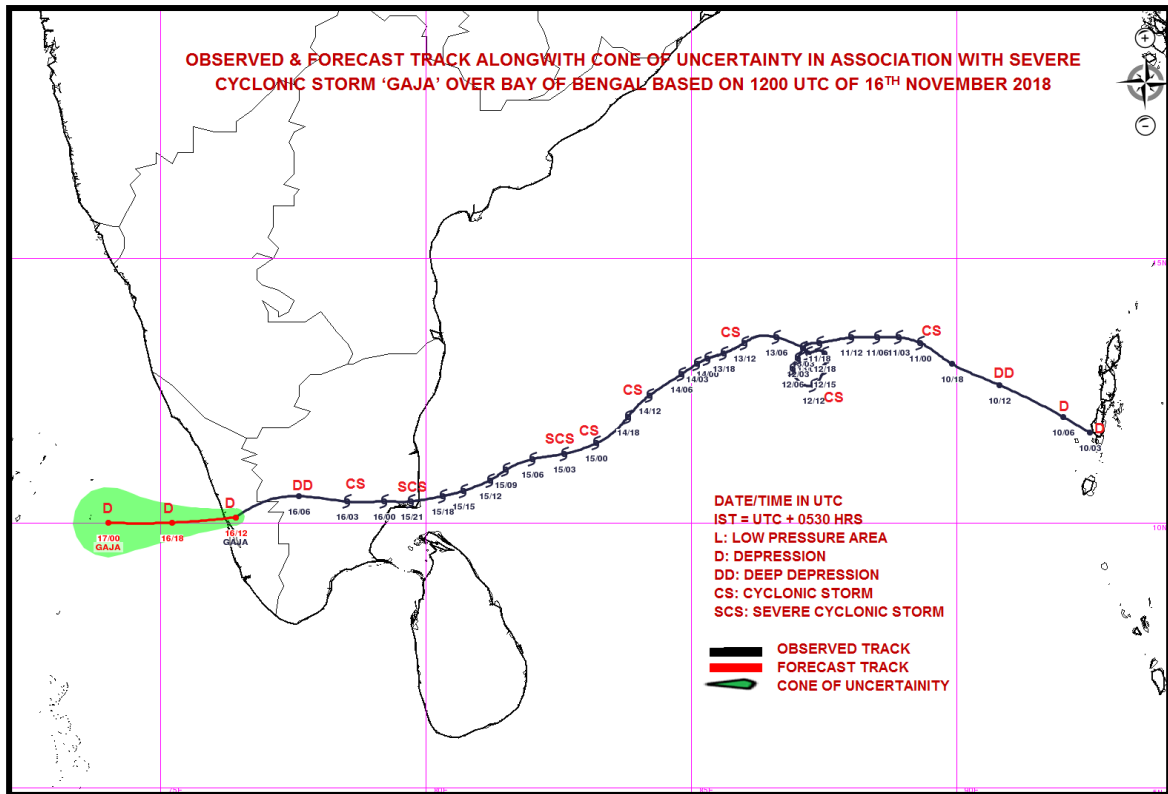
SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

16-11-2018/14:00 GMT  
16-11-2018/19:30 IST



#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 17.11.2018 BASED ON 0000 UTC OF 17.11.2018.**

**DEPRESSION OVER SOUTHEAST ARABIAN SEA INTENSIFIED INTO A DEEP DEPRESSION**

THE DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 18 KMPH, INTENSIFIED INTO A DEEP DEPRESSION AND LAY CENTERED AT 0000 UTC OF TODAY, THE 17<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 09.8°N AND LONGITUDE 74.3°E, ABOUT 210 KM WEST OF KOCHI(43353) AND 220 KM EAST-SOUTHEAST OF AMINDIVI(43311). IT IS LIKELY TO INTENSIFY FURTHER INTO A CYCLONIC STORM DURING NEXT 12 HOURS AND VERY LIKELY TO MOVE WEST-NORTHWESTWARDS ACROSS LAKSHADWEEP ISLANDS DURING NEXT 24 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
17.11.18/0000	09.8/74.3	55-65 gusting to 75	Deep Depression
17.11.18/0600	10.0/73.2	55-65 gusting to 75	Deep Depression
17.11.18/1200	10.2/72.1	65-75 gusting to 85	Cyclonic Storm
17.11.18/1800	10.4/71.0	70-80 gusting to 90	Cyclonic Storm
18.11.18/0000	10.6/69.9	75-85 gusting to 95	Cyclonic Storm
18.11.18/1200	10.7/67.7	70-80 gusting to 90	Cyclonic Storm
19.11.18/0000	10.7/65.5	60-70 gusting to 80	Cyclonic Storm
19.11.18/1200	10.8/63.2	50-60 gusting to 70	Deep Depression
20.11.18/0000	10.9/61.0	40-50 gusting to 60	Depression

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY, THE 17<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY BETWEEN LATITUDE 7.5°N TO 12.5°N AND LONGITUDE 71.5°E AND 76.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH ALONG AND OFF KERALA COAST AND ADJOINING SOUTHEAST ARABIAN SEA

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**REMARKS:**

SEA SURFACE TEMPERATURE IS AROUND 29-30°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> OVER SOUTHEAST ARABIAN SEA. THE LOWER LEVEL CONVERGENCE IS OF ORDER 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO SOUTHWEST OF THE SYSTEM CENTRE, THE LOWER LEVEL VORTICITY IS OF ORDER 80-100X10<sup>-6</sup> SECOND<sup>-1</sup> OVER THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF ORDER 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW (5-10 KNOTS) AROUND THE SYSTEM CENTRE. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 13°N AND THUS FAVOURS NEARLY WESTWARD MOVEMENT OF THE SYSTEM ACROSS SOUTHEAST ARABIAN SEA.

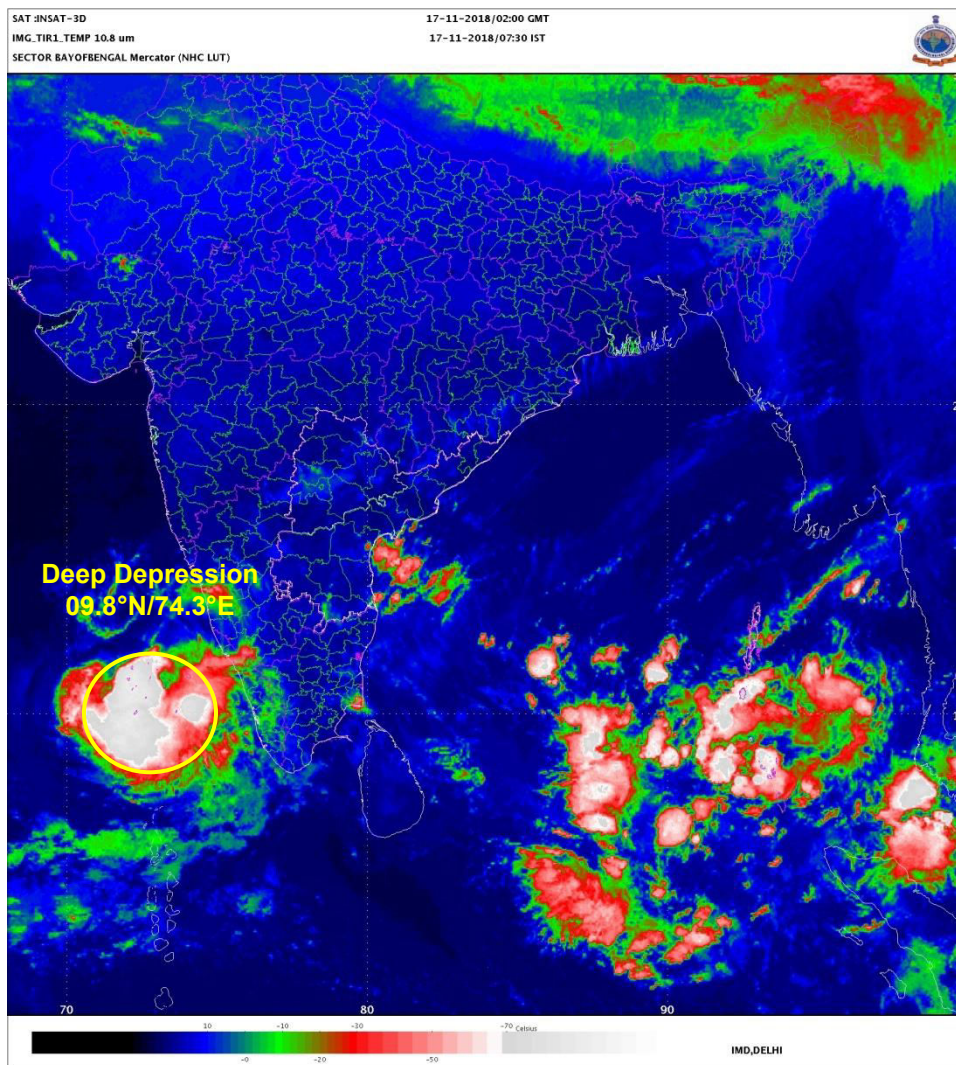
MOST OF THE NWP MODELS SUGGEST NEARLY WESTWARD MOVEMENT AND FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HRS.

(CHARAN SINGH)  
SCIENTIST-F, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

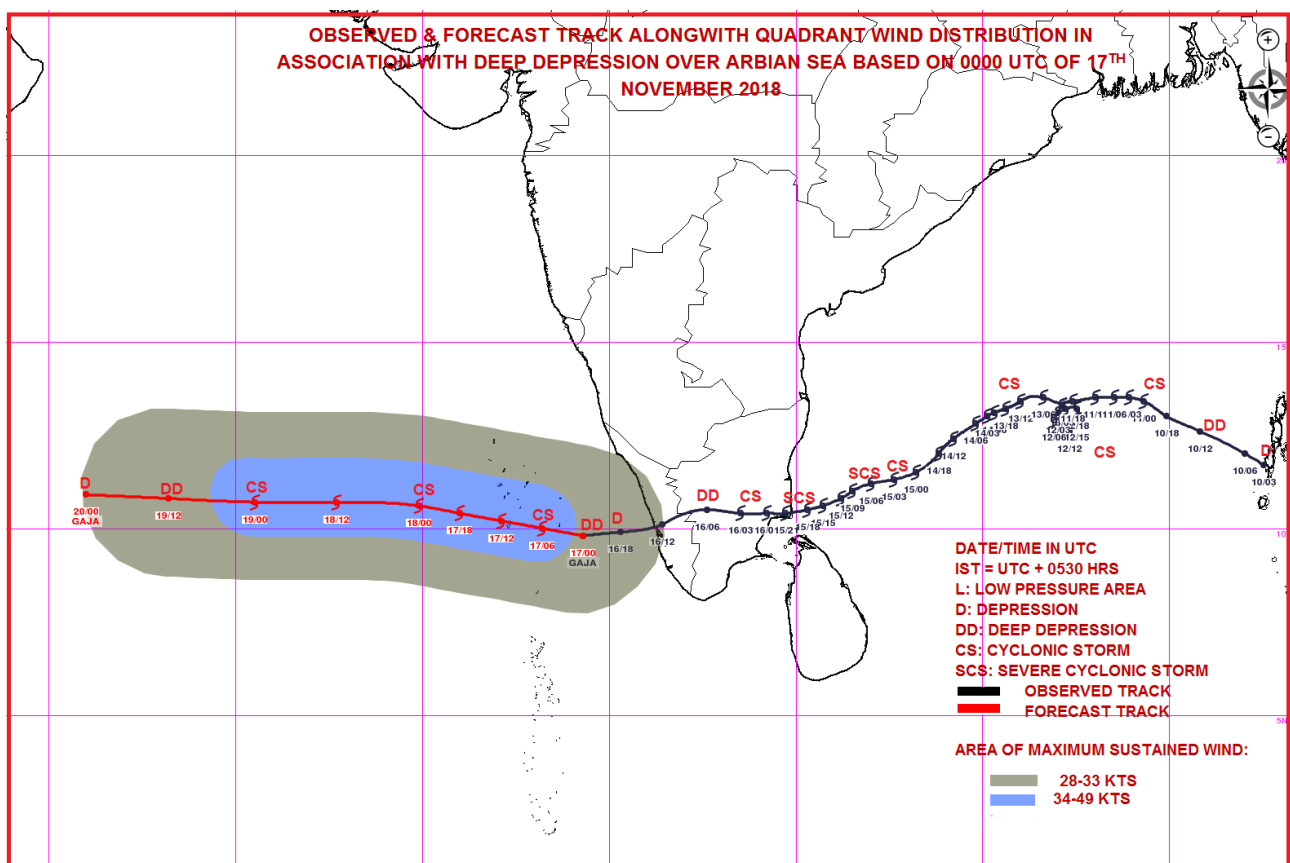
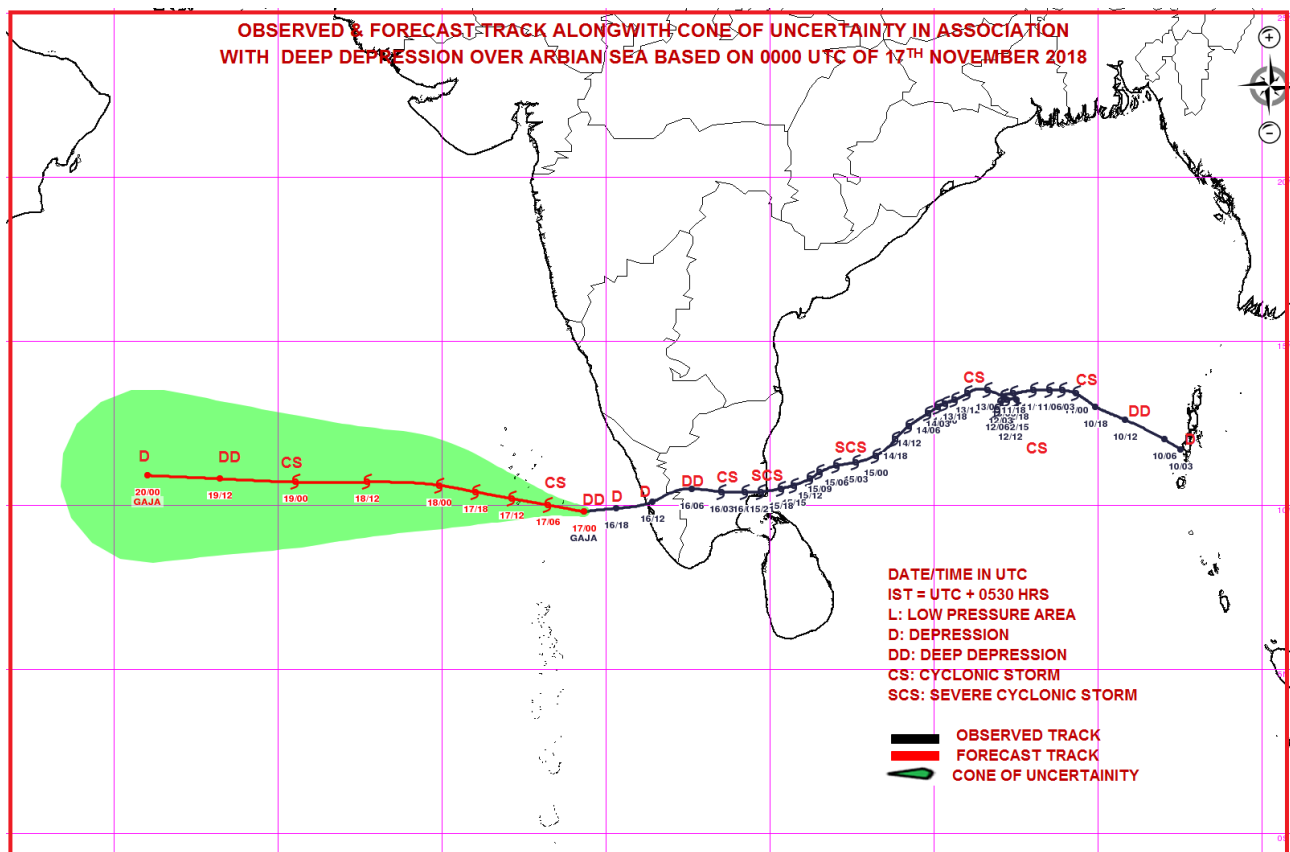


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 17.11.2018 BASED ON 0600 UTC OF 17.11.2018.**

**DEEP DEPRESSSION OVER SOUTHEAST ARABIAN SEA**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 20 KMPH AND LAY CENTERED AT 0600 UTC OF TODAY, THE 17<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 09.8°N AND LONGITUDE 73.2°E, ABOUT 55 KM WEST-SOUTHWEST OF KALPENI (10.1° N/ 73.6° E), 110 KM SOUTH-SOUTHEAST OF KAVARATTI (10.6° N/ 72.6° E) AND 155 KM SOUTH-SOUTHEAST OF AGATTI (43312). IT IS LIKELY TO INTENSIFY FURTHER INTO A CYCLONIC STORM DURING NEXT 12 HOURS AND VERY LIKELY TO MOVE NEARLY WESTWARDS ACROSS LAKSHADWEEP ISLANDS DURING NEXT 24 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
17.11.18/0600	09.8/73.2	55-65 GUSTING TO 75	DEEP DEPRESSION
17.11.18/1200	09.9/72.1	65-75 GUSTING TO 85	CYCLONIC STORM
17.11.18/1800	10.0/71.0	70-80 GUSTING TO 90	CYCLONIC STORM
18.11.18/0000	10.2/69.9	75-85 GUSTING TO 95	CYCLONIC STORM
18.11.18/0600	10.3/68.8	75-85 GUSTING TO 95	CYCLONIC STORM
18.11.18/1800	10.4/66.4	70-80 GUSTING TO 90	CYCLONIC STORM
19.11.18/0600	10.5/64.4	55-65 GUSTING TO 75	DEEP DEPRESSION
19.11.18/1800	10.6/62.2	50-60 GUSTING TO 70	DEPRESSION
20.11.18/0600	10.7/60.0	40-50 GUSTING TO 60	DEPRESSION

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY THE 17<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA, LAKSHADWEEP ISLANDS AND BETWEEN LATITUDE 8.0°N TO 12.0°N AND LONGITUDE 69.5°E AND 74.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTERE.

AT 0600 UTC OF 17<sup>TH</sup> NOVEMBER, A BOUY LOCATED AT 10.8°N/72.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.9 HPA AND MEAN SURFACE WIND SPEED OF 110°/ 10 KNOTS. AMINI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1009.5 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 03 KNOTS. MINICOY (43369) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1010.9 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 02 KNOTS. KOCHI (43353)

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

(KERALA) REPORTED MEAN SEA LEVEL PRESSURE OF 1011.5 HPA AND MEAN SURFACE WIND SPEED OF 160°/ 08 KNOTS

**REMARKS:**

SEA SURFACE TEMPERATURE IS AROUND 29-30°C, TROPICAL CYCLONE HEAT POTENTIAL(TCHP) IS 50-80 KJ/CM<sup>2</sup> OVER SOUTHEAST ARABIAN SEA. THE LOWER LEVEL CONVERGENCE IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE, THE LOWER LEVEL VORTICITY IS OF ORDER  $80-100 \times 10^{-6}$  SECOND<sup>-1</sup> OVER THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE INCREASED AND IS OF ORDER  $30 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTH OF THE SYSTEM CENTRE AND VERTICAL WIND SHEAR IS LOW (5-10 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 12°N AND THUS FAVOURS NEARLY WESTWARD MOVEMENT OF THE SYSTEM ACROSS SOUTHEAST ARABIAN SEA.

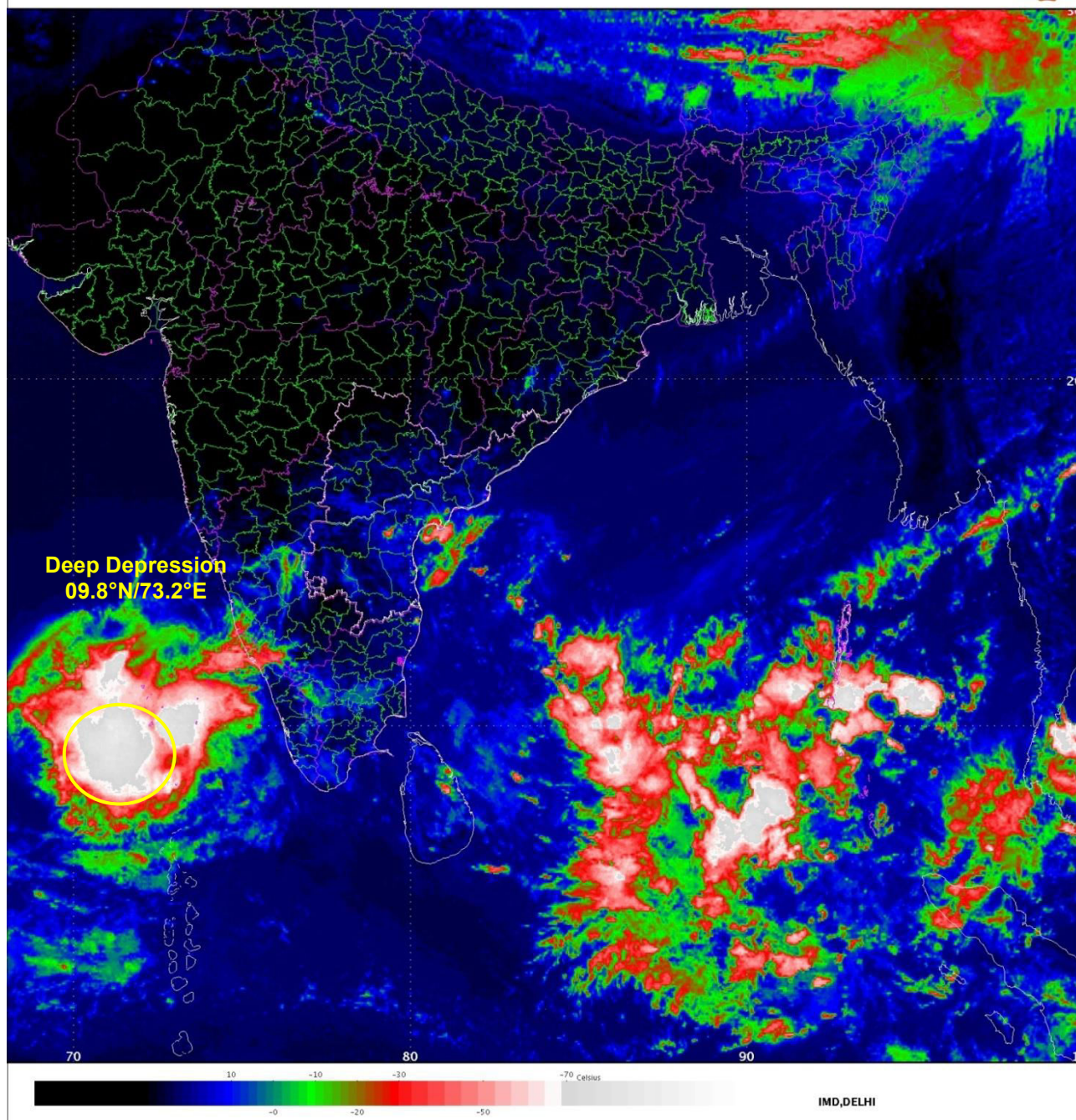
MOST OF THE NWP MODELS SUGGEST NEARLY WESTWARD MOVEMENT AND FURTHER INTENSIFICATION OF THE SYSTEM DURING NEXT 24 HRS.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI



SAT :INSAT-3D  
IMG\_TIR1\_TEMP 10.8 um  
SECTOR BAYOFBENGAL Mercator (NHC LUT)

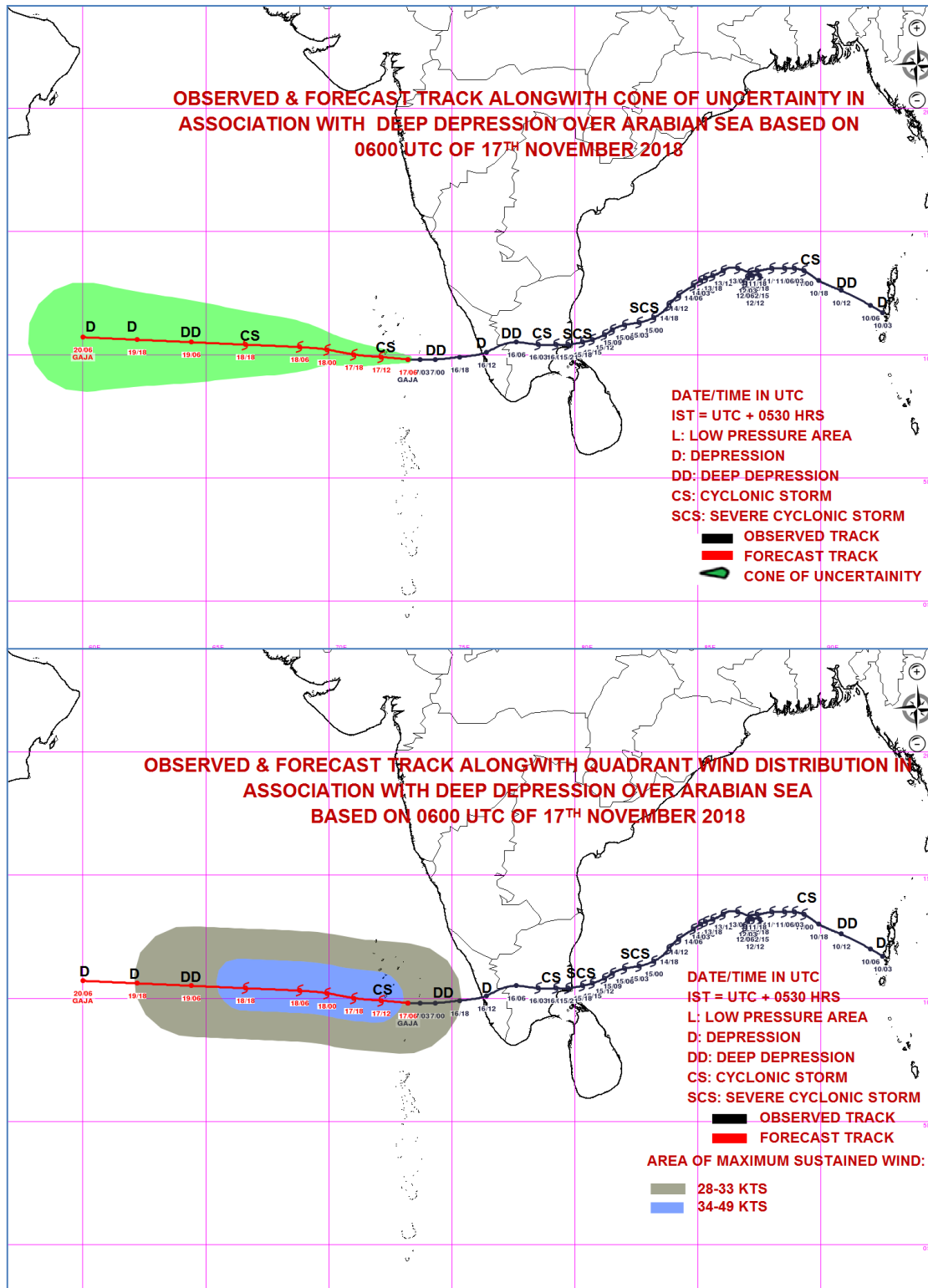
17-11-2018/06:30 GMT  
17-11-2018/12:00 IST



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 16.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 1600 UTC OF 17.11.2018 BASED ON 1200 UTC OF 17.11.2018.**

**DEEP DEPRESSSION OVER SOUTHEAST ARABIAN SEA**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 27 KMPH DURING PAST 06 HOURS AND CROSSED LAKSHADWEEP ISLANDS DURING 1400 HOURS IST TO 1700 HOURS IST. IT LAY CENTERED AT 1730 HRS IST OF 17<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 09.9°N AND LONGITUDE 71.7°E, ABOUT 200 KM WEST-SOUTHWEST OF KALPENI, 120 KM WEST-SOUTHWEST OF KAVARATTI AND 130 KM SOUTH-SOUTHWEST OF AGATTI. IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS AWAY FROM LAKSHADWEEP AREA AND INTENSIFY FURTHER INTO A CYCLONIC STORM DURING NEXT 12 HOURS. HOWEVER THE PROBABILITY OF INTENSIFICATION IS LOW DUE TO MARGINALLY FAVOURABLE ENVIRONMENTAL CONDITIONS. THEREAFTER, IT IS VERY LIKELY TO CONTINUE TO MOVE WEST-NORTHWESTWARDS AND WEAKEN GRADUALLY FROM 19<sup>TH</sup> NOVEMBER MORNING ONWARDS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
17.11.18/1200	09.9/71.7	55-65 GUSTING TO 75	DEEP DEPRESSION
17.11.18/1800	10.1/70.6	55-65 GUSTING TO 75	DEEP DEPRESSION
18.11.18/0000	10.2/69.5	65-75 GUSTING TO 85	CYCLONIC STORM
18.11.18/0600	10.2/68.5	65-75 GUSTING TO 85	CYCLONIC STORM
18.11.18/1200	10.3/67.6	60-70 GUSTING TO 80	CYCLONIC STORM
19.11.18/0000	10.4/65.4	60-70 GUSTING TO 80	CYCLONIC STORM
19.11.18/1200	10.5/63.3	50-60 GUSTING TO 70	DEEP DEPRESSION
20.11.18/0000	10.5/61.1	40-50 GUSTING TO 60	DEPRESSION
20.11.18/1200	10.4/59.1	30-40 GUSTING TO 50	DEPRESSION

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY THE 17<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA, LAKSHADWEEP ISLANDS AND BETWEEN LATITUDE 8.0°N TO 12.5°N AND LONGITUDE 68.5°E AND 73.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 87°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTERE.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



AT 1200 UTC OF 17<sup>TH</sup> NOVEMBER, A SHIP LOCATED AT 7.7°N/72.8°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1009.5 HPA AND MEAN SURFACE WIND SPEED OF 330°/ 13 KNOTS. AMINI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1004.8 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 06 KNOTS. MINICOY (43369) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1007.8 HPA AND MEAN SURFACE WIND SPEED OF 320°/ 04 KNOTS. AGATTI (43312) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1005.8 HPA AND MEAN SURFACE WIND SPEED OF 20°/ 05 KNOTS

**REMARKS:**

SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER, AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF THE SYSTEM CENTRE AND 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH-SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF ORDER 90-100X10<sup>-6</sup> SECOND<sup>-1</sup> TO THE EAST OF SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200 HPA. THE UPPER LEVEL DIVERGENCE IS 5X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH OF SYSTEM CENTRE AND 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHEAST OF SYSTEM CENTER WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THERE IS A MARGINALLY FAVOURABLE ENVIRONMENTAL CONDITION FOR THE INTENSIFICATION DURING NEXT 12 HOURS AND MAINTENANCE OF INTENSITY DURING SUBSEQUENT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THERE IS AN UPPER LEVEL ANTI CYCLONIC CIRCULATION TO THE NORTHEAST AND ANOTHER TO THE NORTH-NORTHWEST OF THE SYSTEM CENTER. UNDER THEIR INFLUENCE THE SYSTEM IS MOVING NEARLY WESTWARDS AND WILL CONTINUE TO MOVE IN THE SAME DIRECTION DURING THE FORECAST PERIOD.

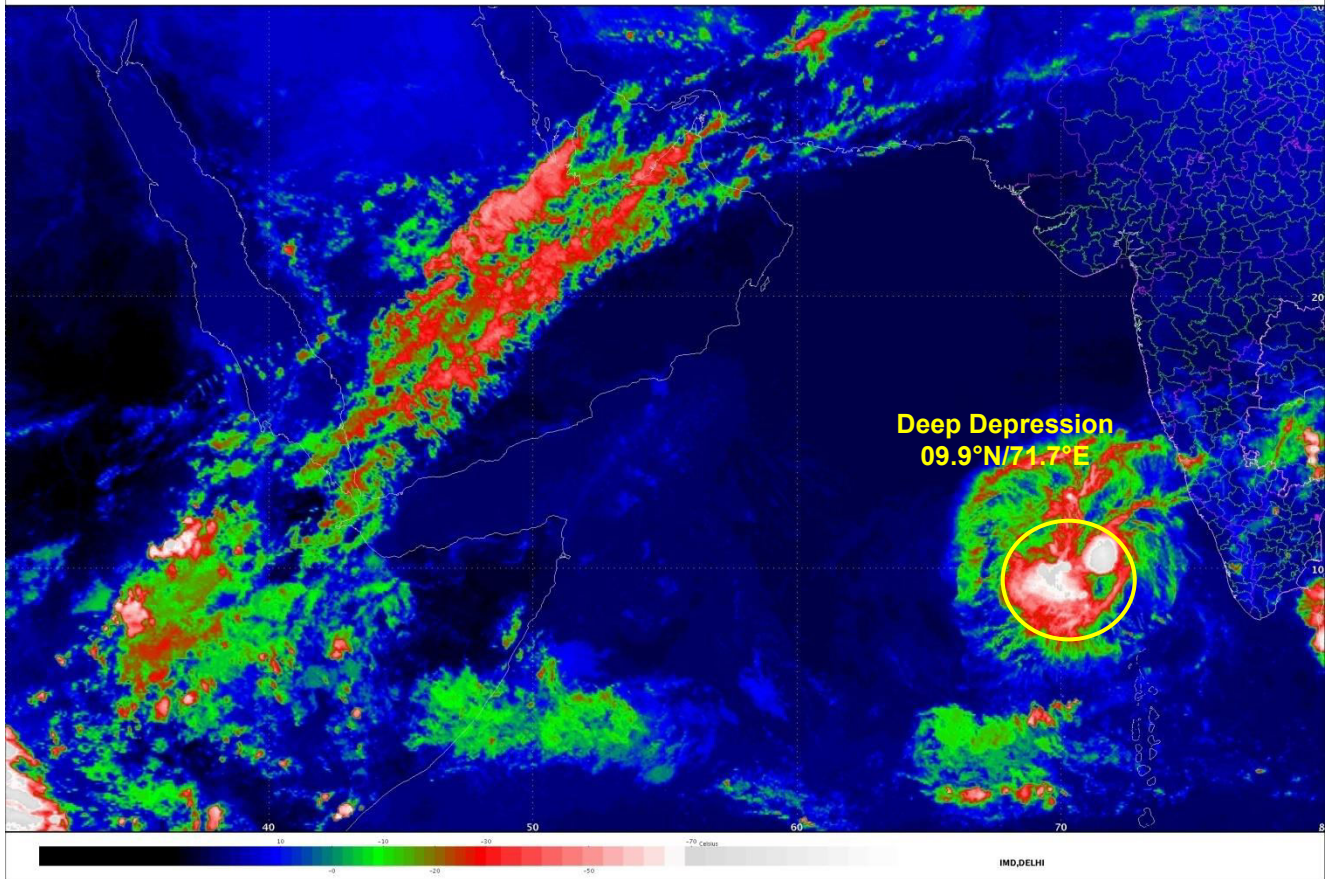
MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

(A. K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

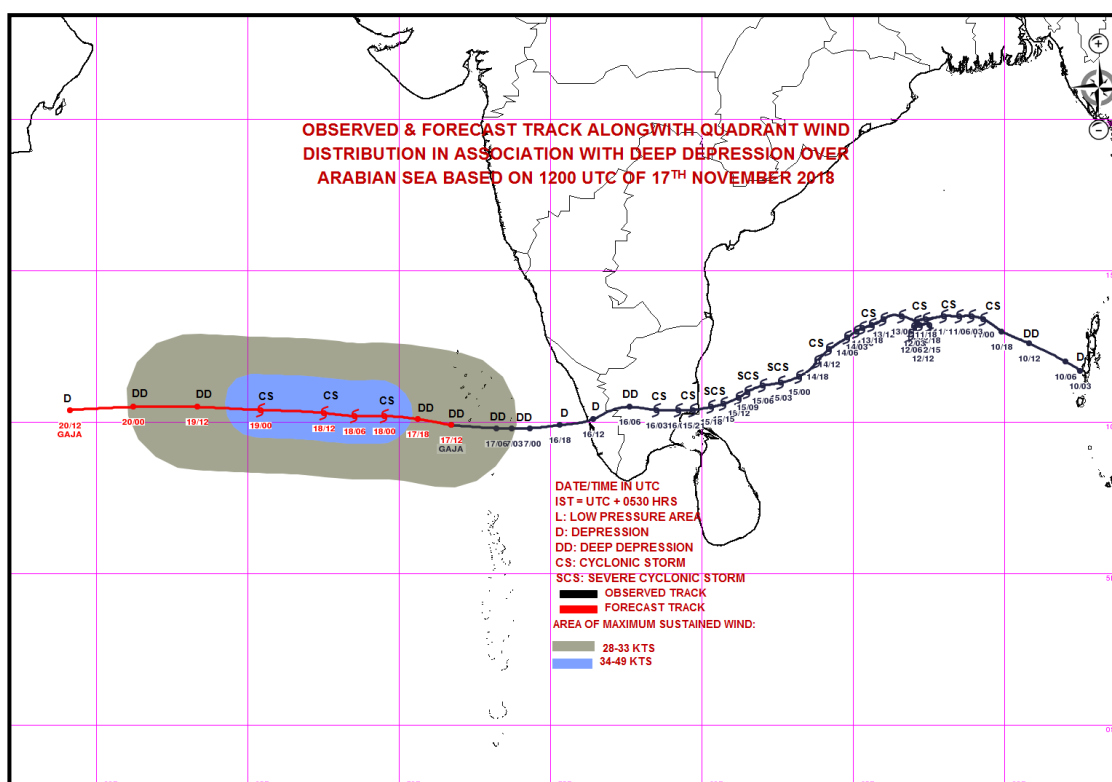
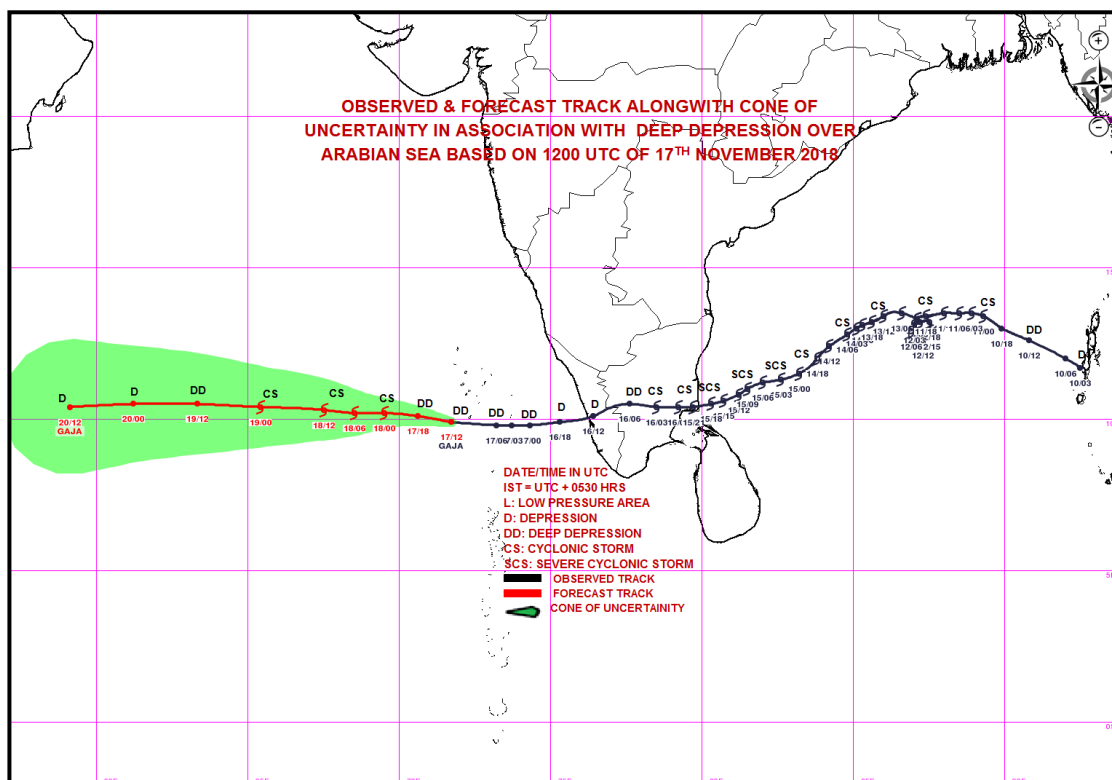
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0300 UTC OF 18.11.2018 BASED ON 0000 UTC OF 18.11.2018.**

**DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 17 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 0000 UTC OF TODAY, 18<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 10.3°N AND LONGITUDE 69.6°E, 330 KM WEST-SOUTHWEST OF KAVARATTI, 320 KM WEST-SOUTHWEST OF AGATTI AND ABOUT 1730 KM EAST-SOUTHEAST OF SOCOTRA. IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS AWAY FROM LAKSHADWEEP AREA DURING NEXT 48 HOURS. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 24 HOURS AND WEAKEN INTO A DEPRESSION THEREAFTER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
18.11.18/0000	10.3/69.6	55-65 gusting to 75	Deep Depression
18.11.18/0600	10.5/68.5	55-65 gusting to 75	Deep Depression
18.11.18/1200	10.7/67.4	55-65 gusting to 75	Deep Depression
18.11.18/1800	10.9/66.5	50-60 gusting to 70	Deep Depression
19.11.18/0000	11.0/65.4	50-60 gusting to 70	Deep Depression
19.11.18/1200	11.0/63.6	45-55 gusting to 65	Depression
20.11.18/0000	11.0/61.8	35-45 gusting to 55	Depression
20.11.18/1200	11.0/60.0	20-30 gusting to 50	Low

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA, LAKSHADWEEP ISLANDS AND BETWEEN LATITUDE 8.0°N TO 13.5°N AND LONGITUDE 67.0°E AND 71.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 0000 UTC OF 18<sup>TH</sup> NOVEMBER, AMINI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1007.3 HPA AND MEAN SURFACE WIND SPEED OF 090°/ 06 KNOTS. MINICOY (43369) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1008.7 HPA AND MEAN SURFACE WIND SPEED OF 180°/ 08 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**REMARKS:**

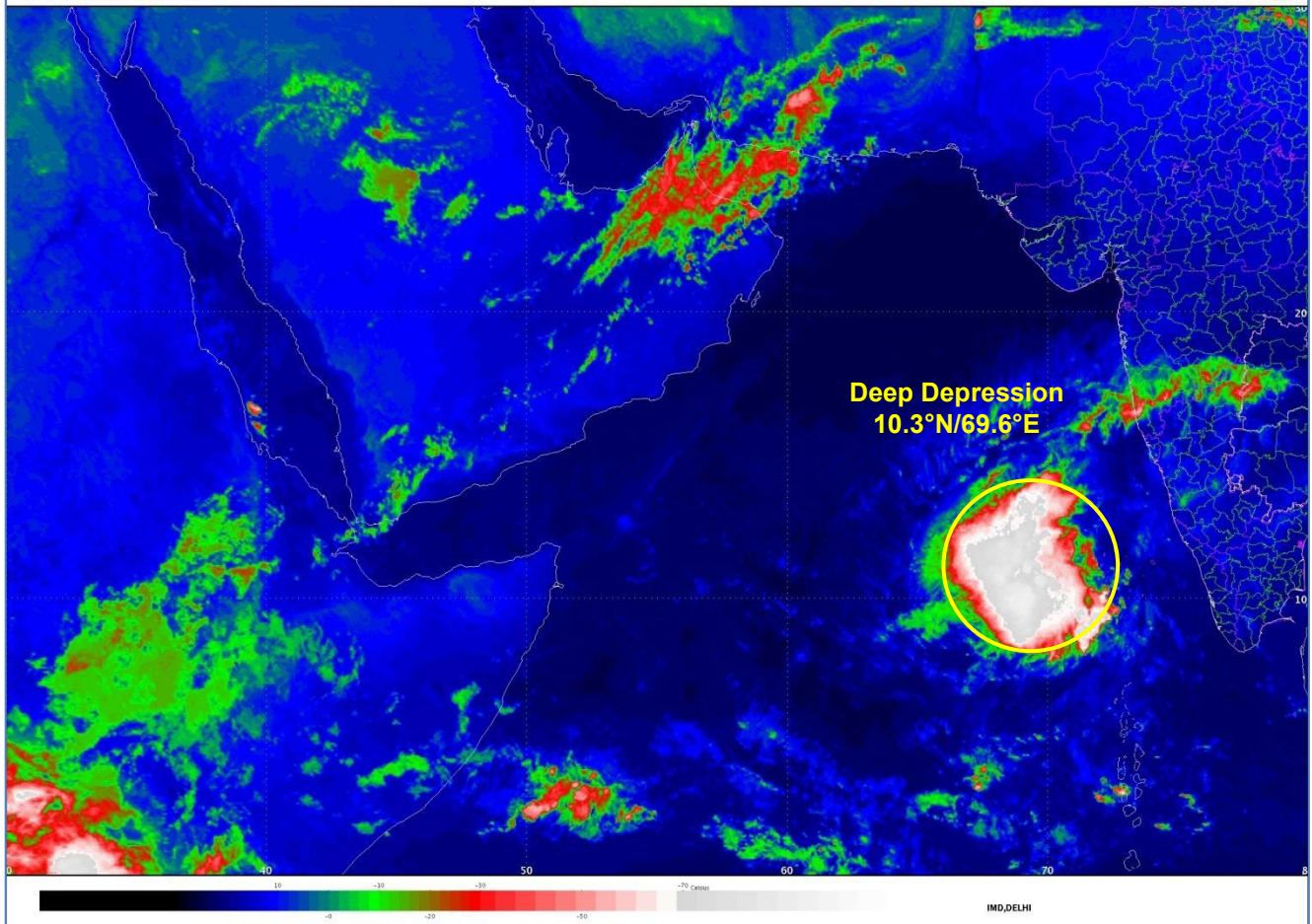
SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER, AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 10X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF ORDER 150X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTIVITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 20X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH OF SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 12 °N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

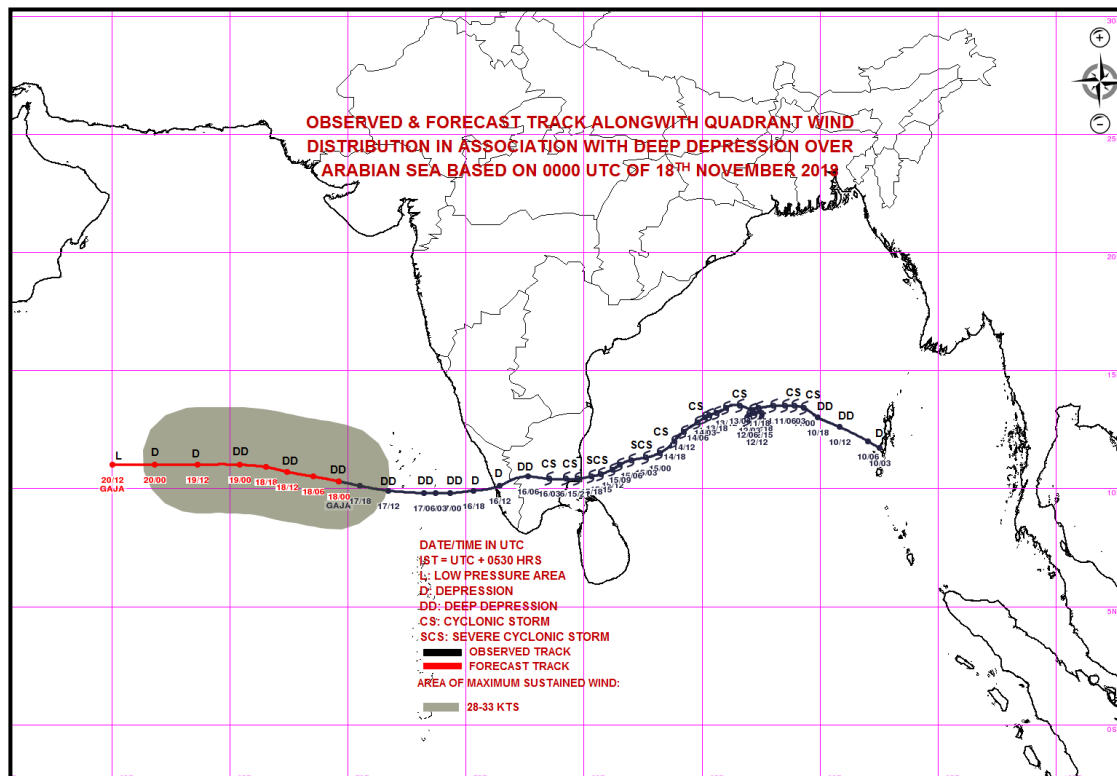
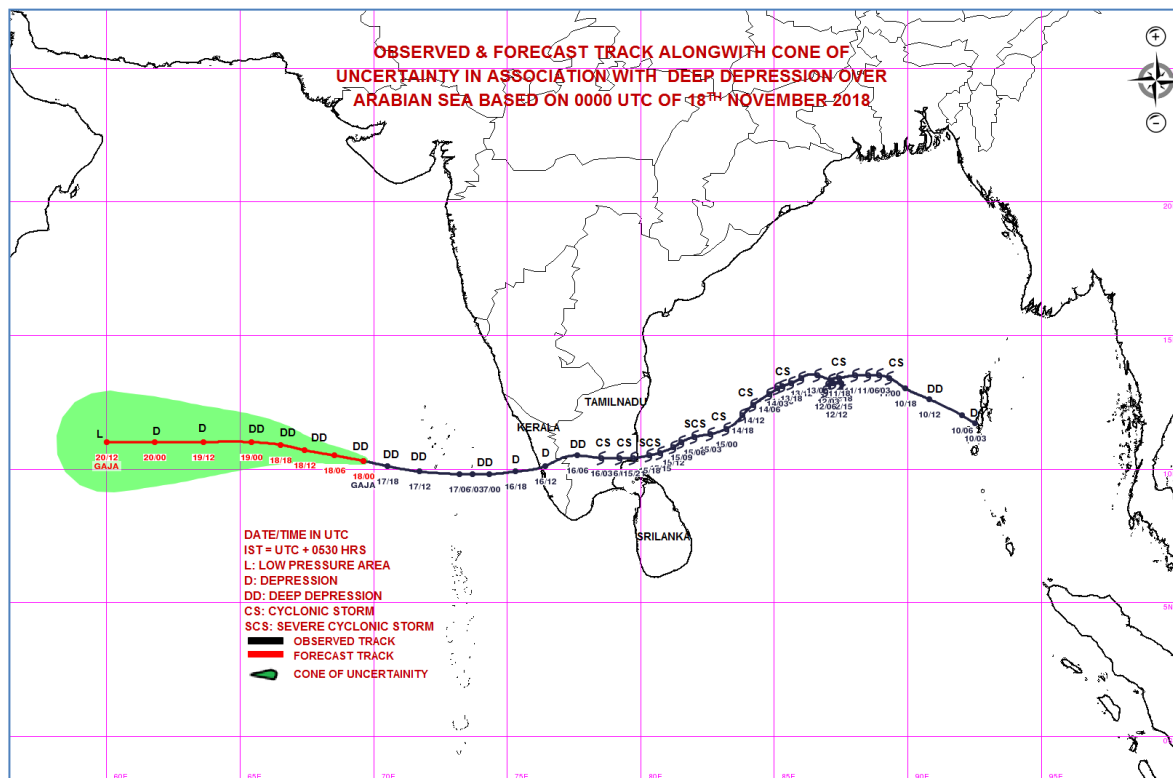
(A. K. DAS)  
SCIENTIST-E, RSMC, NEW DELHI



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 18.11.2018 BASED ON 0300 UTC OF 18.11.2018.**

**DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 0300 UTC OF TODAY, 18TH NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 10.4°N AND LONGITUDE 69.4°E, 350 KM WEST-SOUTHWEST OF KAVARATTI(10.6°N, 72.6°E), 340 KM WEST-SOUTHWEST OF AGATTI(43312) AND ABOUT 1700 KM EAST-SOUTHEAST OF SOCOTRA(41363). IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS AWAY FROM LAKSHADWEEP AREA DURING NEXT 48 HOURS. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 24 HOURS AND WEAKEN INTO A DEPRESSION THEREAFTER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
18.11.18/0300	10.4/69.4	55-65 gusting to 75	Deep Depression
18.11.18/0600	10.5/69.0	55-65 gusting to 75	Deep Depression
18.11.18/1200	10.7/68.0	55-65 gusting to 75	Deep Depression
18.11.18/1800	10.9/66.9	50-60 gusting to 70	Deep Depression
19.11.18/0000	11.0/65.8	50-60 gusting to 70	Deep Depression
19.11.18/1200	11.0/63.9	45-55 gusting to 65	Depression
20.11.18/0000	11.0/62.1	35-45 gusting to 55	Depression
20.11.18/1200	11.0/60.1	20-30 gusting to 50	Low

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T 2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA, LAKSHADWEEP ISLANDS AND BETWEEN LATITUDE 8.0°N TO 14.5°N AND LONGITUDE 66.0°E AND 72.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 0300 UTC OF 18<sup>TH</sup> NOVEMBER, AMINI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1010.4 HPA AND MEAN SURFACE WIND SPEED OF 180°/ 10 KNOTS. MINICOY (43369) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1011.5 HPA AND MEAN SURFACE WIND SPEED OF 230°/ 06 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

## **LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN:**

A LOW PRESSURE AREA HAS FORMED OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN AT 0300 UTC OF TODAY, THE 18<sup>TH</sup> NOVEMBER, 2018. IT IS VERY LIKELY TO MOVE WESTWARDS AND BECOME MORE MARKED OVER CENTRAL PART OF SOUTH BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST bay of Bengal BETWEEN LATITUDE 5.0°N TO 9.0°N AND LONGITUDE 87.0°E AND 91.0°E.

### **REMARKS:**

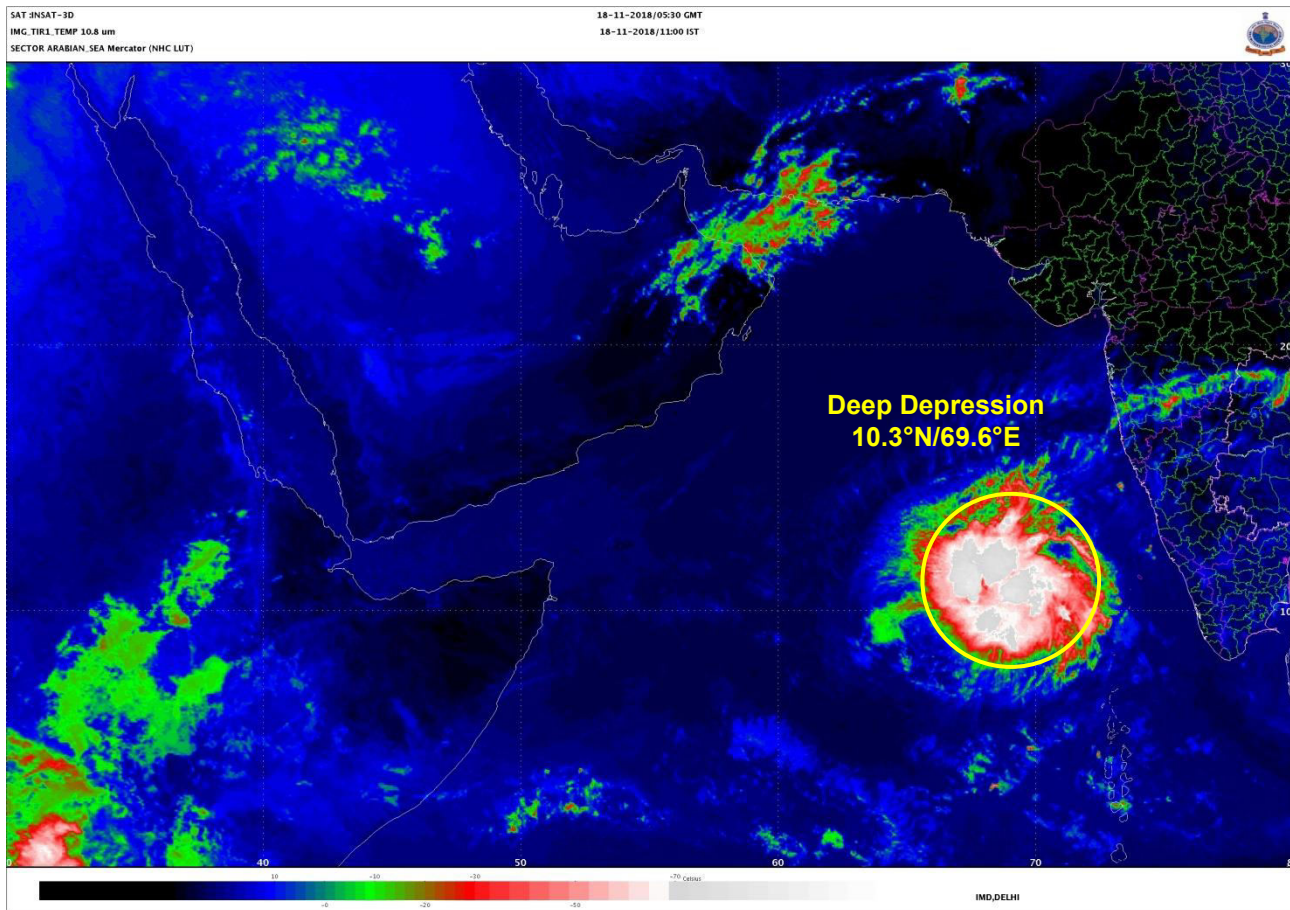
SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER, AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT  $10 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTH OF SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 12°N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

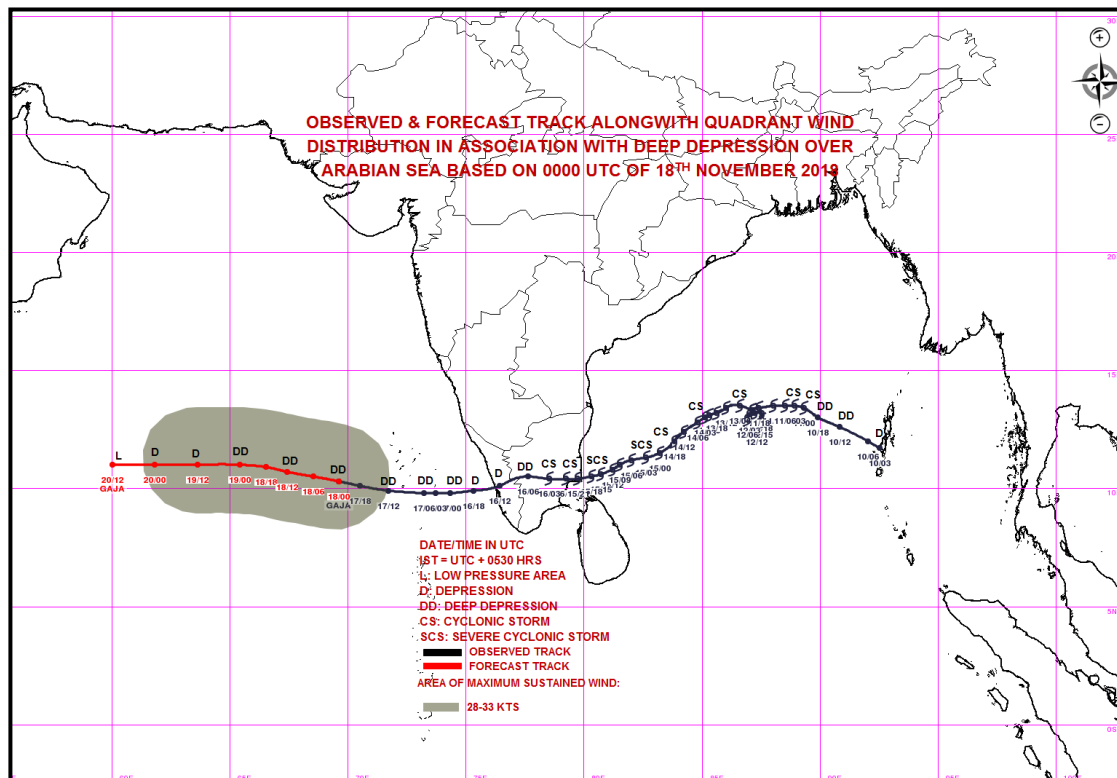
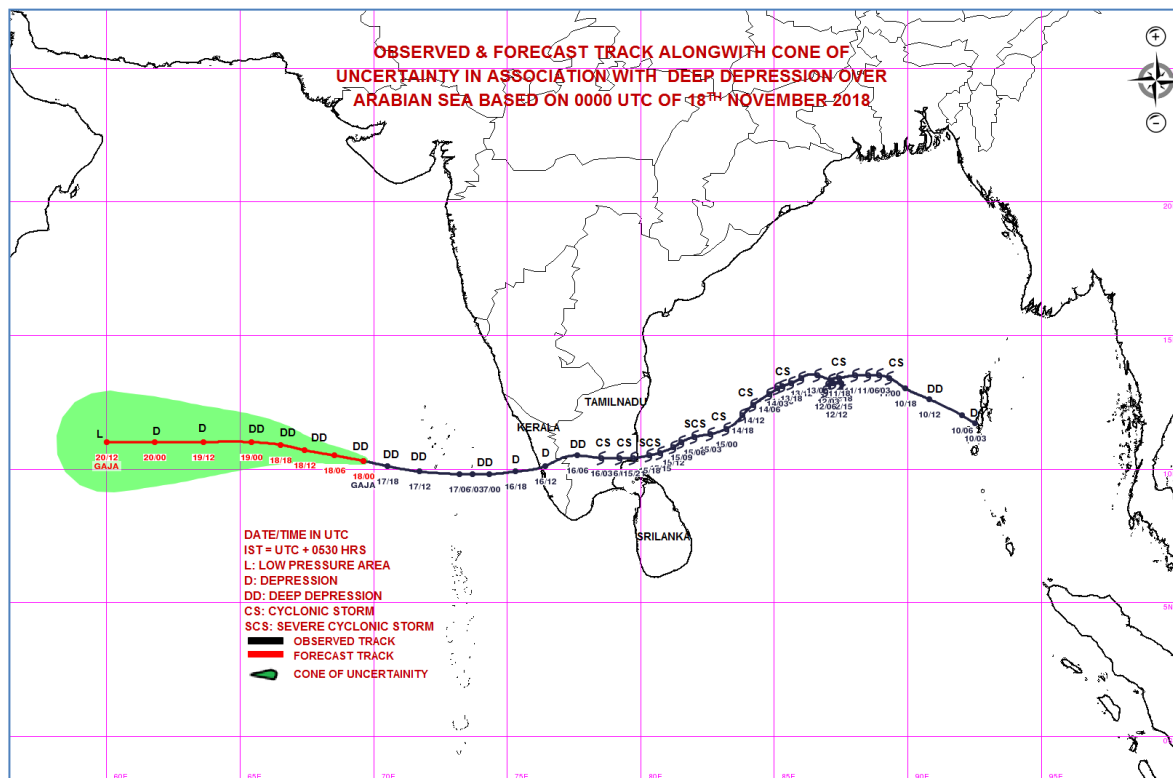
(CHARAN SINGH)  
SCIENTIST-F, RSMC, NEW DELHI



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 96 HOURS ISSUED AT 0900 UTC OF 18.11.2018 BASED ON 0600 UTC OF 18.11.2018.**

**(I) DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED WEST-NORTHWESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 0600 UTC OF TODAY, 18<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 10.5°N AND LONGITUDE 69.0°E, 390 KM WEST-SOUTHWEST OF KAVARATTI, 380 KM WEST-SOUTHWEST OF AGATTI (43312) AND ABOUT 1660 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS AWAY FROM LAKSHADWEEP AREA DURING NEXT 36 HOURS. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 24 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
18.11.18/0600	10.5/69.0	55-65 gusting to 75	Deep Depression
18.11.18/1200	10.7/68.0	55-65 gusting to 75	Deep Depression
18.11.18/1800	10.9/66.9	50-60 gusting to 70	Deep Depression
19.11.18/0000	11.0/65.8	50-60 gusting to 70	Deep Depression
19.11.18/0600	11.1/64.9	50-60 gusting to 70	Deep Depression
19.11.18/1800	11.1/63.1	45-55 gusting to 65	Depression
20.11.18/0600	11.0/61.4	45-55 gusting to 65	Depression
20.11.18/1800	10.9/59.7	40-50 gusting to 60	Depression
21.11.18/0600	10.8/58.0	35-45 gusting to 65	Depression

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA, LAKSHADWEEP ISLANDS AND BETWEEN LATITUDE 8.0°N TO 14.0°N AND LONGITUDE 66.0°E AND 72.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 0600 UTC OF 18<sup>TH</sup> NOVEMBER, AMINI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1011.4 HPA AND SURFACE WIND SPEED OF 140°/ 06 KNOTS. MINICOY (43369) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1011.9 HPA AND SURFACE WIND SPEED OF 180°/ 06 KNOTS. A BUOY LOCATED NEAR LATITUDE 10.3 °N AND LONGITUDE 72.6 °E REPORTED MEAN SEA LEVEL PRESSURE OF 1011.0 HPA AND SURFACE WIND SPEED OF 170°/ 14 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**(II) LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN:**

THE LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN PERSISTS AT 0600 UTC OF TODAY, THE 18<sup>TH</sup> NOVEMBER, 2018. IT IS VERY LIKELY TO MOVE WESTWARDS AND BECOME MORE MARKED OVER CENTRAL PART OF SOUTH BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST Bay of Bengal BETWEEN LATITUDE 3.0°N TO 9.0°N AND LONGITUDE 86.0°E AND 91.0°E.

**REMARKS:**

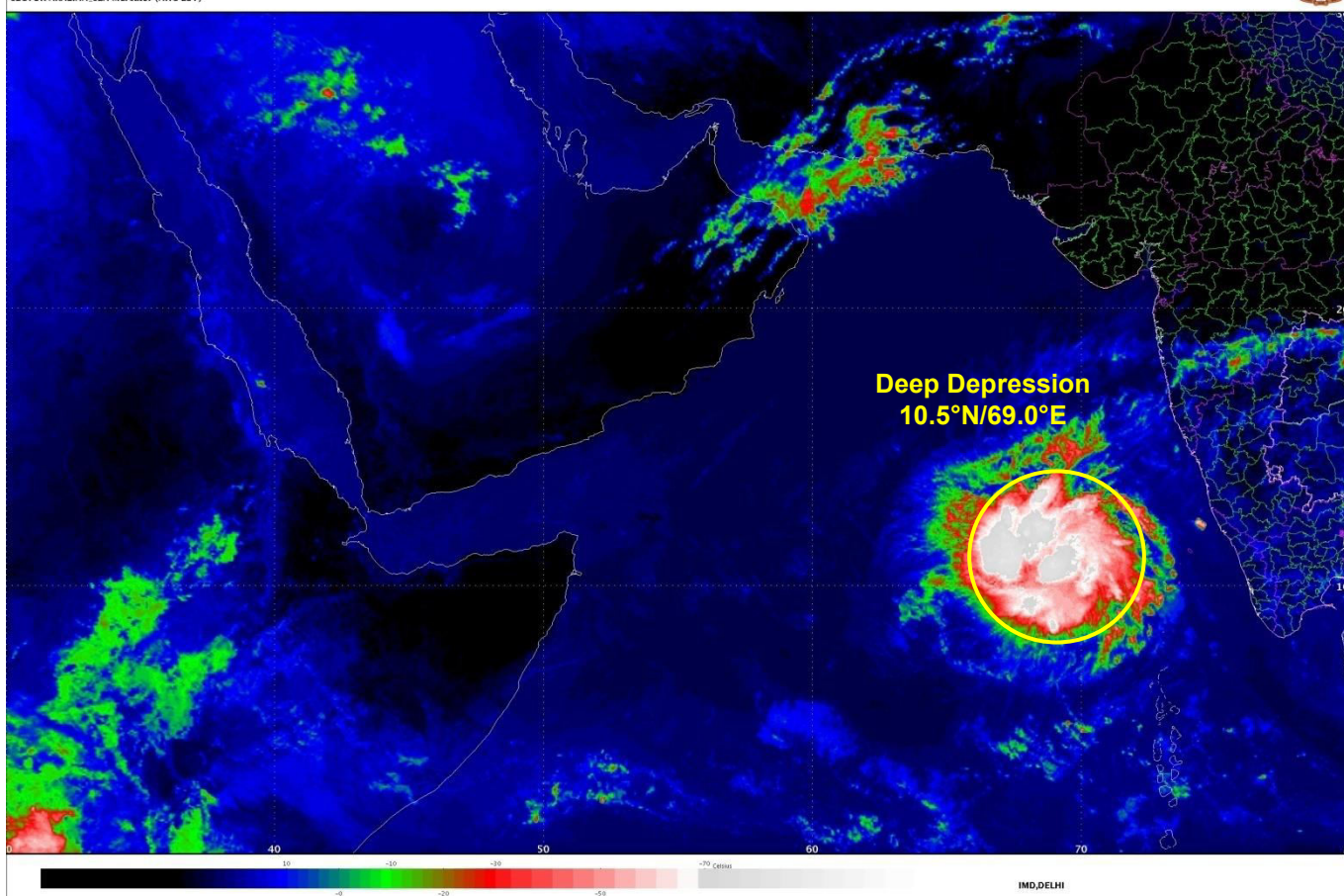
SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER, AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF ORDER  $160 \times 10^{-6}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200 HPA. THE UPPER LEVEL DIVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 13°N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

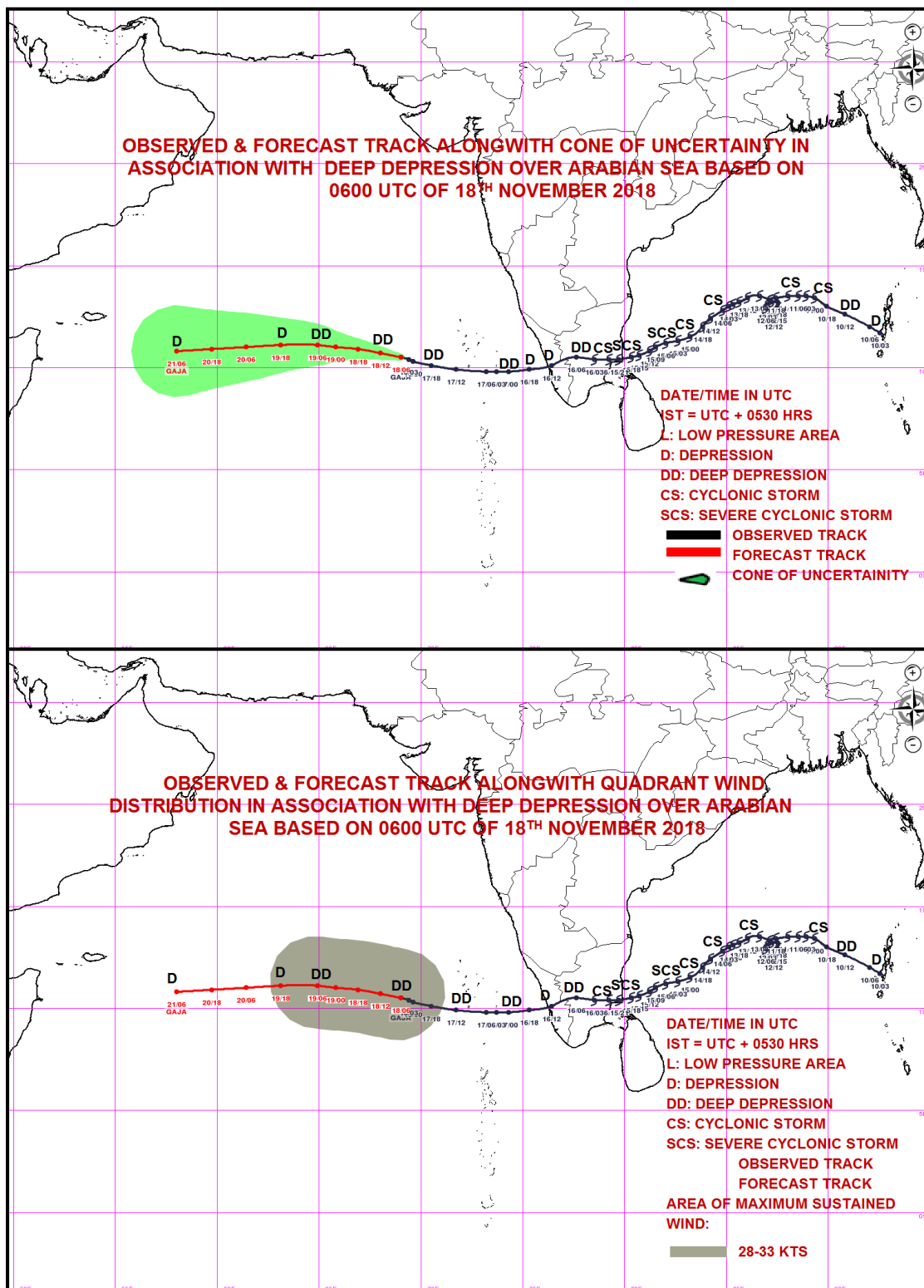
**(CHARAN SINGH)**  
**SCIENTIST-F, RSMC, NEW DELHI**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 1500 UTC OF 18.11.2018 BASED ON 1200 UTC OF 18.11.2018.**

**(I) DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED FURTHER WEST-NORTHWESTWARDS WITH A SPEED OF 12 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 1200 UTC OF TODAY, 18<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 10.8°N AND LONGITUDE 68.4°E, 440 KM WEST OF AGATTI (43312) AND ABOUT 1590 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS FURTHER AWAY FROM LAKSHADWEEP AREA DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 24 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
18.11.18/1200	10.8/68.4	55-65 gusting to 75	Deep Depression
18.11.18/1800	11.0/67.9	50-60 gusting to 70	Deep Depression
19.11.18/0000	11.2/67.4	50-60 gusting to 70	Deep Depression
19.11.18/0600	11.4/66.8	50-60 gusting to 70	Deep Depression
19.11.18/1200	11.5/66.1	50-60 gusting to 70	Deep Depression
20.11.18/0000	11.5/64.6	45-55 gusting to 65	Depression
20.11.18/1200	11.3/63.0	45-55 gusting to 65	Depression
21.11.18/0000	11.1/61.4	40-50 gusting to 60	Depression
21.11.18/1200	10.9/59.8	35-45 gusting to 55	Depression

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T2.0., BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA BETWEEN LATITUDE 8.0°N TO 14.0°N AND LONGITUDE 66.0°E AND 72.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 1200 UTC OF 18<sup>TH</sup> NOVEMBER, AMINIDIVI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1008.0 HPA AND SURFACE WIND SPEED OF 140°/06 KNOTS. A BUOY LOCATED NEAR LATITUDE 11.7°N AND LONGITUDE 68.5°E REPORTED MEAN SEA LEVEL PRESSURE OF 1007.6 HPA AND SURFACE WIND SPEED OF 90°/ 14 KNOTS. ANOTHER BUOY LOCATED NEAR LATITUDE 14.8°N AND LONGITUDE 68.9°E REPORTED MEAN SEA LEVEL PRESSURE OF 1009.3 HPA AND SURFACE WIND SPEED OF 60°/10 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**(II) LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN:**

THE LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN PERSISTS AT 1200 UTC OF TODAY, THE 18<sup>TH</sup> NOVEMBER, 2018. IT IS VERY LIKELY TO MOVE WESTWARDS AND BECOME MORE MARKED OVER CENTRAL PART OF SOUTH BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY THE 18<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL ADJOINING EQUATORIAL INDIAN OCEAN BETWEEN LATITUDE 3.0°N TO 13.0°N AND LONGITUDE 85.0°E AND 93.0°E.

**REMARKS:**

SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER, AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200 HPA. THE UPPER LEVEL DIVERGENCE IS  $20 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE WEST-NORTHWESTWARDS DURING NEXT 48 HOURS.

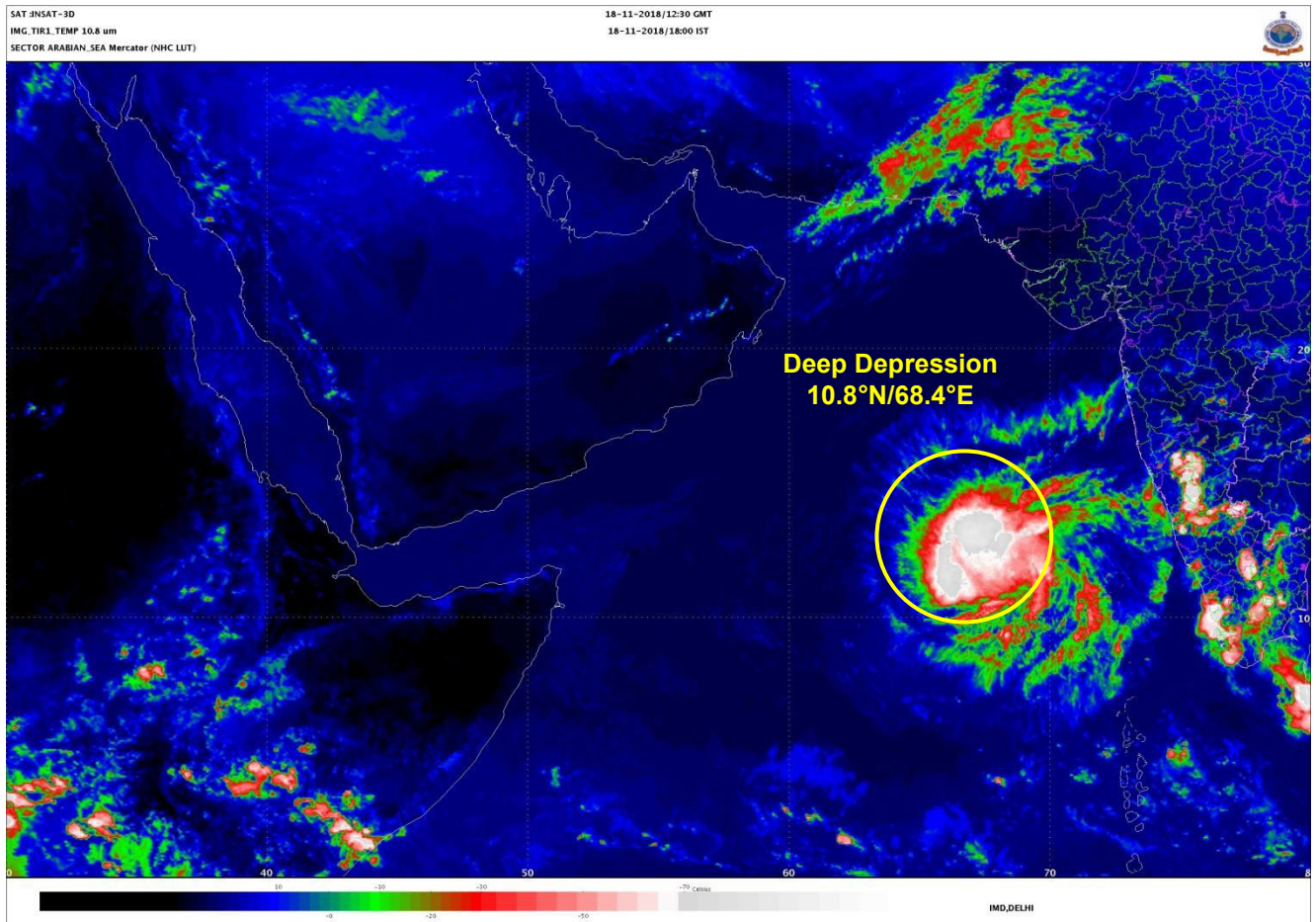
MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(CHARAN SINGH)**  
**SCIENTIST-F, RSMC, NEW DELHI**

---

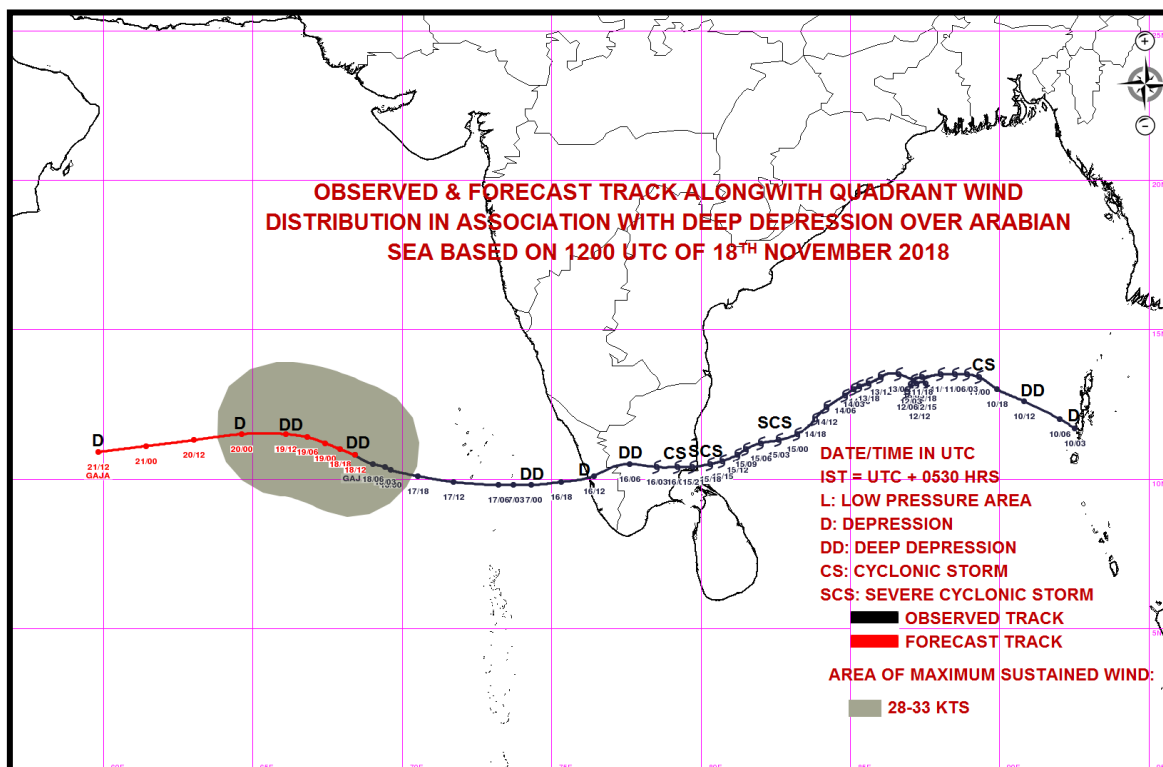
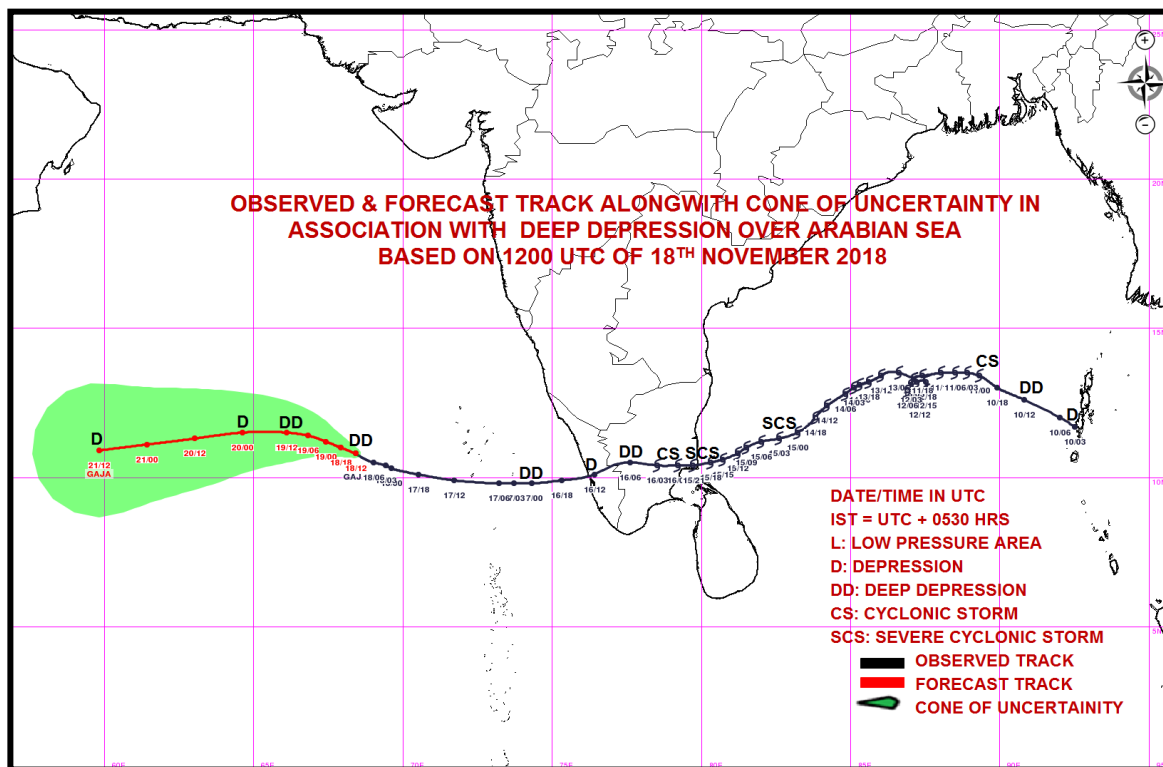
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**  
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 18.11. 2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 2000 UTC OF 18.11.2018 BASED ON 1800 UTC OF 18.11.2018.**

**(I) DEEP DEPRESSSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED FURTHER WEST-NORTHWESTWARDS WITH A SPEED OF 09 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 1800 UTC OF THE 18<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.1°N AND LONGITUDE 68.0°E, 490 KM WEST-NORTHWEST OF AGATTI (43312) AND ABOUT 1540 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE WEST-NORTHWESTWARDS FURTHER AWAY FROM LAKSHADWEEP AREA DURING NEXT 24 HOURS. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 24 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
18.11.18/1800	11.1/68.0	50-60 gusting to 70	Deep Depression
19.11.18/0000	11.3/67.4	50-60 gusting to 70	Deep Depression
19.11.18/0600	11.4/66.8	50-60 gusting to 70	Deep Depression
19.11.18/1200	11.5/66.1	50-60 gusting to 70	Deep Depression
19.11.18/1800	11.5/65.4	50-60 gusting to 70	Deep Depression
20.11.18/0600	11.4/63.8	45-55 gusting to 65	Depression
20.11.18/1800	11.4/62.3	45-55 gusting to 65	Depression
21.11.18/0600	11.2/60.6	40-50 gusting to 60	Depression
21.11.18/1800	11.0/59.0	40-50 gusting to 60	Depression

AS PER THE SATELLITE IMAGERY BASED ON 1700 UTC OF THE 18<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST ARABIAN SEA BETWEEN LATITUDE 8.0°N TO 16.0°N AND LONGITUDE 65.0°E TO 70.5°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 91°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1003 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 1800 UTC OF 18<sup>TH</sup> NOVEMBER, AMINIDIVI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1011.1 HPA AND SURFACE WIND SPEED OF 140°/05 KNOTS. A BUOY LOCATED NEAR LATITUDE 11.8°N AND LONGITUDE 68.5°E REPORTED MEAN SEA LEVEL PRESSURE OF 1009.6 HPA AND SURFACE WIND SPEED OF 100°/ 10 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**(II) LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN:**

THE LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN PERSISTS AT 1800 UTC OF THE 18<sup>TH</sup> NOVEMBER, 2018. IT IS VERY LIKELY TO MOVE WESTWARDS AND BECOME MORE MARKED OVER CENTRAL PART OF SOUTH BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF THE 18<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL ADJOINING EQUATORIAL INDIAN OCEAN BETWEEN LATITUDE 3.0°N TO 13.0°N AND LONGITUDE 85.0°E TO 92.0°E.

**REMARKS:**

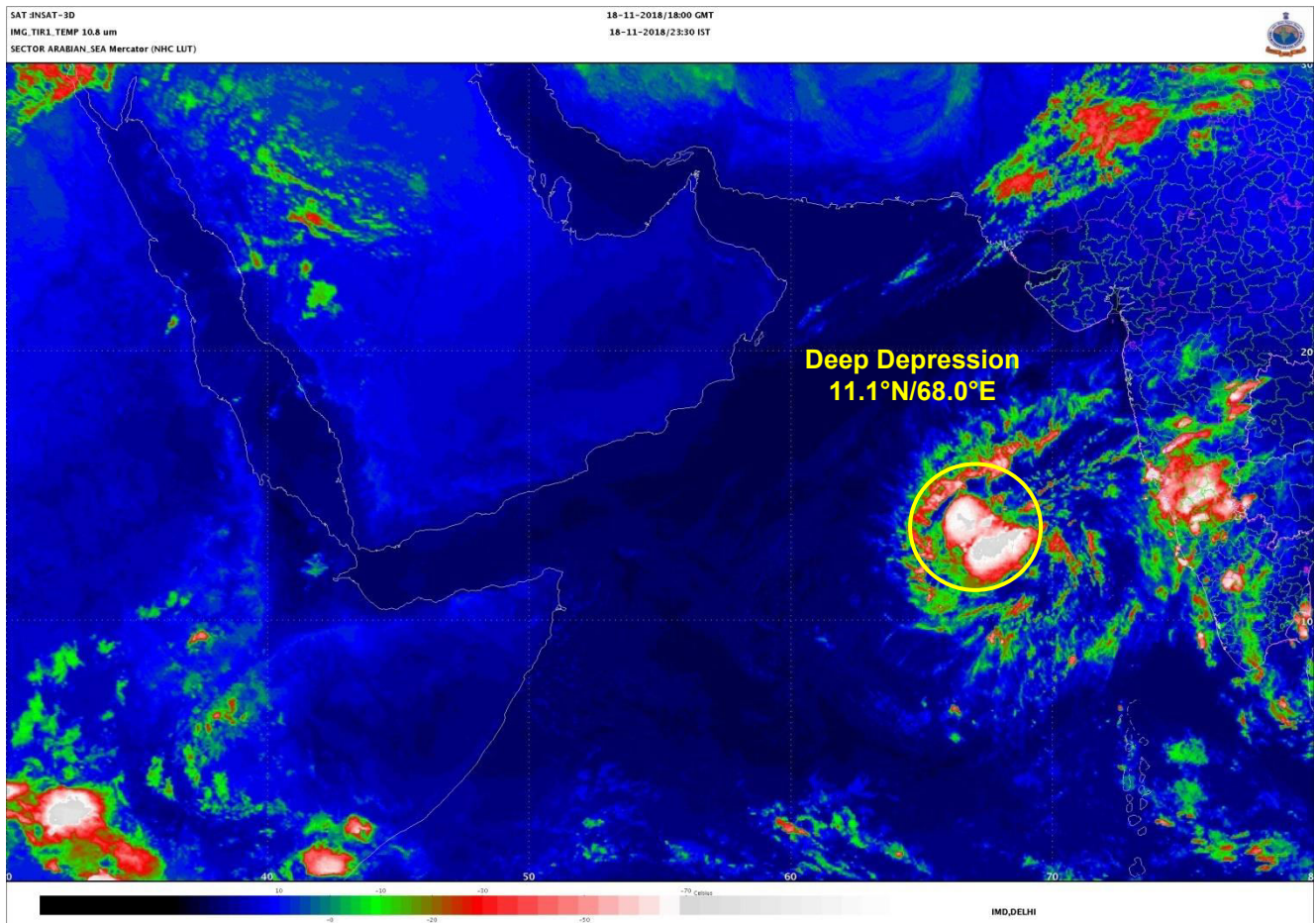
SEA SURFACE TEMPERATURE IS ABOUT 30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT  $5 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST SECTOR OF SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER  $150 \times 10^{-6}$  SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200 HPA. THE UPPER LEVEL DIVERGENCE IS  $30 \times 10^{-5}$  SECOND<sup>-1</sup> TO THE SOUTHWEST OF SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 24 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE WEST-NORTHWESTWARDS DURING NEXT 24 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

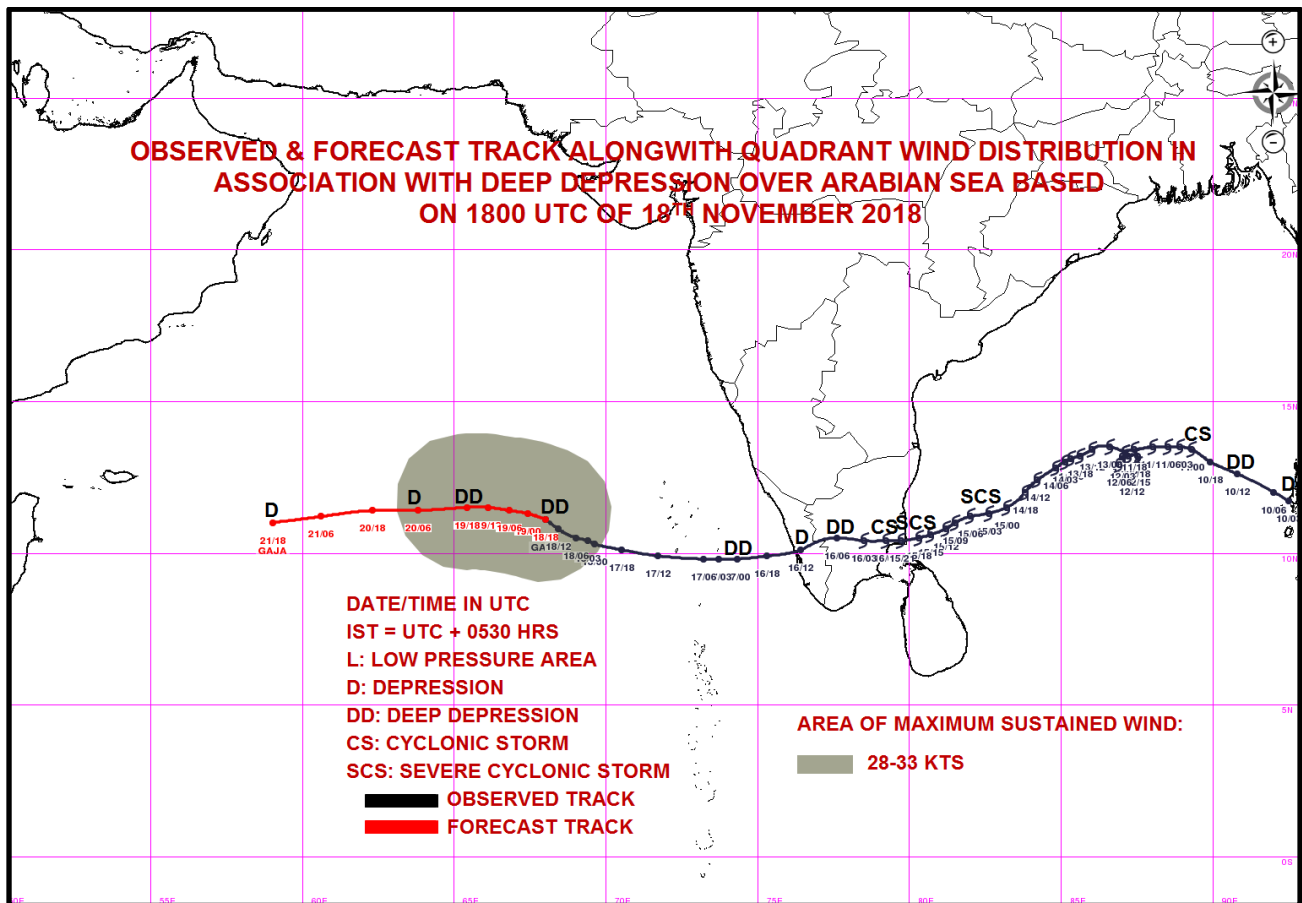
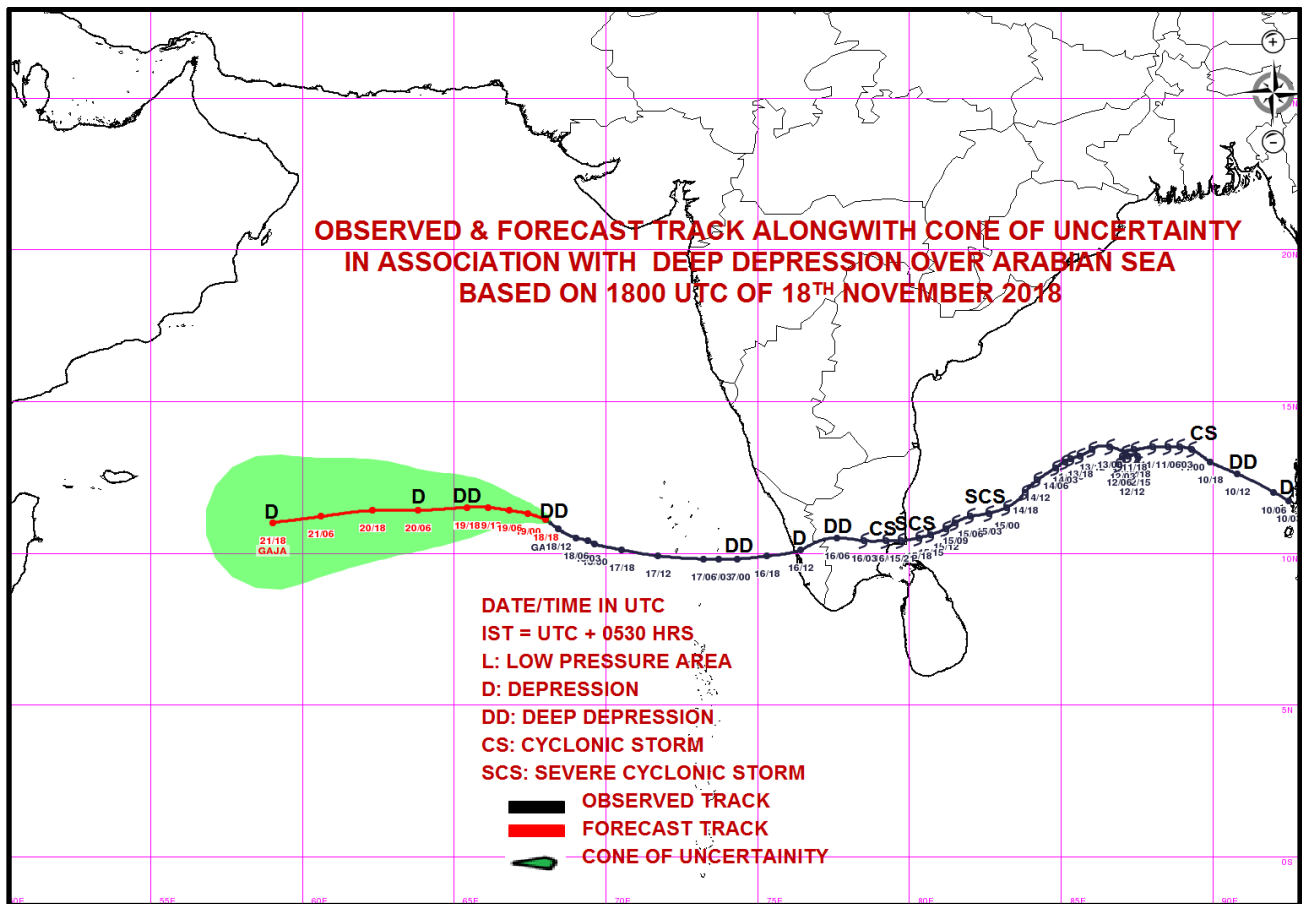
**(SHIBIN B)**  
**SCIENTIST-B, RSMC, NEW DELHI**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 60 HOURS ISSUED AT 0300 UTC OF 19.11.2018 BASED ON 0000 UTC OF 19.11.2018.**

**(I) DEEP DEPRESSSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED FURTHER NEARLY WESTWARDS WITH A SPEED OF 18 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 0000 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.2°N AND LONGITUDE 67.0°E, 600 KM WEST-NORTHWEST OF AGATTI (43312) AND ABOUT 1430 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE NEARLY WESTWARDS AWAY FROM LAKSHADWEEP AREA. IT IS VERY LIKELY TO MAINTAIN THE INTENSITY OF DEEP DEPRESSION DURING NEXT 12 HOURS AND WEAKEN INTO A DEPRESSION THEREAFTER.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position Lat. °N/ Long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
19.11.18/0000	11.2/67.0	50-60 gusting to 70	Deep Depression
19.11.18/0600	11.2/66.4	50-60 gusting to 70	Deep Depression
19.11.18/1200	11.3/66.1	50-60 gusting to 70	Deep Depression
19.11.18/1800	11.3/65.4	50-60 gusting to 70	Depression
20.11.18/0000	11.4/64.0	45-55 gusting to 65	Depression
20.11.18/1200	11.4/63.0	45-55 gusting to 65	Depression
21.11.18/0000	11.3/61.4	40-50 gusting to 60	Depression
21.11.18/1200	11.1/59.8	40-50 gusting to 60	Depression

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS T2.0. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 9.0°N TO 15.0°N AND LONGITUDE 65.0°E TO 70.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 89°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1004 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 0000 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, AMINIDIVI (43311) (LAKSHADWEEP ISLANDS) REPORTED MEAN SEA LEVEL PRESSURE OF 1009.2 HPA AND SURFACE WIND SPEED OF 140°/08 KNOTS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**(II) LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN:**

THE LOW PRESSURE AREA OVER SOUTHEAST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN NOW LIES OVER SOUTHEAST AND ADJOINING SOUTHWEST & EQUATORIAL INDIAN OCEAN AT 0000 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018. IT IS VERY LIKELY TO MOVE WESTWARDS AND BECOME MORE MARKED OVER CENTRAL PART OF SOUTH BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 0000 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL ADJOINING EQUATORIAL INDIAN OCEAN BETWEEN LATITUDE 3.0°N TO 12.0°N AND LONGITUDE 82.0°E TO 89.0°E.

**REMARKS:**

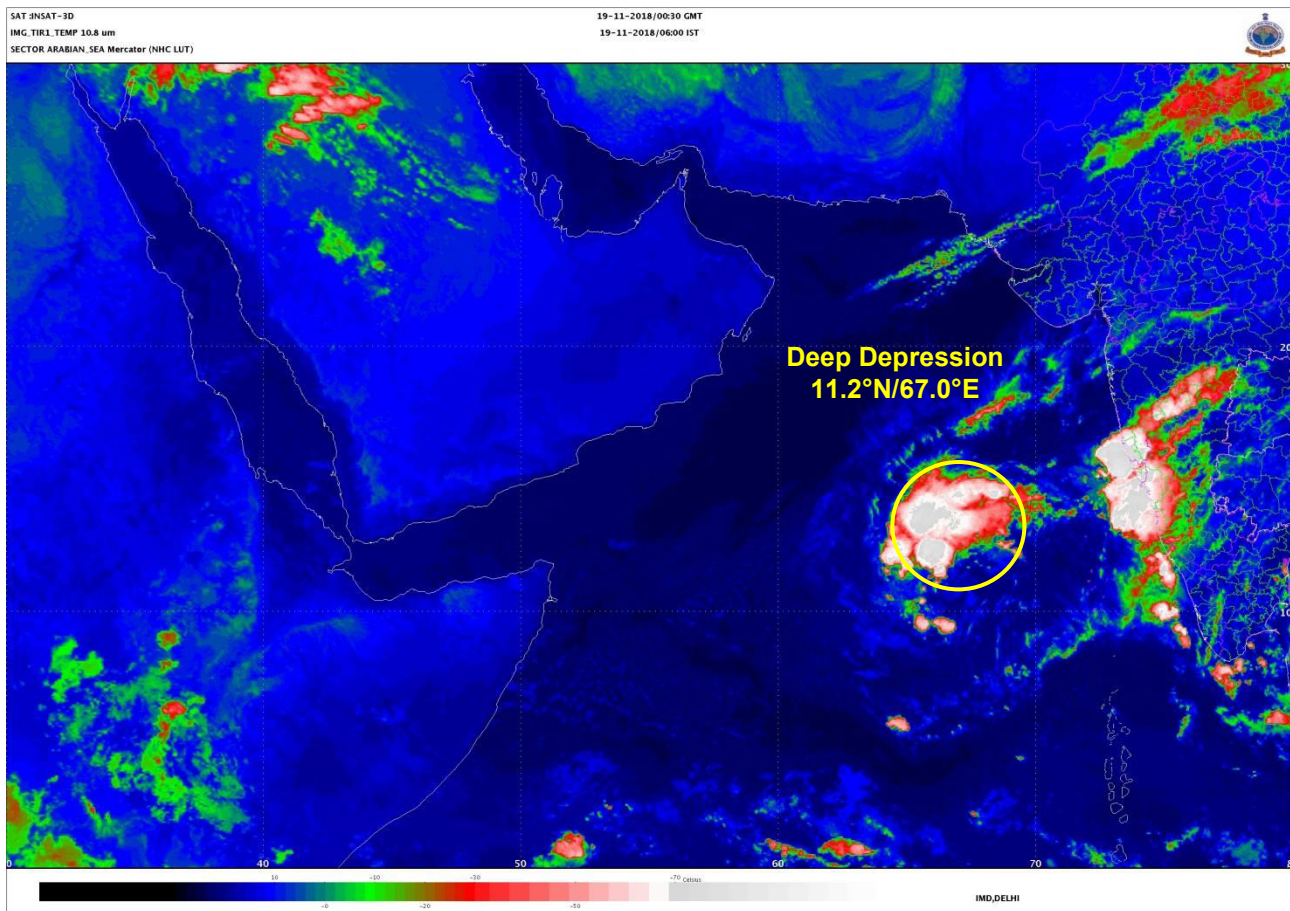
SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 75-100 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5-10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 100X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE WHICH IS NOT FAVOURING POLEWARD OUTFLOW AND MAY INHIBIT FURTHER INTENSIFICATION. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE. IT WILL ENTER INTO ZONE OF HIGH WIND SHEAR AFTER 24 HOURS. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER AND DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM WILL MAINTAIN ITS INTENSITY DURING NEXT 12 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BE UNFAVOURABLE AND WILL LEAD TO GRADUAL WEAKENING OF THE SYSTEM.

THE UPPER TROPOSPHERIC RIDGE RUNS ALONG 15°N. THE DEEP DEPRESSION WILL CONTINUE TO MOVE NEARLY WESTWARDS DURING NEXT 24 HOURS.

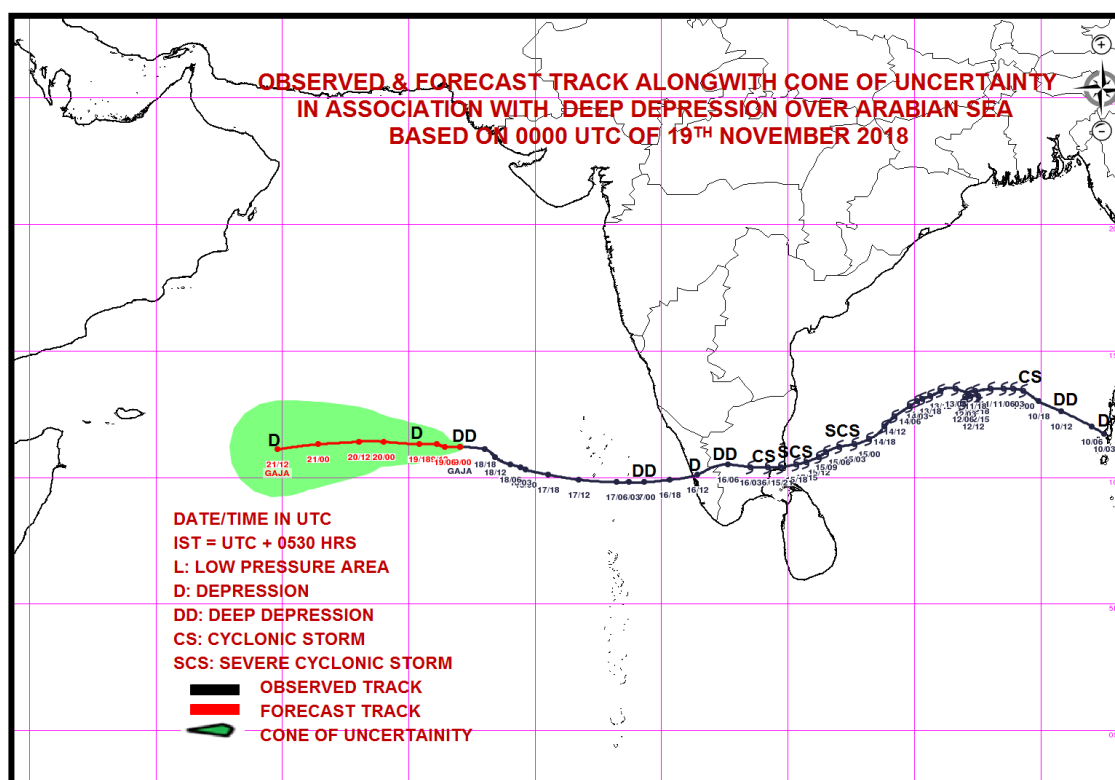
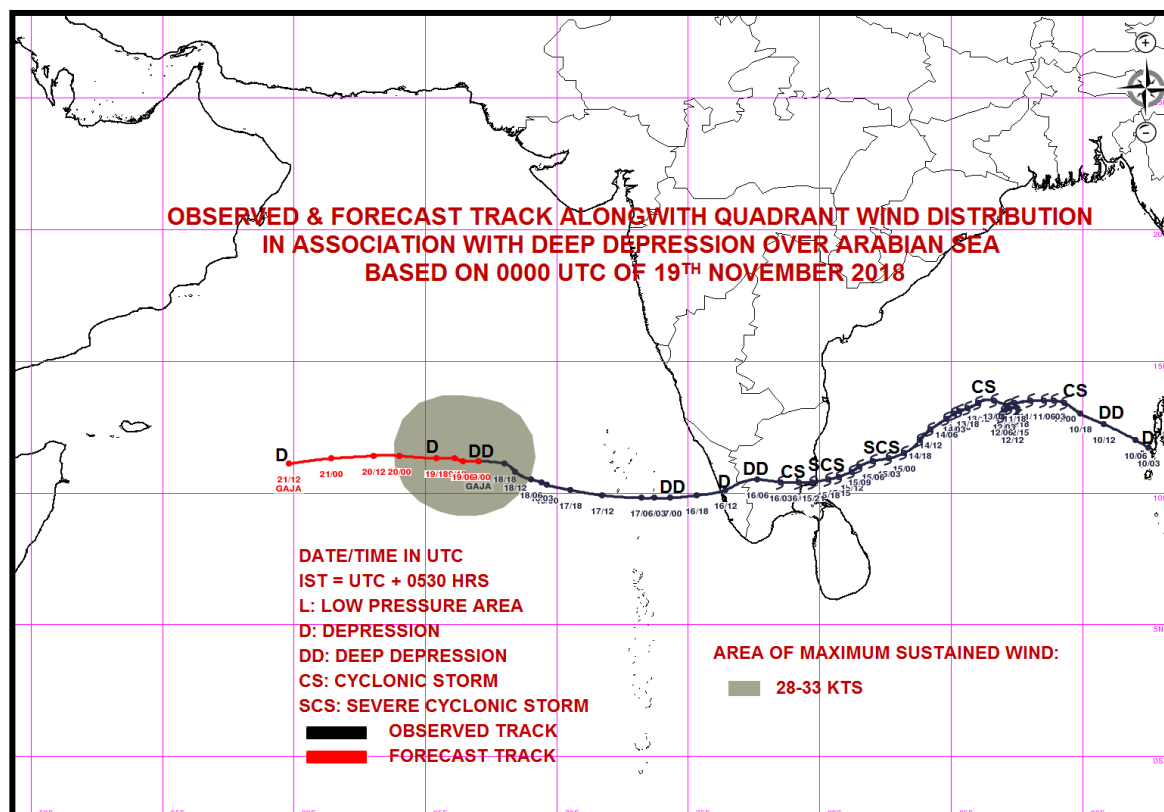
MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(CHARAN SINGH)**  
**SCIENTIST-F, RSMC, NEW DELHI**



---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**  
**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0600 UTC OF 19.11.2018 BASED ON 0300 UTC OF 19.11.2018.**

**(I) DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED FURTHER NEARLY WESTWARDS WITH A SPEED OF 21 KMPH DURING PAST 06 HOURS. IT LAY CENTERED AT 0300 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.2°N AND LONGITUDE 66.3°E, ABOUT 670 KM WEST-NORTHWEST OF AGATTI (43312) AND 1360 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A DEPRESSION DURING NEXT 06 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.11.18/0300	11.2/66.3	50-60 GUSTING TO 70	DEEP DEPRESSION
19.11.18/0600	11.2/65.8	45-55 GUSTING TO 65	DEPRESSION
19.11.18/1200	11.3/64.8	45-55 GUSTING TO 65	DEPRESSION
19.11.18/1800	11.3/63.9	45-55 GUSTING TO 65	DEPRESSION
20.11.18/0000	11.4/62.9	45-55 GUSTING TO 65	DEPRESSION
20.11.18/1200	11.4/61.1	40-50 GUSTING TO 60	DEPRESSION
21.11.18/0000	11.3/59.4	40-50 GUSTING TO 60	DEPRESSION

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I.1.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 8.5°N TO 14.5°N AND LONGITUDE 64.0°E TO 96.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1004 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 30 KNOTS GUSTING TO 40 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

AT 0300 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, A SHIP LOCATED AT LATITUDE 9.2° N/ LONGITUDE 69.4° E REPORTED MEAN SEA LEVEL PRESSURE OF 1011.4 HPA AND SURFACE WIND SPEED OF 160°/12 KNOTS.

**(II) WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS SOUTH BAY OF BENGAL**

THE LOW PRESSURE AREA OVER SOUTHEAST AND ADJOINING SOUTHWEST & EQUATORIAL INDIAN OCEAN LAY AS A WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL AT 0300 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018. IT IS LIKELY TO MOVE WESTWARDS AND CONCENTRATE INTO A DEPRESSION OVER SOUTHWEST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

AS PER THE SATELLITE IMAGERY BASED ON 0300 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ADJOINING INDIAN OCEAN AND SOUTHWEST BAY OF BENGAL BETWEEN LATITUDE 7.5°N TO 12.5°N AND LONGITUDE 83.5°E TO 90.0°E IN ASSOCIATION WITH THE LOW LEVEL CIRCULATION OVER THE AREA.

**PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	-	-	-

**REMARKS:**

**(I) ARABIAN SEA:**

SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 70-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 80X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 30-40X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM SHOWS WEAKENING TREND DUE TO DRY AIR INCURSION FROM THE WESTERN SECTOR UPTO SOUTHERN SECTOR. WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER IS GRADUALLY DECREASING AND THERE IS DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM IS LIKELY TO WEAKEN INTO A DEPRESSION DURING NEXT 6 HOURS AND MAINTAIN ITS INTENSITY OF DEPRESSION FOR NEXT 24-36 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BECOME UNFAVOURABLE AND WILL LEAD TO DISSIPATION OF THE SYSTEM OVER SEA. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS DURING NEXT 24 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(II) BAY OF BENGAL:**

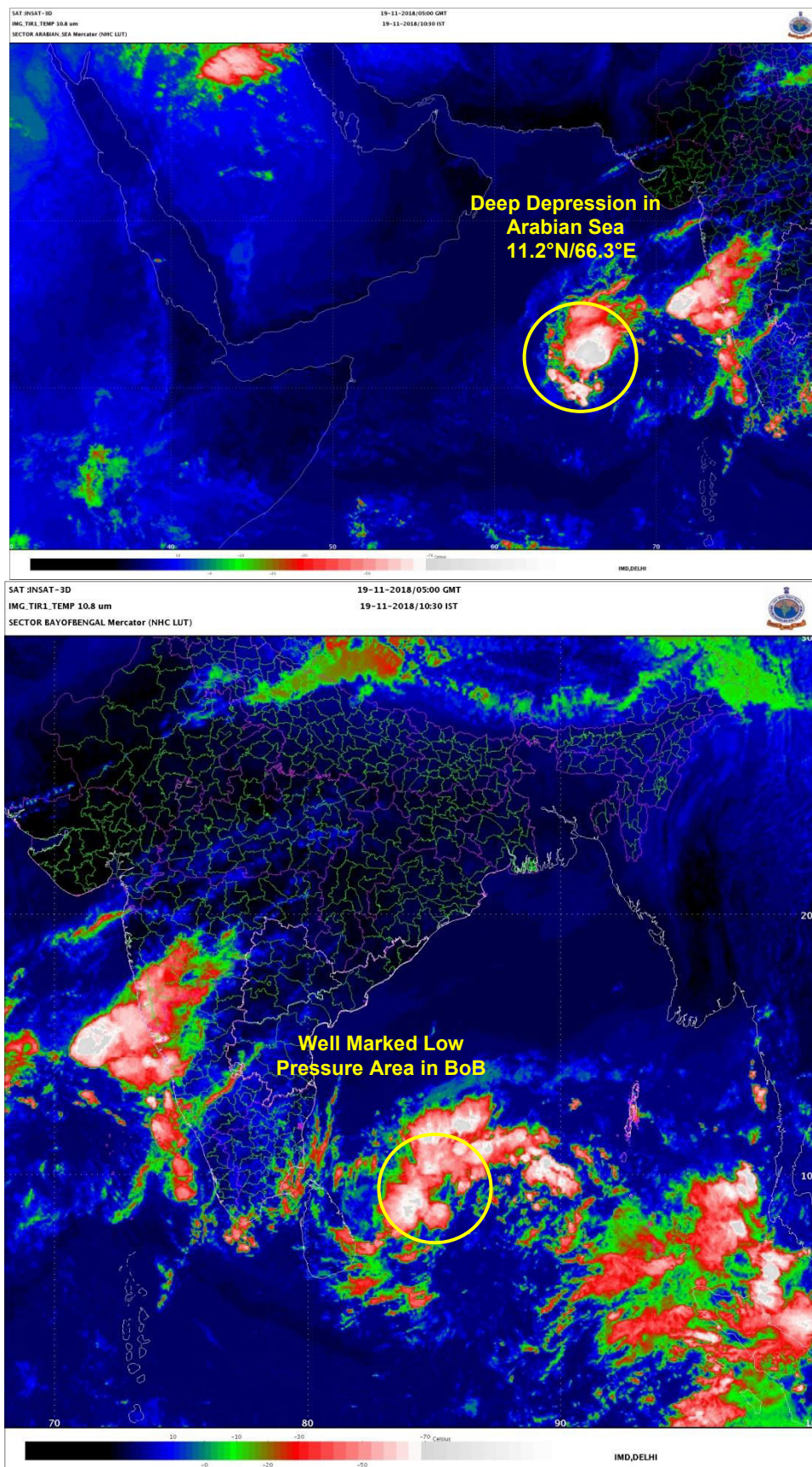
SEA SURFACE TEMPERATURE IS ABOUT 27-29°C OVER THE SYSTEM AREA AND ALSO OVER SOUTHWEST BAY OF BENGAL AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 60-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PART OF SOUTHWEST BAY OF BENGAL. THE LOWER LEVEL CONVERGENCE IS ABOUT 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM AREA. THE LOWER LEVEL VORTICITY IS OF THE ORDER 20-40X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200HPA LEVEL. THE UPPER LEVEL DIVERGENCE IS 10-20X10<sup>-5</sup> SECOND<sup>-1</sup>. VERTICAL WIND SHEAR IS LOW TO MODERATE (5-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION. THUS THE SYSTEM IS LIKELY TO CONCENTRATE INTO A DEPRESSION DURING NEXT 24 HOURS.

**(NEETHA K GOPAL)**  
**SCIENTIST-E, RSMC, NEW DELHI**

---

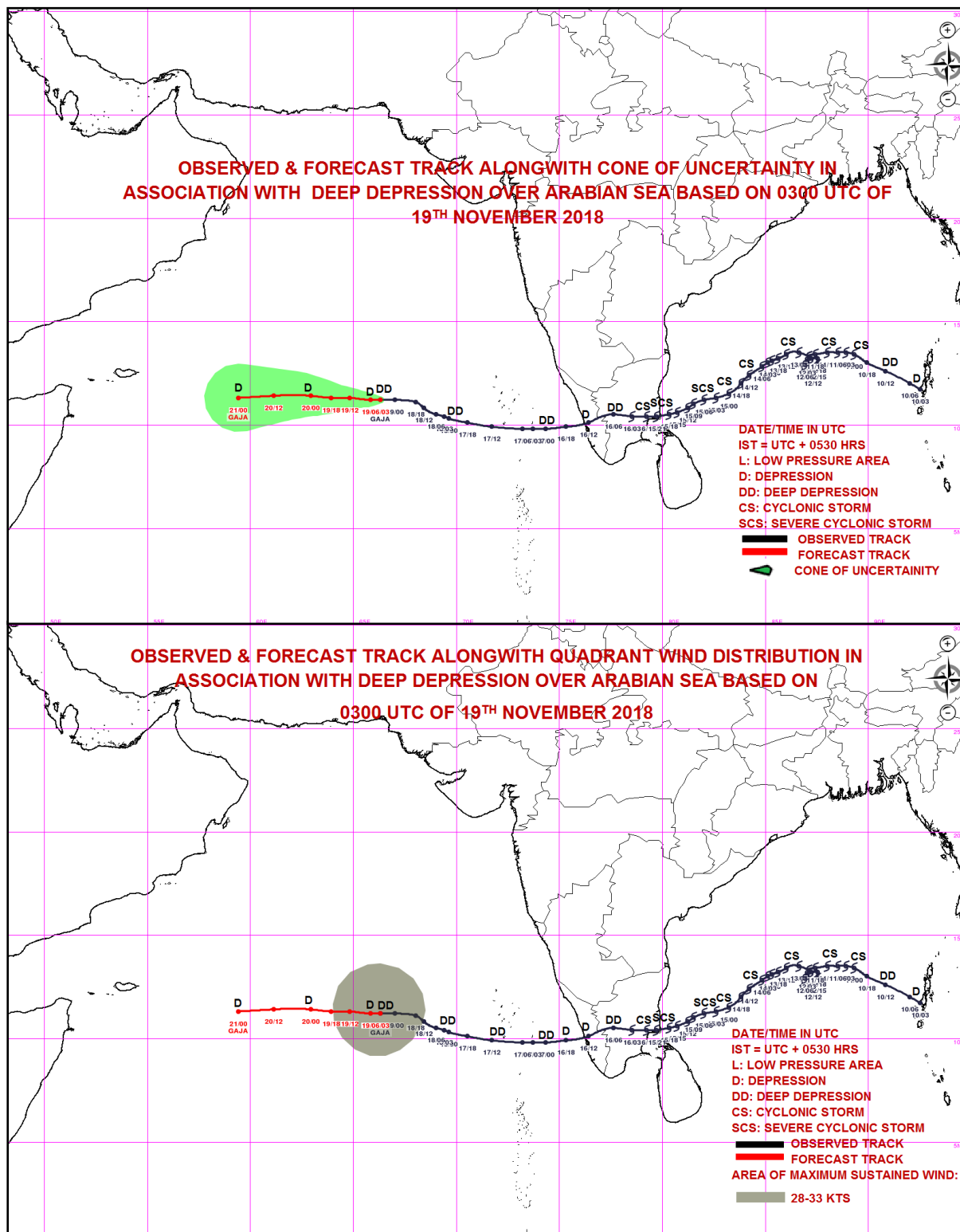
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 19.11.2018 BASED ON 0600 UTC OF 19.11.2018.**

**(I) DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA WEAKENED INTO A DEPRESSION:**

THE DEEP DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED WESTWARDS WITH A SPEED OF 22 KMPH DURING PAST 06 HOURS, WEAKENED INTO A DEPRESSION AND LAY CENTERED AT 0600 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.2°N AND LONGITUDE 65.8°E, ABOUT 730 KM WEST-NORTHWEST OF AGATTI (43312) AND 1300 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A WELL MARKED LOW PRESSURE AREA DURING NEXT 48 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME (UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.11.18/0600	11.2/65.8	45-55 GUSTING TO 65	DEPRESSION
19.11.18/1200	11.3/64.8	45-55 GUSTING TO 65	DEPRESSION
19.11.18/1800	11.3/63.9	40-50 GUSTING TO 60	DEPRESSION
20.11.18/0000	11.4/62.9	40-50 GUSTING TO 60	DEPRESSION
20.11.18/0600	11.4/62.0	35-45 GUSTING TO 55	DEPRESSION
20.11.18/1800	11.3/60.2	35-45 GUSTING TO 55	DEPRESSION
21.11.18/0600	11.2/58.4	25-35 GUSTING TO 45	WELL MARKED LOW PRESSURE AREA

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I.1.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 8.5°N TO 14.5°N AND LONGITUDE 64.0°E TO 96.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1005 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

**(II) WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS SOUTH BAY OF BENGAL**

THE WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL PERSISTED AT 0600 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER THE SAME REGION. IT IS LIKELY TO MOVE WESTWARDS AND CONCENTRATE INTO A DEPRESSION OVER SOUTHWEST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 0600 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ADJOINING INDIAN OCEAN AND SOUTHWEST BAY OF BENGAL BETWEEN LATITUDE 7.5°N TO 12.5°N AND LONGITUDE 83.5°E TO 90.0°E IN ASSOCIATION WITH THE LOW LEVEL CIRCULATION OVER THE AREA.

**PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	-	-	-

**REMARKS:**

**(I) ARABIAN SEA:**

SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 70-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 100X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 10-20X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR IS LOW TO MODERATE (5-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM SHOWS WEAKENING TREND DUE TO DRY AIR INCURSION FROM THE WESTERN SECTOR UPTO SOUTHERN SECTOR. WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER IS GRADUALLY DECREASING AND THERE IS DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

THUS, THE SYSTEM HAS WEAKEN INTO A DEPRESSION DURING NEXT AND IS LIKELY TO MAINTAIN ITS INTENSITY OF DEPRESSION FOR NEXT 24-36 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BECOME UNFAVOURABLE AND WILL LEAD TO DISSIPATION OF THE SYSTEM OVER SEA. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS DURING NEXT 24 HOURS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(II) BAY OF BENGAL:**

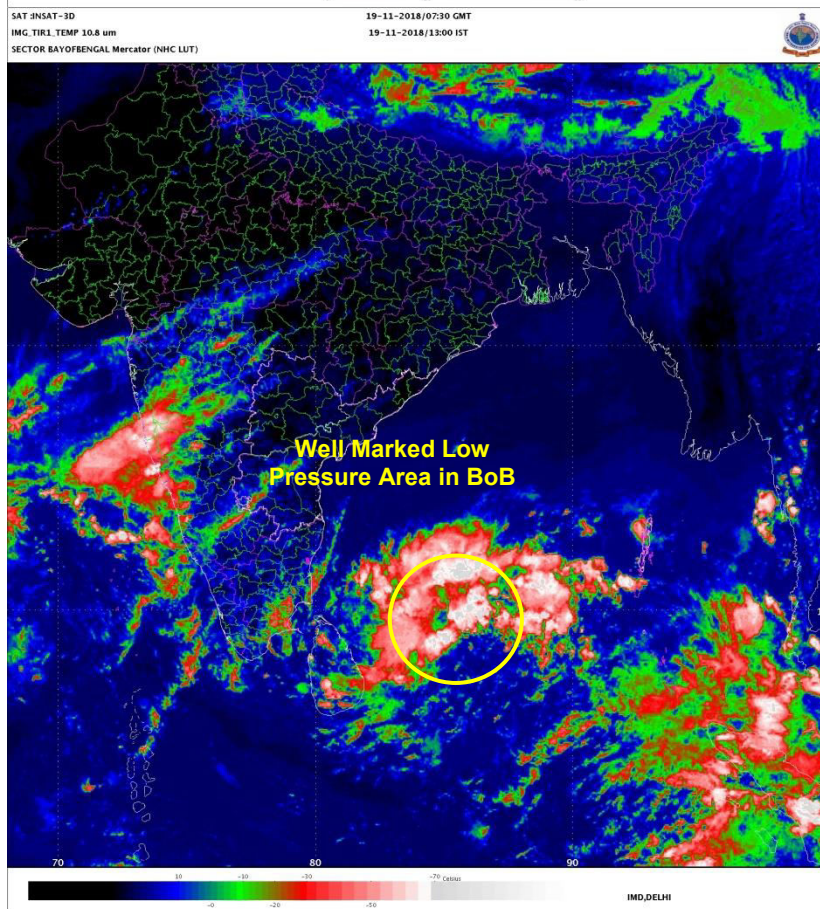
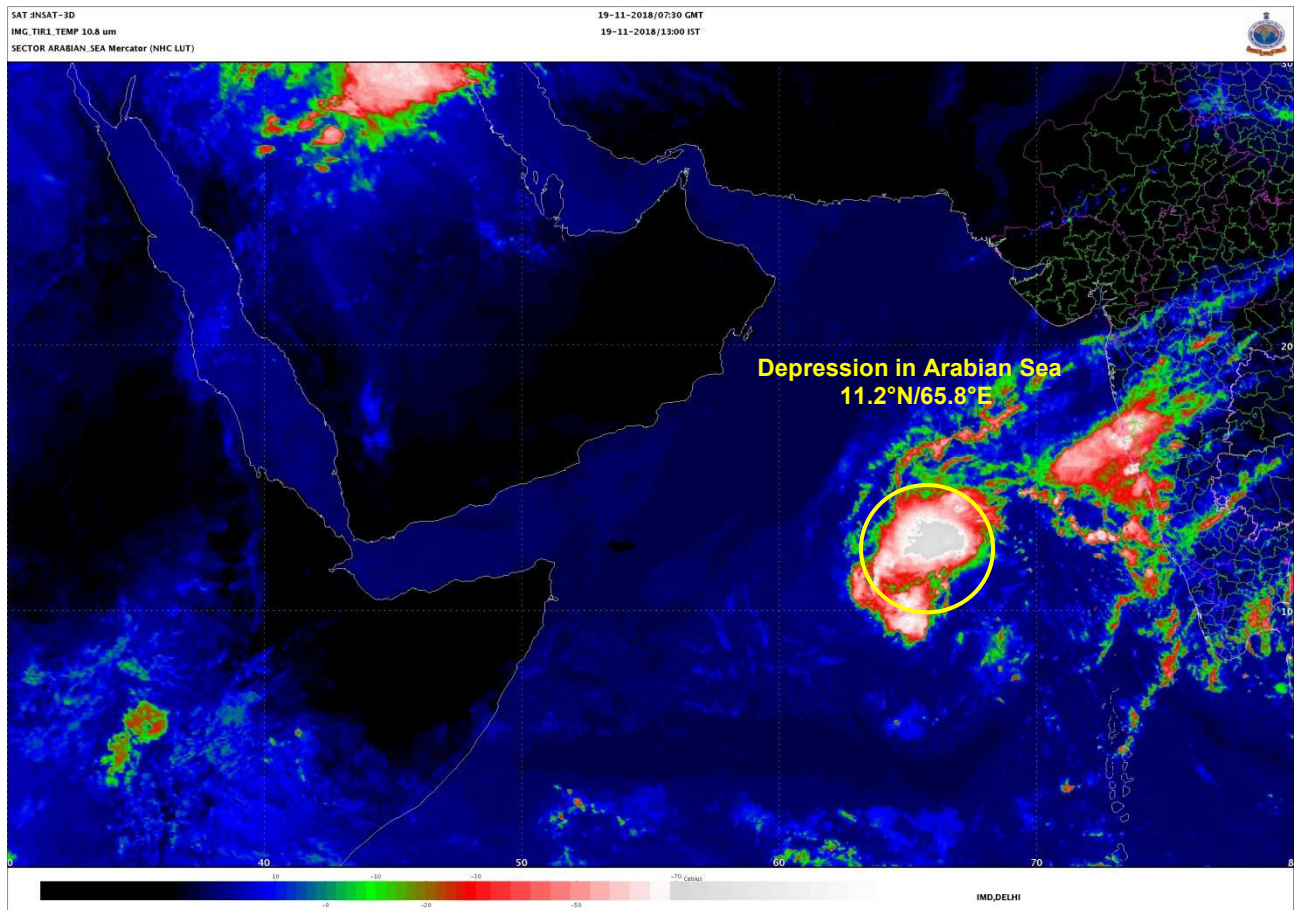
SEA SURFACE TEMPERATURE IS ABOUT 27-29°C OVER THE SYSTEM AREA AND ALSO OVER SOUTHWEST BAY OF BENGAL AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 60-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PART OF SOUTHWEST BAY OF BENGAL. MJO WILL BE IN PHASE 4 WITH VERY LOW AMPLITUDE. THE LOWER LEVEL CONVERGENCE IS ABOUT 10-15X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTHWEST OF THE SYSTEM AREA. THE LOWER LEVEL VORTICITY IS OF THE ORDER 20-40X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200HPA LEVEL. THE UPPER LEVEL DIVERGENCE IS 10-20X10<sup>-5</sup> SECOND<sup>-1</sup>. VERTICAL WIND SHEAR IS LOW TO MODERATE (5-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION. THUS STHE SYSTEM IS LIKELY TO CONCENTRATE INTO A DEPRESSION DURING NEXT 24 HOURS.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

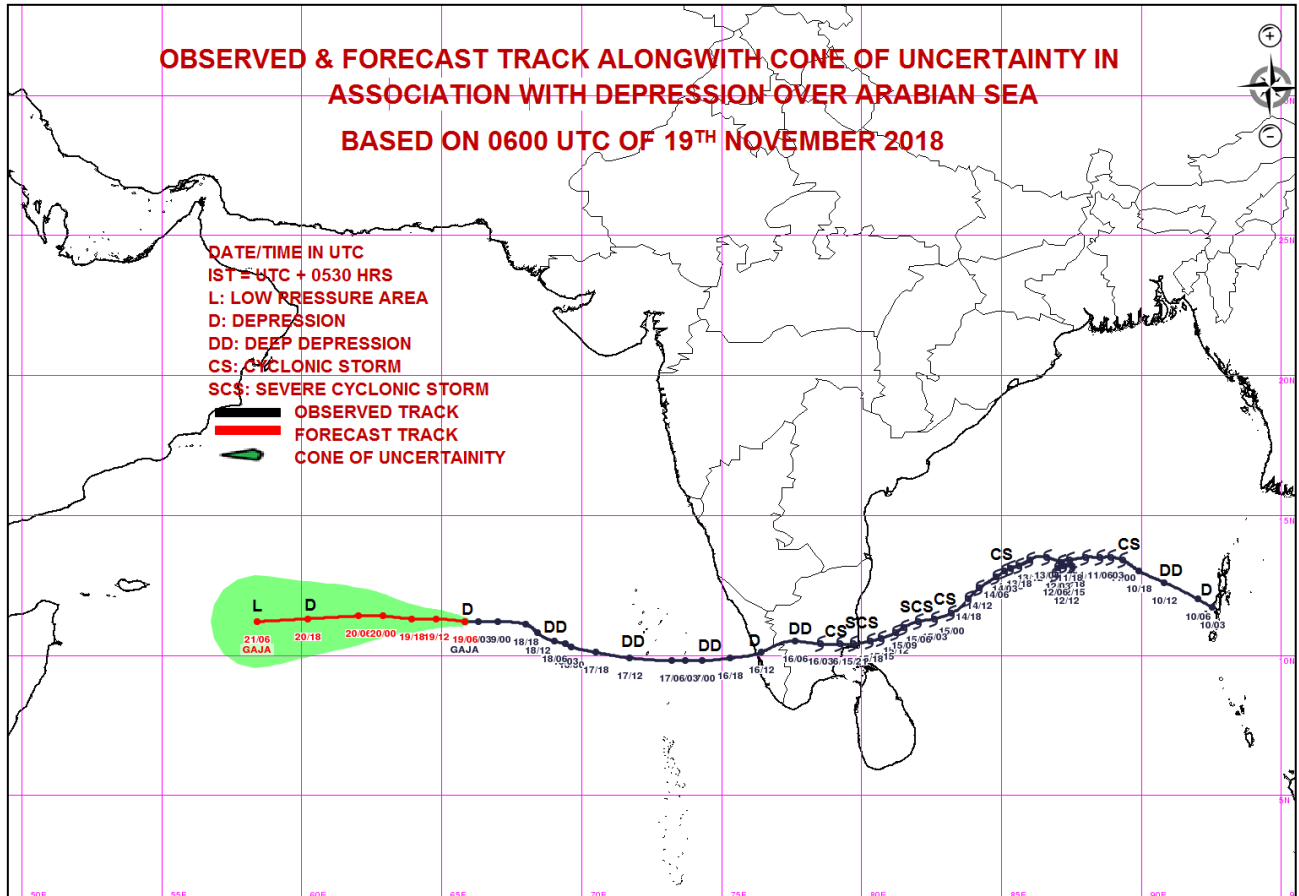
**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



## PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 1500 UTC OF 19.11.2018 BASED ON 1200 UTC OF 19.11.2018.**

**(I) DEPRESSION OVER SOUTHEAST ARABIAN SEA:**

THE DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED WESTWARDS WITH A SPEED OF 21 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 1200 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.2°N AND LONGITUDE 64.6°E, ABOUT 850 KM WEST-NORTHWEST OF AGATTI (43312) AND 1170 KM EAST-SOUTHEAST OF SOCOTRA (41363). IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A WELL MARKED LOW PRESSURE AREA DURING NEXT 12 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.11.18/1200	11.2/64.6	45-55 GUSTING TO 65	DEPRESSION
19.11.18/1800	11.3/63.4	40-50 GUSTING TO 60	DEPRESSION
20.11.18/0000	11.4/62.4	35-45 GUSTING TO 55	DEPRESSION
20.11.18/0600	11.4/61.4	25-35 GUSTING TO 45	WELL MARKED LOW PRESSURE AREA

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, THE INTENSITY OF THE SYSTEM IS C.I.1.5. BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 9.5°N TO 14.5°N AND LONGITUDE 62.5°E TO 68.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 72°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1005 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

A SHIP LOCATED AT LATITUDE 11.3° N/ LONGITUDE 62.8°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1008.6 HPA AND MAXIMUM SUSTAINED SURFACE WIND OF 040°/ 25 KNOTS. ANOTHER A SHIP LOCATED AT LATITUDE 15.6° N/ LONGITUDE 61.5°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1014.3 HPA AND MAXIMUM SUSTAINED SURFACE WIND OF 020°/ 22 KNOTS.

**(II) WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS SOUTH BAY OF BENGAL**

THE WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL PERSISTED AT 1200 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER THE SAME REGION. IT IS LIKELY TO MOVE WESTWARDS AND CONCENTRATE INTO A DEPRESSION OVER SOUTHWEST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1200 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER 2018, SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ADJOINING

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

INDIAN OCEAN AND SOUTHWEST BAY OF BENGAL BETWEEN LATITUDE 9.0°N TO 13.0°N AND LONGITUDE 83.0°E TO 88.0°E IN ASSOCIATION WITH THE LOW LEVEL CIRCULATION OVER THE AREA.

**PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	-	-	-

**REMARKS:**

**(I) ARABIAN SEA:**

SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 70-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND IT DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5-10X10<sup>-5</sup> SECOND<sup>-1</sup> TO THE SOUTH OF THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 50-70X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 5-10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR IS LOW TO MODERATE (5-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM SHOWS WEAKENING TREND DUE TO DRY AIR INCURSION FROM THE WESTERN SECTOR UPTO SOUTHERN SECTOR. WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER IS GRADUALLY DECREASING AND THERE IS DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

SATELLITE IMAGES INDICATE DISORGANISATION OF THE CLOUD CENTRE ASSOCIATED WITH THE SYSTEM. HOWEVER, MULTISAT WIND ESTIMATE INDICATES 25 KNOTS WIND TO THE NORTHWEST SECTOR OF THE SYSTEM CENTRE. ALSO SHIP IN THE NEIGHBOURHOOD OF THE SYSTEM IS REPORTING 25KNOTS WIND AT 1200 UTC. HENCE, THE INTENSITY OF THE SYSTEM IS RETAINED AS DEPRESSION BASED ON THE AVAILABLE OBSERVATIONS, EVENTHOUGH CLOUDS ARE SHOWING DISORGANISATION AND CENTRE IS NOT WELL DEFINED.

THE INTENSITY OF THE SYSTEM IS LIKELY TO BE MAINTAINED AS DEPRESSION FOR NEXT 12 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BECOME UNFAVOURABLE AND WILL LEAD TO DISSIPATION OF THE SYSTEM OVER SEA. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(II) BAY OF BENGAL:**

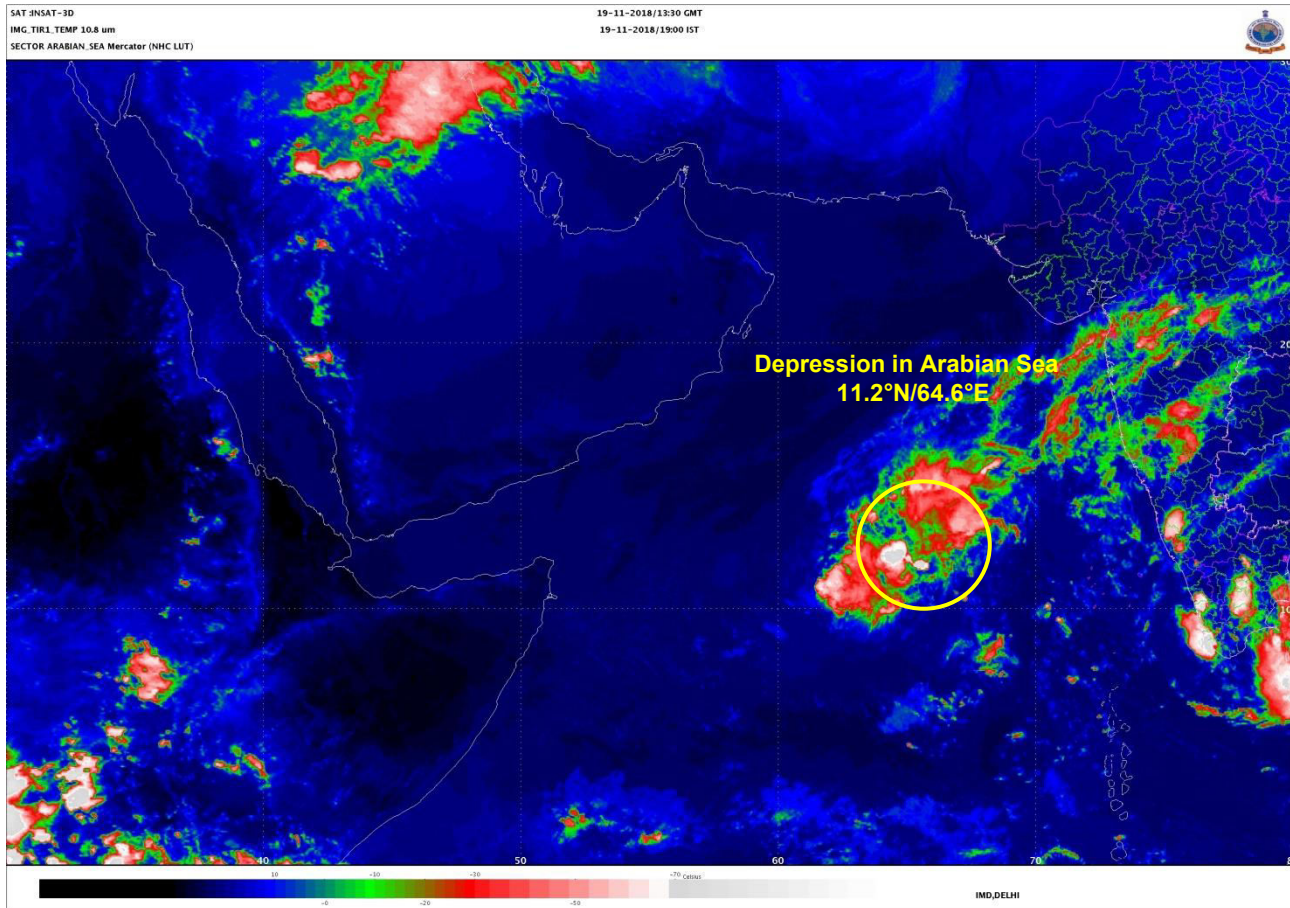
SEA SURFACE TEMPERATURE IS ABOUT 27-29°C OVER THE SYSTEM AREA AND ALSO OVER SOUTHWEST BAY OF BENGAL AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 60-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PART OF SOUTHWEST BAY OF BENGAL. MJO WILL BE IN PHASE 4 WITH VERY LOW AMPLITUDE. THE LOWER LEVEL CONVERGENCE IS ABOUT 5-10X10<sup>-5</sup> SECOND<sup>-1</sup> OVER THE SYSTEM AREA. THE LOWER LEVEL VORTICITY IS OF THE ORDER 20-40X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 200HPA LEVEL. THE UPPER LEVEL DIVERGENCE IS 10-20X10<sup>-5</sup> SECOND<sup>-1</sup>. VERTICAL WIND SHEAR IS LOW TO MODERATE (5-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION. THUS THE SYSTEM IS LIKELY TO CONCENTRATE INTO A DEPRESSION DURING NEXT 24 HOURS.

(NEETHA K GOPAL)  
SCIENTIST-E, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

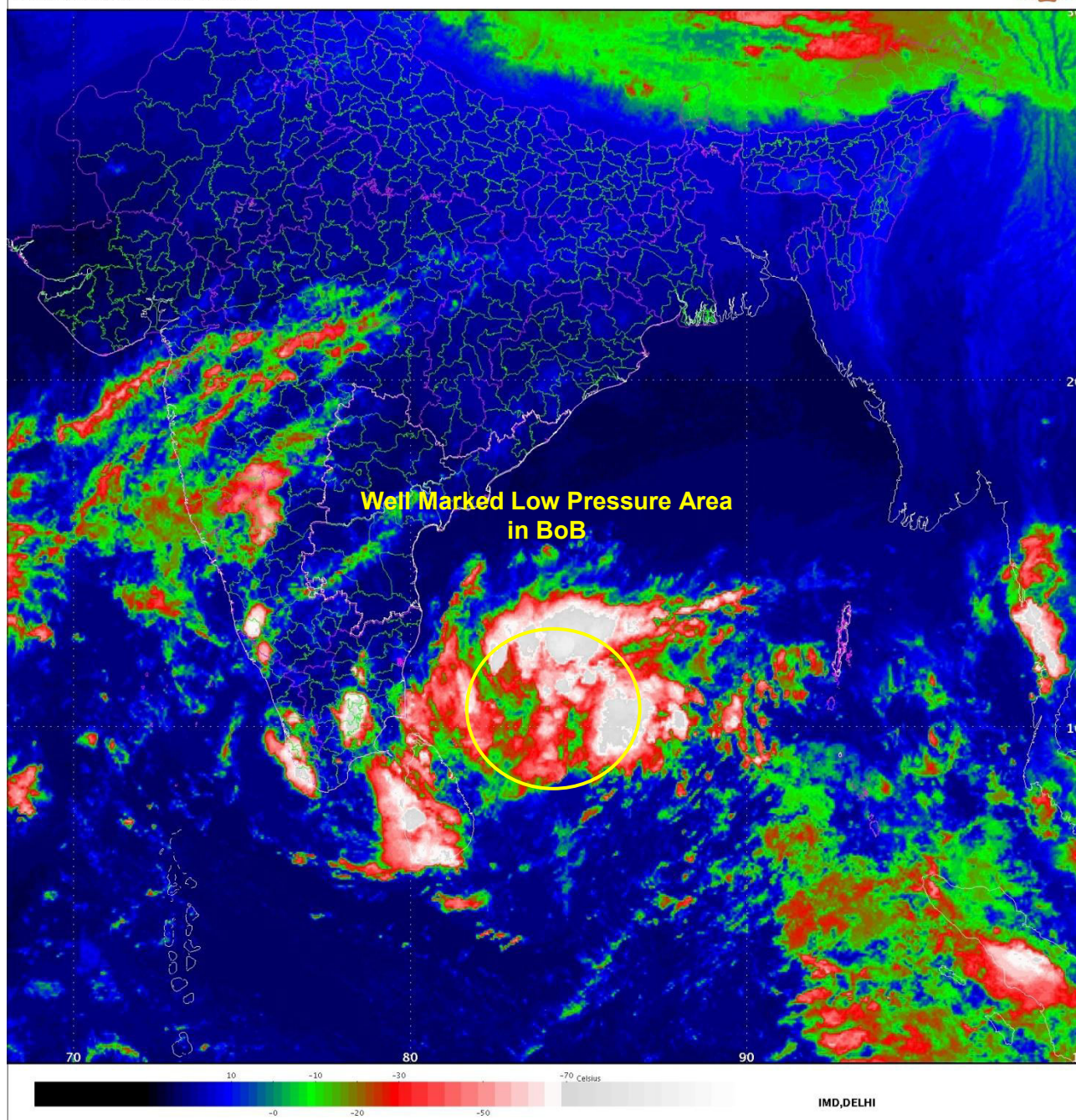


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

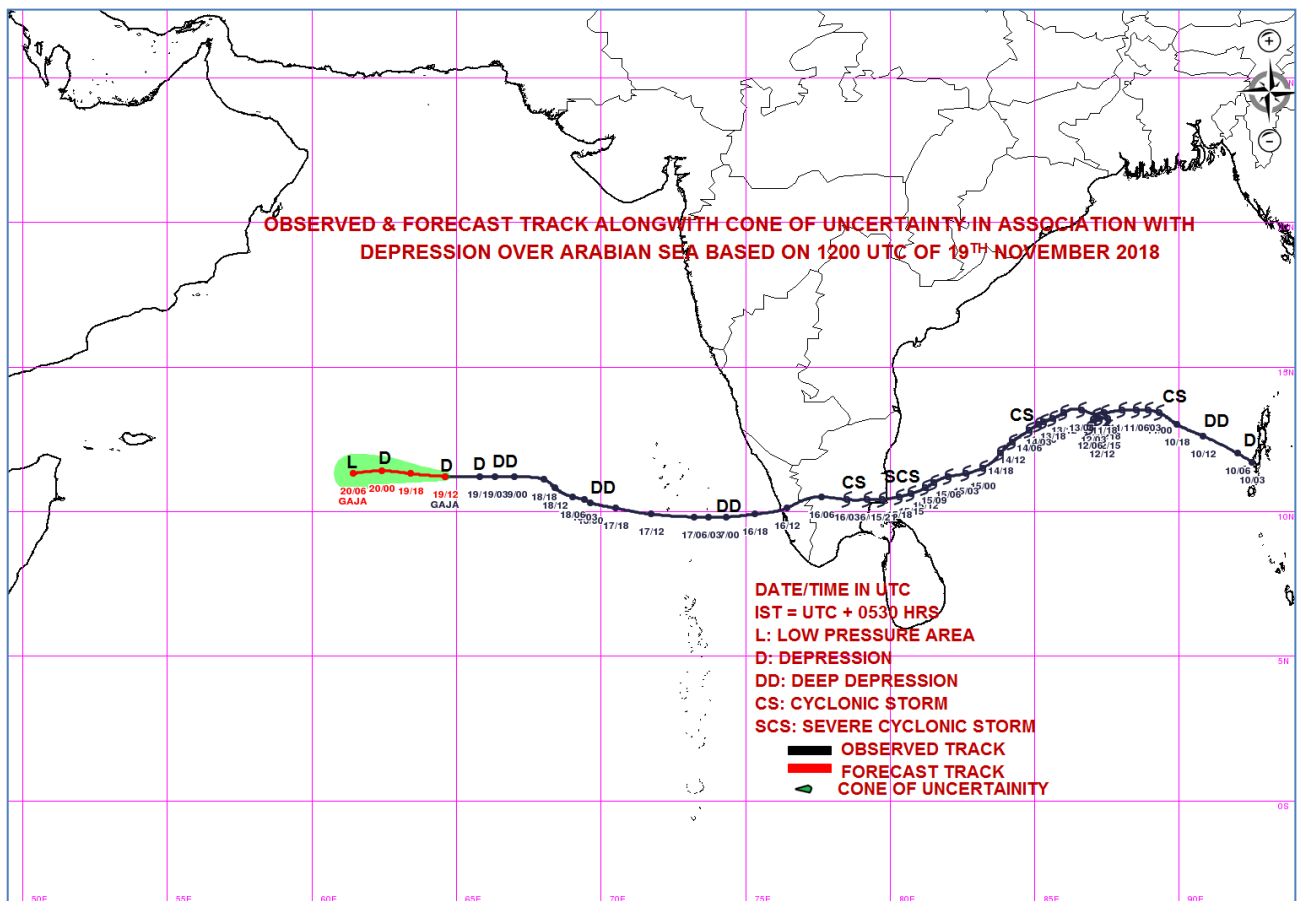




**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 2100 UTC OF 19.11.2018 BASED ON 1800 UTC OF 19.11.2018.**

**(I) DEPRESSION OVER SOUTHWEST AND ADJOINING SOUTHEAST ARABIAN SEA:**

THE DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 21 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 1800 UTC OF 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.3°N AND LONGITUDE 63.4°E, ABOUT 990 KM WEST-NORTHWEST OF AGATTI AND 1040 KM EAST-SOUTHEAST OF SOCOTRA. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A WELL MARKED LOW PRESSURE AREA DURING NEXT 12 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.11.18/1800	11.3/63.4	40-50 GUSTING TO 60	DEPRESSION
20.11.18/0000	11.4/62.4	35-45 GUSTING TO 55	DEPRESSION
20.11.18/0600	11.4/61.4	25-35 GUSTING TO 45	WELL MARKED LOW PRESSURE AREA

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 19<sup>TH</sup> NOVEMBER 2018, THE BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 10°N TO 14.0°N AND LONGITUDE 61.0°E TO 66.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 80°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1005 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

A SHIP LOCATED AT LATITUDE 19.0° N/ LONGITUDE 62.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1015.0 HPA AND MAXIMUM SUSTAINED SURFACE WIND OF 110/08 KNOTS.

**(II) WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS SOUTH BAY OF BENGAL**

THE WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL PERSISTED AT 1800 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER THE SAME REGION. IT IS LIKELY TO MOVE WESTWARDS AND CONCENTRATE INTO A DEPRESSION OVER SOUTHWEST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 19<sup>TH</sup> NOVEMBER 2018, SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ADJOINING INDIAN OCEAN AND SOUTHWEST BAY OF BENGAL BETWEEN LATITUDE 8.0°N TO 15.0°N AND LONGITUDE 80.0°E TO 90.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	-	-	-

**REMARKS:****(I) ARABIAN SEA:**

SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 70-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND IT DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 70X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM SHOWS WEAKENING TREND DUE TO DRY AIR INCURSION FROM THE WESTERN SECTOR UPTO SOUTHERN SECTOR. WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER IS GRADUALLY DECREASING AND THERE IS DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

SATELLITE IMAGES INDICATE DISORGANISATION OF THE CLOUD CENTRE ASSOCIATED WITH THE SYSTEM. HOWEVER, MULTISAT WIND ESTIMATE INDICATES 25 KNOTS WIND TO THE NORTH-NORTHWEST SECTOR OF THE SYSTEM CENTRE. ALSO SHIP IN THE NEIGHBOURHOOD OF THE SYSTEM IS REPORTING 08 KNOTS WIND AT 1800 UTC. HENCE, THE INTENSITY OF THE SYSTEM IS RETAINED AS DEPRESSION BASED ON THE AVAILABLE OBSERVATIONS, EVEN THOUGH CLOUDS ARE SHOWING DISORGANISATION AND CENTRE IS NOT WELL DEFINED.

THE INTENSITY OF THE SYSTEM IS LIKELY TO BE MAINTAINED AS DEPRESSION FOR NEXT 12 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BECOME UNFAVOURABLE AND WILL LEAD TO DISSIPATION OF THE SYSTEM OVER SEA. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(II) BAY OF BENGAL:**

SEA SURFACE TEMPERATURE IS ABOUT 27-29°C OVER THE SYSTEM AREA AND ALSO OVER SOUTHWEST BAY OF BENGAL AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 60-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PART OF SOUTHWEST BAY OF BENGAL. MJO WILL BE IN PHASE 4 WITH VERY LOW AMPLITUDE. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> OVER THE SYSTEM AREA. THE LOWER LEVEL VORTICITY IS OF THE ORDER 40X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500HPA LEVEL. THE UPPER LEVEL DIVERGENCE IS 30X10<sup>-5</sup> SECOND<sup>-1</sup>. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION. THUS THE SYSTEM IS LIKELY TO CONCENTRATE INTO A DEPRESSION DURING NEXT 24 HOURS.

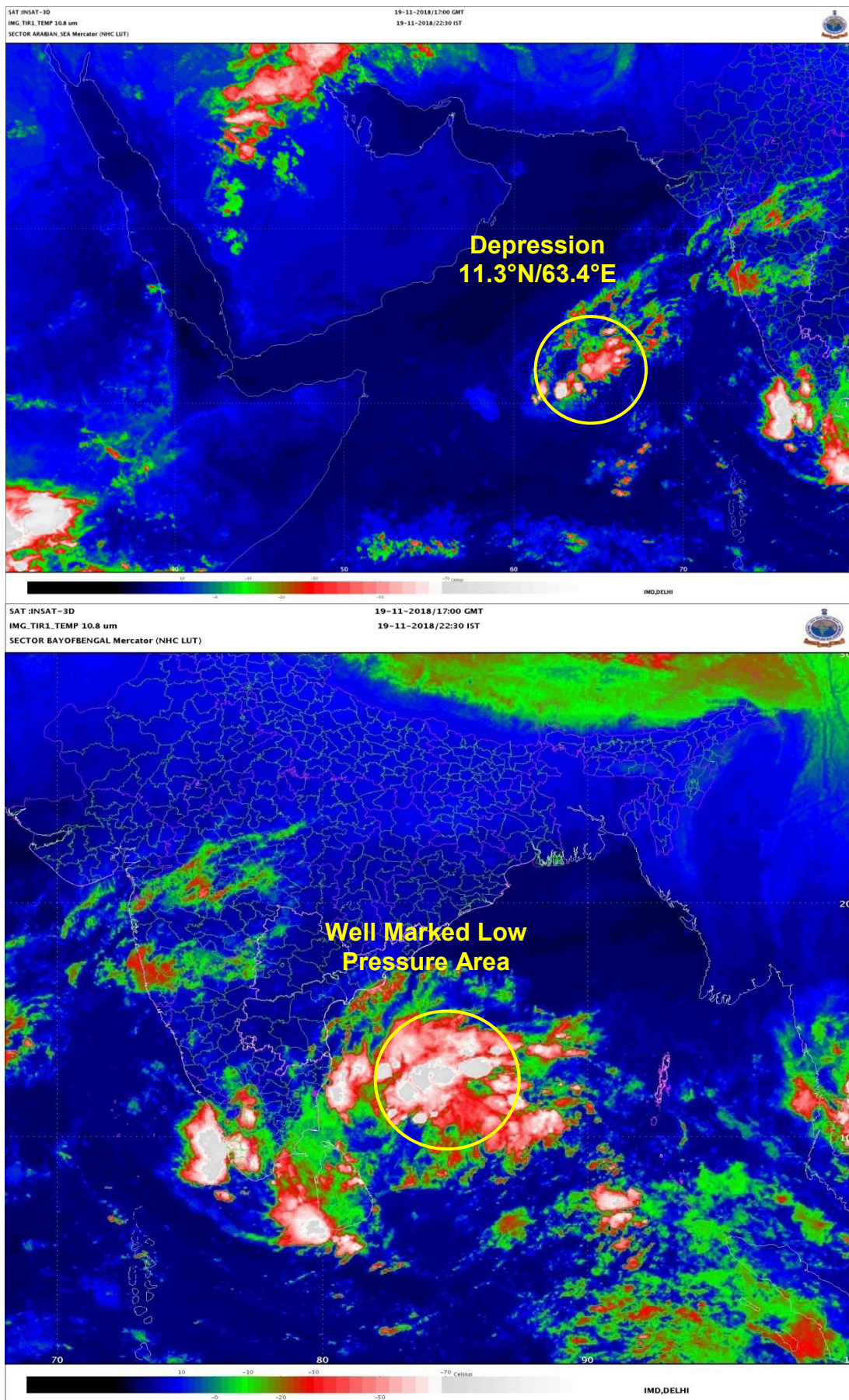
(SHOBHIT KATIYAR)  
SCIENTIST-B, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

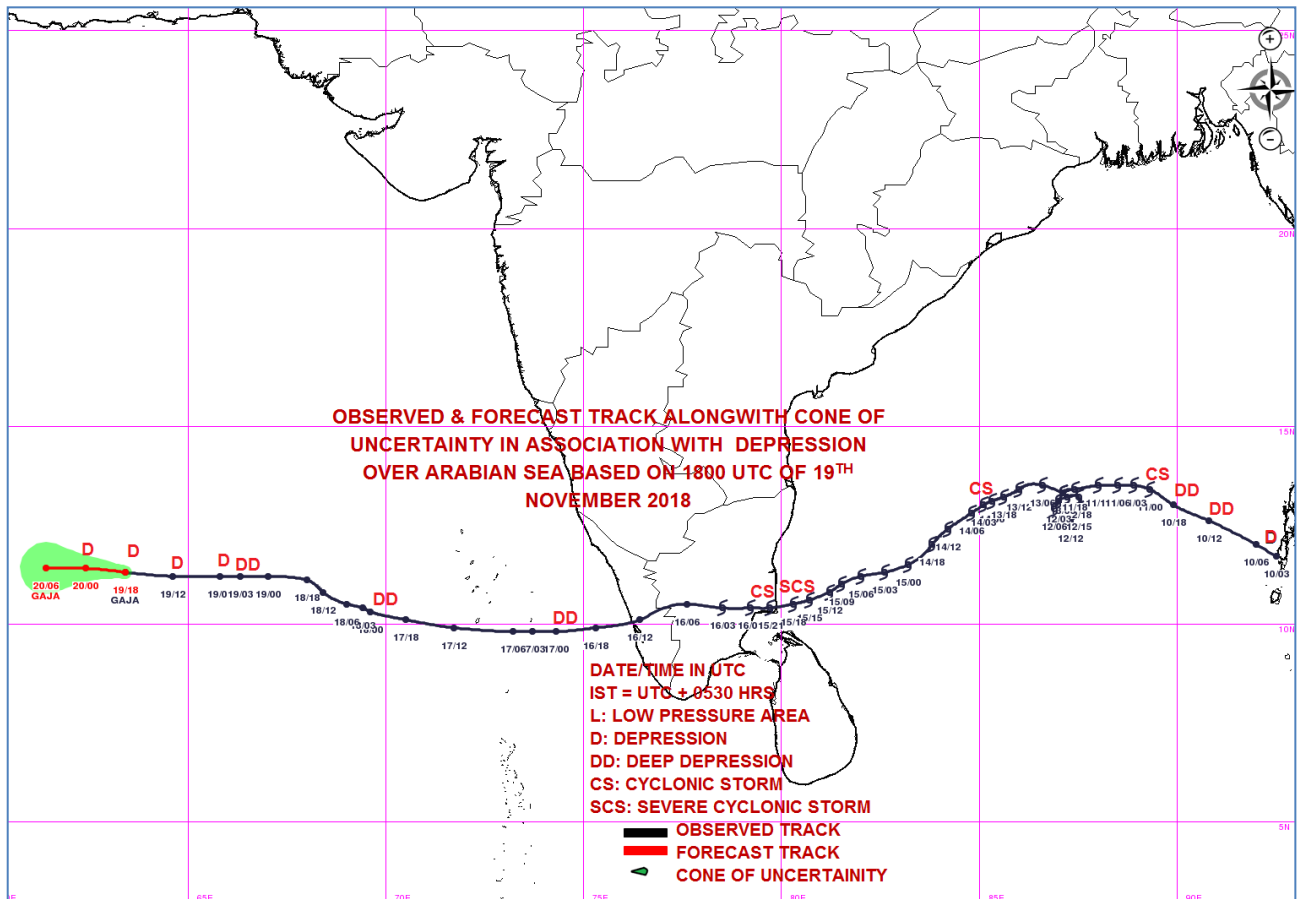




### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%





# **PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI**  
**SPECIAL TROPICAL WEATHER OUTLOOK**

**DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 19.11.2018**

**SPECIAL TROPICAL WEATHER OUTLOOK FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 72 HOURS ISSUED AT 2100 UTC OF 19.11.2018 BASED ON 1800 UTC OF 19.11.2018.**

**(I) DEPRESSION OVER SOUTHWEST AND ADJOINING SOUTHEAST ARABIAN SEA:**

THE DEPRESSION OVER SOUTHEAST ARABIAN SEA MOVED NEARLY WESTWARDS WITH A SPEED OF 21 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 1800 UTC OF 19<sup>TH</sup> NOVEMBER, 2018 OVER SOUTHWEST AND ADJOINING SOUTHEAST ARABIAN SEA NEAR LATITUDE 11.3°N AND LONGITUDE 63.4°E, ABOUT 990 KM WEST-NORTHWEST OF AGATTI AND 1040 KM EAST-SOUTHEAST OF SOCOTRA. IT IS VERY LIKELY TO MOVE NEARLY WESTWARDS AND WEAKEN INTO A WELL MARKED LOW PRESSURE AREA DURING NEXT 12 HOURS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/ TIME(UTC)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.11.18/1800	11.3/63.4	40-50 GUSTING TO 60	DEPRESSION
20.11.18/0000	11.4/62.4	35-45 GUSTING TO 55	DEPRESSION
20.11.18/0600	11.4/61.4	25-35 GUSTING TO 45	WELL MARKED LOW PRESSURE AREA

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 19<sup>TH</sup> NOVEMBER 2018, THE BROKEN LOW AND MEDIUM CLOUDS WITH EMBEDDED MODERATE TO INTENSE CONVECTION LAY OVER ARABIAN SEA BETWEEN LATITUDE 10°N TO 14.0°N AND LONGITUDE 61.0°E TO 66.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 80°C.

THE ESTIMATED CENTRAL PRESSURE IS ABOUT 1005 HPA AND THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 25 KNOTS GUSTING TO 35 KNOTS. STATE OF SEA IS ROUGH TO VERY ROUGH AROUND THE SYSTEM CENTER.

A SHIP LOCATED AT LATITUDE 19.0° N/ LONGITUDE 62.2°E REPORTED A MEAN SEA LEVEL PRESSURE OF 1015.0 HPA AND MAXIMUM SUSTAINED SURFACE WIND OF 110/08 KNOTS.

**(II) WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS SOUTH BAY OF BENGAL**

THE WELL MARKED LOW PRESSURE AREA OVER CENTRAL PARTS OF SOUTH BAY OF BENGAL PERSISTED AT 1800 UTC OF TODAY, THE 19<sup>TH</sup> NOVEMBER, 2018 OVER THE SAME REGION. IT IS LIKELY TO MOVE WESTWARDS AND CONCENTRATE INTO A DEPRESSION OVER SOUTHWEST BAY OF BENGAL & ADJOINING EQUATORIAL INDIAN OCEAN DURING NEXT 24 HOURS.

AS PER THE SATELLITE IMAGERY BASED ON 1800 UTC OF 19<sup>TH</sup> NOVEMBER 2018, SCATTERED LOW AND MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LAY OVER SOUTHEAST BAY OF BENGAL AND ADJOINING INDIAN OCEAN AND SOUTHWEST BAY OF BENGAL BETWEEN LATITUDE 8.0°N TO 15.0°N AND LONGITUDE 80.0°E TO 90.0°E. THE MINIMUM CLOUD TOP TEMPERATURE IS MINUS 86°C.

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

**PROBABILITY OF CYCLOGENESIS DURING NEXT 120 HRS:**

24 HOURS	24-48 HOURS	48-72 HOURS	72-96 HOURS	96-120 HOURS
LOW	MODERATE	-	-	-

**REMARKS:****(I) ARABIAN SEA:**

SEA SURFACE TEMPERATURE IS ABOUT 29-30°C AROUND SYSTEM CENTER AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 70-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND IT DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> TO THE WEST OF 65° E. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTER. THE LOWER LEVEL VORTICITY IS OF THE ORDER 70X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500 HPA. THE UPPER LEVEL DIVERGENCE IS 10X10<sup>-5</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM SHOWS WEAKENING TREND DUE TO DRY AIR INCURSION FROM THE WESTERN SECTOR UPTO SOUTHERN SECTOR. WARM MOIST AIR ADVECTION FROM THE SOUTHEAST OF THE SYSTEM CENTER IS GRADUALLY DECREASING AND THERE IS DRY AIR INCURSION TO THE WEST OF THE SYSTEM. ALSO, WATER VAPOUR IMAGERY INDICATES DRY MID LEVEL ATMOSPHERE.

SATELLITE IMAGES INDICATE DISORGANISATION OF THE CLOUD CENTRE ASSOCIATED WITH THE SYSTEM. HOWEVER, MULTISAT WIND ESTIMATE INDICATES 25 KNOTS WIND TO THE NORTH-NORTHWEST SECTOR OF THE SYSTEM CENTRE. ALSO SHIP IN THE NEIGHBOURHOOD OF THE SYSTEM IS REPORTING 08 KNOTS WIND AT 1800 UTC. HENCE, THE INTENSITY OF THE SYSTEM IS RETAINED AS DEPRESSION BASED ON THE AVAILABLE OBSERVATIONS, EVEN THOUGH CLOUDS ARE SHOWING DISORGANISATION AND CENTRE IS NOT WELL DEFINED.

THE INTENSITY OF THE SYSTEM IS LIKELY TO BE MAINTAINED AS DEPRESSION FOR NEXT 12 HOURS. THEREAFTER, THE ENVIRONMENTAL FEATURES WILL BECOME UNFAVOURABLE AND WILL LEAD TO DISSIPATION OF THE SYSTEM OVER SEA. THE SYSTEM WILL CONTINUE TO MOVE NEARLY WESTWARDS.

MOST OF THE NWP MODELS ARE IN AGREEMENT WITH THE ABOVE PREDICTED MOVEMENT AND INTENSITY OF THE SYSTEM.

**(II) BAY OF BENGAL:**

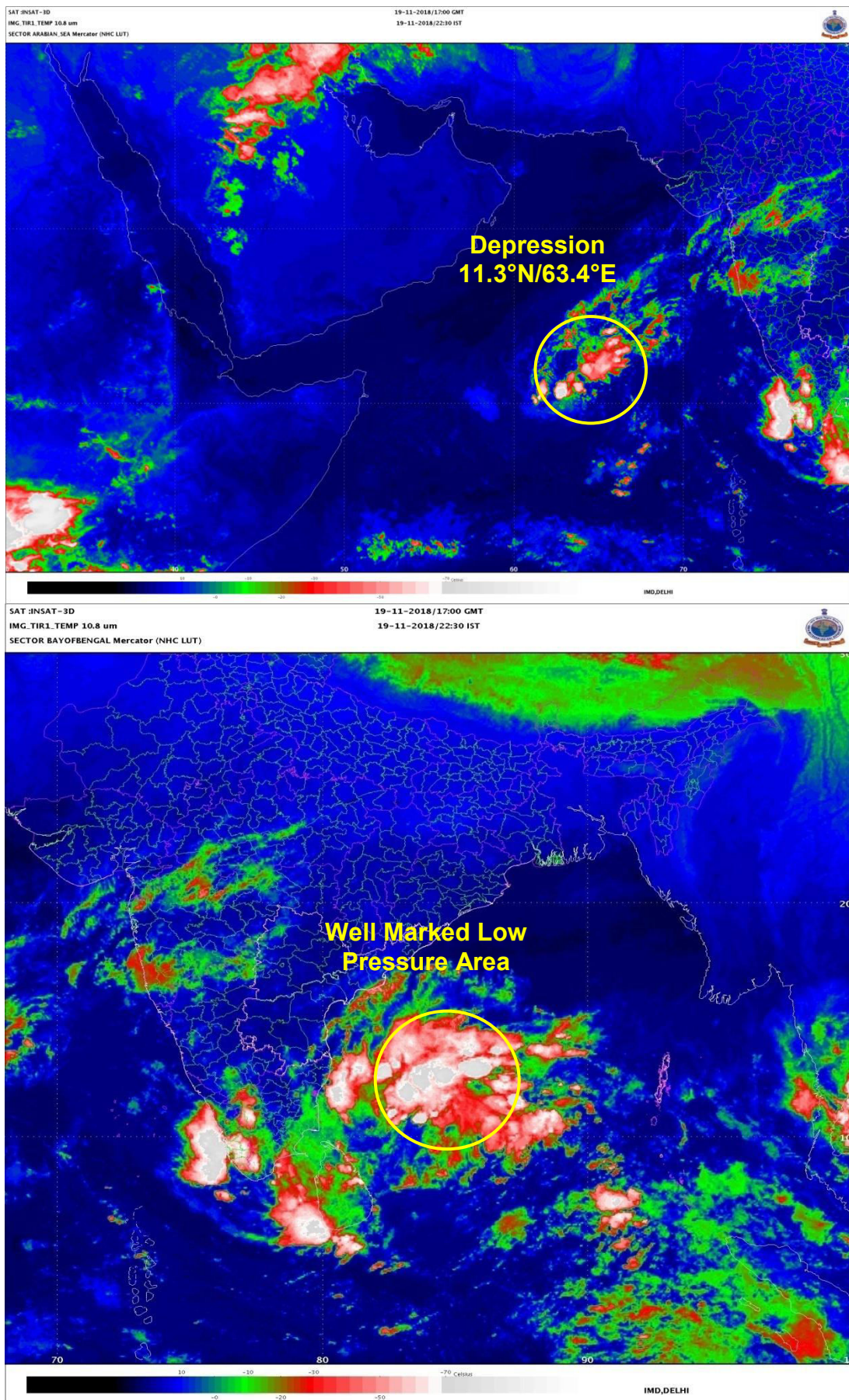
SEA SURFACE TEMPERATURE IS ABOUT 27-29°C OVER THE SYSTEM AREA AND ALSO OVER SOUTHWEST BAY OF BENGAL AND TROPICAL OCEAN HEAT CONTENT (OHC) IS 60-80 KJ/CM<sup>2</sup> AROUND THE SYSTEM CENTER AND DECREASES TO LESS THAN 50 KJ/CM<sup>2</sup> OVER WESTERN PART OF SOUTHWEST BAY OF BENGAL. MJO WILL BE IN PHASE 4 WITH VERY LOW AMPLITUDE. THE LOWER LEVEL CONVERGENCE IS ABOUT 5X10<sup>-5</sup> SECOND<sup>-1</sup> OVER THE SYSTEM AREA. THE LOWER LEVEL VORTICITY IS OF THE ORDER 40X10<sup>-6</sup> SECOND<sup>-1</sup> AROUND THE SYSTEM CENTRE. POSITIVE VORTICITY FIELD EXTENDS UPTO 500HPA LEVEL. THE UPPER LEVEL DIVERGENCE IS 30X10<sup>-5</sup> SECOND<sup>-1</sup>. VERTICAL WIND SHEAR IS LOW TO MODERATE (10-15 KNOTS) AROUND THE SYSTEM CENTRE AND ALSO ALONG THE FORECAST TRACK. TOTAL PRECIPITABLE WATER IMAGE INDICATES THE SYSTEM IS EXPERIENCING WARM MOIST AIR ADVECTION. THUS THE SYSTEM IS LIKELY TO CONCENTRATE INTO A DEPRESSION DURING NEXT 24 HOURS.

(SHOBHIT KATIYAR)  
SCIENTIST-B, RSMC, NEW DELHI

---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**

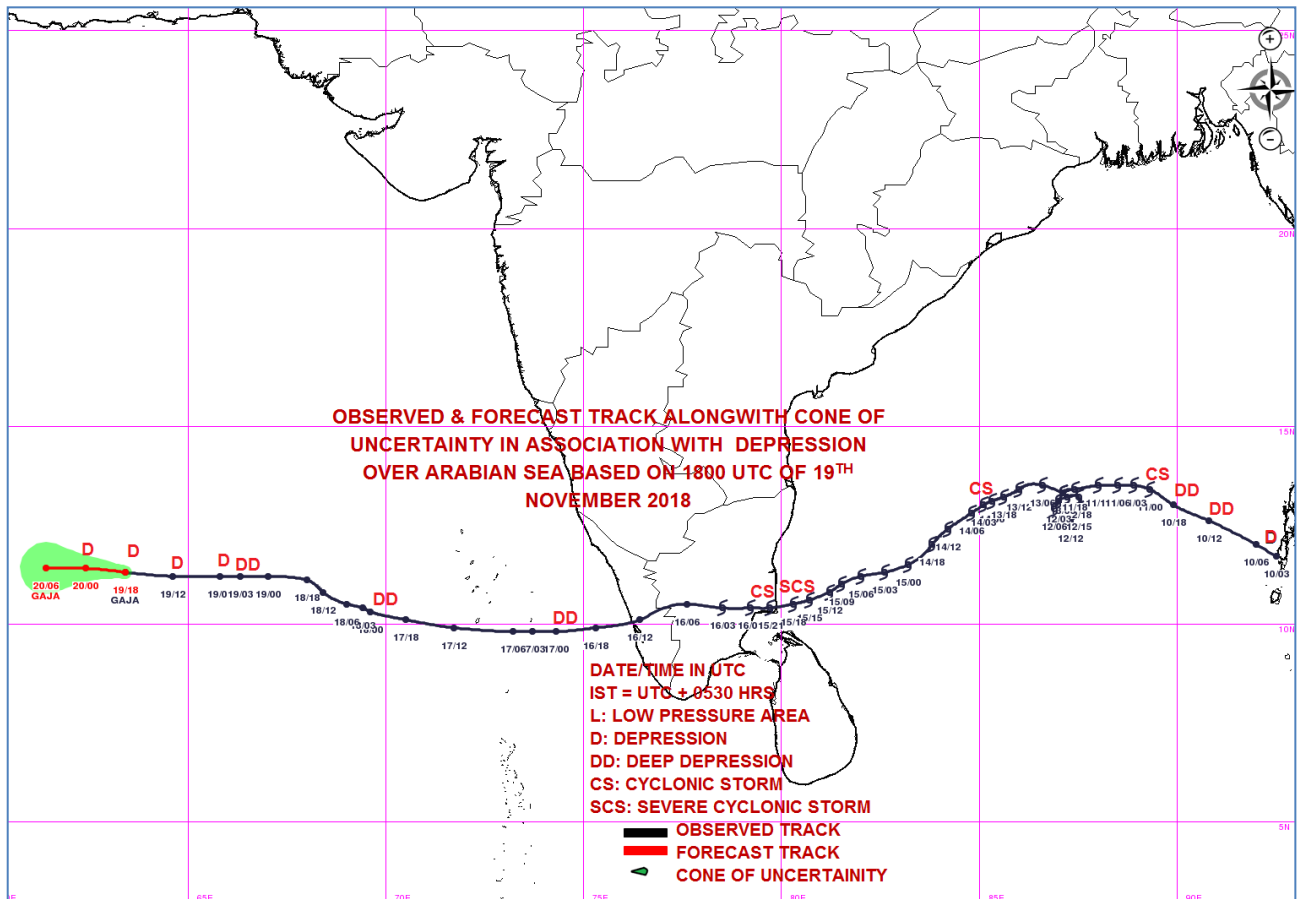


---

**PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)**

**NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%**





#### PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%