



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)
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 0300 UTC OF 19.05.2020 BASED ON 0000 UTC OF 19.05.2020.

SUB: SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS UM-PUN) OVER WEST CENTRAL BAY OF BENGAL

THE **SUPER CYCLONIC STORM 'AMPHAN'** (PRONOUNCED AS **UM-PUN**) OVER WESTCENTRAL AND ADJOINING EASTCENTRAL BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS, LAY CENTRED AT 0000 UTC OF THE 19TH MAY, 2020 NEAR LATITUDE 15.6°N AND LONGITUDE 86.7°E, ABOUT 520 KM NEARLY SOUTH OF PARADIP (42976), 670 KM SOUTH-SOUTHWEST OF DIGHA (42901) AND 800 KM SOUTH-SOUTHWEST OF KHEPUPARA (41984). **IT IS VERY LIKELY TO WEAKEN INTO AN EXTREMELY SEVERE CYCLONIC STORM DURING NEXT 06 HOURS.** IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (42901) AND HATIYA ISLANDS (41963) CLOSE TO SUNDARBANS DURING 0900-1200 UTC OF 20TH MAY 2020 AS A VERY SEVERE CYCLONIC STORM WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 180 KMPH.

THE SUPER CYCLONIC STORM 'AMPHAN' IS BEING TRACKED BY THE DOPPLER WEATHER RADARS AT VISHAKHAPATNAM (43149) ALONG WITH OTHER OBSERVING PLATFORMS.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

DATE/TIME(IST)	POSITION (LAT. °N/ LONG. °E)	MAXIMUM SUSTAINED SURFACE WIND SPEED (KMPH)	CATEGORY OF CYCLONIC DISTURBANCE
19.05.20/0000	15.6/86.7	225-235 GUSTING TO 255	SUPER CYCLONIC STORM
19.05.20/0600	16.8/87.0	200-210 GUSTING TO 230	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1200	17.4/87.1	190-200 GUSTING TO 220	EXTREMELY SEVERE CYCLONIC STORM
19.05.20/1800	18.3/87.4	180-190 GUSTING TO 210	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/0000	19.6/87.8	170-180 GUSTING TO 200	EXTREMELY SEVERE CYCLONIC STORM
20.05.20/1200	21.7/88.4	135-145 GUSTING TO 160	VERY SEVERE CYCLONIC STORM
21.05.20/0000	23.8/89.1	60-70 GUSTING TO 80	CYCLONE
21.05.20/1200	25.9/89.9	40-50 GUSTING TO 60	DEPRESSION

PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

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

REMARKS:

AS PER INSAT-3D SATELLITE IMAGERY BASED ON 0000 UTC OF 19TH MAY, THE SYSTEM WEAKEND AND CURRENT INTENSITY **T6.0**. WALL CLOUD TEMPERATURE IS -93°C. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION PREVAILS BETWEEN LAT 10.3°N TO 21.5°N LONG 81.5°E TO 92.8°E. THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS **125** KNOTS GUSTING TO **145** KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **940** HPA.

THE CYCLONE IS TRACKED BY THE DOPPLER WEATHER RADAR (DWR) AT VISHAKHAPATANAM (43149). THE SYSTEM IS AT DISTANCE OF 426 KM FROM THE RADAR AND THE EYE DIAMETER IS MEASURED AS 30 KM.

AT 0000 UTC OF 19TH MAY, THE BOUY (**23092**) AT 17.5°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 993.9 HPA AND WIND DIRECTION AND SPEED 120°/29 KNOTS, BOUY (**23459**) LOCATED AT 13.9°N/87.0°E REPORTED WIND DIRECTION/SPEED AS 140°/39 KNOTS AND ANOTHER BOUY (**23094**) AT 13.6°N/84.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 995.3 HPA.

THE MADDEN JULIAN OSCILLATION (MJO) INDEX IS IN PHASE 2 WITH AMPLITUDE MORE THAN 1 FOR NEXT TWO DAYS. IT WILL REMAIN IN PHASE 3 WITH AMPLITUDE MORE THAN 1 DURING SUBSEQUENT THREE DAYS. THUS MJO PHASE AND AMPLITUDE WILL SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER BAY OF BENGAL DURING NEXT 5 DAYS.

CONSIDERING THE SEA CONDITIONS, THE SEA SURFACE TEMPERATURE (SST) IS 30-31°C OVER ENTIRE BAY OF BENGAL AND THE TROPICAL CYCLONE HEAT POTENTIAL IS MORE THAN 100 KJ/CM² OVER MAJOR PARTS OF SOUTH & CENTRAL BAY OF BENGAL. IT IS ABOUT 60-80 KJ/CM² OVER BOB TO THE NORTH OF 17°N AND IS DECREASING TOWARDS EXTREME NORTH BAY OF BENGAL.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND (250-300)X10⁻⁶ SEC⁻¹ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS 50X10⁻⁵ SEC⁻¹ LOCATED AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS ABOUT 40X10⁻⁵ SEC⁻¹ AROUND TO NORTHWEST OF THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-50 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE LIES NEAR 17.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSTEM IS LIKELY TO MOVE TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20TH MAY 2020. THE FORECAST IS BASED ON THE CONSENSUS FROM VARIOUS MODELS.

STORM SURGE GUIDANCE

- STORM SURGE OF ABOUT 4-5 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.(FIGURE ENCLOSED)

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

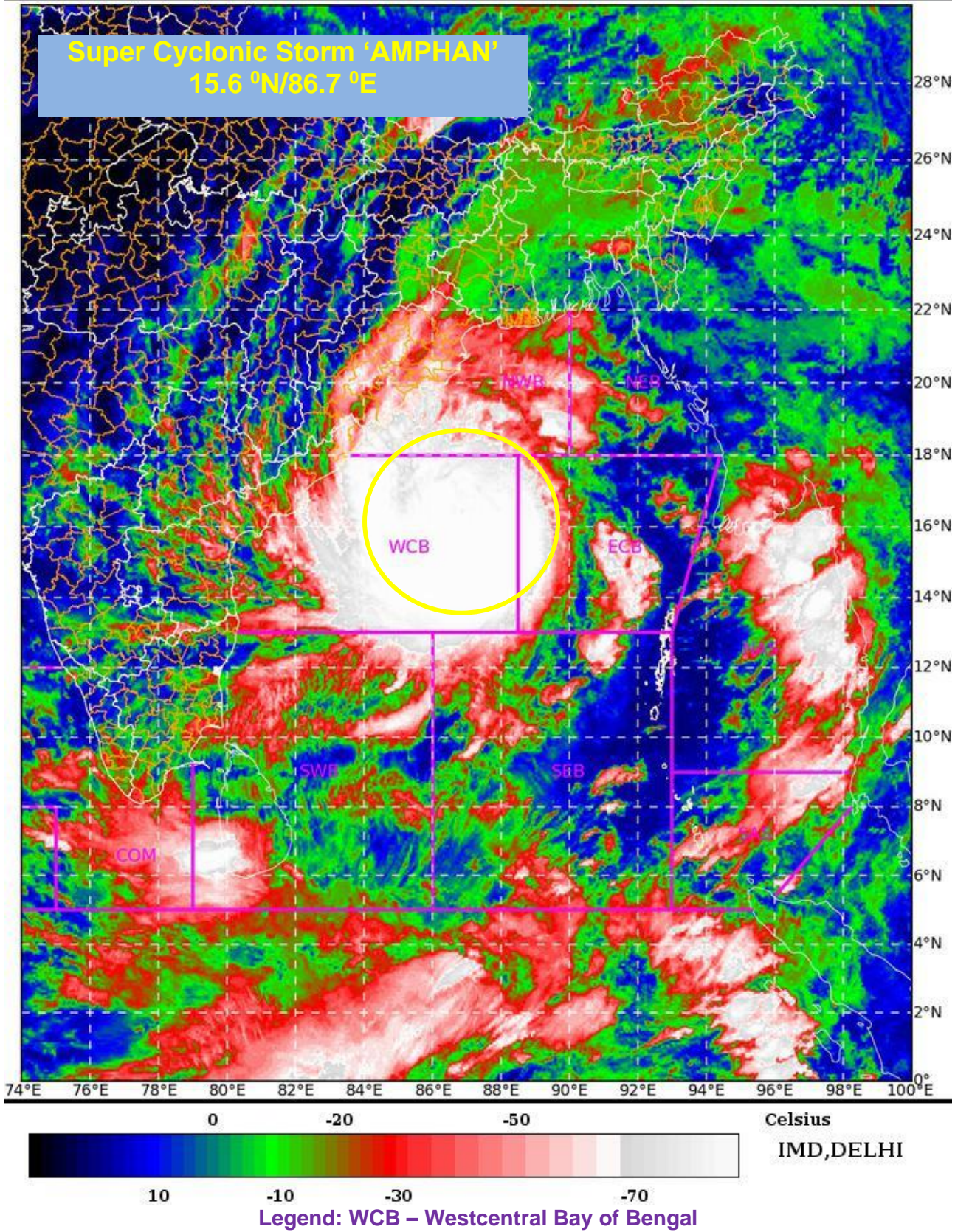
PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

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

SAT : INSAT-3D IMG 19-05-2020/(0200 to 0227) GMT

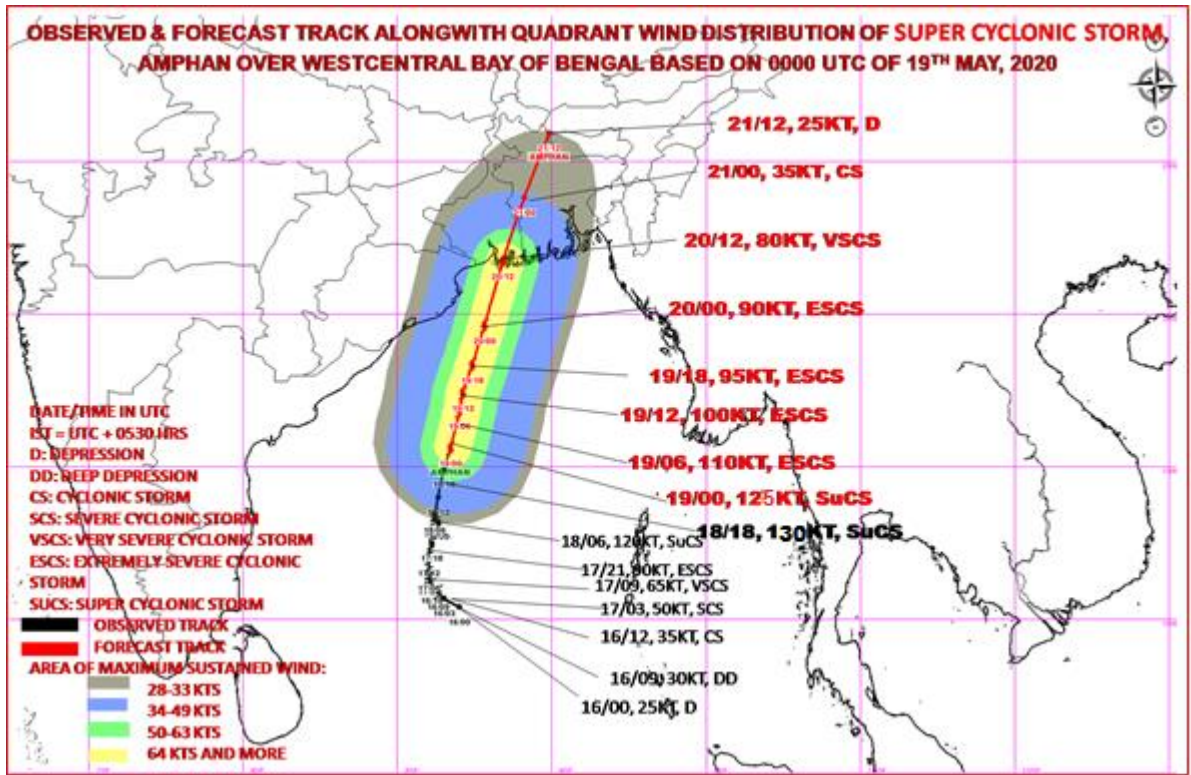
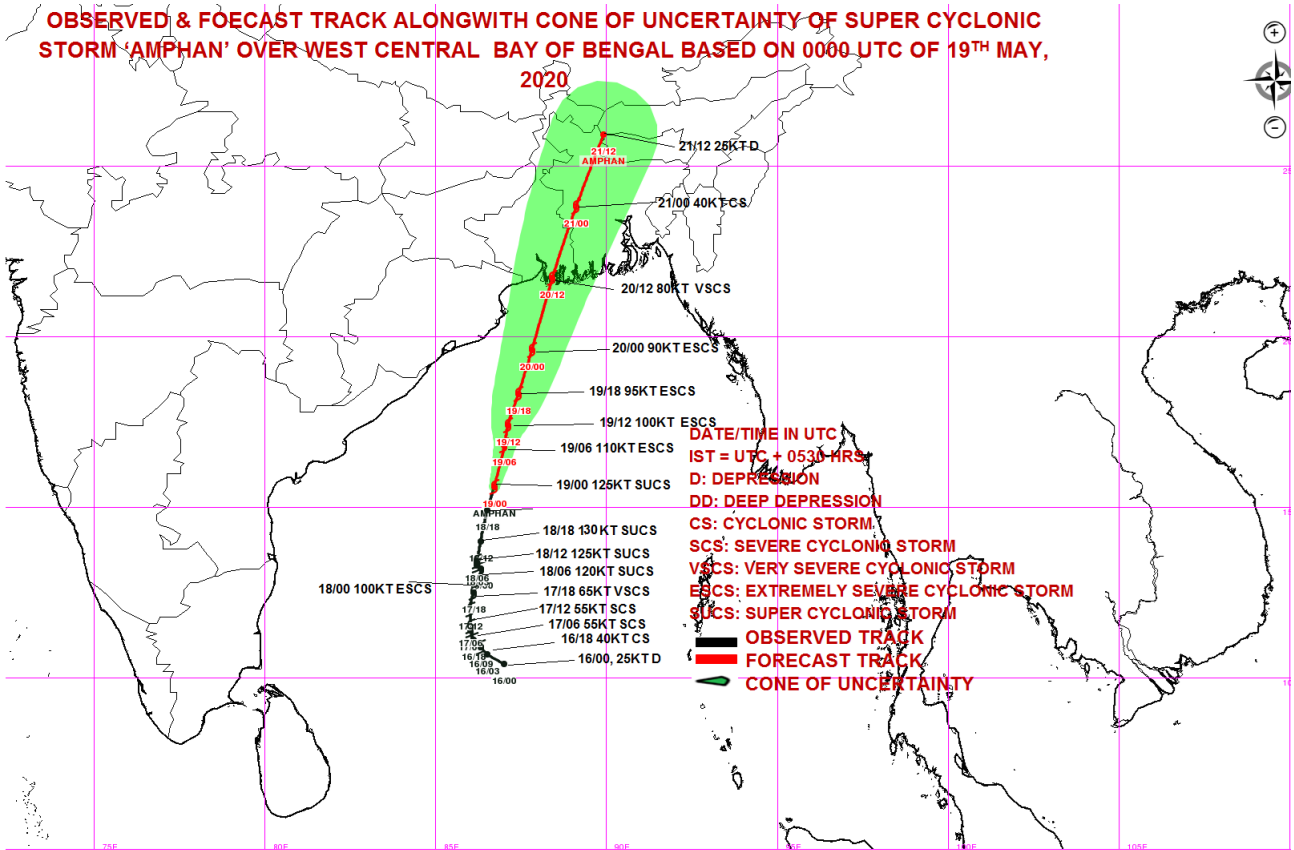
IMG_TIR1_TEMP 10.8 um 19-05-2020/(0730 to 0757) IST

L1C Mercator



PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

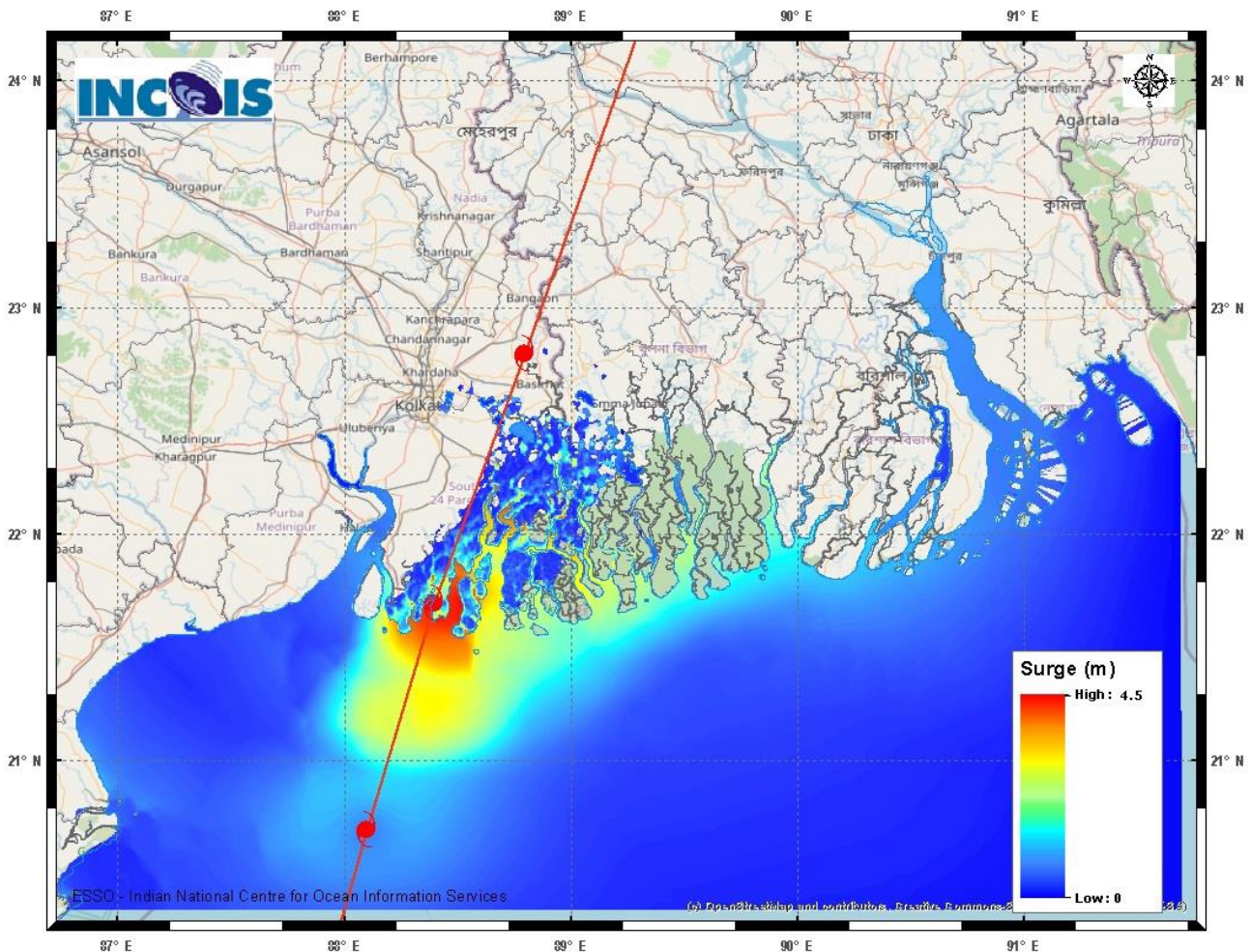
NIL: 0%, LOW: 1-25%, FAIR: 26-50%, MODERATE: 51-75% AND HIGH: 76-100%



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

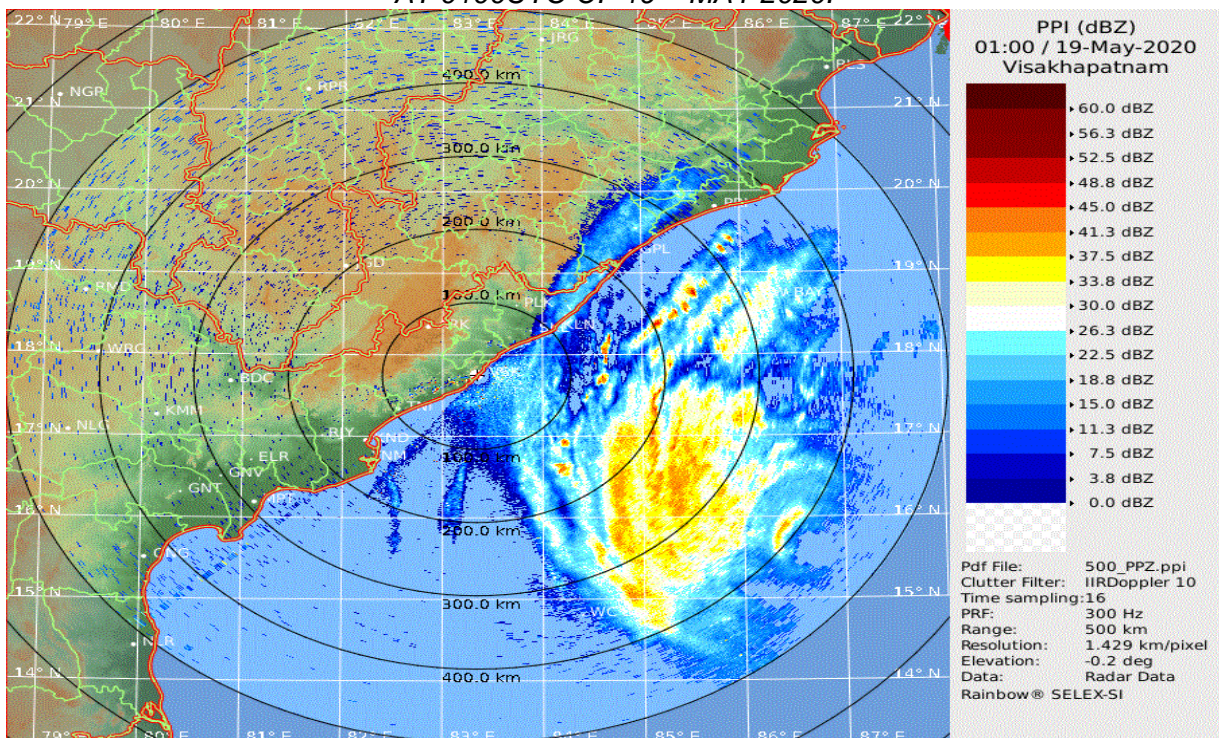
PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)
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FIGURE: STORM SURGE FORECAST FROM INCOIS ISSUED AT 0030 UTC OF 19TH MAY 2020



STORM SURGE OF ABOUT 4-6 METERS ABOVE ASTRONOMICAL TIDE IS LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH & NORTH 24 PARGANAS AND ABOUT 3-4 METERS OVER THE LOW LYING AREAS OF EAST MEDINIPUR DISTRICT OF WEST BENGAL DURING THE TIME OF LANDFALL.

FIGURE: REFLECTIVITY OF VISHAKHAPATNAM DOPPLER WEATHER RADAR AT 0100UTC OF 19TH MAY 2020.



PROBABILITY OF CYCLOGENESIS (FORMATION OF DEPRESSION)

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