



**REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI
TROPICAL CYCLONE ADVISORY NO. 11**

DEMS-RSMCSPECIAL TROPICAL CYCLONES NEW DELHI DATED 24.10.2024

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.11 FOR NORTH INDIAN OCEAN (THE BAY OF BENGAL AND ARABIAN SEA) VALID FOR NEXT 120 HOURS ISSUED AT 0900 UTC OF 24.10.2024 BASED ON 0600 UTC OF 24.10.2024

SUB: SEVERE CYCLONIC STORM “DANA” OVER NORTHWEST BAY OF BENGAL (CYCLONE WARNING FOR ODISHA AND WEST BENGAL COASTS: RED MESSAGE)

THE SEVERE CYCLONIC STORM “DANA” (PRONOUNCED AS DANA) OVER NORTHWEST BAY OF BENGAL MOVED NORTH-NORTHWESTWARDS WITH A SPEED OF 13 KMPH DURING PAST 6 HOURS AND LAY CENTRED AT 0600 UTC OF TODAY, THE 24TH OCTOBER, OVER THE SAME REGION, NEAR LATITUDE 19.2° N AND LONGITUDE 87.9°E, ABOUT 180 KM SOUTHEAST OF PARADIP (42976, ODISHA), 210 KM SOUTH-SOUTHEAST OF DHAMARA (ODISHA) AND 270 KM SOUTH OF SAGAR ISLAND (42903, WEST BENGAL).

IT IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS AND CROSS NORTH ODISHA AND WEST BENGAL COASTS BETWEEN PURI (43053, ODISHA) AND SAGAR ISLAND (42903, ODISHA) CLOSE TO BHITARKANIKA AND DHAMARA (ODISHA) DURING 1800 UTC OF 24TH TO 0000 UTC OF 25TH OCTOBER, 2024 AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100-110 KMPH GUSTING 120 KMPH.

THE SYSTEM IS UNDER CONTINUOUS SURVEILLANCE OF THE DOPPLER WEATHER RADAR AT PARADIP.

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THERE IS HIGH CONFIDENCE IN DETERMINATION OF CURRENT LOCATION AND CENTRE.

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
24.10.24/0600	19.2/87.9	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
24.10.24/1200	19.8/87.6	105-115 GUSTING TO 125	SEVERE CYCLONIC STORM
24.10.24/1800	20.4/87.2	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
25.10.24/0000	20.8/86.8	100-110 GUSTING TO 120	SEVERE CYCLONIC STORM
25.10.24/0600	21.1/86.3	85-95 GUSTING TO 105	CYCLONIC STORM
25.10.24/1800	21.2/85.7	50-60 GUSTING TO 70	DEEP DEPRESSION

THE CLOUD MASS IS ORGANISED IN CDO PATTERN. CURRENT INTENSITY IS CHARACTERISED AS T3.5. IR/VIS IMAGERY DEPICTS LLCC EMBEDDED IN NORTH-EAST SECTOR OF CDO. DIAMETER SIZE OF CDO IS ABOUT 150 KMS YIELDS CF=3 BF = 0.5 YIELDS DT = 3.5 MET AND PT AGREE HENCE FT BASED ON DT + BF= 3.0+0.5=3.5. ASSOCIATED SCATTERED TO BROKEN LOW/MEDIUM CLOUDS WITH EMBEDDED INTENSE TO VERY INTENSE CONVECTION OVER CENTRAL & NORTH BAY OF BENGAL BETWEEN LATITUDE 15.0N & 21.0N AND LONGITUDE 85.0E TO 90.0E. MINIMUM CTT IS MINUS 93°C. TOTAL PRECIPITABLE WATER IMAGERY INDICATE WARM MOIST AIR INCURSION INTO THE CORE FROM SOUTHWEST. MULTISATELLITE WINDS INDICATE STRONGER WINDS IN NORTHEAST SECTOR.

ESTIMATED CENTRAL PRESSURE IS 986 HPA AND MAXIMUM SUSTAINED WIND SPEED IS 55 KNOTS GUSTING TO 65 KNOTS. SEA CONDITION IS VERY HIGH OVER NORTHWEST & ADJOINING CENTRAL BAY OF BENGAL.

UNDER IT'S INFLUENCE:

(I) WIND WARNING:

NORTHWEST BAY OF BENGAL: GALE WIND SPEED REACHING 100-110 KMPH GUSTING TO 120 KMPH IS PREVAILING. IT IS LIKELY TO INCREASE GRDUALY BECOMING 105-115 KMPH GUSTING TO 125 KMPH FROM 1200 UTC OF 24TH OCTOBER.

ADJOINING AREAS OF CENTRAL BAY OF BENGAL: GALE WIND SPEED REACHING 100-110 KMPH GUSTING TO 120 KMPH IS PREVAILING AND IS LIKELY TO CONTINUE TILL 1200 UTC OF 24TH OCTOBER. IT IS LIKELY TO DECREASE THEREAFTER.

ADJOINING AREAS OF NORTHEAST BAY OF BENGAL: SQUALLY WIND SPEED REACHING 50-60 KMPH GUSTING TO 70 KMPH IS LIKELY TO PREVAIL TILL 0000 UTC OF 25TH OCT AND DECREASE THEREAFTER.

ALONG & OFF ODISHA-WEST BENGAL COASTS: GALE WIND SPEED REACHING 60-70 GUSTING TO 80 KMPH IS PREVAILING AND INCREASE GRADUALLY REACHING 100-110 KMPH GUSTING TO 120 KMPH FROM 24TH/1200 UTC TILL 0000 UTC OF 25TH OCT AND DECREASE GRADUALLY THEREAFTER.

(II) STORM SURGE WARNING:

STORM SURGE OF:

- ❖ 1.0 TO 2.0 M HEIGHT ABOVE ASTRONOMICAL TIDE IS VERY LIKELY TO INUNDATE LOW LYING AREAS OF KENDRAPARA, BHADRAK & BALASORE DISTRICTS OF ODISHA AND EAST MEDINIPUR DISTRICTS OF WEST BENGAL.
- ❖ 0.5 TO 1.0 M HEIGHT ABOVE ASTRONOMICAL TIDE IS VERY LIKELY TO INUNDATE LOW LYING AREAS OF SOUTH 24-PARGANAS OF WEST BENGAL AND JAGATSINGHPUR DISTRICT OF ODISHA DURING THE TIME OF LANDFALL.

(III) SEA CONDITION:

NORTHWEST BAY OF BENGAL: SEA CONDITION IS LIKELY TO BE VERY HIGH TILL 0000 UTC OF 25TH OCTOBER AND IMPROVE GRADUALLY THEREAFTER.

ADJOINING AREAS OF CENTRAL BAY OF BENGAL: SEA CONDITION IS LIKELY TO BE VERY HIGH TO HIGH TILL 24TH OCTOBER/1200 UTC AND IMPROVE GRADUALLY THEREAFTER.

ADJOINING AREAS OF NORTHEAST BAY OF BENGAL: SEA CONDITION IS LIKELY TO BE ROUGH TO VERY ROUGH TILL 25TH/0000 UTC AND IMPROVE GRADUALLY THEREAFTER.

ALONG & OFF ODISHA-WEST BENGAL COASTS: HIGH TO VERY HIGH TILL 25TH OCT/0600 UTC AND IMPROVE GRADUALLY THEREAFTER.

(IV) FISHERMEN WARNING:

- ❖ **TOTAL SUSPENSION OF FISHING OPERATION IS ADVISED TILL 25TH OCTOBER**
- ❖ **FISHERMEN ARE ADVISED NOT TO VENTURE INTO:**
 - ADJOINING AREAS OF CENTRAL BAY OF BENGAL TILL 24TH OCTOBER.
 - NORTHWEST & ADJOINING NORTHEAST BAY OF BENGAL AND ALONG & OFF ODISHA, WEST BENGAL AND BANGLADESH COASTS TILL 25TH OCTOBER.

REMARKS:

THE MADDEN-JULIAN OSCILLATION (MJO) IS CURRENTLY IN PHASE 5, WITH AMPLITUDE MORE THAN 1, AND IS EXPECTED TO MOVE ACROSS PHASE 5 DURING NEXT 2 DAYS WITH FURTHER INCREASING AMPLITUDE. THUS, MJO WOULD SUPPORT ENHANCEMENT OF CONVECTIVE ACTIVITY OVER NORTH AND CENTRAL BAY OF BENGAL DURING NEXT 2 DAYS. THE GUIDANCE FROM NCICS BASED FORECAST OVER BOB INDICATES EASTWARD MOVING MJO & KELVIN WAVES ALONG WITH WESTWARD MOVING EQUATORIAL ROSSBY WAVES OVER THE CENTRAL BAY OF BENGAL DURING NEXT 3 DAYS. THESE FEATURES INDICATE HIGHLY FAVOURABLE ENVIRONMENT FOR INTENSIFICATION OF SYSTEM OVER THE NORTH & CENTRAL PARTS OF THE BAY OF BENGAL.

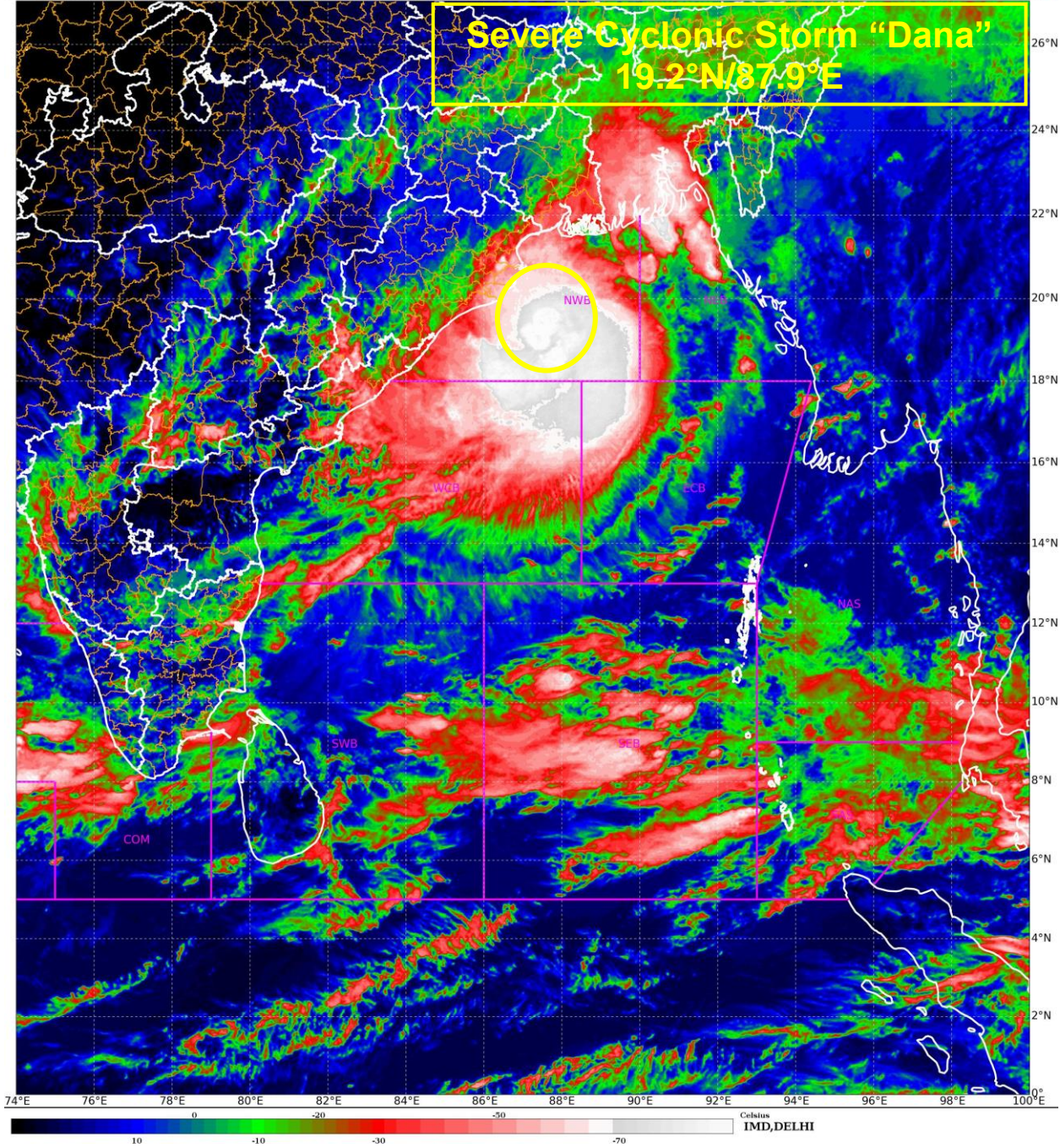
THE SEA SURFACE TEMPERATURE (SST) IS 30°C OVER CENTRAL & NORTH BOB. THE TROPICAL CYCLONE HEAT POTENTIAL (TCHP) IS >100 KJ/CM² OVER WESTCENTRAL BOB, AROUND 70-80 KJ/CM² OVER NORTHWEST BOB. VORTICITY AT LOW LEVEL IS 250 X 10⁻⁶S⁻¹ OVER NORTHWEST BAY OF BENGAL WITH VERTICAL EXTENSION UPTO 200 HPA LEVEL. POSITIVE LOW-LEVEL CONVERGENCE IS 20 X10⁻⁶S⁻¹ TO THE SOUTHWEST OF SYSTEM AREA. POSITIVE UPPER-LEVEL DIVERGENCE IS ALSO SAME AND IS 20X10⁻⁶S⁻¹ OVER SYSTEM AREA. VERTICAL WIND SHEAR (VWS) IS LOW (10-15 KT) OVER NORTHWEST BOB. THE UPPER TROPOSPHERIC RIDGE IS AROUND 20N. CURRENTLY THE SYSTEM IS TRACKING NORTH-NORTHWESTERLY UNDER THE INFLUENCE OF

SOUTH-SOUTHEASTERLY WINDS TO THE SOUTH OF RIDGE. ENHANCED POLEWARD AND EQUATORWARD OUTFLOW IS SEEN IN MID-LATITUDE WESTERLIES. HIGH SST, POLEWARD & EQUATORWARD OUTFLOW, MODERATE WIND SHEAR, WARM MOIST AIR INCURSION INTO THE CORE, FAVOURABLE MJO & EQUATORIAL WAVES ARE SUPPORTING FURTHER INTENSIFICATION OF THE SYSTEM.

THERE IS NOW CONVERGENCE AMONG VARIOUS MODELS REGARDING CROSSING OVER ODISHA COAST NEAR DHAMARA (ODISHA) AROUND 20.8N/86.8E. THE TIME OF LANDFALL IS VARYING BETWEEN 24/15 UTC TO 25/01 UTC. INTENSITY AT THE TIME OF LANDFALL IS VARYING BETWEEN 55-65 KT BY VARIOUS MODELS.

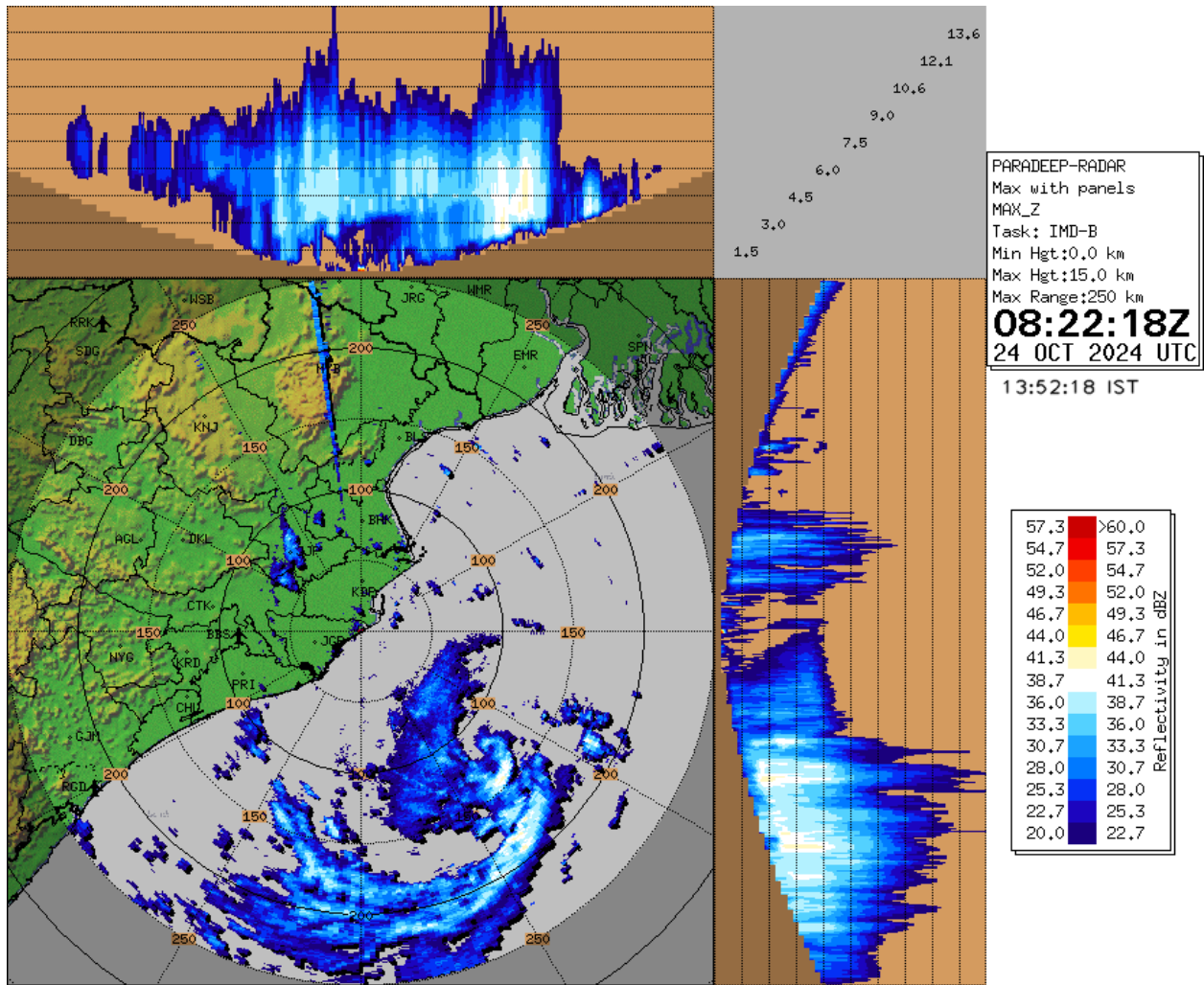
CONSIDERING ALL, SEVERE CYCLONIC STORM IS VERY LIKELY TO MOVE NORTH-NORTHWESTWARDS AND CROSS NORTH ODISHA AND WEST BENGAL COASTS BETWEEN 43053, ODISHA) AND SAGAR ISLAND (42903, WEST BENGAL) CLOSE TO BHITARKANIKA AND DHAMARA (ODISHA) DURING 1800 UTC OF 24TH TO 0000 UTC OF 25TH OCTOBER, 2024 AS A SEVERE CYCLONIC STORM WITH A WIND SPEED OF 100-110 KMPH GUSTING 120 KMPH.

(M. SHARMA)
SCIENTIST-D
RSMC NEW DELHI



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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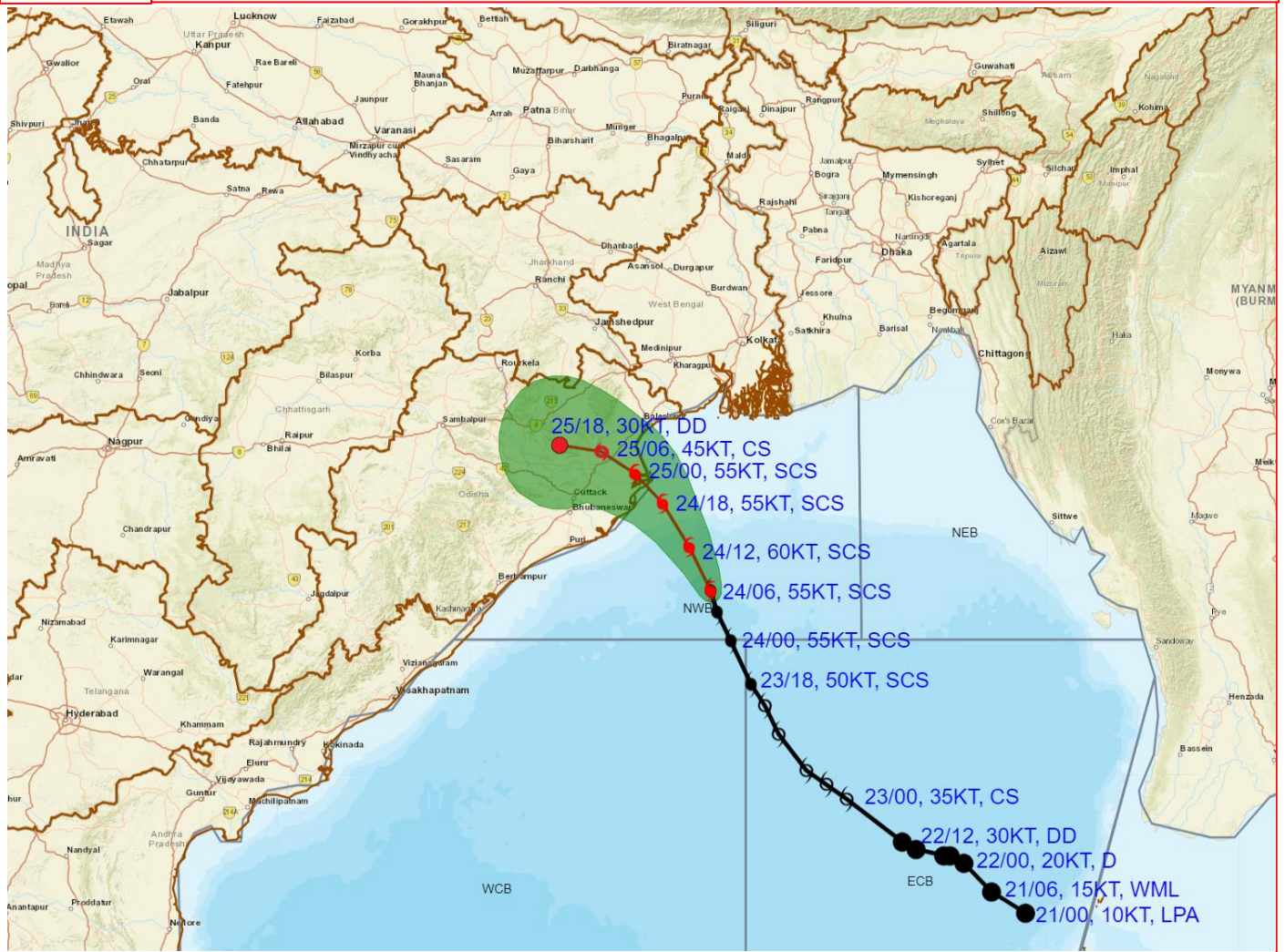
Radar Image of Paradip at 0822 UTC 24th Oct 2024



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OBSERVED AND FORECAST TRACK ALONGWITH CONE OF UNCERTAINTY OF SEVERE CYCLONIC STORM 'DANA' OVER NORTHWEST BAY OF BENGAL BASED ON 0600 UTC (1130 Hrs. IST) OF 24th OCTOBER 2024



DATE/TIME : IN UTC
IST : UTC + 0530
KT : NAUTICAL MILE S/HOUR = 1.85 KM/HOUR
LPA : 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 (48-63 KT)
VSCS : VERY SEVERE CYCLONIC STORM (64-89 KT)
ECS : EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)
SuCS : SUPER CYCLONIC STORM (≥ 120 KT)

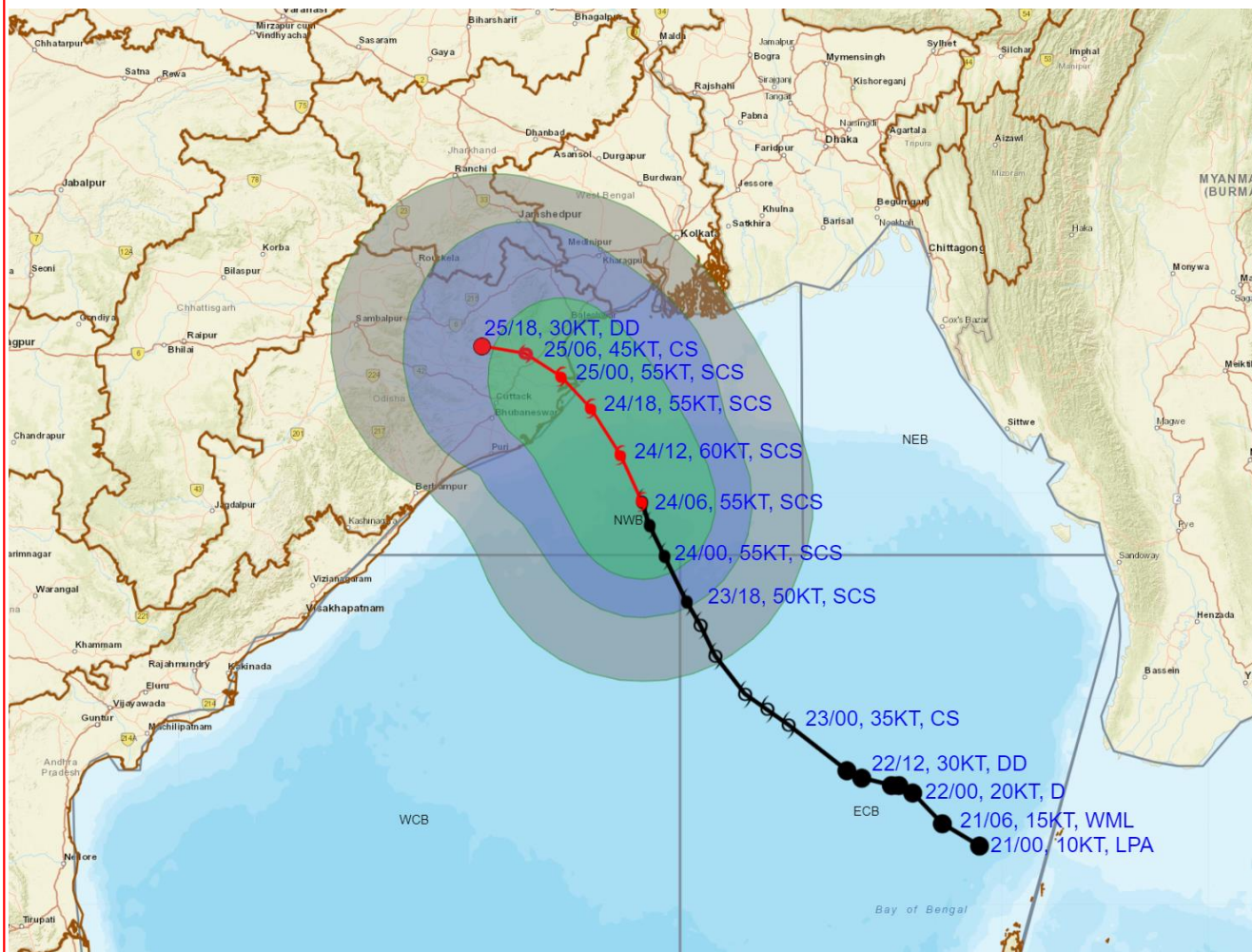
LESS THAN 34 KT
 34-47 KT
 ≥ 48 KT
 OBSERVED TRACK
 FORECAST TRACK
 CONE OF UNCERTAINTY

Forecast	DISTANCE (KM) AND DIRECTION FROM STATIONS		
Date and Time (UTC)	PARADIP (CWR)	DHAMARA	SAGAR ISLAND
24.10.24/0600	180, SE	210, SSE	270, S
25.10.24/0600	100, NNW	70, WNW	190, WSW

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OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF SEVERE CYCLONIC STORM 'DANA' OVER NORTHWEST BAY OF BENGAL BASED ON 0600 UTC (1130 Hrs. IST) OF 24th OCTOBER 2024



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SuCS : SUPER CYCLONIC STORM (≥ 120 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

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Storm Surge warning graphics

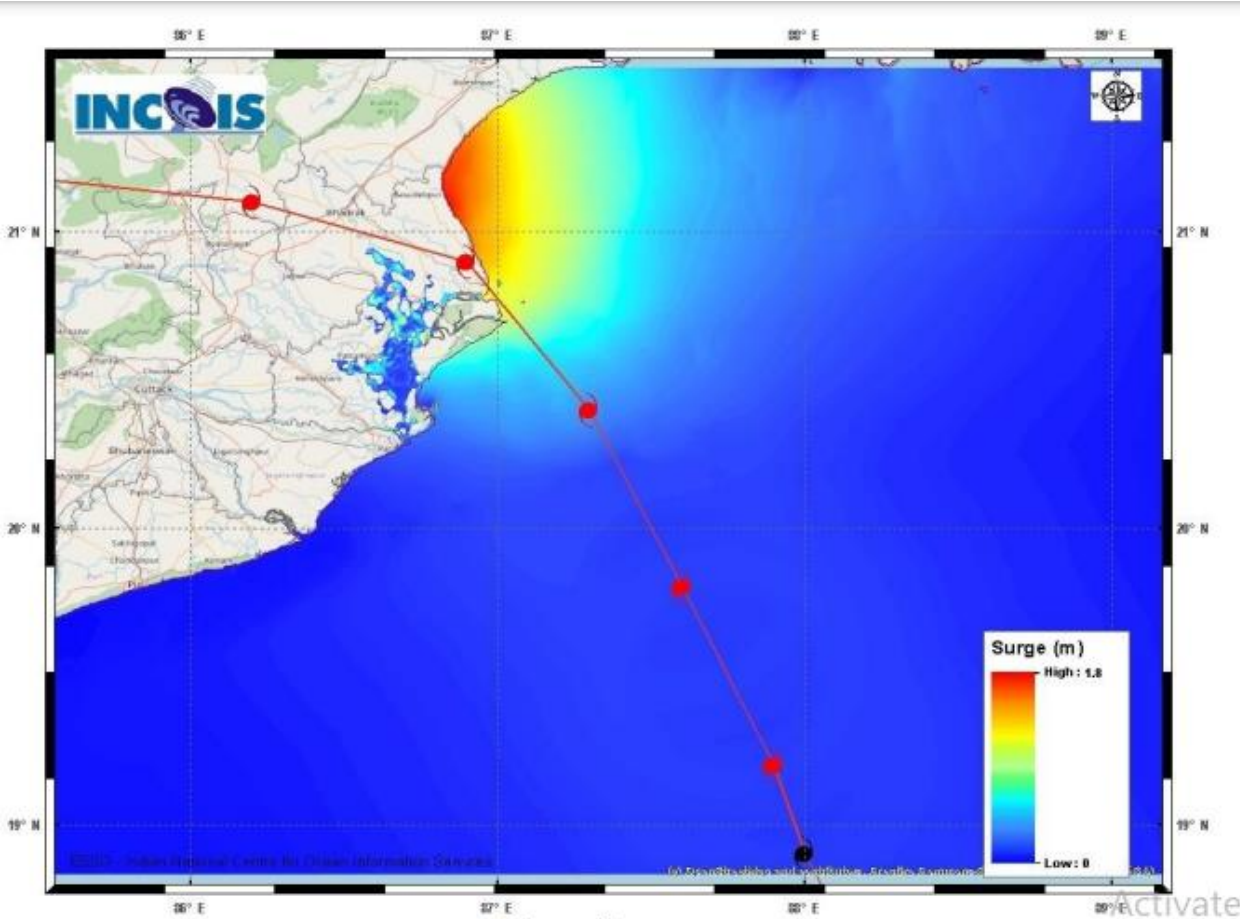


Figure: Storm surge map

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MANDAL/TALUK	DISTRICT	STATE/UNION TERRITORY	NEAREST PLACE OF HABITATION	STORM SURGE (m) *	EXPECTED INUNDATION EXTENT (km)
Baleswar	Baleswar	Odisha	Kumbhigari	0.5-1.8	Upto 1.08
Bhadrak	Bhadrak	Odisha	Mohanpur	1.1-1.8	Upto 1.00
Jagatsinghpur	Jagatsinghpur	Odisha	Musadia	0.2-0.5	Upto 2.54
Kanhi	Purba Medinipur	West Bengal	Dakshin Purushottampur	0.3-1.0	Upto 0.98
Kendraparha	Kendrapara	Odisha	Tikayat Nagar	0.2-1.2	Upto 3.01

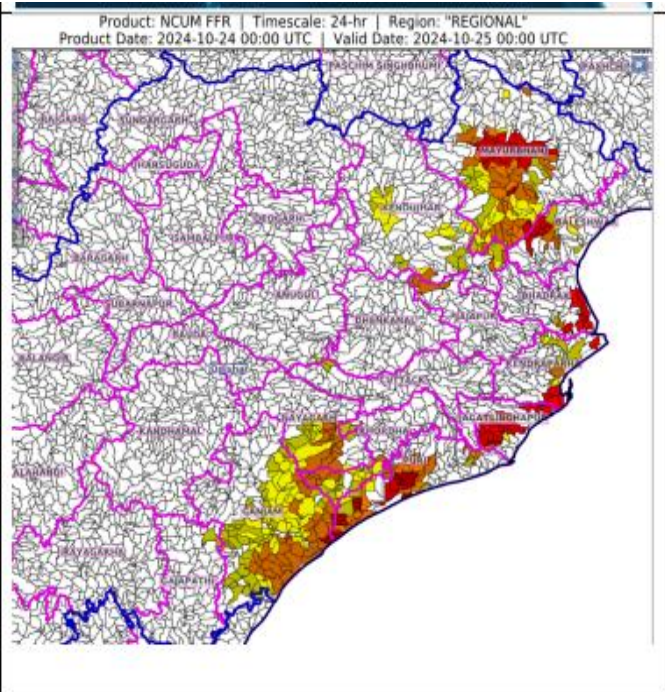
24 HOURS OUTLOOK FOR THE FLASH FLOOD RISK

24 hours Outlook for the Flash Flood Risk (FFR) till 0530 IST of 25-10-2024 :

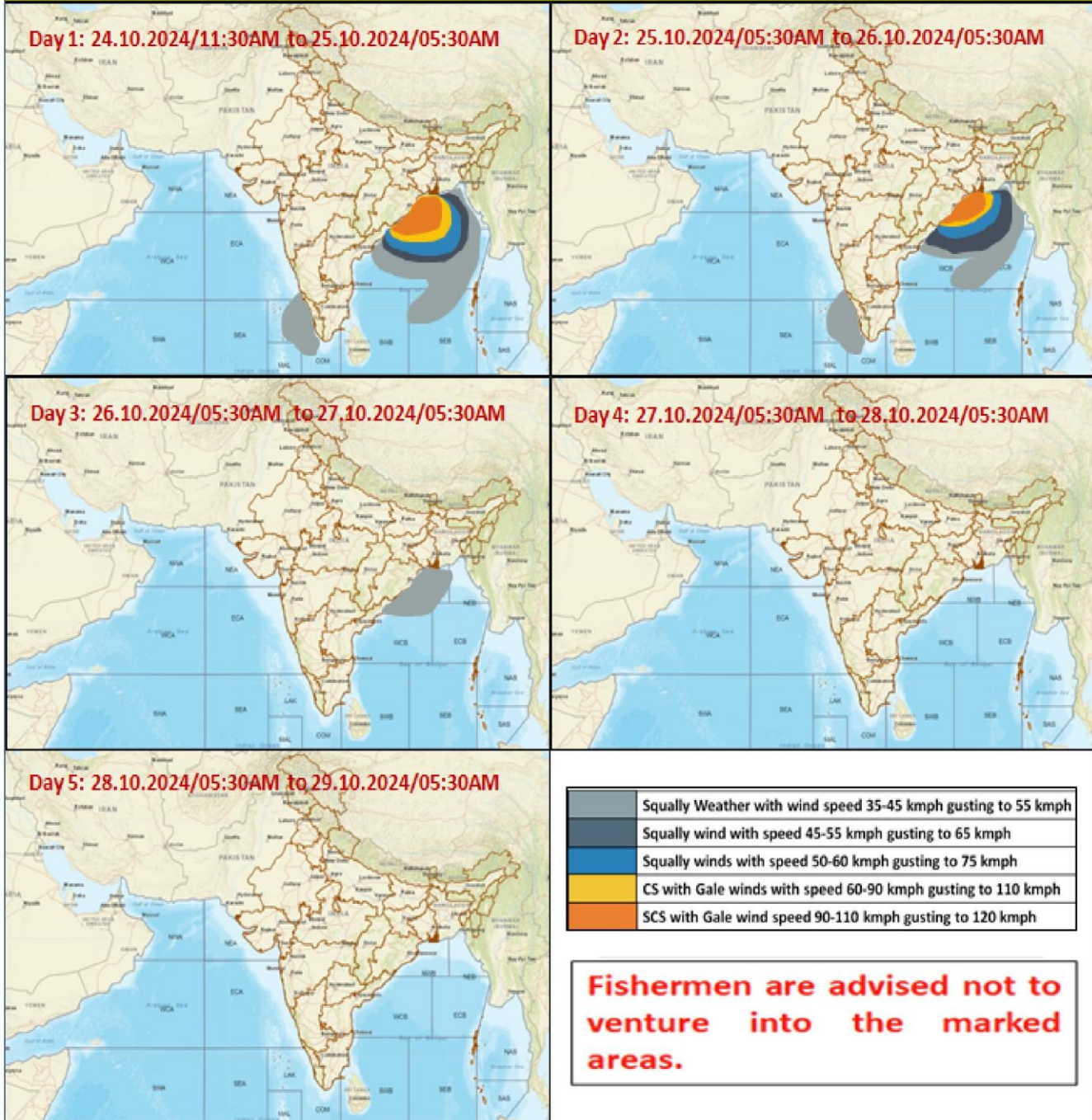
Low to Moderate flash flood risk likely over few watersheds & neighbourhoods of following Met Sub-division during next 24 hours

Odisha - Baleshwar, Bhadrak, Gajapati, Ganjam, Jagatsinghpur, Jajapur, Kendraparha, Kendujhar, Khordha, Mayurbhanj, Nayagarh and Puri districts.

Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as shown in map due to expected rainfall occurrence in next 24 hours.



Fishermen Warning Graphics



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