



**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<br>(Lat. °N/ long. °E) | Maximum sustained surface<br>wind speed (Kmph) | Category of cyclonic<br>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.

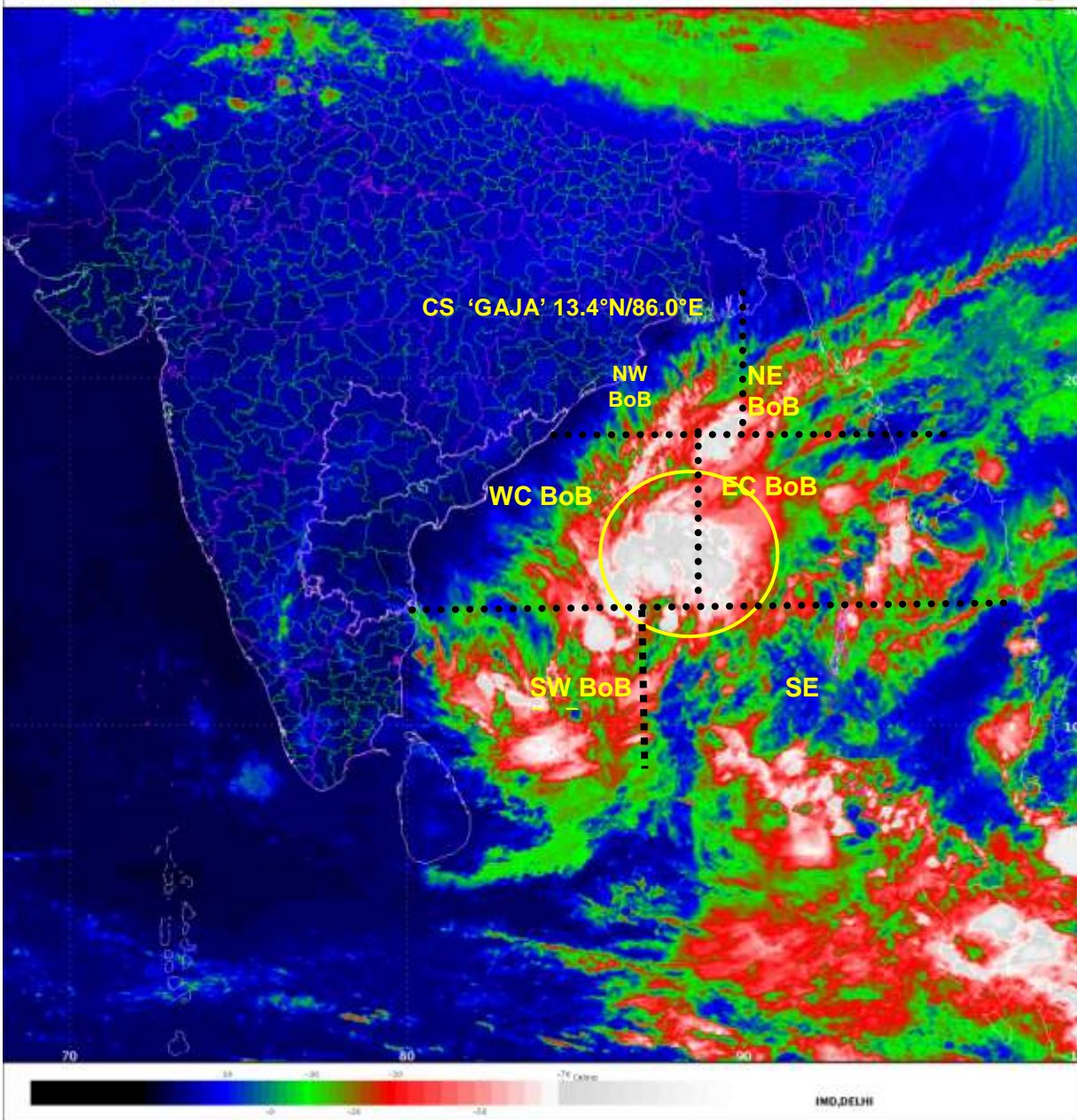
THERE IS DIVERGENCE AMONGST THE MODEL GUIDANCE ABOUT THE INTENSITY OF THE SYSTEM AT THE TIME OF LANDFALL. ECMWF, IMD GFS, AND NCEP MODELS INDICATE THE SYSTEM TO BE DEPRESSION AT THE TIME OF LANDFALL, WHEREAS NCUM AND HWRF MODELS INDICATE THE SYSTEM WILL CROSS COAST AS A CYCLONIC STORM.

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

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

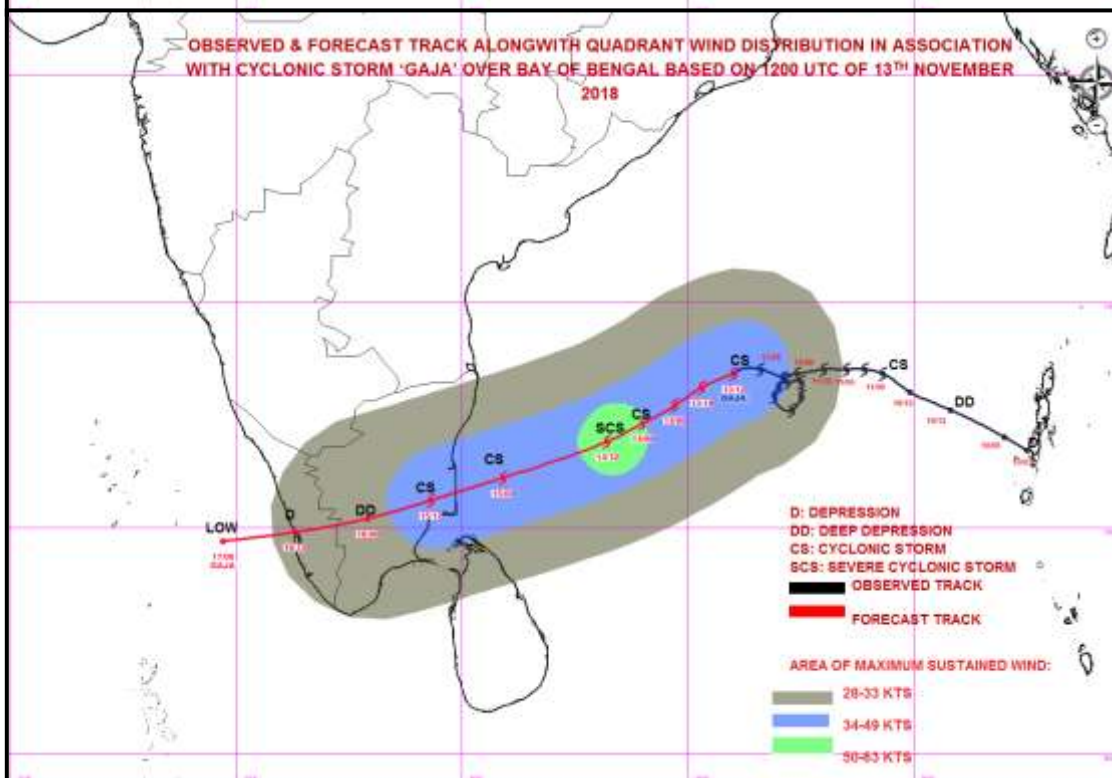
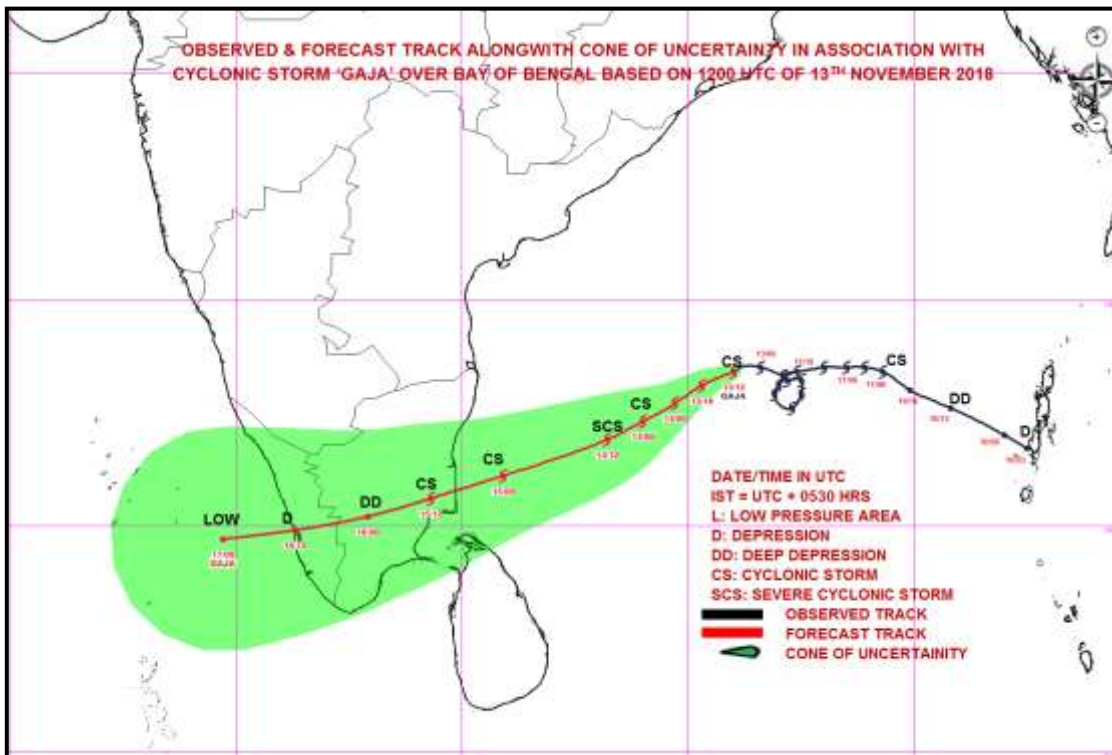
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