Annexure I

राष्ट्रीय मौसम पूर्वानुमान केन्द्र
भारत मौसम विज्ञान विभाग
पृथ्वी विज्ञान मंत्रालय

National Weather Forecasting Centre
India Meteorological Department
Ministry of Earth Sciences

Saturday, November 30, 2024
Time of Issue: 0930 hours IST
(MORNING)

All India Impact Based Weather Warning Bulletin

Weather Warnings for next 7 days is given below:
(Graphics for warnings & rainfall distribution (Table 1) are given below the text:

30 November (Day 1):

- **Heavy to very Heavy rainfall** at a few places **with extremely heavy falls (≥ 20 cm)** very likely at isolated places over north Tamil Nadu; **Heavy to very Heavy with extremely heavy falls (≥ 20 cm)** at isolated places over Rayalaseema and south Coastal Andhra Pradesh**; Heavy rainfall (≥ 7 cm)** at isolated places over Kerala & Mahe, South Interior Karnataka and Andaman & Nicobar Islands.

- **Dense fog** very likely in isolated pockets of Uttar Pradesh in night/morning hours.

- **Thunderstorm accompanied with lightning** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam, Kerala & Mahe, South Interior Karnataka, Telangana and Rayalaseema**.**

- **Squally wind speed reaching 45-55 kmph gusting to 65 kmph** is likely to prevail along & off South Tamil Nadu coast and Gulf of Mannar; **Squally wind speed reaching 55-65 kmph gusting to 75 kmph** is likely to prevail over adjoining areas of westcentral Bay of Bengal; **Squally wind speed reaching 55-65 kmph gusting to 75 kmph** is very likely to prevail Along & off East Sri Lanka coasts; **Gale wind speed reaching 75-85 kmph gusting to 95 kmph** is likely to prevail over southwest Bay of Bengal, along & off North Tamil Nadu - Puducherry and adjoining South Andhra Pradesh coasts. Fishermen are advised not to venture into these areas.

01 December (Day 2):

- **Heavy to very Heavy rainfall (≥ 12 cm**) very likely at isolated places over Interior Tamil Nadu, Kerala & Mahe and South Interior Karnataka; **Heavy rainfall (≥ 7 cm)** at isolated places over remaining parts of Tamil Nadu, Puducherry & Karaikal, Coastal Andhra Pradesh & Yanam and Rayalaseema.

- **Dense fog** very likely in isolated pockets of Uttar Pradesh in night/morning hours.

- **Thunderstorm accompanied with lightning** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Coastal & South Interior Karnataka and Telangana**.**

- **Squally wind speed reaching 45-55 kmph gusting to 65 kmph** likely to prevail along & off South Tamil Nadu coast and Gulf of Mannar, Along & off East Sri Lanka coasts, along & off North Tamil Nadu – Puducherry and adjoining South Andhra Pradesh coasts & adjoining areas of westcentral Bay of Bengal.Fishermen are advised not to venture into these areas.

02 December (Day 3):

- **Heavy to very Heavy rainfall (≥ 12 cm**) very likely at isolated places over Kerala & Mahe and South Interior Karnataka. **Heavy rainfall (≥ 7 cm)** at isolated places over Tamil Nadu, Puducherry & Karaikal and Lakshadweep.

- **Thunderstorm accompanied with lightning** very likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Lakshadweep, Coastal & South Interior Karnataka and Telangana**.**

- **Squally wind speed reaching 45-55 kmph gusting to 65 kmph** likely to prevail along & off South Tamil Nadu coast and Gulf of Mannar, Along & off East Sri Lanka coasts, along & off North Tamil Nadu – Puducherry and adjoining South Andhra Pradesh coasts & adjoining areas of westcentral Bay of Bengal.Fishermen are advised not to venture into these areas.

03 December (Day 4):

- **Heavy rainfall (≥ 7 cm)** likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Coastal Karnataka and Lakshadweep.

- **Thunderstorm accompanied with lightning** likely at isolated places over Tamil Nadu, Puducherry & Karaikal, Kerala & Mahe, Lakshadweep, Coastal & South Interior Karnataka and Telangana.

04 December (Day 5):

- **No Warning**.

05 December (Day 6):

- **No Warning**.

06 December (Day 7):

- **No Warning**.

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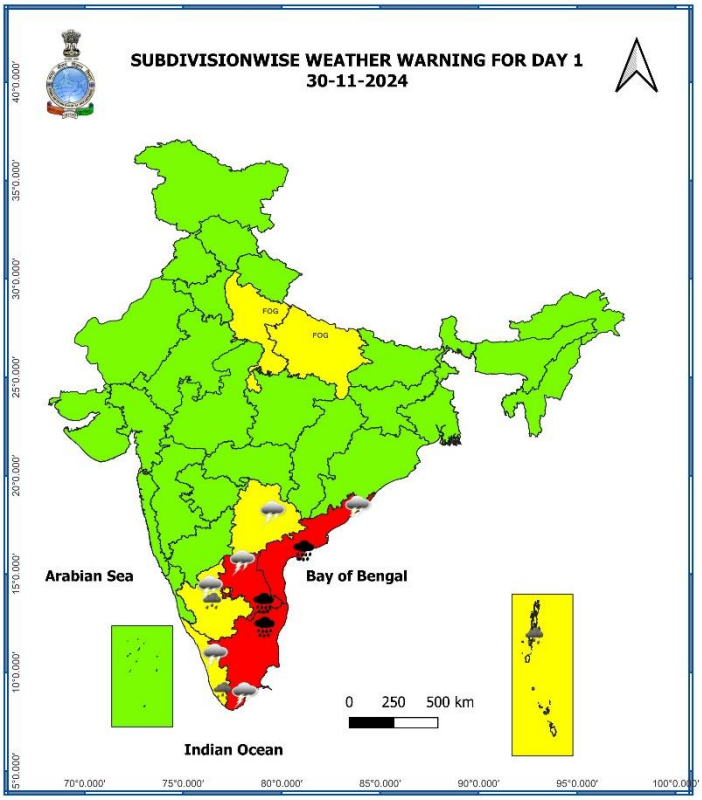

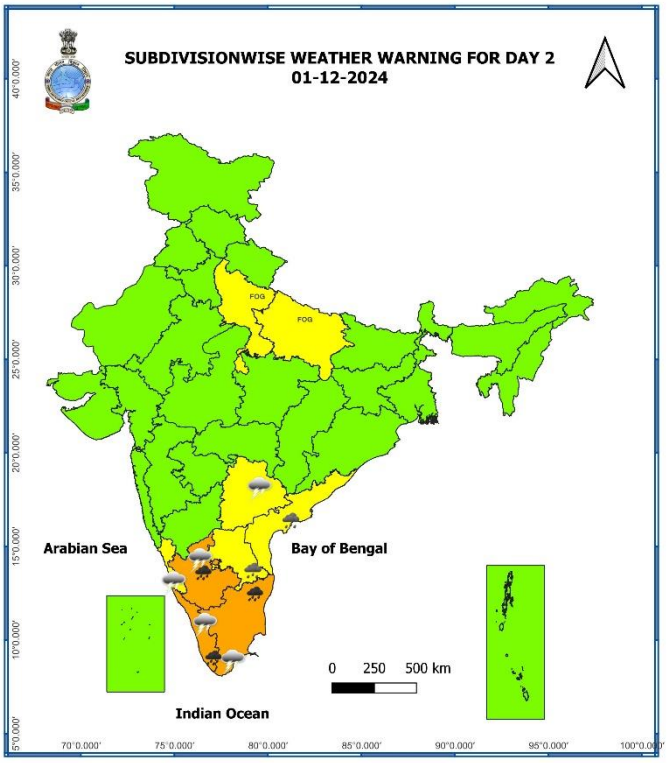

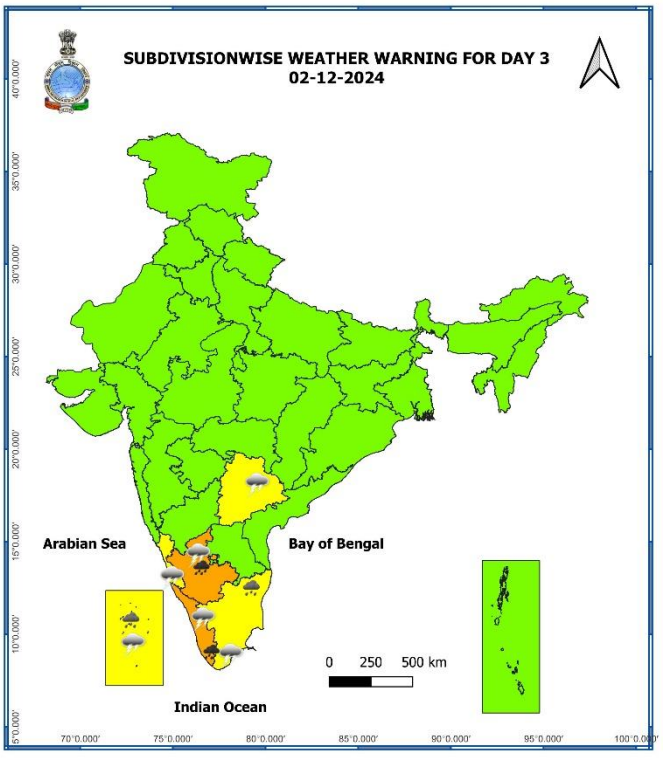

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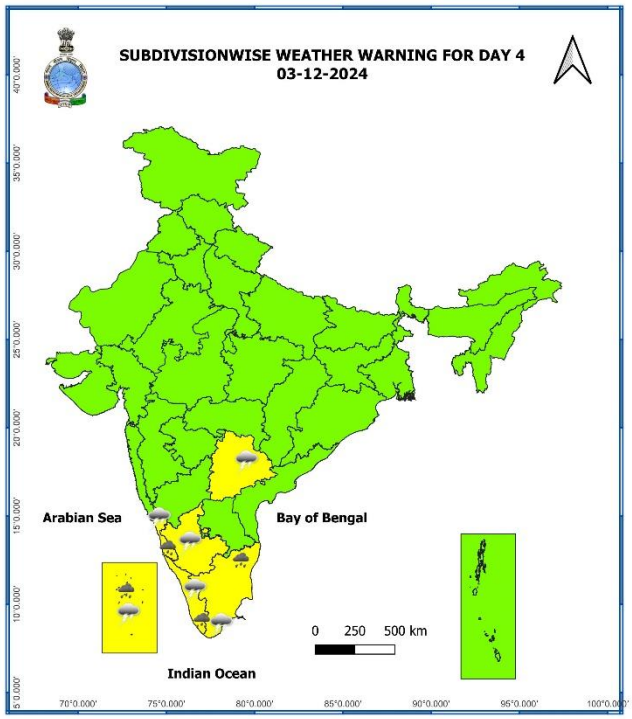

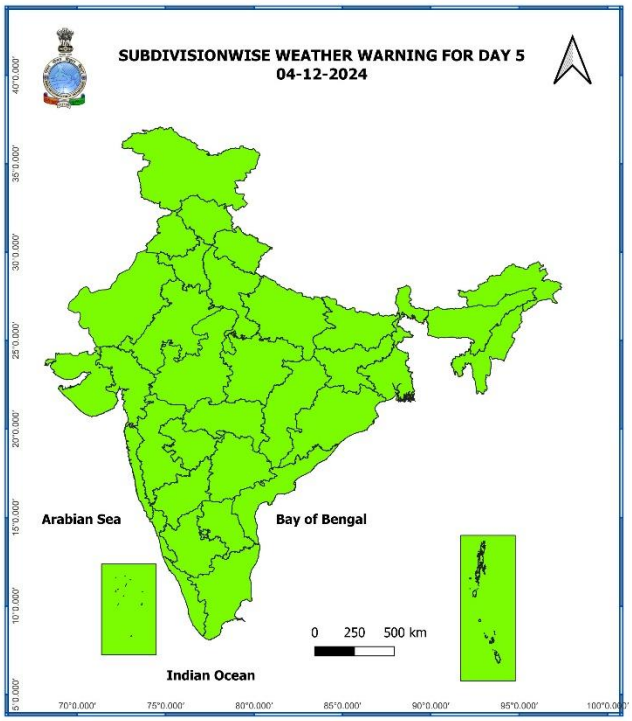

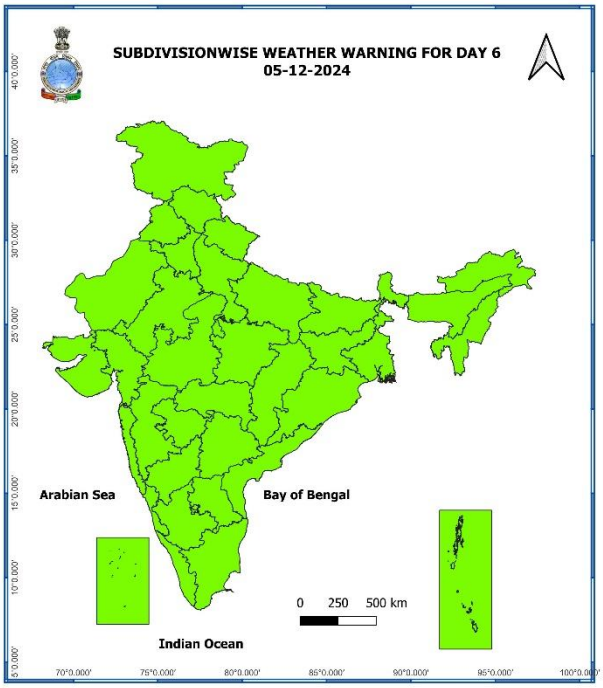

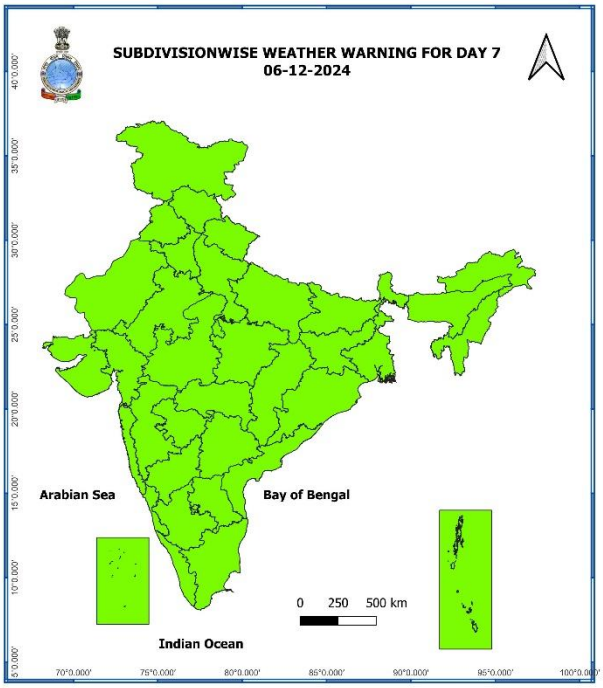

- **Action may be taken based on ORANGE AND RED COLOUR warnings.**
- **Vulnerable regions likely urban and hilly areas action may be initiated for heavy rainfall warning.**
- **As the lead period increases forecast accuracy decreases.**

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Table-1

7 Days Rainfall Forecast								
S. No.	Subdivision	30-Nov	01-Dec	02-Dec	03-Dec	04-Dec	05-Dec	06-Dec
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
1	ANDAMAN & NICOBAR ISLANDS	FWS	FWS	SCT	SCT	FWS	FWS	FWS
2	ARUNACHAL PRADESH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
3	ASSAM & MEGHALAYA	DRY	DRY	DRY	DRY	DRY	DRY	DRY
4	NAGALAND, MANIPUR, MIZORAM & TRIPURA	ISOL	ISOL	ISOL	DRY	DRY	DRY	DRY
5	SUB-HIMALAYAN WEST BENGAL & SIKKIM	DRY	DRY	DRY	DRY	DRY	DRY	DRY
6	GANGETIC WEST BENGAL	ISOL	ISOL	DRY	DRY	DRY	DRY	DRY
7	ODISHA	DRY	DRY	DRY	DRY	DRY	DRY	DRY
8	JHARKHAND	DRY	DRY	DRY	DRY	DRY	DRY	DRY
9	BIHAR	DRY	DRY	DRY	DRY	DRY	DRY	DRY
10	EAST UTTAR PRADESH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
11	WEST UTTAR PRADESH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12	UTTARAKHAND	DRY	DRY	DRY	DRY	DRY	DRY	DRY
13	HARYANA CHANDIGARH & DELHI	DRY	DRY	DRY	DRY	DRY	DRY	DRY
14	PUNJAB	DRY	DRY	DRY	DRY	DRY	DRY	DRY
15	HIMACHAL PRADESH	ISOL	ISOL	ISOL	ISOL	DRY	DRY	DRY
16	JAMMU & KASHMIR AND LADAKH	ISOL	ISOL	SCT	ISOL	DRY	DRY	DRY
17	WEST RAJASTHAN	DRY	DRY	DRY	DRY	DRY	DRY	DRY
18	EAST RAJASTHAN	DRY	DRY	DRY	DRY	DRY	DRY	DRY
19	WEST MADHYA PRADESH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
20	EAST MADHYA PRADESH	DRY	DRY	ISOL	ISOL	DRY	DRY	DRY
21	GUJARAT REGION	DRY	DRY	DRY	DRY	DRY	DRY	DRY
22	SAURASHTRA & KUTCH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
23	KONKAN & GOA	DRY	DRY	ISOL	ISOL	DRY	DRY	DRY
24	MADHYA MAHARASHTRA	DRY	DRY	ISOL	ISOL	DRY	DRY	DRY
25	MARATHAWADA	DRY	DRY	ISOL	ISOL	DRY	DRY	DRY
26	VIDARBHA	DRY	ISOL	ISOL	ISOL	DRY	DRY	DRY
27	CHHATTISGARH	ISOL	ISOL	ISOL	ISOL	ISOL	ISOL	ISOL
28	COASTAL ANDHRA PRADESH & YANAM	FWS	SCT	SCT	ISOL	ISOL	ISOL	ISOL
29	TELANGANA	ISOL	SCT	SCT	ISOL	ISOL	ISOL	ISOL
30	RAYALASEEMA	FWS	SCT	SCT	SCT	ISOL	ISOL	ISOL
31	TAMILNADU PUDUCHERRY & KARAIKAL	FWS	FWS	FWS	SCT	SCT	SCT	SCT
32	COASTAL KARNATAKA	DRY	SCT	FWS	FWS	SCT	ISOL	ISOL
33	NORTH INTERIOR KARNATAKA	DRY	ISOL	SCT	ISOL	ISOL	ISOL	ISOL
34	SOUTH INTERIOR KARNATAKA	ISOL	SCT	FWS	FWS	ISOL	ISOL	ISOL
35	KERALA & MAHE	SCT	WS	WS	FWS	SCT	ISOL	ISOL
36	LAKSHADWEEP	DRY	SCT	FWS	WS	WS	SCT	SCT

- **As the lead period increases forecast accuracy decreases.**

Annexure I

Impact & Action Suggested due to

- ✓ **Heavy to very Heavy rainfall with extremely heavy falls** at isolated places over north Tamil Nadu, Rayalaseema, south Coastal Andhra Pradesh on 30th November.
- ✓ **Isolated heavy to very heavy rainfall** over Interior Tamil Nadu on 01st December; Kerala & Mahe and South Interior Karnataka on 01st & 02nd December.
- ✓ **Low to Moderate flash flood risk** likely over Tamil Nadu, Puducherry & Karaikal, Rayalaseema and Coastal Andhra Pradesh & Yanam on 30th November & 01st December. **(ANNEXURE I)**

A. Impact Expected

❖ Localized Flooding of roads, water logging in low lying areas and closure of underpasses mainly in urban areas of the above region.
❖ Occasional reduction in visibility due to heavy rainfall.
❖ Disruption of traffic in major cities due to water logging in roads leading to increased travel time.
❖ Minor damage to kutcha roads.
❖ Possibilities of damage to vulnerable structure.
❖ Localized Landslides/Mudslides
❖ Damage to horticulture and standing crops in some areas due to inundation.
❖ It may lead to riverine flooding in some river catchments (for riverine flooding please visit Web page of CWC).

B. Action Suggested

❖ Check for traffic congestion on your route before leaving for your destination.
❖ Follow any traffic advisories that are issued in this regard.
❖ Avoid going to areas that face the water logging problems often.
❖ Avoid staying in vulnerable structure.

Impact expected due to dense/ very dense fog in the late night /morning hours

❖ Transport and Aviation:
- May affect some airports, highways and railway routes in the areas of met- sub-division.
- Difficult driving conditions with slower journey times.
- Unless taken precautionary measures, it may lead to some road traffic collisions.

❖ Power Sector:
- Chances of Tripping of Power lines in the very dense fog routes.

❖ Human Health:
- Lung related health impacts: Dense fog contains particulate matter and other pollutants and in case exposed it gets lodged in the lungs, clogging them and decreasing their functional capacity which increases episodes of wheezing, coughing and shortness of breath.
- Impact on people having asthma bronchitis: Long time exposure to dense fog may cause respiratory problem for people having asthma bronchitis and other lung related health problems.
- Eye Irritation: Dense fog contains pollutions of various types and these Pollutants in the air if exposed may tend to irritate the membranes of the eye causing various infections leading to redness or swelling of the eye.

Action suggested:

❖ Transport and Aviation:
- Be careful while driving or outing through any transport.
- Use fog lights during driving.
- Be in touch with airlines, railways and state transport for schedule of your journey.

❖ Power Sector:
- To keep ready Maintenance Team
- Human Health: To avoid outing until unless emergency and to cover the face.

Annexure I

Agromet advisories for Heavy Rainfall likely over Tamil Nadu, Kerala and Coastal Andhra Pradesh:

- In **Tamil Nadu**, drain out excess water from rice, sugarcane, cotton, turmeric, vegetables and other standing crop fields; coconut and banana orchards. Undertake propping in sugarcane. Provide mechanical support to banana plants to prevent lodging.
- Undertake picking of matured cotton bolls and harvesting of matured rice, maize, groundnut, finger millet, pigeon pea, areca nut, fruits and vegetables in **South Interior Karnataka** and harvesting of matured rice in **Andhra Pradesh** immediately. Keep the harvested produce in safer places or cover the produce with tarpaulin sheets in the fields.
- Provide adequate drainage facilities for removal of excess water from standing crop fields and fruit orchards in Andhra Pradesh and South Interior Karnataka.
- Provide mechanical support to horticultural crops and staking to vegetables.

Livestock and Fishery

- Keep the animals inside the shed during heavy rainfall and provide balanced feed.
- Store the feed and fodder at safer place to avoid spoilage from rainfall.
- Hang gunny bags all around poultry sheds.
- Construct an outlet with proper netting around the pond to drain out excess rain water, thereby preventing fishes/fingerlings from escaping in case of overflowing.
- Check and repair dykes around the ponds to avoid entry of runoff water from catchment area.

Flash Flood Guidance:

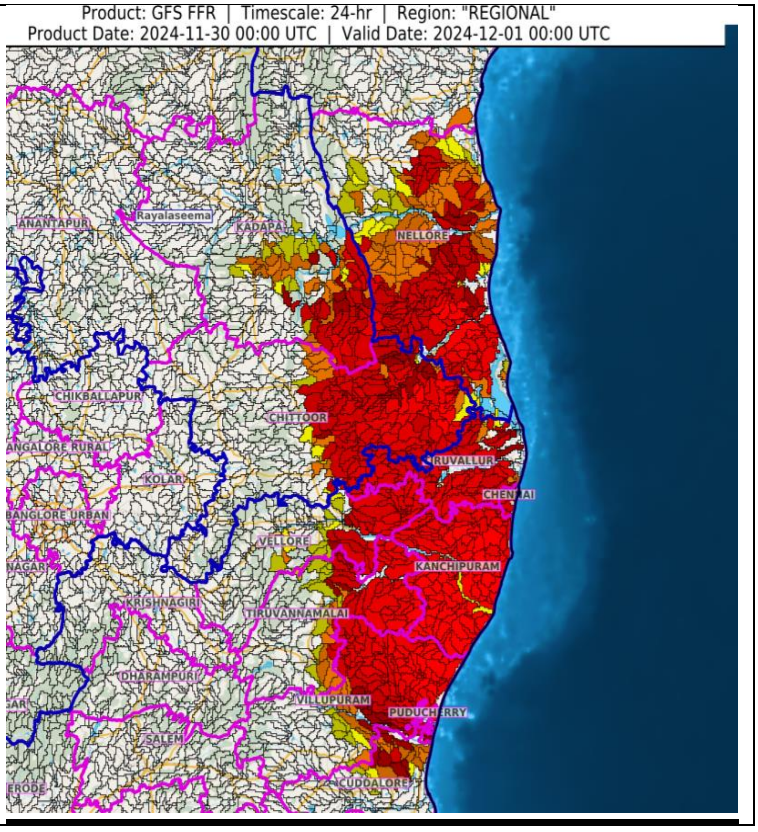
ANNEXURE I

<u>24 hours Outlook for the Flash Flood Risk (FFR) till 0530 IST of 01-12-2024:</u>

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

Coastal Andhra Pradesh & Yanam - Nellore district.
Rayalaseema - Chittoor and Kadapa districts.
Tamil Nadu - Puducherry & Karaikal - Puduchery, Chennai, Cuddalore, Kanchipuram, Tiruvallur, Tiruvannamalai, Vellore and Villupuram districts.

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



Annexure-I

Legends & abbreviations:

- **Heavy Rain:**64.5-115.5mm; **Very Heavy Rain:**115.6-204.4mm; **Extremely Heavy Rain:** >204.4mm.
- **Obsy.:** Observatory; **AWS:** Automatic Weather Station; **ARG:** Automatic Rain Gauge; **dist.:** District: **NH:** National Highway; **KVK**: Krishi Vigyan Kendra; **DVC:** Damodar Valley Corporation; **PTO**: Part Time Office, **Aero:** Aerodrome, **IAF:** Indian Air Force.

- **Region wise classification of meteorological Sub-Divisions:**

✓ **Northwest India:** Western Himalayan Region (Jammu-Kashmir-Ladakh-Gilgit-Baltistan-Muzaffarabad, Himachal Pradesh and Uttarakhand); Punjab, Haryana-Chandigarh-Delhi; West Uttar Pradesh, East Uttar Pradesh, West Rajasthan and East Rajasthan.

✓ **Central India:** West Madhya Pradesh, East Madhya Pradesh, Vidarbha and Chhattisgarh.

✓ **East India:** Bihar, Jharkhand, Sub-Himalayan West Bengal & Sikkim; Gangetic West Bengal, Odisha and Andaman & Nicobar Islands.

✓ **Northeast India:** Arunachal Pradesh, Assam & Meghalaya and Nagaland, Manipur, Mizoram & Tripura.

✓ **West India:** Gujarat Region, Saurashtra & Kutch, Konkan & Goa, Madhya Maharashtra and Marathawada.

✓ **South India:** Coastal Andhra Pradesh & Yanam, Telangana, Rayalaseema, Coastal Karnataka, North Interior Karnataka, South Interior Karnataka, Kerala & Mahe, Tamil Nadu, Puducherry & Karaikal and Lakshadweep.

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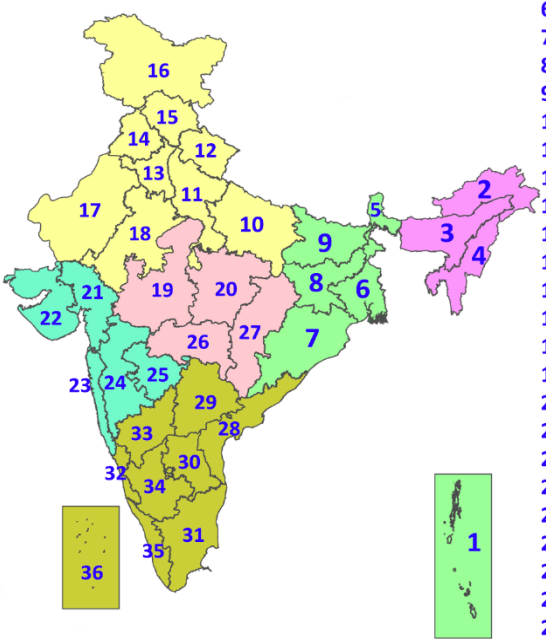
LEGENDS

1. अंडमान और निकोबार द्वीपसमूह
2. अरुणाचल प्रदेश
3. असम और मेघालय
4. नागालैंड, मणिपुर, मिजोरम और त्रिपुरा
5. उप-हिमालयी पश्चिम बंगाल और सिक्किम
6. गंगीय पश्चिम बंगाल
7. ओडिशा
8. झारखंड
9. बिहार
10. पूर्वी उत्तर प्रदेश
11. पश्चिम उत्तर प्रदेश
12. उत्तराखंड
13. हरियाणा, चंडीगढ़ और दिल्ली
14. पंजाब
15. हिमाचल प्रदेश
16. जम्मू और कश्मीर और लद्दाख
17. पश्चिम राजस्थान
18. पूर्वी राजस्थान
19. पश्चिम मध्य प्रदेश
20. पूर्वी मध्य प्रदेश
21. गुजरात
22. सौराष्ट्र
23. कोंकण और गोवा
24. मध्य महाराष्ट्र
25. मराठवाड़ा
26. विदर्भ
27. छत्तीसगढ़
28. तटीय आंध्र प्रदेश और यनम
29. तेलंगाना
30. रायलसीमा
31. तमिलनाडु, पुडुचेरी और कराईकल
32. तटीय कर्नाटक
33. आंतरिक उत्तरी कर्नाटक
34. आंतरिक दक्षिणी कर्नाटक
35. केरल और माहे
36. लक्षद्वीप



1. Andaman & Nicobar Islands
2. Arunachal Pradesh
3. Assam & Meghalaya
4. Nagaland, Manipur, Mizoram & Tripura
5. Sub-Himalayan West Bengal & Sikkim
6. Gangetic West Bengal
7. Odisha
8. Jharkhand
9. Bihar
10. East Uttar Pradesh
11. West Uttar Pradesh
12. Uttarakhand
13. Haryana, Chandigarh & Delhi
14. Punjab
15. Himachal Pradesh
16. Jammu & Kashmir and Ladakh
17. West Rajasthan
18. East Rajasthan
19. West Madhya Pradesh
20. East Madhya Pradesh
21. Gujarat
22. Saurashtra
23. Konkan & Goa
24. Madhya Maharashtra
25. Marathwada
26. Vidarbha
27. Chhattisgarh
28. Coastal Andhra Pradesh & Yanam
29. Telangana
30. Rayalaseema
31. Tamilnadu, Puducherry & Karaikal
32. Coastal Karnataka
33. North Interior Karnataka
34. South Interior Karnataka
35. Kerala & Mahe
36. Lakshadweep

SPATIAL DISTRIBUTION (% of Stations reporting)

% Stations	Category	% Stations	Category
76-100	Widespread (WS/Most Places)	26-50	Scattered (SCT/A Few Places)
51-75	Fairly Widespread (FWS/Many Places)	1-25	Isolated (ISOL)

Fog
Heavy Rain
Very Heavy Rain
Extremely Heavy Rain
Thunder & Lightning
Hailstorm
Dust Raising Winds

Heavy Snow
Dust Storm
Heat Wave
Warm Night
Hot Day
Hot & Humid
Strong Surface Winds

Cold Wave
Cold Day
Ground Frost

COLOUR CODED WARNING

- No Warning (No Action)
- Watch (Be Aware)
- Alert (Be Prepared To Take Action)
- Warning (Take Action)

Probabilistic Forecast

Terms	Probability of Occurrence (%)
Unlikely	< 25
Likely	25 - 50
Very Likely	50 - 75
Most Likely	> 75

* Red colour warning does not mean "Red Alert", Red colour warning means "Take Action".
Forecast and Warning for any day is valid from 0830 hours IST of day till 0830 hours IST of next day.
For more details, kindly visit https://mausam.imd.gov.in or contact: 011-2434-4599
(Service to the Nation since 1875)

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DEFINITION/CRITERIA

Rain/ Snow *	**Heavy:** 64.5 to 115.5 mm/cm * **Very Heavy:** 115.6 to 204.4 mm/cm* **Extremely Heavy:** > 204.4 mm/cm *
Heat Wave	**When maximum temperature of a station reaches ≥40° C for plains and ≥30° C for hilly regions** **(a) Based on Departure from normal** **Heat Wave:** Maximum Temperature Departure from normal 4.5° C to 6.4° C. **Severe Heat Wave:** Maximum Temperature Departure from normal ≥6.5° C **(b). Based on Actual maximum temperature** **Heat Wave:** When actual maximum temperature ≥45°C. **Severe Heat Wave:** When actual maximum temperature ≥47°C **(c). Criteria for heat wave for coastal stations** When maximum temperature departure is >4.5°C from normal. Heat Wave may be described provided maximum temperature ≥37°C
Warm Night	**When maximum temperature remains 40°C** **Warm Night:** When minimum temperature departure 4.5 °C to 6.4 °C. **Severe Warm Night:** When minimum temperature departure >6.4 °C.
Cold Wave	**When minimum temperature of a station ≤10°C for plains and ≤0°C for hilly regions.** **(a). Based on departure** **Cold Wave:** Minimum Temperature Departure from normal -4.5 °C to -6.4 °C. **Severe Cold Wave:** Minimum Temperature Departure from normal ≤ -6.5 °C **(b) Based on actual Minimum Temperature (for Plains only)** **Cold Wave :** When Minimum Temperature is ≤ 4.0 °C **Severe Cold Wave:** When Minimum Temperature is ≤ 2.0 °C **(c) For Coastal Stations** When Minimum Temperature departure is ≤-4.5 °C & actual Minimum Temperature is ≤ 15 °C
Cold Day	**When minimum temperature of a station ≤10°C for plains and ≤0°C for hilly regions** **Based on departure** **Cold Day:** Maximum Temperature Departure from normal -4.5 °C to -6.4 °C. **Severe Cold Day:** Maximum Temperature Departure from normal ≤ -6.5 °C
Fog	**Phenomenon of small droplets suspended in air and the horizontal visibility < 1km** **Moderate Fog:** When the visibility between 500-200 metres **Dense Fog:** when the visibility between 50- 200 metres **Very Dense Fog:** when the visibility < 50 metres
Thunderstorm	**Sudden electrical discharges manifested by a flash of light (Lightning) and a sharp rumbling sound (thunder)**
Dust/Sand Storm	**An ensemble of particles of dust or sand energetically lifted to great heights by a strong and turbulent wind.**
Frost	**Ice deposits on ground** Air temperature ≤4°C (over Plains)
Squall	**A strong wind that rises suddenly, lasts for atleast 1 minute.** **Moderate**: Wind speed 52-61 kmph **Severe**: Wind speed 62-87 kmph **Very Severe**: Wind speed >87 kmph
Sea State	**Effect of various waves in the sea over specific area** **Rough to very rough**: Wind speed 41-62 kmph (22-33 knots) & Wave height 2.5-6 metre **High to very high**: Wind speed 63-117 kmph (34-63 knots) & Wave height 6-14 metre **Phenomenal**: Wind speed >117 kmph (>63 knots) & Wave height >14 metre
Cyclone	**Cyclonic Storm**: Wind speed 62-87 kmph (34-47 knots) **Severe Cyclonic Storm**: Wind speed 88-117 kmph (48-63 knots) **Very Severe Cyclonic Storm**: Wind speed 118-165 kmph (64 - 89 knots) **Extremely Severe Cyclonic Storm**: Wind speed 166-220 kmph (90 -119 knots) **Super Cyclone Strom**: Wind speed >220 kmph (>119 knots)

* Red colour warning does not mean "Red Alert", Red colour warning means "Take Action".
Forecast and Warning for any day is valid from 0830 hours IST of day till 0830 hours IST of next day.
For more details, kindly visit https://mausam.imd.gov.in or contact: 011-2434-4599
(Service to the Nation since 1875)