



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)
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 120 HOURS ISSUED AT 1100 UTC OF 20.05.2020 BASED ON 0900 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 BAY OF BENGAL MOVED NORTH-NORTHEASTWARDS WITH A SPEED OF 20 KMPH DURING PAST 06 HOURS AND LAY CENTRED AT 1430 HRS IST OF TODAY, THE 20TH MAY, 2020 AS AN EXTREMELY SEVERE CYCLONIC STORM OVER **NORTHWEST BAY OF BENGAL** NEAR LATITUDE 21.4°N AND LONGITUDE 88.1°E, ABOUT 190 KM EAST-NORTHEAST OF PARADIP (42976), 65 KM EAST-SOUTHEAST OF DIGHA (42901), 35 KM NEARLY SOUTH OF SAGAR ISLANDS(42903) AND 225 KM SOUTH-WESTSOUTHWEST OF KHEPUPARA (41984).

LANDFALL PROCESS HAS COMMENCED AND THE FORWARD SECTOR OF THE WALL CLOUD REGION IS ENTERING INTO LAND IN WEST BENGAL. DURING NEXT 2-3 HOURS IT IS VERY LIKELY CROSS WEST BENGAL – BANGLADESH COASTS BETWEEN DIGHA (WEST BENGAL) AND HATIYA ISLANDS (BANGLADESH) CLOSE TO SUNDARBANS WITH MAXIMUM SUSTAINED WIND SPEED OF 155-165 KMPH GUSTING TO 185 KMPH. AFTER LANDFALL, THE SYSTEM IS LIKELY TO MOVE NORTH-NORTHEASTWARDS CLOSE TO KOLKATA(42807).

The system is now being continuously tracked by the Doppler Weather Radar (DWR) at Kolkata (West Bengal).

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
20.05.20/1430	21.4/88.1	160-170 gusting to 190	Extremely Severe Cyclonic Storm
20.05.20/1730	22.0/88.4	150-160 gusting to 180	Very Severe Cyclonic Storm
20.05.20/2330	23.2/88.8	110-120 gusting to 135	Severe Cyclonic Storm
21.05.20/0530	24.6/89.3	60-70 gusting to 80	Cyclonic Storm
21.05.20/1130	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 0900 UTC OF 20TH MAY SHOWS THE SYSTEM INTENSITY IS T5.0/5.5. WALL CLOUDS HAVE ENTERED THE COAST. THE CENTRE OF THE CYCLONE LIES VERY CLOSE TO THE COAST. ASSOCIATED BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER BAY BETWEEN LATITUDE 18.0°N TO 26.5°N LONGITUDE 83.5°E TO 92.5°E AND ALSO OVER COASTAL ODISHA AND GANGETIC WEST BENGAL. WALL CLOUDS MINIMUM CLOUD TOP TEMPERATURE -93 DEG C.

THE ESTIMATED MAXIMUM SUSTAINED WIND SPEED IS 85 KNOTS GUSTING TO 95 KNOTS. THE SEA CONDITION IS PHENOMENAL AROUND THE SYSTEM CENTER. THE ESTIMATED CENTRAL PRESSURE IS **960** HPA.

THE CYCLONE IS BEING TRACKED BY DOPPLER WEATHER RADARS (DWR) AT KOLKATTA (43049). THE SYSTEM IS AT DISTANCE 130 KM SOUTHSOUTHWEST OF KOLKATTA RADAR.

AT 0900 UTC OF 20TH MAY, THE BOUY (**23092**) AT 17.24°N/89.1°E REPORTED MEAN SEA LEVEL PRESSURE OF 997.2 HPA AND WIND DIRECTION/SPEED AS 220°/08 KNOTS. DIGHA (42901), REPORTED MEAN SEA LEVEL PRESSURE OF 973.5 HPA AND WIND DIRECTION/SPEED AS 320°/27 KNOTS.

THE SYSTEM ENTERING THE COAST. CONSIDERING THE ENVIRONMENTAL CONDITIONS, WITH THE POSITIVE VORTICITY MAINTAINING AT $(250-300) \times 10^{-6} \text{ SEC}^{-1}$ AROUND THE SYSTEM CENTRE WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. THE LOWER LEVEL CONVERGENCE HAS REDUCED TO $(20-30) \times 10^{-5} \text{ SEC}^{-1}$ AROUND THE SYSTEM CENTRE. THE UPPER LEVEL DIVERGENCE HAS ALSO REDUCED TO $10 \times 10^{-5} \text{ SEC}^{-1}$ AROUND THE SYSTEM CENTRE. VERTICAL WIND SHEAR (VWS) IS MODERATE TO HIGH (25-30 KTS) AROUND THE SYSTEM CENTRE. IT IS INCREASING TO 30-40 KTS AT NORTH OF 23°N ALONG THE EXPECTED TRACK. THE UPPER TROPOSPHERIC RIDGE HAS FURTHER SHIFTED NORTH AND NOW LIES NEAR 22.0°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 1000-1200 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).

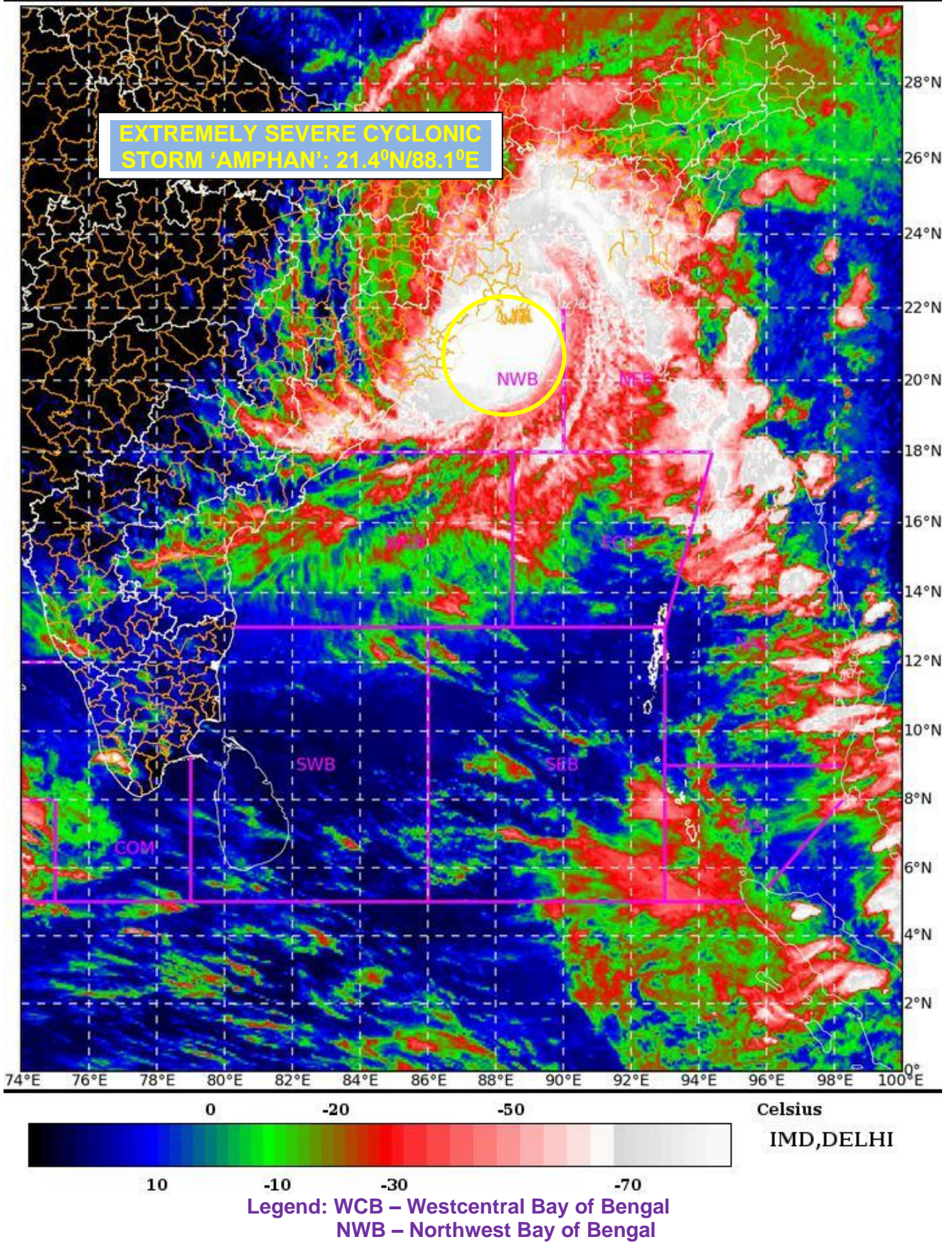
(RK JENAMANI)
SCIENTIST-F, RSMC, NEW DELHI

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L1C Mercator



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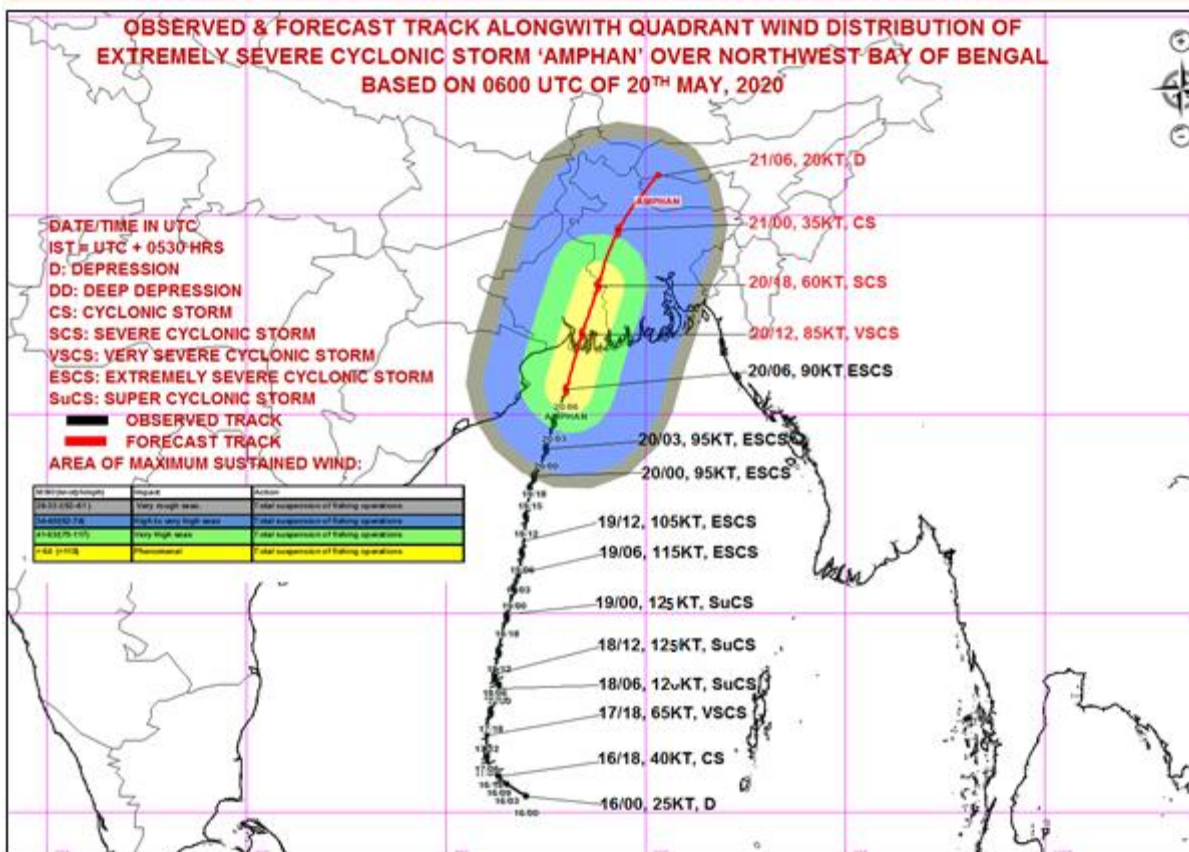
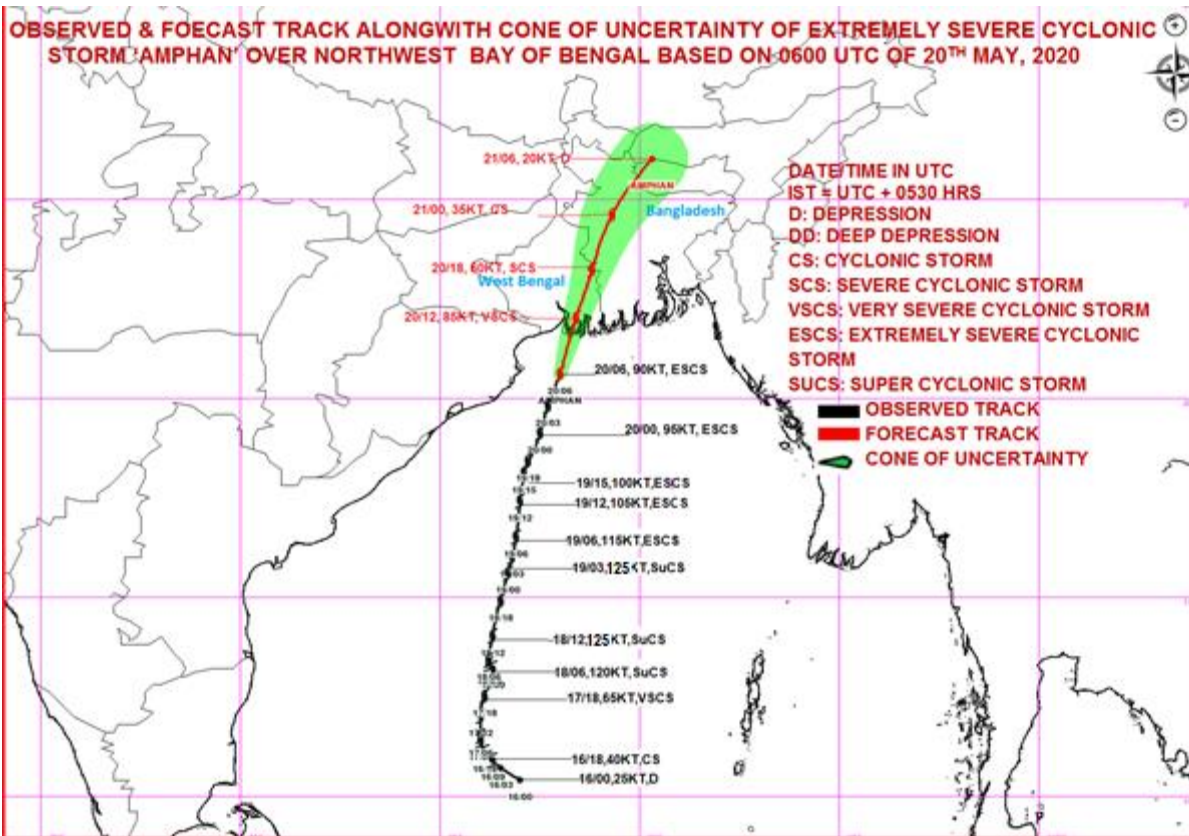


Figure: Storm Surge forecast from INCOIS issued at 1500 IST of 20th May 2020

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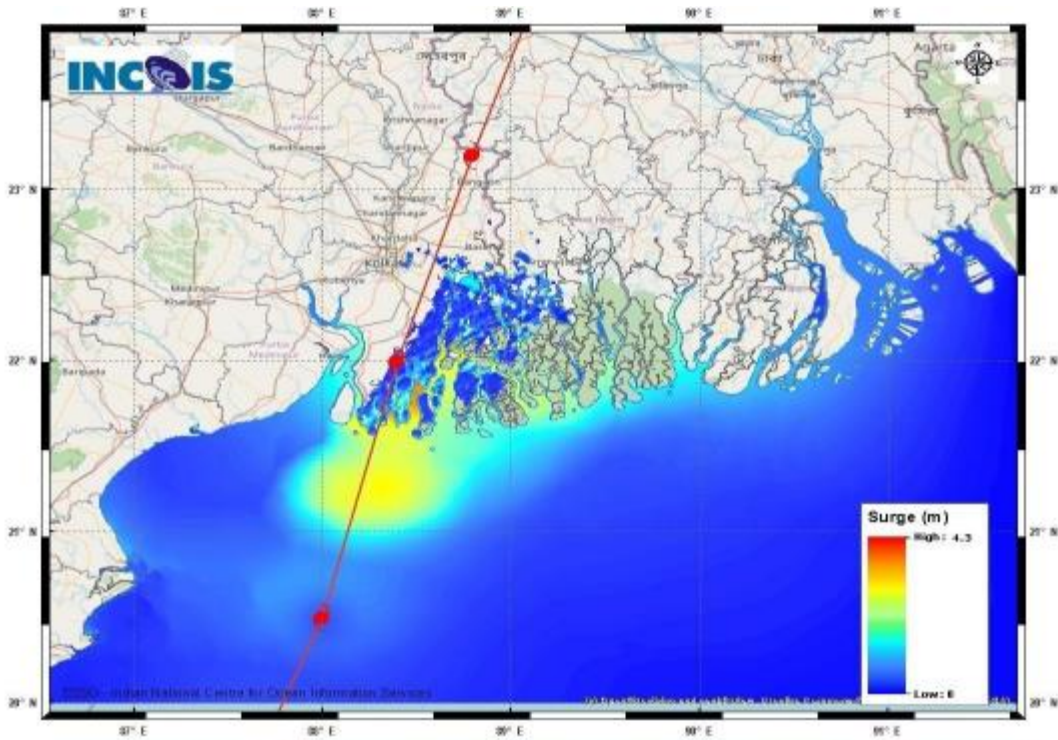


Fig: Computed storm surge & Inundation based on the IMD track forecast

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. Given below is the direct model output from INCIOS Storm Surge model.

STORM SURGE HEIGHT INFORMATION:

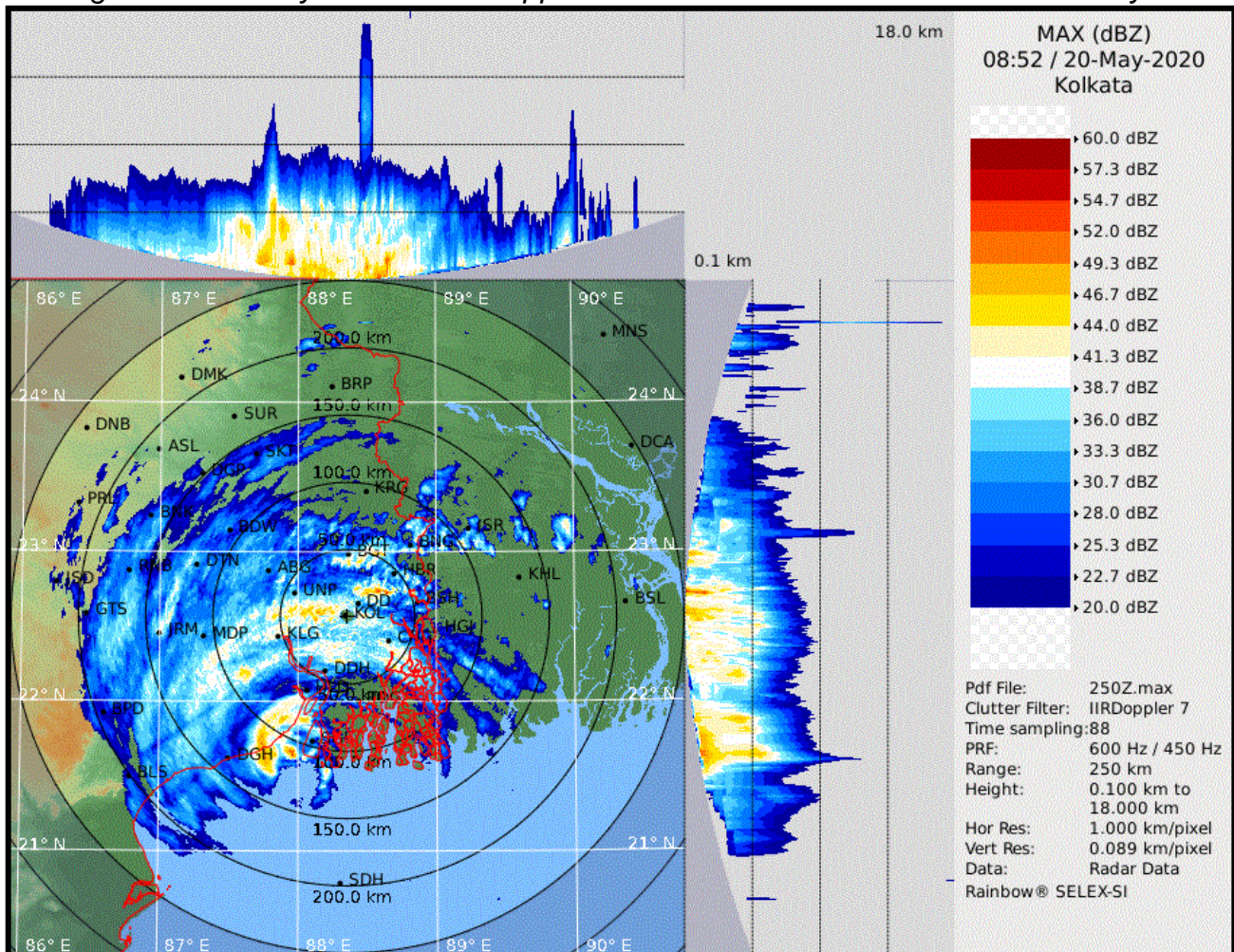
* The below listed surge heights are over and above astronomical tide.

MANDAL/TALUK	DISTRICT	STATE / UNION TERRITORY	NEAREST PLACE OF HABITATION	* STORM SURGE (m)	* EXPECTED INUNDATION EXTENT (km)
Bhangar-I	South 24 Parganas	West Bengal	Bhangar-I	0.5-4.3	Around 17
Basirhat	North 24 Parganas	West Bengal	Basirhat	0.5-3.9	Around 10
Diamond Harbour	South 24 Parganas	West Bengal	Daimond Harbor	0.5-3.5	Around 17
Bagnan-II	Haora	West Bengal	Bagnan-II	0.5-1.0	Around 0.4
Mahisadal	Medhinipur	West Bengal	Tentul Berya	0.5-1.0	Around 0.4
Nandigram-I	Medhinipur	West Bengal	Nakchira Chara	0.5-0.8	Around 0.4
off Haldia	Purba Medhinipur	West Bengal	Nayachar Island	0.5-1.5	Around 0.5
Sutahata-I	Medinipur	West Bengal	Maniruddin Chara	0.5-1.6	Around 0.4
Sutahata-II	Medinipur	West Bengal	Haldia	0.5-1.5	Around 0.3
Digha	Purba Medhinipur	West Bengal	Digha	0.5-0.7	Around 0.3
Tamluk	East Midnapore	West Bengal	Tamluk	0.5-1.5	Around 0.3
Bhadrak	Bhadrak	Odisha	Mohanpur	0.5-1.1	Around 0.8
Kendrapara	Kendraparha	Odisha	Baligarh	0.5-0.8	Around 2.6
Baleshwar	Baleshwar	Odisha	Sahanur	0.5-0.7	Around 0.7

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Figure: Reflectivity of Kolkatta Doppler Weather Radar at 0852 UTC of 20th May 2020



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