



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

FROM: RSMC TROPICAL CYCLONES NEW DELHI DATED 09.12.2022

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)
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 0900 UTC OF 09.12.2022 BASED ON 0600 UTC OF 09.12.2022

SUBJECT: THE CYCLONIC STORM “MANDOUS” PRONOUNCED AS “MAN-DOUS” OVER SOUTHWEST BAY OF BENGAL (CYCLONE WARNING: NORTH TAMILNADU, PUDUCHERRY AND SOUTH ANDHRA PRADESH COASTS)

THE CYCLONIC STORM “**MANDOUS**” PRONOUNCED AS “**MAN-DOUS**” OVER SOUTHWEST BAY OF BENGAL MOVED NORTHWESTWARDS WITH A SPEED OF 10 KMPH DURING PAST 06 HOURS AND LAY CENTERED AT 0600UTC OF 09TH DECEMBER, 2022 OVER SOUTHWEST BAY OF BENGAL OFF NORTH TAMILNADU AND PUDUCHERRY COASTS NEAR LATITUDE 11.4°N AND LONGITUDE 81.3°E, ABOUT 310 KM NORTH OF TRINCOMALEE (43418), 230 KM NORTH-NORTHEAST OF JAFFNA (43404), 160 KM EAST-NORTHEAST OF KARAİKAL(43346), 180KM SOUTHEAST OF MAMALLAPURAM (MAHABALIPURAM) ABOUT 210 KM SOUTH-SOUTHEAST OF CHENNAI(43279). THE CYCLONE IS BEING MONITORED BY DOPPLER WEATHER RADARS OF KARAİKAL AND CHENNAI.

IT IS VERY LIKELY TO MOVE NEARLY NORTHWESTWARDS AND CROSS NORTH TAMILNADU, PUDUCHERRY AND ADJOINING SOUTH ANDHRA PRADESH COASTS BETWEEN PUDUCHERRY AND SRIHARIKOTA AROUND MAMALLAPURAM (MAHABALIPURAM) AS A CYCLONIC STORM WITH A MAXIMUM SUSTAINED WIND SPEED OF 65-75 KMPH GUSTING TO 85 KMPH DURING 1800 TO 2100 UTC OF 09TH DECEMBER

FORECAST TRACK AND INTENSITY ARE GIVEN BELOW:

| DATE/TIME(UTC) | POSITION (LAT. °N/ LONG. °E) | MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH) | CATEGORY OF CYCLONIC DISTURBANCE |
|----------------|------------------------------|---|----------------------------------|
| 09.12.22/0600 | 11.4/81.3 | 80-90 GUSTING TO 100 | CYCLONIC STORM |
| 09.12.22/1200 | 12.0/80.7 | 70-80 GUSTING TO 90 | CYCLONIC STORM |
| 09.12.22/1800 | 12.4/80.3 | 65-75 GUSTING TO 85 | CYCLONIC STORM |
| 10.12.22/0000 | 12.7/80.0 | 55-65 GUSTING TO 75 | DEEP DEPRESSION |
| 10.12.22/0600 | 12.9/79.7 | 40-50 GUSTING TO 60 | DEPRESSION |

Cloud distribution: (a) Isolated: <25%, Scattered:25-50%, Broken: 51-75%, Solid:>75%, Convection Intensity: (a) Weak: Cloud Top Temperature (CTT) >-25°C, (b) Moderate: CTT: - 25°C to -40°C, (c) Intense: CTT: - 41°C to -70°C and (d) Very Intense: : Less than -70°C
PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION): NIL: 0%, LOW: 1-33%, , MODERATE: 34-66% AND HIGH: 67-100%
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AS PER INSAT 3D IMAGERY, CURRENT INTENSITY IS T3.0/3.5 AND SHOWS CURVED BAND PATTERN. THE ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION LIES OVER SOUTH WEST BAY OF BENGAL BETWEEN AREA LAT 8.0 DEG N TO 14.0 DEG N AND WEST OF LONG 82.5 DEG E OVER TAMILNADU, GULF OF MANNAR, PALK STRAIT AND SRI LANKA. MINIMUM CLOUD TOP TEMPERATURE (CTT) IS MINUS 93 DEG CEL.

THE MAXIMUM SUSTAINED SURFACE WIND SPEED IS 45 KNOTS GUSTING TO 55 KNOTS. THE ESTIMATED CENTRAL PRESSURE IS ABOUT 994 HPA. SEA CONDITION IS HIGH OVER SOUTHWEST BAY OF BENGAL AND ROUGH TO VERY ROUGH OVER ADJOINING AREAS OF WEST CENTRAL BAY OF BENGAL AND GULF OF MANNAR.

REMARKS:

THE MADDEN JULIAN OSCILLATION (MJO) INDEX CURRENTLY LIES IN PHASE 3 AND WILL REMAIN THERE TILL 9TH DECEMBER. SEA SURFACE TEMPERATURE (SST) IS AROUND 27°C-28°C OVER SOUTHWEST AND CENTRAL BOB AND ALONG AND OFF NORTH TAMILNADU AND ADJOINING ANDHRA PRADESH COASTS. ALSO THE OCEAN HEAT CONTENT (OHC) IS 50-80 KJ/CM² OVER SOUTHWEST BOB AND LESS THAN 50 KJ/CM² OVER WESTCENTRAL BOB. THERE IS WARM AIR ADVECTION TO THE SYSTEM FROM THE SOUTHERN SECTOR WITH REDUCING TREND.

AT 0600 UTC OF 9TH DEC, CHENNAI(43279) REPORTED MEAN SEA LEVEL PRESSURE OF 1006.5 HPA AND WIND DIRECTION/SPEED AS 340°/12 KNOTS, PUDUCHERRY(43331) REPORTED MEAN SEA LEVEL PRESSURE OF 1004 HPA AND WIND DIRECTION/SPEED AS 340°/8.0 KNOTS, NAGAPPTINAM(43347) REPORTED MEAN SEA LEVEL PRESSURE OF 1003 HPA AND WIND DIRECTION/SPEED AS 290°/9 KNOTS, KARAIKAL(43346) REPORTED MEAN SEA LEVEL PRESSURE OF 1006 HPA AND WIND DIRECTION/SPEED AS 290°/11 KT KNOTS AND CUDDALORE(43329) REPORTED MEAN SEA LEVEL PRESSURE OF 1003 HPA AND WIND DIRECTION/SPEED AS 340°/8 KNOTS. THERE HAS BEEN A PRESSURE FALL IN LAST 24 HOURS(P24) OF -3.0 HPA TO -5.0 HPA IN THESE STATIONS OVER NORTH TAMIL NADU COAST WITH PRESSURE DEPARTURE FROM NORMAL OF -8.0 TO -10.0. THE HIGHEST PRESSURE FALL IS -5.1 HPA AND PRESSURE DEPARTURE FROM NORMAL IS -10.4 HPA AT CUDDALORE(43329).

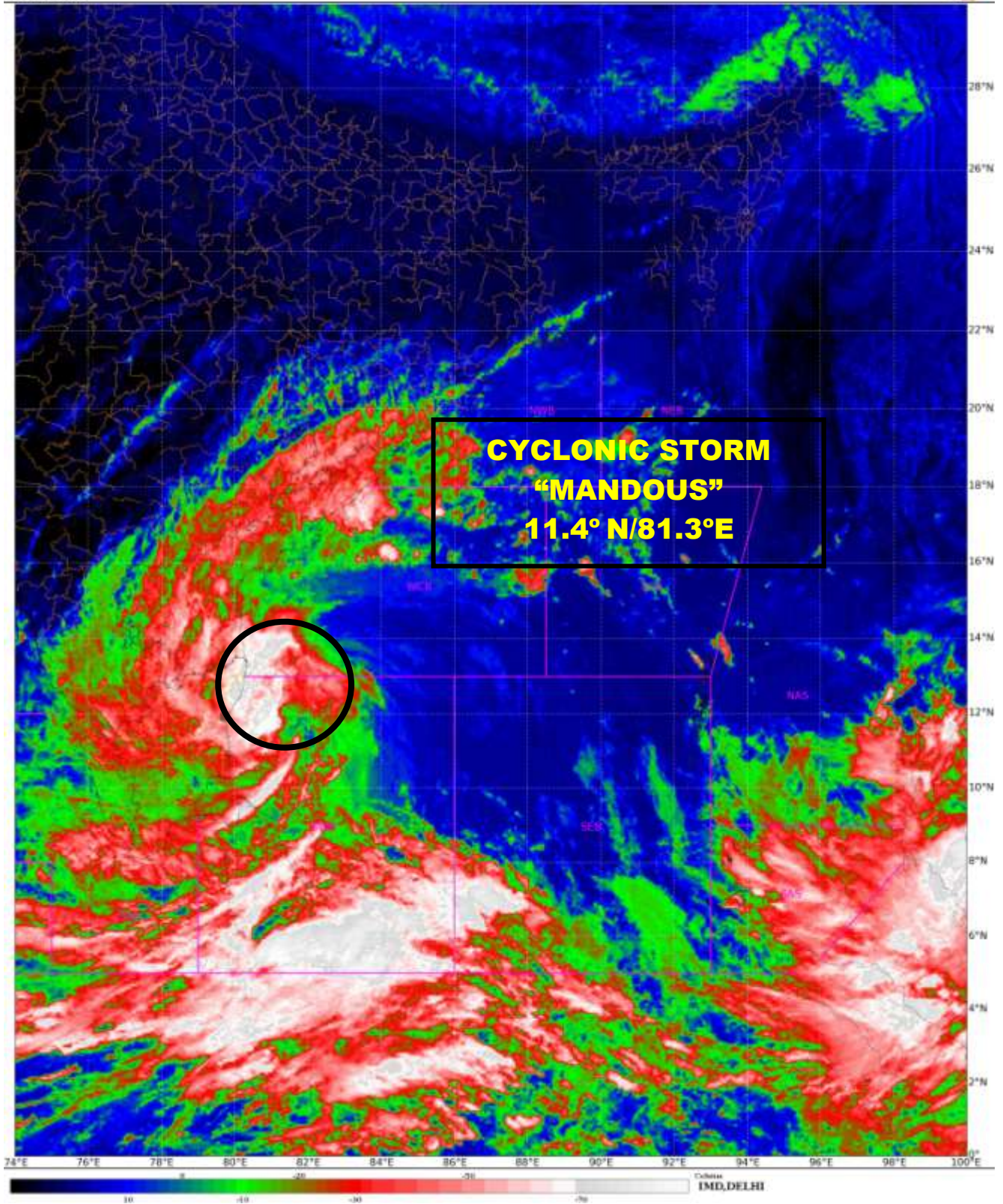
LOW LEVEL VORTICITY HAS DECREASED AND IS $200 \times 10^{-6} \text{ S}^{-1}$ AROUND THE SYSTEM CENTER WITH PEAK TO THE SOUTH OF THE SYSTEM CENTER. LOW LEVEL CONVERGENCE IS $20 \times 10^{-5} \text{ S}^{-1}$ TO THE NORTH OF SYSTEM CENTER AND UPPER LEVEL DIVERGENCE HAS REDUCED AND IS $5 \times 10^{-5} \text{ S}^{-1}$ TO THE NORTH OF THE SYSTEM CENTER.

WIND SHEAR IS MODERATE TO HIGH (20-25 KNOTS) OVER & AROUND THE SYSTEM CENTER AND DECREASING ALONG THE PREDICTED TRACK. THE UPPER TROPOSPHERIC RIDGE RUNS ROUGHLY ALONG 17.0°N OVER THE BOB. THE SYSTEM LIES IN THE SOUTHERMOST PERIPHERY OF THE STEERING RIDGE IN ASSOCIATION WITH THE ANTI CYCLONIC CIRCULATION TO THE NORTHEAST OF MYANMAR. THE SYSTEM IS UNDER THE INFLUENCE OF RIDGE LINE AND IT IS LIKELY TO BE STEERED TOWARDS NORTHWEST TILL 0000 UTC OF 10TH DECEMBER. THEREAFTER, IT IS LIKELY TO BE STEERED WEST-NORTHWESTWARDS. PRESENTLY, THE SYSTEM IS UNDER THE INFLUNCE OF COLD AND DRY AIR INTRUSION FROM SOUTH PENINSULAR INDIA, THE SYSTEM WOULD SHOW SLIGHT WEAKENING TREND WHILE MOVING TOWARDS COAST.

IN VIEW OF ALL THE ABOVE, THE SYSTEM IS VERY LIKELY TO MOVE NEARLY NORTHWESTWARDS AND CROSS NORTH TAMILNADU, PUDUCHERRY AND ADJOINING SOUTH ANDHRA PRADESH COASTS BETWEEN PUDUCHERRY AND SRIHARIKOTA AROUND MAMALLAPURAM (MAHABALIPURAM) AS A CYCLONIC STORM WITH A MAXIMUM SUSTAINED WIND SPEED OF 65-75 KMPH GUSTING TO 85 KMPH DURING 1800 TO 2100 UTC OF 09TH DECEMBER

R.K JENAMANI

SCIENTIST-F, RSMC,NEW DELHI



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OBSERVED AND FORECAST TRACK OF CYCLONIC STORM 'MANDOUS' OVER SOUTHWEST BAY OF BENGAL BASED ON 0600 UTC OF 09th DECEMBER, 2022.



DATE/TIME IN UTC

IST=UTC + 0530

L: LOW PRESSURE AREA

WML: WELL MARKED LOW PRESSURE AREA

D: DEPRESSION (17-27 KT)

DD: DEEP DEPRESSION (28-33 KT)

CS: CYCLONIC STORM (34-47 KT)

SCS: SEVERE CYCLONIC STORM (48-63KT)

VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)

ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)

SuCS: SUPER CYCLONIC STORM (≥ 120 KT)

LESS THAN 34 KT

34-47 KT

≥ 48 KT

OBSERVED TRACK

FORECAST TRACK

CONE OF UNCERTAINTY



OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF CYCLONIC STORM 'MANDOUS' OVER SOUTHWEST BAY OF BENGAL BASED ON 0600 UTC OF 09th DECEMBER, 2022.



DATE/TIME IN UTC
IST=UTC + 0530

L: LOW PRESSURE AREA
WML: WELL MARKED LOW PRESSURE AREA
D: DEPRESSION (17-27 KT)
DD: DEEP DEPRESSION (28-33 KT)
CS: CYCLONIC STORM (34-47 KT)
SCS: SEVERE CYCLONIC STORM (48-63KT)
VSCS: VERY SEVERE CYCLONIC STORM (64-89 KT)
ESCS: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
SuCS: SUPER CYCLONIC STORM (≥ 20 KT)

● LESS THAN 34 KT
○ 34-47 KT
● ≥ 48 KT
— OBSERVED TRACK
— FORECAST TRACK
— CONE OF UNCERTAINTY
AREA OF MAXIMUM SUSTAINED WIND SPEED:
■ 28-33 KT (52-61 KMPH)
■ 34-49 KT (62-91 KMPH)
■ 50-63 KT (92-117 KMPH)
■ ≥ 64 KT (≥ 118 KMPH)

IMPACT OVER THE SEA

| MSW (knot/kmph) | Impact | Action |
|--------------------------|------------------------|--|
| 28-33 (52-61) | Very rough seas | Total suspension of fishing operations |
| 34-49 (62-91) | High to very high seas | Total suspension of fishing operations |
| 50-63 (92-117) | Very high seas | Total suspension of fishing operations |
| ≥ 64 (≥ 118) | Phenomenal | Total suspension of fishing operations |

Forecast distance (km) and direction of the centre from nearest 5 coastal stations

| Forecast Date and Time | Lead Period | Lat | Lon | Station 1 | Station 2 | Station 3 | Station 4 | Station 5 |
|------------------------|-------------|------|------|-----------------------|-----------------------|-------------------------|-------------------------|--------------------------|
| 09.12.22.0600 | 0 | 11.4 | 81.3 | PARANGIPETTAI (170,E) | MAMALLAPURAM (180,SE) | CUDDALORE (170,ESE) | NAGAPPATTINAM (175,ENE) | MO PONDICHERRY (175,ESE) |
| 09.12.22.1200 | 6 | 12.0 | 80.7 | MO PONDICHERRY (95,E) | MAMALLAPURAM (85,SE) | PARANGIPETTAI (115,ENE) | MINAMBAKKAM (125,SSE) | NUMGAMBAKKAM (130,SSE) |
| 09.12.22.1800 | 12 | 12.4 | 80.3 | MINAMBAKKAM (70,S) | MAMALLAPURAM (25,SSE) | NUMGAMBAKKAM (75,S) | CUDDALORE (90,NE) | PARANGIPETTAI (115,NNE) |
| 10.12.22.0000 | 18 | 12.7 | 80.0 | MINAMBAKKAM (40,SSW) | MAMALLAPURAM (20,WNW) | TIRUTTANI (70,SE) | MO PONDICHERRY (85,NNE) | VELLORE (95,ESE) |
| 10.12.22.0600 | 24 | 12.9 | 79.7 | TIRUTTANI (35,SSE) | MAMALLAPURAM (60,WNW) | NUMGAMBAKKAM (55,WSW) | VELLORE (60,E) | TIRUPATHI (85,S) |

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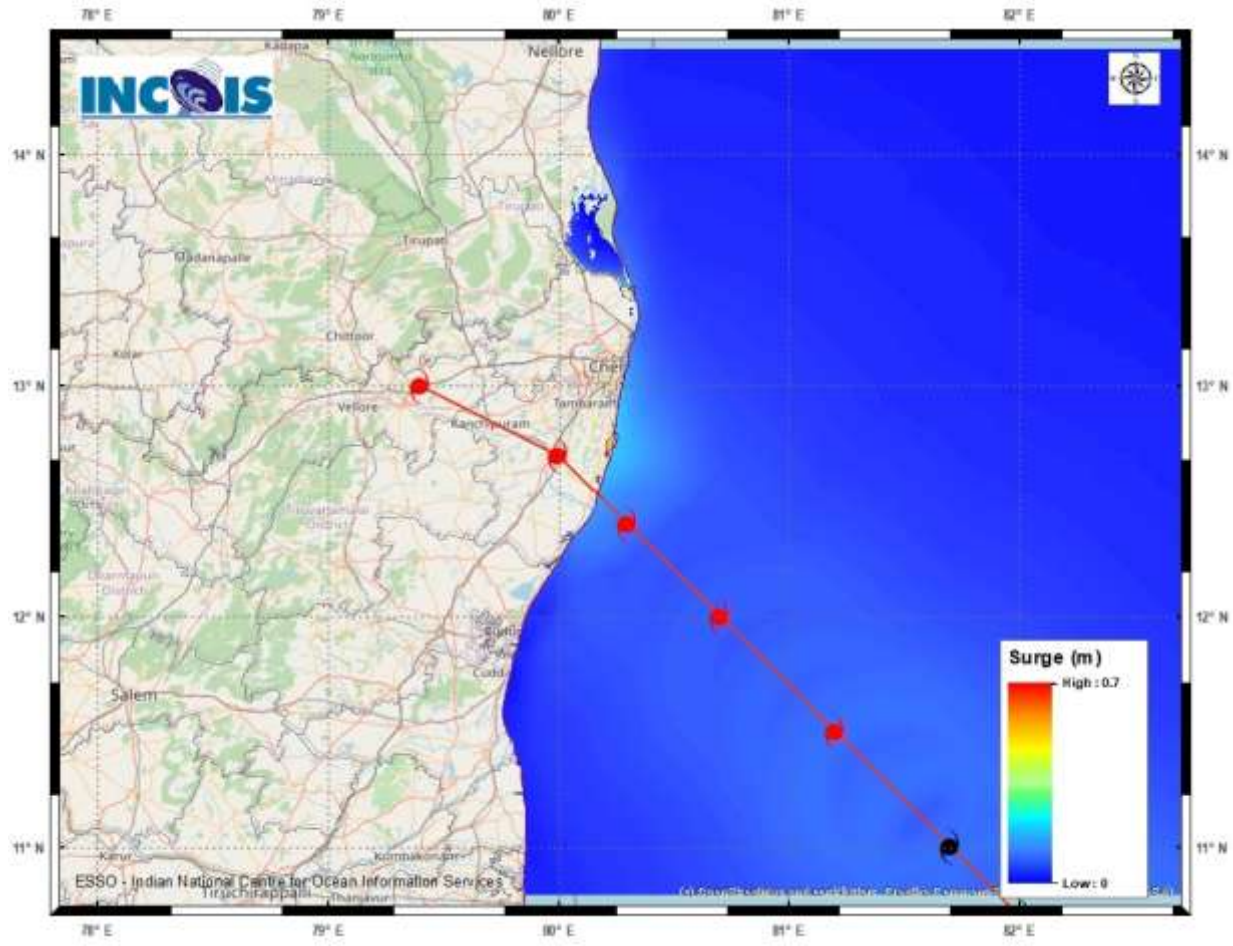
Fishermen warning graphics



| | |
|--|--|
| | Squally WX with wind speed 40-45 kmph gusting to 55 kmph |
| | Squally WX with wind speed 45-55 kmph gusting to 65 kmph |
| | Squally wind speed 45-55 kmph gusting to 65 kmph |
| | Squally wind with wind speed 55-65 kmph gusting to 75 kmph |
| | Gale wind with wind speed 70-80 kmph gusting to 90 kmph |
| | Gale wind with wind speed 80-90 kmph gusting to 100 kmph |

Fishermen are advised not to venture into the marked areas.

Storm Surge Guidance



STORM SURGE HEIGHT INFORMATION:

* The below listed surge heights are over and above astronomical tide.

| MANDAL/TALUK | DISTRICT | STATE / UNION TERRITORY | NEAREST PLACE OF HABITATION | STORM SURGE (m) * | EXPECTED INUNDATION EXTENT (km) |
|--------------|--------------|-------------------------|-----------------------------|----------------------|---------------------------------|
| Chengalpattu | Kancheepuram | Tamil Nadu | Muthukadu | 0.3-0.7 | Upto 0.13 |