



**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)  
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 120 HOURS ISSUED AT 0200 UTC OF 20.05.2020 BASED ON 0000 UTC OF 20.05.2020.**

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

THE SUPER CYCLONIC STORM 'AMPHAN' (PRONOUNCED AS **UM-PUN**) OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY OF BENGAL MOVED NORTH NORTH-EASTWARDS WITH A SPEED OF 14 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 0000 UTC OF 20<sup>TH</sup> MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 19.1°N AND LONGITUDE 87.5°E, ABOUT 155 KM SOUTH-SOUTHEAST OF PARADIP (42976), 280 KM SOUTH OF DIGHA (42901) AND 425 KM SOUTHWEST OF KHEPUPARA (41984).

IT IS VERY LIKELY TO MOVE NORTH-NORTHEASTWARDS ACROSS NORTHWEST BAY OF BENGAL AND CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS DURING AFTERNOON TO EVENING HOURS OF TODAY, THE 20<sup>TH</sup> MAY 2020 WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH.

FORECAST TRACK AND INTENSITY ARE GIVEN IN THE FOLLOWING TABLE:

Date/Time(UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Kmph)	Category of cyclonic disturbance
20.05.20/0000	19.1/87.5	170-180 gusting to 200	Extremely Severe Cyclonic Storm
20.05.20/0600	20.5/88.0	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1200	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/1800	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0000	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1200	26.0/90.3	30-40 gusting to 50	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 20<sup>TH</sup> MAY, THE VORTEX (AMPHAN) LIES OVER NORTHWEST AND ADJOINING WESTCENTRAL BAY CENTERED NEAR 19.1°N/87.4°E. THE SYSTEM INTENSITY IS T5.5/5.5. THE ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 15.0°N TO 21.5°N LONGITUDE 84.0°E TO 90.0°E & ALSO OVER ODISHA ADJOINING NORTH COASTAL ANDHRA PRADESH. MINIMUM CLOUD TOP TEMPERATURE IS MINUS 93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 95 KNOTS GUSTING TO 105 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **956** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT VISHAKHAPATNAM (43149), PARADIP (42976) AND GOPALPUR (43049). THE SYSTEM IS AT DISTANCE OF 130 KM FROM THE PARADIP RADAR.

AT 0000 UTC OF 20<sup>TH</sup> MAY, THE BOUY (**23092**) AT 17.4°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 993.7 HPA AND WIND DIRECTION/SPEED AS 240°/31 KNOTS. PARADIP (42976) REPORTED MEAN SEA LEVEL PRESSURE OF 985.5 HPA AND WIND DIRECTION/SPEED AS 320°/52 KNOTS

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, BUT SYSTEM IS ENTERING TO LOWER TROPICAL CYCLONE HEAT POTENTIAL OF 70-90 KJ/CM<sup>2</sup> AND IT IS FURTHER DECREASING TOWARDS NORTH BAY OF BENGAL ALONG THE SYSTEM TRACK.

CONSIDERING THE ENVIRONMENTAL CONDITIONS, THE POSITIVE VORTICITY IS AROUND  $250 \times 10^{-6} \text{ SEC}^{-1}$  AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE ZONE IS ABOUT  $30 \times 10^{-5} \text{ SEC}^{-1}$  OVER THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE IS OF THE ORDER OF  $20 \times 10^{-5} \text{ SEC}^{-1}$  AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (20-25 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 25-30 KTS TO THE NORTH BETWEEN 15-20°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 21.0°N OVER BAY OF BENGAL. AT PRESENT THE SYSTEM IS MOVING NORTH-NORTHEASTWARD ALONG THE PERIPHERY OF THE ANTICYCLONE LIES OVER MAYNMAR.

VARIOUS NUMERICAL MODELS INCLUDING ECMWF, IMD GFS, NCEP GFS, GEFS, NEPS AND NCUM ARE INDICATING THE SYSTEM IS LIKELY TO MOVE ACROSS NORTHWEST BAY OF BENGAL TOWARDS WEST BENGAL AND BANGLADESH COASTS AS AN EXTREMELY SEVERE CYCLONIC STORM DURING 0900-1200 UTC OF 20<sup>TH</sup> 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).

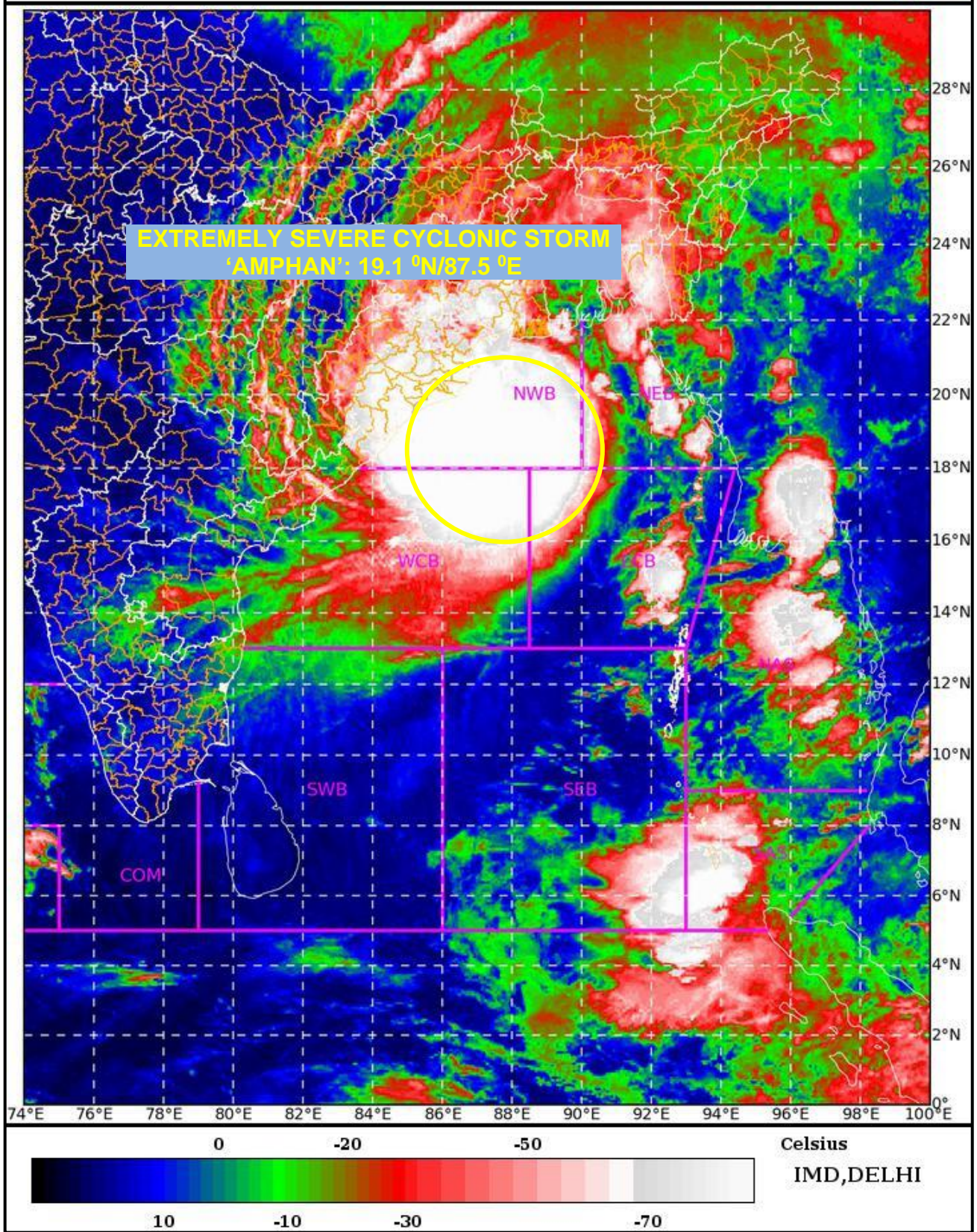
(SUNITHA DEVI S)  
SCIENTIST-E, RSMC, NEW DELHI

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

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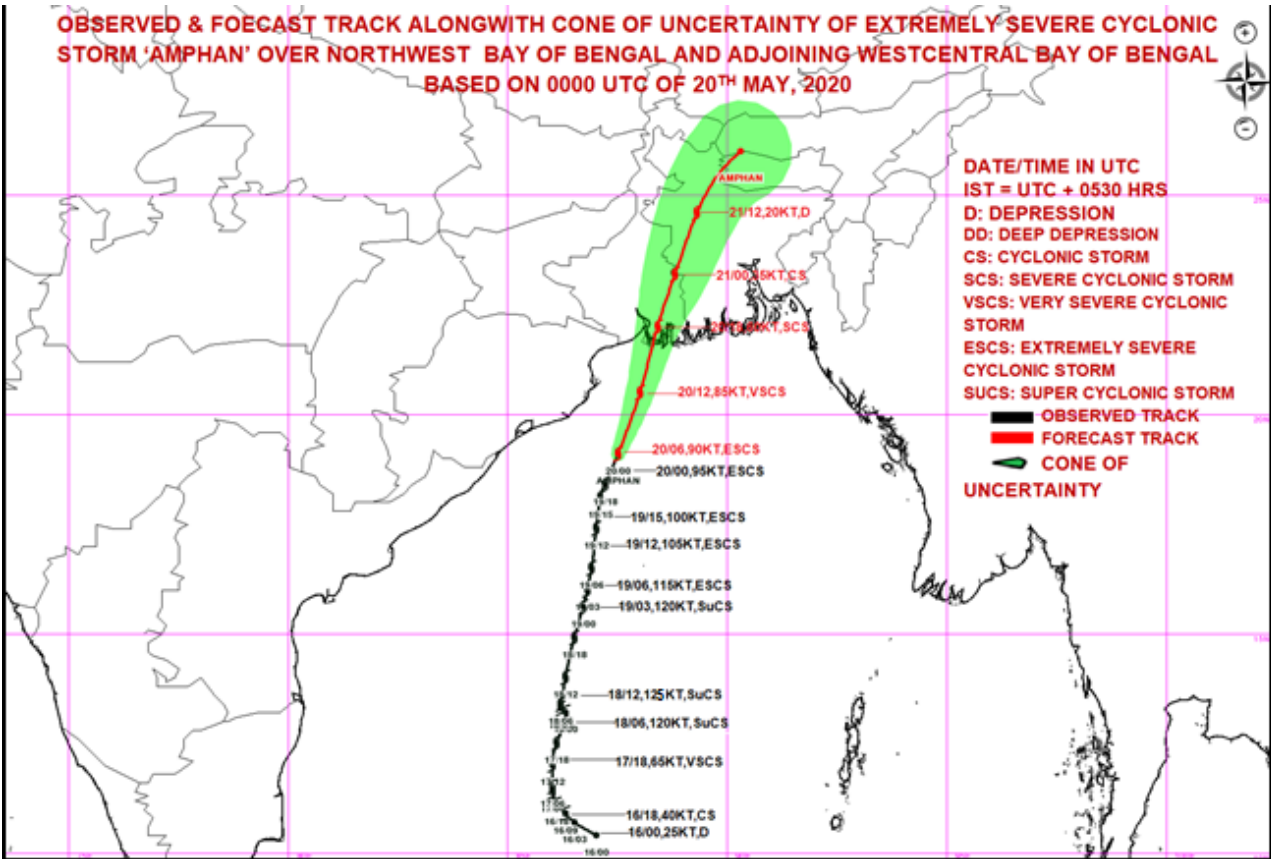
SAT : INSAT-3D IMG      20-05-2020/(0000 to 0026) GMT  
IMG\_TIR1\_TEMP 10.8 um    20-05-2020/(0530 to 0556) IST  
L1C Mercator



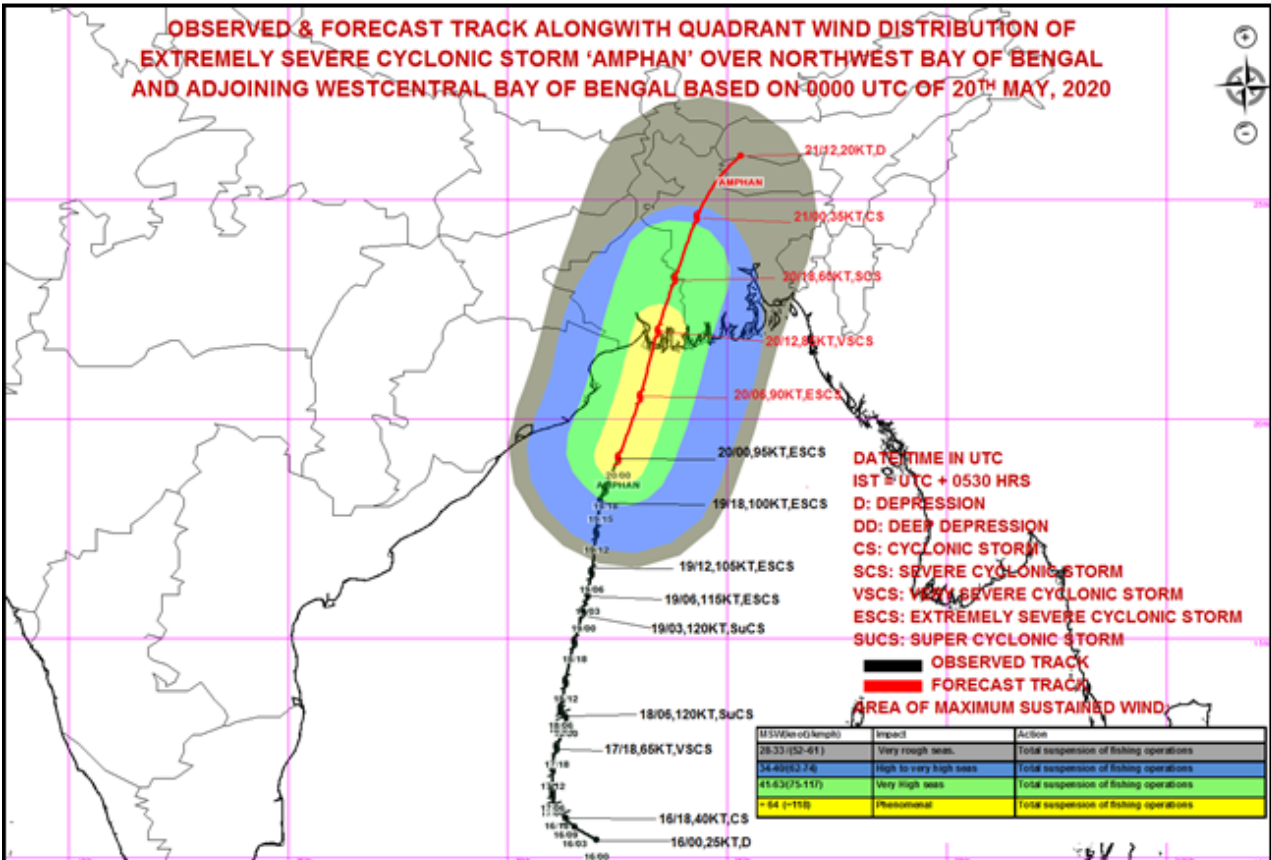
Legend: WCB – Westcentral Bay of Bengal  
NWB – Northwest Bay of Bengal

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**OBSERVED & FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' OVER NORTHWEST BAY OF BENGAL AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 0000 UTC OF 20<sup>TH</sup> MAY, 2020**



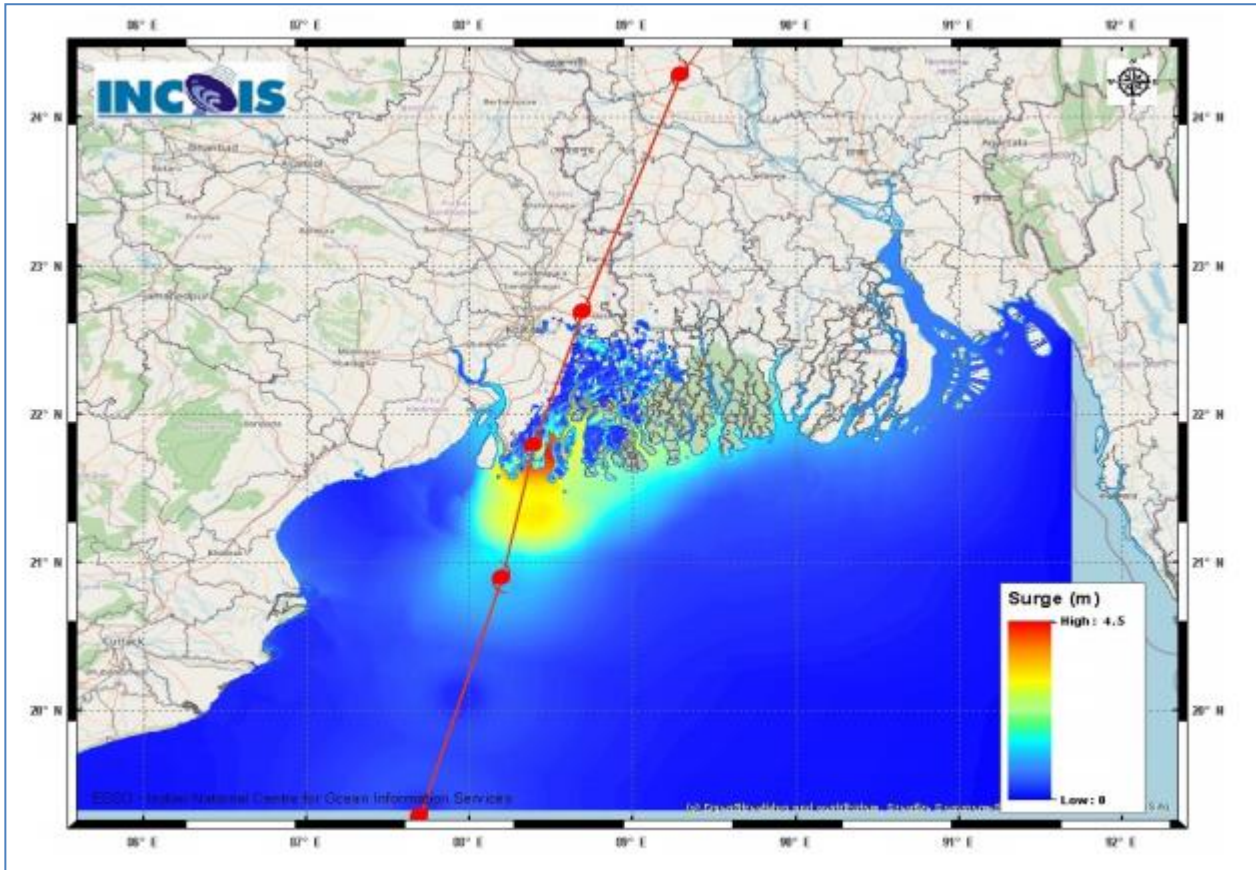
**OBSERVED & FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF EXTREMELY SEVERE CYCLONIC STORM 'AMPHAN' OVER NORTHWEST BAY OF BENGAL AND ADJOINING WESTCENTRAL BAY OF BENGAL BASED ON 0000 UTC OF 20<sup>TH</sup> MAY, 2020**



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

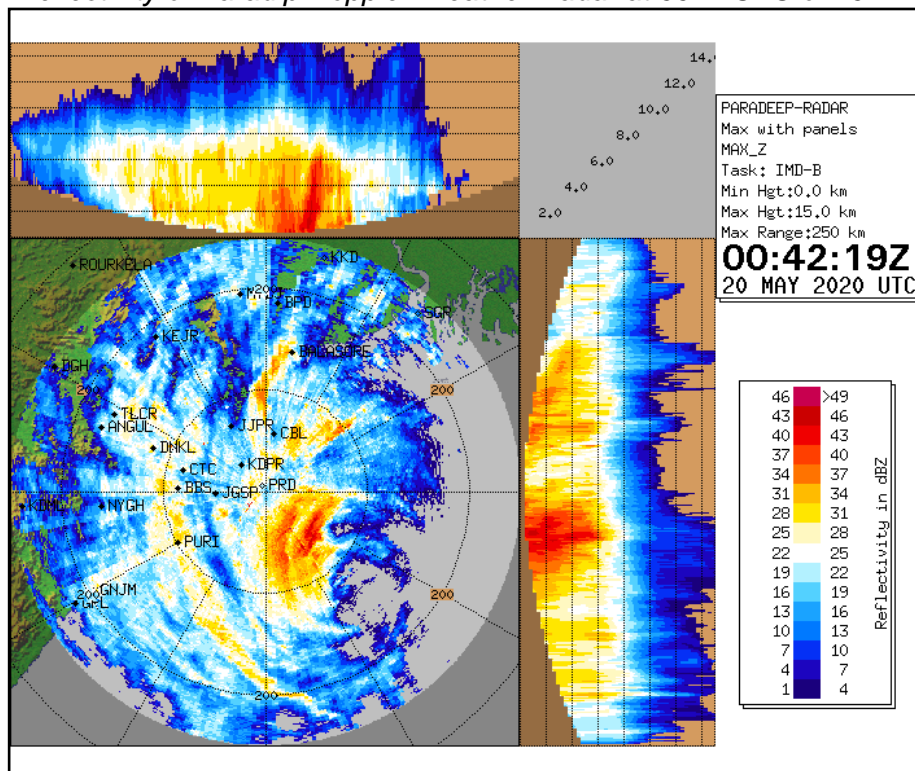
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**Figure: Storm Surge forecast from INCOIS issued at 0525 IST of 20<sup>th</sup> May 2020**



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

**Figure: Reflectivity of Paradip Doppler Weather Radar at 0042 UTC of 20<sup>th</sup> May 2020**



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