



## REGIONAL SPECIALISED METEOROLOGICAL CENTRE-TROPICAL CYCLONES, NEW DELHI TROPICAL WEATHER OUTLOOK

### DEMS-RSMC TROPICAL CYCLONES NEW DELHI DATED 28.11.2024

#### **SPECIAL TROPICAL WEATHER OUTLOOK FOR THE NORTH INDIAN OCEAN (THE BAY OF BENGAL AND THE ARABIAN SEA) VALID FOR THE NEXT 120 HOURS ISSUED AT 0300 UTC OF 28.11.2024 BASED ON 0000 UTC OF 28.11.2024.**

##### **Sub: Deep Depression over Southwest Bay of Bengal**

The Deep Depression over Southwest Bay of Bengal moved northwards with a speed of 2 Km/h during past 6 hours and lay centred at 0000 UTC of the 28th November 2024 over the same region near latitude 9.1°N and longitude 82.1°E, about 100 km east-northeast of Trincomalee (43418), 310 km southeast of Nagappattinam (43347), 410 km southeast of Puducherry (43331) and 480 km south-southeast of Chennai (43279).

It is very likely to move nearly north-northwestwards skirting Sri Lanka coast during next 12 hours. Thereafter, it will continue to move north-northwestwards and cross north Tamil Nadu-Puducherry coasts between Karaikal and Mahabalipuram around 0300 UTC of 30<sup>th</sup> November as a deep depression with a wind speed of 50-60 Km/h gusting to 70 Km/h. There is a possibility of marginal intensification of the deep depression into a Cyclonic Storm with wind speed 65-75 Km/h gusting to 85 Km/h over southwest Bay of Bengal between 1200 UTC of 28<sup>th</sup> November and 0000 UTC of 29<sup>th</sup> November.

The system is being tracked by DWR Karaikal. A continuous watch is being maintained for the movement and intensification of system.

Estimated Central Pressure in association with the system is 999 hPa and associated maximum sustained wind speed is 30 kts gusting to 40 kts. Sea condition is likely to remain very rough to High over southwest Bay of Bengal & along and off Sri Lanka coast till 29<sup>th</sup> November. Rough to very rough sea condition is likely along & off Tamil Nadu - Puducherry and South Andhra Pradesh coasts till 29<sup>th</sup> November. Rough to very rough sea condition is also likely over adjoining west central Bay of Bengal till 29<sup>th</sup> November.

Sea condition is likely to be rough to very rough over southwest Bay of Bengal & adjoining areas of westcentral Bay of Bengal, Gulf of Mannar & along and off Tamilnadu, Puducherry & Srilanka coasts till 1200 UTC of 30<sup>th</sup> November. The sea condition could be very rough to high over southwest Bay of Bengal during 1200 UTC of 28<sup>th</sup> November to 0000 UTC of 29<sup>th</sup> November.

As per latest satellite imagery, intensity of the system is characterized as T2.0. Associated scattered to broken low and medium clouds with embedded intense to very intense convection lay over south & adjoining central Bay of Bengal and neighborhood between latitude 7.0N to 17.0N and longitude 80.0E to 92.0E, Sri Lanka, Palk Strait, Gulf of Mannar, Tamil Nadu and Coastal Andhra Pradesh. Minimum cloud top temperature is minus 80-93°C.

Forecast track and intensity are given in the following table

Date/ Time (UTC)	Position (Lat. °N/ long. °E)	Maximum sustained surface wind speed (Km/h)	Category of cyclonic disturbance
28.11.24/0000	9.1/82.1	55-65 gusting to 75	Deep Depression
28.11.24/0600	9.6/82.0	55-65 gusting to 75	Deep Depression
28.11.24/1200	10.0/81.8	60-70 gusting to 80	Cyclonic Storm
28.11.24/1800	10.4/81.6	65-75 gusting to 85	Cyclonic Storm
29.11.24/0000	10.7/81.3	60-70 gusting to 80	Cyclonic Storm
29.11.24/1200	11.3/80.7	55-65 gusting to 75	Deep Depression
30.11.24/0000	11.7/80.1	50-60 gusting to 70	Deep Depression
30.11.24/1200	12.1/79.5	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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## Remarks:

Currently, the system has moved away from the intense patch of higher SST of about 30°C (6-10°N and 84-88°E) and is an area with relatively lower SST (29°C). Further the SST is relatively less along & off the Tamil Nadu coast. The total precipitable water imagery is indicating warm moist air around system area. However, colder air incursion is seen in the southwest sector. The tropical cyclone heat potential is less than 40 KJ/cm<sup>2</sup> over southwest & adjoining westcentral BoB along & off Sri Lanka/Tamil Nadu/ Andhra Pradesh coasts. The increase in barrier layer depth over the southwest BoB may also lead to marginal weakening near coast. The land interactions with Sri Lanka coast is also inhibiting intensification of system.

Madden Julian Oscillation (MJO) is in phase 4 with amplitude more than 1 and would move across phase 5 from 29<sup>th</sup> onwards. Presence of Equatorial Rossby Waves over south BoB, MJO, strong westerly wind anomaly over south BoB and easterly wind anomaly to its north over South & adjoining central BoB during 28<sup>th</sup> November indicate a favourable environment for intensification of system.

Low level positive cyclonic vorticity at 850 hpa level is around  $100 \times 10^{-5} \text{ s}^{-1}$  over the system area and is extending up to 200 hPa level. The low level convergence is around  $20 \times 10^{-5} \text{ s}^{-1}$  to the northeast of system area. Upper level divergence is around  $50 \times 10^{-5} \text{ s}^{-1}$  to the northeast of system centre. Zone of convergence and divergence are not aligned. Vertical wind shear is moderate (15-20 kt) over the system area and is high to the north of 10°N and along the Tamil Nadu coast. The system is being steered north-northwestwards along the periphery of upper tropospheric ridge near 13°N.

Various environmental features (higher SST, warm moist air incursion into the core, high ocean thermal energy, moderate wind shear, favourable MJO & Equatorial Rossby Waves) are indicating favourable environment for marginal intensification of system till 28<sup>th</sup> November. However, all features indicate that system would show weakening as it moves towards Tamil Nadu coast (North of 11°N).

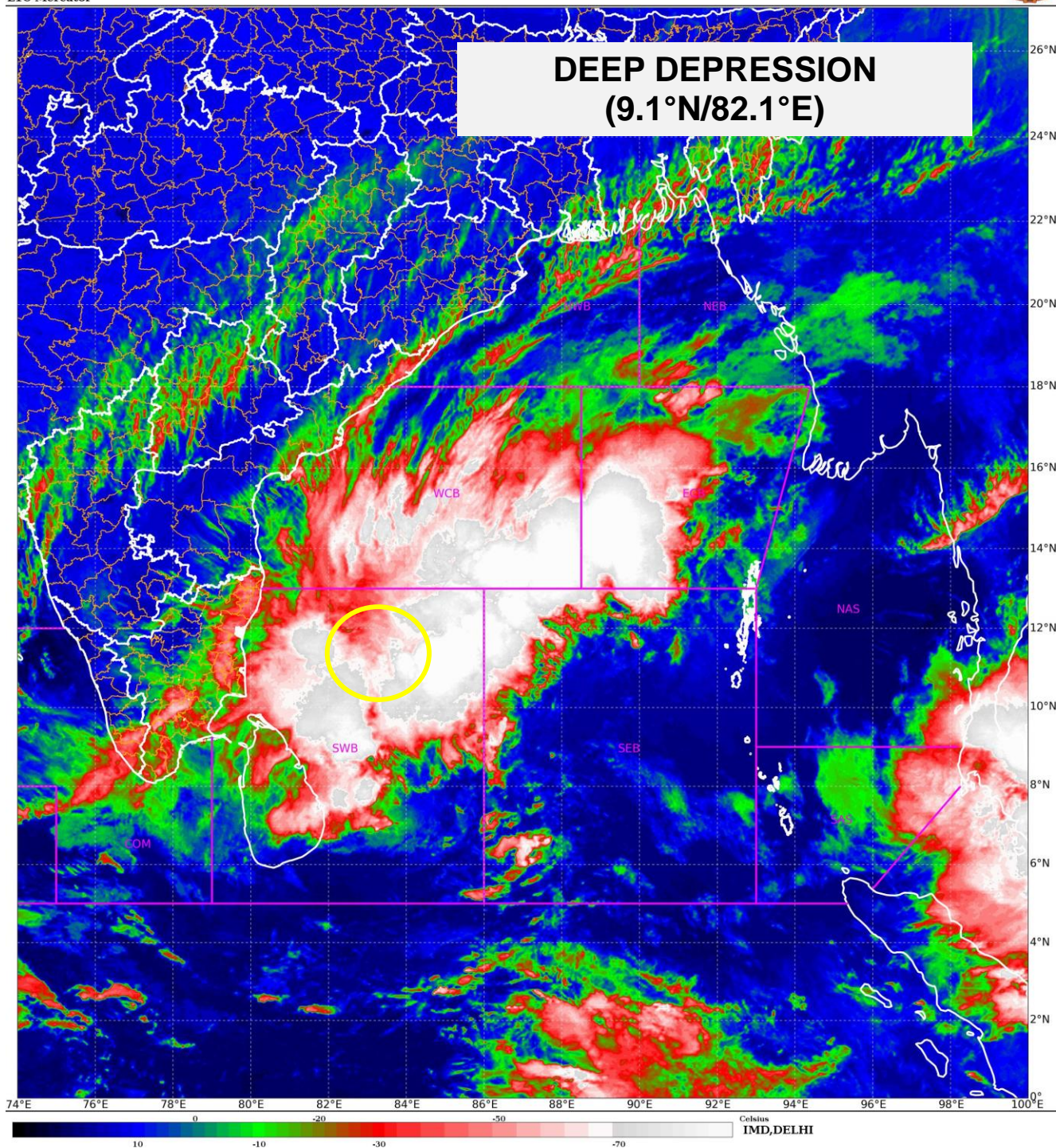
There is still lack of consensus among various models with respect to movement and landfall. Some of the models are indicating intensification into marginal cyclonic storm during 28<sup>th</sup> /0000UTC to 29<sup>th</sup> /0000 UTC and gradual weakening of the system thereafter as it moves towards the coast.

**It is inferred that the deep depression over Southwest Bay of Bengal** is very likely to move nearly north-northwestwards skirting Sri Lanka coast during next 12 hours. Thereafter, it will continue to move north-northwestwards and cross north Tamil Nadu-Puducherry coasts between Karaikal and Mahabalipuram around 0300 UTC of 30<sup>th</sup> November as a deep depression with a wind speed of 50-60 Kmph gusting to 70 Kmph. There is a possibility of marginal intensification of the deep depression into a Cyclonic Storm with wind speed 65-75 Kmph gusting to 85 Kmph over southwest Bay of Bengal between 1200 UTC of 28<sup>th</sup> November and 0000 UTC of 29<sup>th</sup> November.

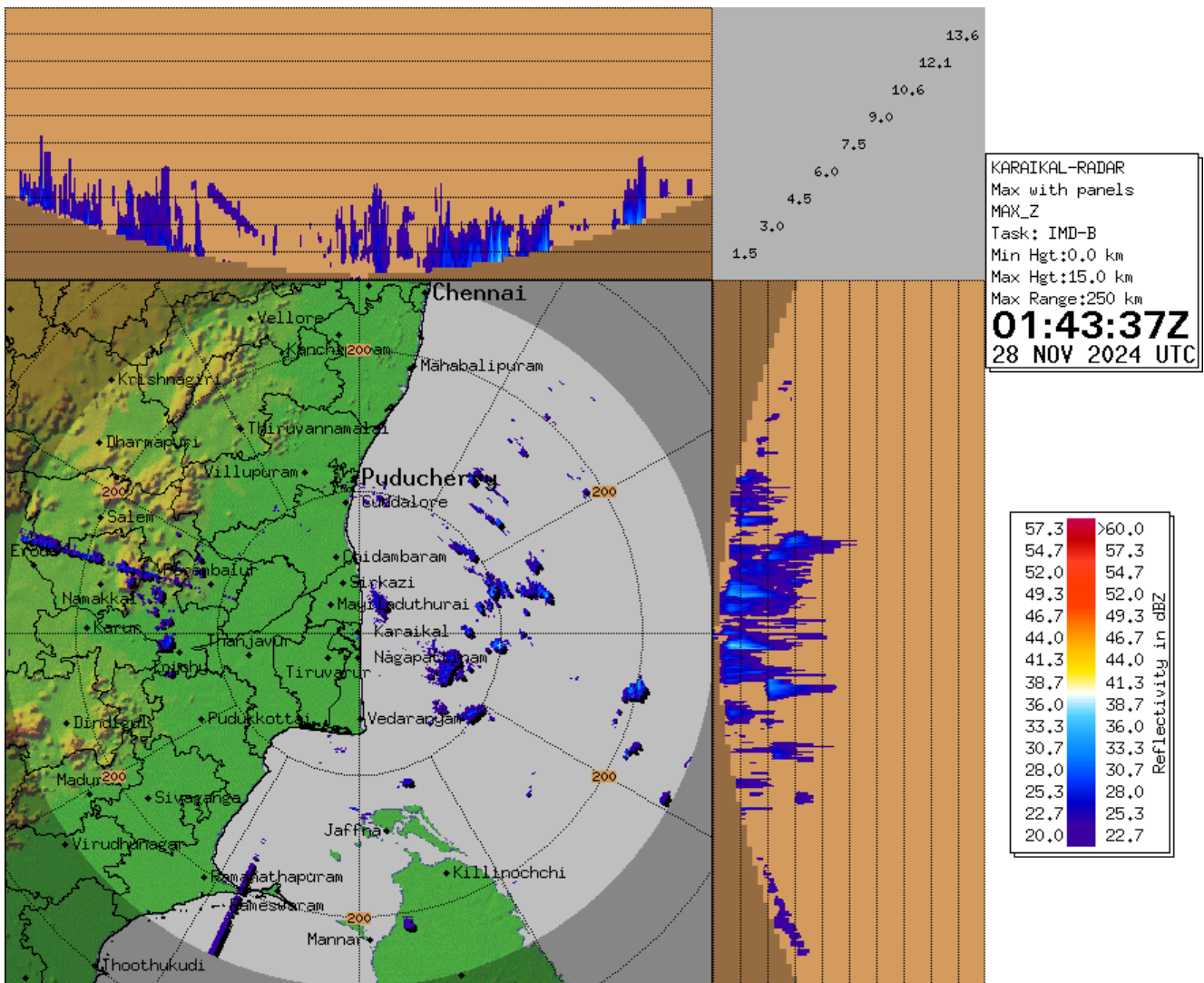
**Next bulletin will be issued at 0600 UTC of 28<sup>th</sup> November, 2024.**

(Shibin Balakrishnan)  
Scientist D, RSMC, New Delhi





## Doppler Weather Radar Observation (Max Z) at Karaikal

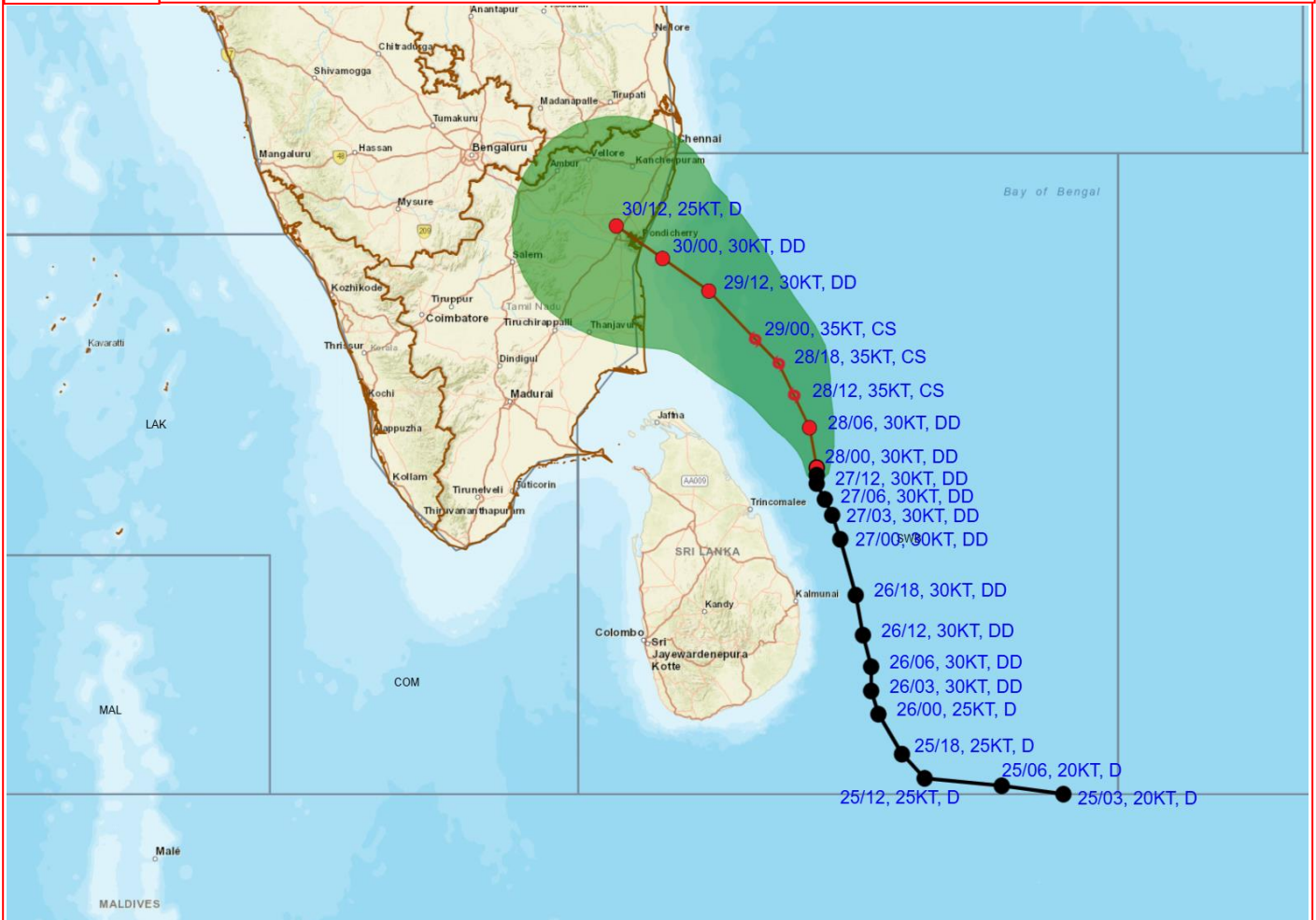








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**OBSERVED AND FORECAST TRACK ALONG WITH CONE OF UNCERTAINTY OF DEEP DEPRESSION OVER SOUTHWEST BAY OF BENGAL BASED ON 0000 UTC (0530 HRS. IST) OF 28<sup>TH</sup> NOVEMBER, 2024**

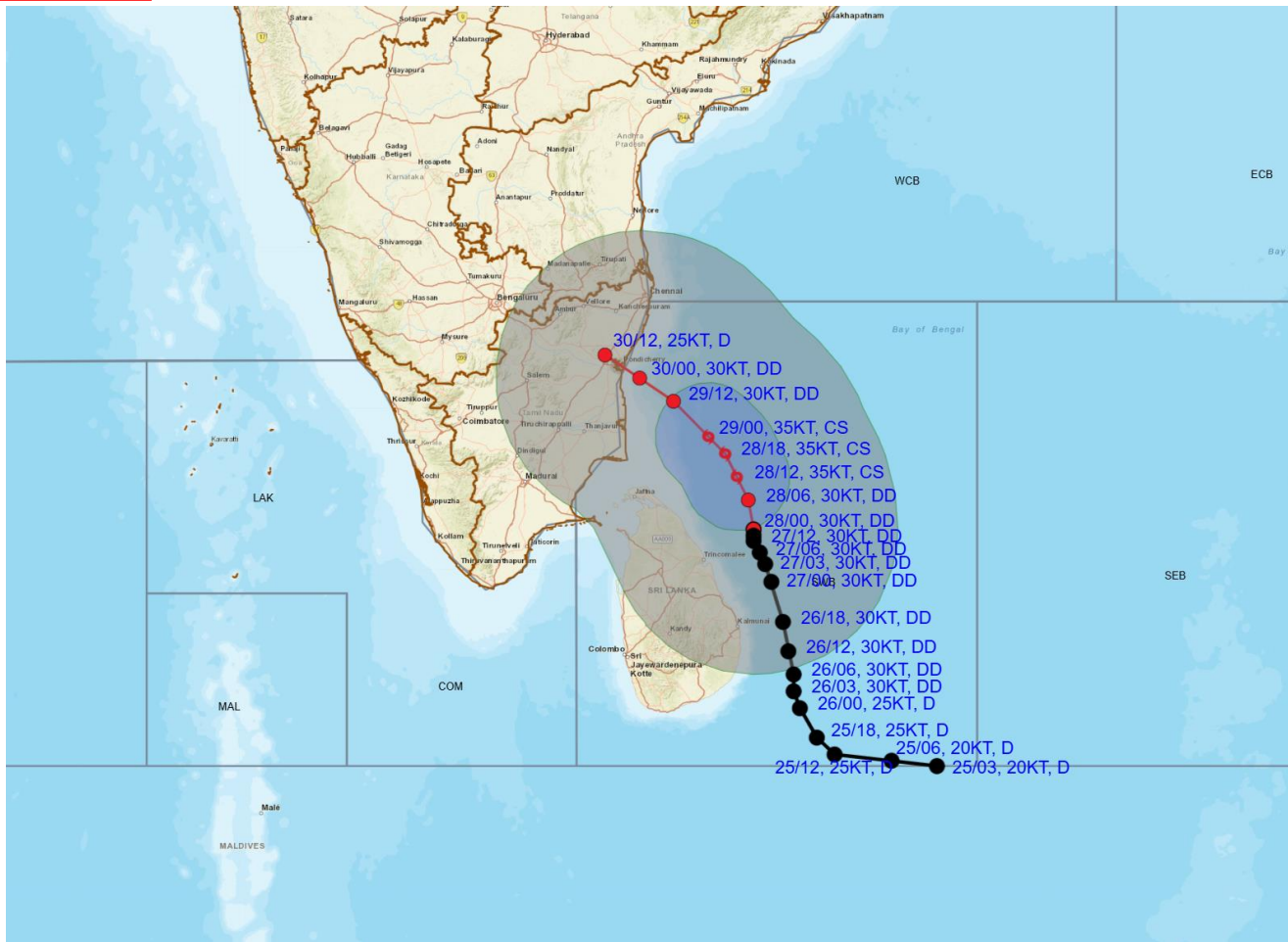


DATE/TIME	: IN UTC	<div> LESS THAN 34 KT</div> <div> 34-47 KT</div> <div> ≥ 48 KT</div> <div> OBSERVED TRACK</div> <div> FORECAST TRACK</div> <div> CONE OF UNCERTAINTY</div>
IST	: UTC + 0530	
KT	: NAUTICAL MILE S/HOUR = 1.85 KM/HOUR	
LPA	: LOW PRESSURE AREA	
WML	: WELL MARKED LOW PRESSURE AREA	
D	: DEPRESSION (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)	
ESCS	: EXTREMELY SEVERE CYCLONIC STORM (90-119 KT)	
SuCS	: SUPER CYCLONIC STORM (≥120 KT)	

Forecast	DISTANCE (KM) AND DIRECTION FROM STATIONS				
Date and Time (UTC)	BATTICALOA	TRINCOMALEE	NAGAPPATTINAM	PUDUCHERRY	CHENNAI/MINAMBAKKAM
28.11.24/0000	160, NNE	110, ENE	310, SE	410, SE	480, SSE
29.11.24/0000	330, N	240, N	160, E	210, SE	280, SSE
30.11.24/0000	480, NNW	370, NNW	110, NNE	40, SE	140, S



## OBSERVED AND FORECAST TRACK ALONGWITH QUADRANT WIND DISTRIBUTION OF DEEP DEPRESSION OVER SOUTHWEST BAY OF BENGAL BASED ON 0000 UTC (0530 HRS. IST) OF 28<sup>TH</sup> NOVEMBER, 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 ( $\geq 120$  KT)

● LESS THAN 34 KT  
● 34-47 KT  
●  $\geq 48$  KT  
— OBSERVED TRACK  
— FORECAST TRACK  
— CONE OF UNCERTAINTY  
AREA OF MAXIMUM SUSTAINED WIND SPEED:  
■ 28-33 KT (52-61 KMPH)  
■ 34-47 KT (62-91 KMPH)  
■ 50-63 KT (92-117 KMPH)  
■  $\geq 64$  KT ( $\geq 118$  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
$\geq 64$ ( $\geq 118$ )	Phenomenal	Total suspension of fishing operations

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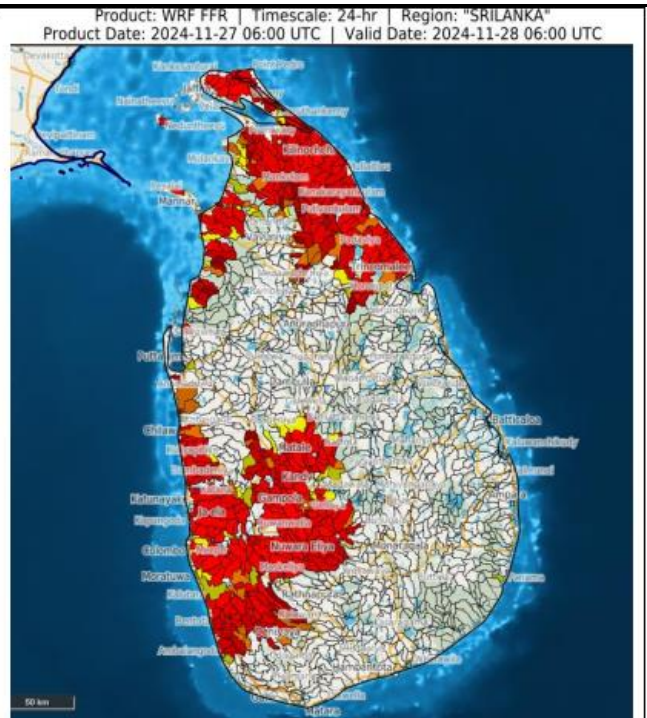


## FLASH FLOOD OUTLOOK

### **24 hours Flash Flood Risk Outlook till 0600 UTC of 28.11.2024:**

**High flash flood threat** likely over few watersheds and neighbourhoods of Sri Lanka (as shown in adjacent map) during next 24 hours.

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.

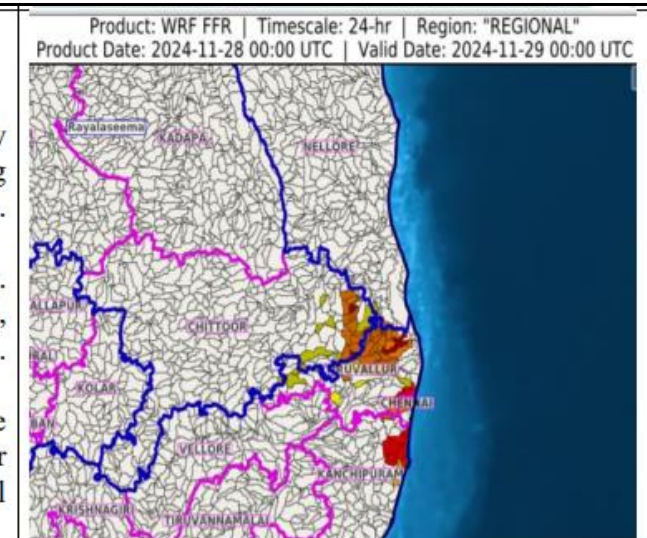


### **24 hours Outlook for the Flash Flood Risk (FFR) till 0530 IST of 29-11-2024 :**

**Low flash flood risk** likely over few watersheds & neighbourhoods of following Met Sub-divisions during next 24 hours.

**Royalaseema** - Chittoor district.  
**Tamil Nadu - Pudu & Karaikal** - Chennai, Kanchipuram and Tiruvallur 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.



### **Flash Flood Risk**



**High Risk (Take Action)**



**Moderate Risk (Be Prepared)**

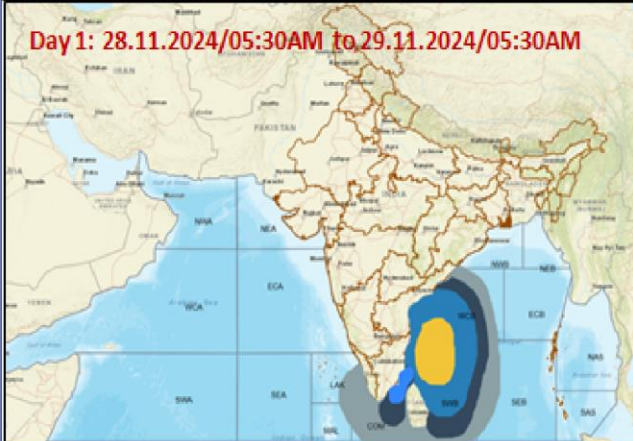


**Low Risk (Be Updated)**

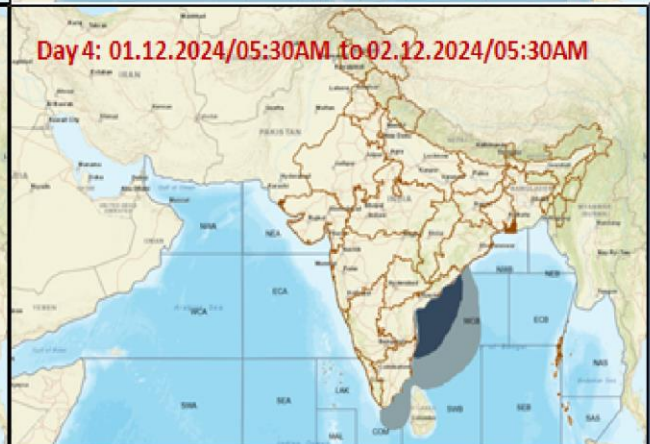
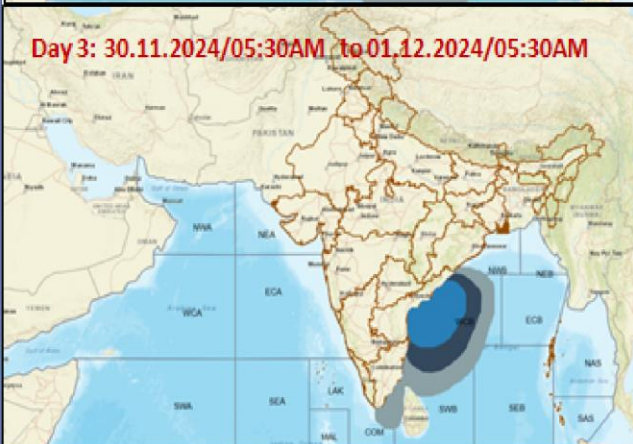


## Fishermen Warning Graphics

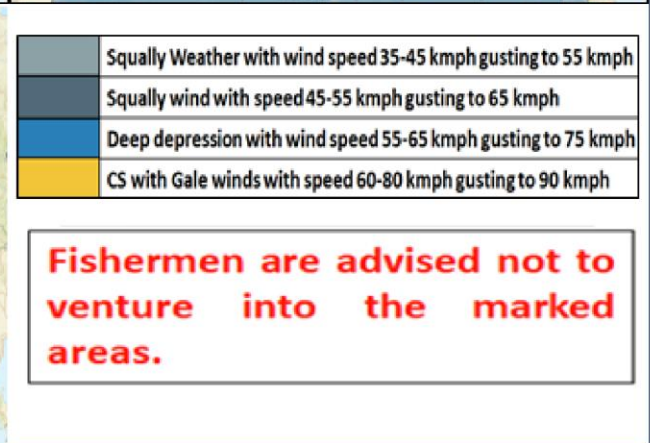
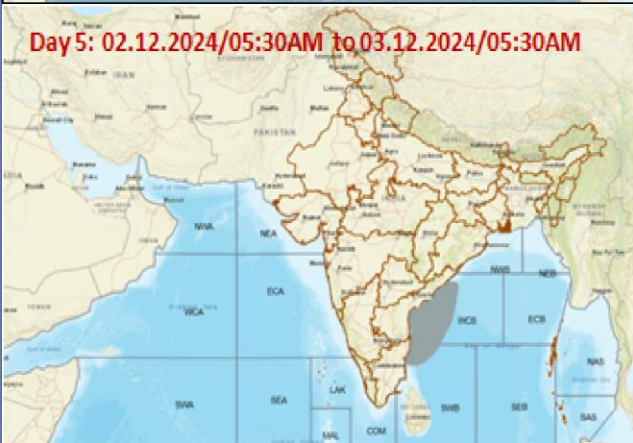
**Day 1: 28.11.2024/05:30AM to 29.11.2024/05:30AM**



**Day 3: 30.11.2024/05:30AM to 01.12.2024/05:30AM**



**Day 5: 02.12.2024/05:30AM to 03.12.2024/05:30AM**



Squally Weather with wind speed 35-45 kmph gusting to 55 kmph

Squally wind with speed 45-55 kmph gusting to 65 kmph

Deep depression with wind speed 55-65 kmph gusting to 75 kmph

CS with Gale winds with speed 60-80 kmph gusting to 90 kmph

**Fishermen are advised not to venture into the marked areas.**