

# All India Coordinated Research Project on Agrometeorology

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Weekly Crop Weather Information during 08 Dec to 14 Dec 2022

The crop weather conditions in different states as reported by the cooperating centres of AICRPAM

## *AP-Rayalaseema (Anantapur)*

During the period 01.06.2022 to 08.12.2022, Andhra Pradesh state received 818.6 mm rainfall (-3.3% deviation from the normal rainfall), Coastal A.P received 942.0 mm rainfall (+0.8% deviation from the normal rainfall) and Rayalaseema received 645.8 mm rainfall (-0.3% deviation from the normal rainfall). During the period 01.06.2022 to 08.12.2022, Tirupati (-22.0% deviation from the normal rainfall), Sri potti sriramulu Nellore (-21.5 % deviation from the normal rainfall) and Prakasam (-21.1% deviation from the normal rainfall) districts received deficit rainfall; Nandyal (-9.6% deviation from the normal rainfall), Y.S.R (-9.1% deviation from the normal rainfall), visakhapatnam (-8.1% deviation from the normal rainfall), Chittoor (-8.1% deviation from the normal rainfall), NTR (-7.2% deviation from the normal rainfall), Anakapalli (-6.9% deviation from the normal rainfall), Krishna (-4.4% deviation from the normal rainfall), Srikakulam (-3.3% deviation from the normal rainfall), Annamayya (-3.0% deviation from the normal rainfall), Palnadu (-2.5% deviation from the normal rainfall), West Godavari (+1.2% deviation from the normal rainfall), Dr.B.R.Ambedkar Konaseema (+4.3% deviation from the normal rainfall), East Godavari (+5.1% deviation from the normal rainfall), Kurnool (+6.4% deviation from the normal rainfall), Guntur (+7.1% deviation from the normal rainfall), Alluri sitharama Raju (+7.4% deviation from the normal rainfall), Parvathipuram Manyam (+7.6% deviation from the normal rainfall), Bapatla (+11.0% deviation from the normal rainfall), Vizianagaram (+11.6% deviation from the normal rainfall), Kakinada (+12.9% deviation from the normal rainfall) and Eluru (+15.1% deviation from the normal rainfall) districts received normal rainfall; Ananthapuramu (+35.7% deviation from the normal rainfall) and Sri sathya sai (+38.4% deviation from the normal rainfall) districts received excess rainfall. Agricultural operations in progress are stripping of groundnut is under progress and rabi sowings are under progress rabi sowings are in progress. Phenological stages are red gram is at the

flowering to pod initiation stage and castor is at maturity to harvesting stage. Soil moisture status is no rainfall received this week. Dry conditions were observed at field conditions.

### ***Maharashtra-Vidarbha(Akola)***

Weekly average means (49 MW) at AICRPAM Akola center: T max 29.9°C (normal 30.2°C), T min 11.3°C (normal 11.6°C). RH I 83 % (normal 70 %), RH II 39 % (normal 30 %). Evaporation rate 2.9 mm (normal 3.2 mm), Wind 0.7 km/hr (normal 3.4 km/hr), and BSH 5.4 hrs (normal 8.2 hrs). Maximum temperature across the week was 0.3°C below normal with a deviation of -2.4 to +0.8°C from normal. The minimum temperature across the week is 0.2°C below normal with a deviation of -5.1 to +1.8°C from normal. Agricultural operations in progress are picking of burst bolls in timely sown cotton is underway. Harvesting of mature rice is being undertaken. Harvesting of mature and ripe amba bahar orange fruits, guava (mrig bahar), and custard apple fruits is underway. Need-based intercultural operations are being undertaken in rabi crops. Need-based irrigation is given in rabi crops. Phenological stages are the normal sown cotton through the boll development/picking stage. The pigeon pea is at flowering/ pod formation. Orange fruit (ambia bahar), guava (mrig bahar), and custard apple are at the harvest stage. Rabi-sown crops are at the early vegetative to vegetative stage. Soil moisture status is inadequate.

### ***Gujarat (Anand)***

The actual maximum temperature was 1.2°C lower and the minimum temperature was 2.4 °C higher as compared to their normals. Total BSS was 60.2 hrs. with an average of 8.6 hrs. The daily average evaporation and wind speeds were 2.9 mm and 3.6 km/hr respectively. The daily average RH during morning and afternoon was 78.1 % and 39.3 % respectively. Agricultural operations in progress need base plant protection measures. Inter-culturing and weeding in transplanted vegetables and rabi tobacco. Topping in bidi tobacco. Harvesting of okra, brinjal, and chili. Picking of cotton. Thinning, gap-filling, intercultural, and weeding in mustard. The phenological stages are cotton is in the harvesting stage. Okra is in the fruiting/harvesting stage. Tomato, brinjal, and chili are in the fruiting/picking stage. Transplanted rabi tobacco is in the vegetative stage. Bidi tobacco is in the flowering/topping stage. Mustard is in the vegetative stage. Sunflowers, wheat, rabi, and maize are in the emergence stage. Moisture status is good-maintain by irrigation.

### ***South Karnataka (Bangalore)***

State actual rainfall from 1st October 2022 to 8th December 2022 was 191.0 mm as against the normal of 176.0 mm with (+) 9 % deviation. Whereas SIK received 249.0 mm of rainfall as against the normal of 194.0 mm leading to (+) 28 % deviation. State actual rainfall

from 1st January 2022 to 8th December 2022 was 1448.0 mm as against the normal of 1147.0 mm with (+) 26 % deviation. Whereas SIK 1194.0 mm of rainfall as against the normal of 706.0 mm leading to (+) 69 % deviation. Agricultural operations in progress are the harvesting of *kharif* crops and rabi crops are under the vegetative and flowering stages. The phenological stages are the harvesting of *kharif* crops and rabi crops under the flowering and pod formation and filling stages. Moisture status is a dry soil condition observed in the crop field.

### ***Orissa (Bhubaneswar)***

Dry weather has prevailed over the districts of Odisha. Agricultural operations in progress are the harvesting of paddy, harvesting of sugarcane plant protection of cole crops, brinjal, chili, and tomato plant protection of tube rose, marigold intercultural operation of zinger and turmeric transplanting of tomato, brinjal, chili sowing of rabi crops like maize, pulses, oil seeds, vegetables, and spices. Phenological stages are the harvesting stage of long-duration paddy harvesting stage of sugarcane seedling stage of rabi pulses, oilseeds and spices vegetative stage of brinjal, cole crops, tomato and chili flowering to pod formation stage of Arhar flowering stage of marigold and chrysanthemum. Optimum moisture for growth of both paddy and non-paddy crops in most of the districts of Odisha.

### ***Jammu (Rakh Dhiansar)***

Mainly clear to cloudy weather prevailed during this week with no rainfall. The maximum temperature remained normal and ranged from 21.0 to 26.0°C. The minimum temperature remain below normal by 1 to 2°C and ranged from 4.4 to 13.0°C. Both maximum and minimum temperatures remain above normal on 9th Nov 2022. The morning and afternoon relative humidity were observed in the range of 72 to 97 % and 37 to 47 %, respectively. The evaporation and sunshine remained in the range of 2.4 to 2.8 mm/day and 1.3 to 8.0 hrs, respectively. Agricultural operations in progress are sowing of late sown wheat crop (var: WH-1021, PBW-590, PBW-373, Raj-3077, Raj-3765, DBW-16) under irrigated conditions is in progress. Sowing of Lentil (var. L-4147, L-9/12, PL-406) is in progress. Intercultural operation viz hoeing, weeding, and earthing in vegetable crops, gram, field pea, and mustard is in progress. Ist dose of nitrogen fertilizer as the top dressing has been applied to the mustard crop. Hoeing and weeding in rabi pulses and oilseed is in progress. Weed management in rabi crops. Phenological stages are the early sown mustard at the flowering stage. Normally sown mustard is at the vegetative stage. Gram is at the vegetative stage. Toria crop is at Phy.Maturity stage. Normal sown wheat is at tillering stage. Late sown wheat is at emergence. Peak vegetative stage in the berseem crop. Soil moisture status is normal.

### ***Konkan region (Dapoli)***

Therefore 0.8 to 8.4 Bright sunshine hours were recorded last week. During last week 0.0 mm of rainfall was recorded at the Agrometeorological observatory, Dr. B.S.K.K.V. Dapoli. The maximum and minimum temperatures ranged from 30.4 to 34.0 and 12.0 to 19.5 C respectively. Wind velocity ranged from 1.8 to 2.6 km and the wind was blowing from a south-westerly direction. Agricultural operations in progress are protective spray at vegetative stages in mango and cashew nuts. Irrigation to coconut, areca nut & new fruit crop orchard. Transplanting of rabi vegetable. Rabi vegetable crops in transplanting to vegetative. Mango and cashew nut in the vegetative flush to flowering. Rabi pulses into the vegetative stage. Phenological stages are the rabi vegetable crops in transplanting to vegetative. Mango and cashew nut in the vegetative flush to flowering. Rabi pulses in the emergence to the vegetative stage. Soil moisture status is medium.

### ***Eastern U.P (Faizabad)***

Dry weather in all the region, with light fog in the morning. The average temperature is normal. Agricultural operations in progress are sowing of irrigated wheat are in progress. Irrigation in potato and berseem, sowing of winter maize and autumn sugarcane. Timely sown wheat is in the CRI stage while late sown wheat just germinated. The chickpea is in the vegetative stage while the pigeon pea is in the reproductive stage. Soil moisture status is below normal.

### ***Assam (Jorhat)***

The weather during the week was clear. The daily average maximum temperature was 28.1°C which is 2.2 degrees above normal and the average daily minimum temperature was 13.9°C which is 2.2 degrees below normal for the week. Total BSSH was 57.7 hrs only with an average of 8.2 hrs. The daily average evaporation and wind speeds were 1.5 mm and 1.1 km/hr respectively. The daily average RH during morning and afternoon was 100% and 53.5% respectively. Agricultural operations in progress are sali rice harvesting; Boro rice sowing/ transplanting, potato rabi vegetables(cole crops & others), transplanting/ harvesting, and potato earthing up. Phenological stages are the maturity stage in sali rice, seedling stage in boro rice, vegetative/stolon formation in potato; green gram/black gram pod development/maturity; cole crop sowing, and vegetative stages. Soil moisture status is moisture stress observed in some areas of the state.

### ***Western U.P (Kanpur)***

Light cloud coverage on 12-13 December but no rainfall is forecast during this week. Maximum temperature may be 1.0 to 2.0°C higher than normal and minimum temperature maybe 1.0-2.0°C higher than normal. North-Easterly/ North-Westerly winds may be

prevailing during this week which is 2-3 km/hr above to its normal during this week as per forecast. Agricultural operations in progress are wheat sowing and irrigation. Barley sowing. Pigeon pea spray insecticide. Gram sowing and weeding. Pea weeding. Lentil weeding. Toria nil. Mustard weeding, thinning, and irrigation. Brinjal/chilies weeding, plucking, marketing, spray pesticide. Leafy vegetable cutting and marketing. Animals protect from cold and common diseases. Phenological stages are wheat emergence/ CRI and barley emergence/ CRI. Toria padding/ maturity, gram emergence/ vegetative, pea emergence/ vegetative, pigeon pea vegetative/ branching, mustard emergence/ vegetative, vegetables transplanting/ flowering/ fruiting Soil moisture status is dry.

### ***Tamil Nadu (Kovilpatti)***

Maximum temperature: 30.2°C (normal 30.4°C), minimum temperature: 21.8°C (normal 19.8°C), rainfall: 14.6 mm (normal 15.5°C mm). The maximum and minimum temperature was 0.2°C and 2.0°C below & above normal respectively and the rainfall was 0.9 mm below normal across the week. The general weather situation in Tamil Nadu's maximum temperature range of 28°C - 34°C prevailed over the state except for Kodaikanal and Uthagamandalam (15°C - 23°C) during the period under report. A minimum temperature range of 20°C - 27°C prevailed over the state except for Kodaikanal and Uthagamandalam (11°C - 10°C) during the period under report. With respect to daily rainfall, rainfall occurred at a few places one or two places over Tamil Nadu on 03.12.2022, 04.12.2022, 06.12.2022, 07.12.2022, and 08.12.2022, at many places over Tamil Nadu on 05.12.2022 during this week. Agricultural operations in progress are spraying of pesticides is in progress. Weeding of cotton and maize is in progress. The top dressing of fertilizer is in progress. In the phenological stages, bananas are vegetative to the bunch development stage. Rabi cotton, black gram, brinjal, onion, and chilies are in the vegetative stage. Millets and pulses are flowering stages and are in the vegetative stage. Rice transplanting is in progress. Groundnut is in the flowering stage. Soil moisture status during this week, 14.6 mm of rainfall was recorded.

### ***West Bengal (Mohanpur)***

Weather conditions during the 49th week at Mohanpur, West Bengal maximum temperature 25.5 to 27.5 °C, minimum temperature 11.7 to 12.5 °C, bright sunshine hours 4.3 to 8.2 hours, morning-time Relative Humidity 88 to 93 %, after noon-time R.H 44 to 55 %, weekly total pan evaporation 10 mm, total weekly rainfall: 0.0 mm and average daily wind speed is around 0.0 km/h. Agricultural operations in progress are the irrigation of brinjal, potato, and chickpea. Phenological stages are the brinjal fruiting stage, leafy vegetables are in the maturity stage. Chickpea and potato emergence. The soil moisture in % on oven dry weight basis as recorded in a barren field on 01.12.22: Surface (0 cm): 7.76%; (7.5cm): 10.82%; (15.0 cm): 13.76%; (30 cm): 16.91%,(45 cm): 18.32%,(60 cm): 19.66%

### ***Jharkhand (Ranchi)***

During this week the lowest minimum temperature was recorded at 3°C and . Daily maximum and minimum temperatures ranged from 22.5 to 26.7 and 3.0 to 7.3°C, respectively. Weekly maximum and minimum temperatures were 24.2 and 4.6 °C against their normal value of 23.7 and 8.5 °C, respectively. Agricultural operations in progress are for nursery and planting of onion and cole crops has been started and going on. Intercultural operation is going on standing crops of horse gram, niger, safflower, lobia, rice bean, etc. Land preparation for the sowing of wheat, potato, chickpea, fava bean linseed, field pea, and mustard crops is going on. Phenological stages are the timely sown mustard crop is at pre to the flowering stage, and the timely sown green pea crop is at the stem elongation stage. Toria crop sown in the month of September is at the flowering stage, and November sowed wheat crop is at CRI and tillering stage. The pigeon pea crop is at the flowering to pod formation stage, Timely sown linseed crop is at the branching stage. Soil moisture status is normal.

### ***Himachal Pradesh (Palampur)***

The maximum temperature ranged between 18.5 to 20.0°C which was above normal by 0.6 to 2.4°C and the minimum temperature ranged between 4.5 to 8.0°C which was below normal by 0.7 to 2.0°C. No rainfall was received during the week against the normal of 4.0 mm. The relative humidity varied between 42-82 % and sunshine hours between 3.0-9.5 hrs/day with variable sky conditions (Octa 0-8). The evaporation rate varied from 2.3-2.7 mm per day. Agricultural operations in progress are the arrangement of fodder for their cattle and dairy animals. The sowing of rabi crops is in progress in the region. Phenological stages are the timely wheat three-leaf stage; mustard vegetative stage; winter vegetables reproductive stage; soil moisture status dry.

### ***Marathwada (Parbhani)***

From 03.12.2022 to 08.12.2022 during this week's Weather conditions at Parbhani center, no rainfall was recorded. The maximum temperature ranged from 28.8 to 31.6 0C and the minimum temperature ranged from 13.3 to 19.0 0C. Relative humidity (RH-I) ranged between 80-94% and relative humidity (RH-II) recorded was 34-49% The wind speed varied from 1.5 to 2.7 km/hr. Agricultural operations in progress are the intercultural operations viz; weeding is in progress. spraying of insecticides and pesticides is in progress. Irrigation management for rabi crops is in progress. Phenological stages are the sown *kharif* crops viz cotton is at picking stage, Pigeon pea is the pod development stage. Sugarcane crop is in the grand growth stage, vegetable crops are in the fruiting stage and fruit crops



are in the development stage. Rabi crops are at the vegetative stage. Soil moisture status is inadequate.

### ***Bihar (Samastipur (Pusa))***

The weather remained dry all over Bihar state. The light morning fog was observed all across the state. The maximum temperature ranged from 25.4 to 27.4°C against the normal of 27.0 to 27.8°C. The minimum temperature ranged from 9.0 to 11.4 against the normal of 10.5 to 10.9°C. Agricultural operations in progress are sowing of Late sown wheat varieties (HUW 234, PBW 343, DBW 14, HP 1744, HD 2643, NW 2036, and HW 2045) are in progress. Thinning of late sown varieties of rape seed and mustard. Irrigation in chili, tobacco, and potato crops. Earthing of potato and maize crops. The phenological stages are late sown wheat is a germinating stage. Normal sown wheat is in the CRI stage. Rabi maize is 3-5 leaf to knee height stage. Early sown rapeseed is in the flowering stage and late mustard is in the germination stage. Potato, lentils, gram, pea, rajmash, broadbean, and coriander are in the early vegetative stage. Soil moisture status is normal.

### ***Madhya Maharashtra (Solapur)***

Cloudy weather. Agricultural operations in progress are plant protection and intercultural of rabi season crops. Phenological stages are the flag leaf stage in sorghum, and pod development in chickpeas. Soil moisture status is reducing

### ***Rajasthan (Udaipur)***

State: Most of the districts in the state reported high temperatures in the daytime and low temperatures at night. Whereas the lowest temperature during the night was reported in Mount Abu (2.0°C), Jobner (2.0°C), Fatehpur Sikri (2.0°C), Churu (3.5 °C), Sikar (7.5°C), and Bhilwara (3.5 °C) during this week. At the center maximum temperature ranged between 26.6°C to 27.2°C with a mean of 27.0°C which was 0.5°C above the normal and minimum temperature ranged between 5.0°C to 8.5°C with a mean 1.3°C above which was 1.7°C below. Wind velocity ranged between 1.6 to 3.3 with a mean of 2.3 km/hr and sunshine hours 6.8 to 9.5 with a mean of 8.4 hours. Mean evaporation 2.5 mm. Agricultural operations in progress are the Irrigation of Wheat Mustard and gram. Weeding and fertilizer application in Wheat. Plant protection measures in mustard. Phenological stages are Wheat at the CRI stage. Mustard is at the flowering to pod initiation stage. Opium is at the germination stage. Soil moisture status is inadequate.

## *North Karnataka (Bijapur)*

Partially cloudy condition with very light to light rainfall has been received in the districts of North Interior Karnataka during the previous week. Agricultural operations in progress are plant protection measures in horticultural crops and field crops. Inter-cultivation and hand-weeding operations in already sown crops may be taken up to control the weed infestation effectively. The phenological stages are the pigeon pea flowering to pod formation stage. Safflower flowering stage. Chickpeas are vegetative to the flowering stage. Soil moisture status is moderately low.

## **Weather during 08 Dec - 14 Dec 2022**

### **Significant Weather Features**

- Last week's Cyclonic Storm "Mandous" (pronounced as "Man-Dous") lay over Southwest Bay of Bengal, about 300 km east-northeast of Trincomalee (Sri Lanka), 420 km east-southeast of Jaffna (Sri Lanka), 460 km east-southeast of Karaikal and about 550 km southeast of Chennai in the beginning of the week; it moved nearly west-northwestwards and intensified into a Severe Cyclonic storm in the evening of 8<sup>th</sup> December, 2022 and lay centred over Southwest Bay of Bengal, about 250 km northeast of Trincomalee (Sri Lanka), 320 km east-northeast of Jaffna (Sri Lanka), 350 km east-southeast of Karaikal and about 440 km southeast of Chennai; it maintained the intensity of Severe Cyclonic storm for about fifteen hours but weakened into a Cyclonic Storm in the morning of the next day and lay centered at 0830 hours IST of 9<sup>th</sup> December, 2022 over Southwest Bay of Bengal off north Tamilnadu-Puducherry coasts, about 280 km north of Trincomalee (Sri Lanka), 230 km northeast of Jaffna (Sri Lanka), 180 km east-northeast of Karaikal and about 260 km south-southeast of Chennai; then it moved northwestwards and reached close to north Tamil Nadu-Puducherry coasts and lay near Latitude 12.5°N and Longitude 80.3°E, about 15 km southeast of Mamallapuram (Mahabalipuram) and about 60 km south-southeast of Chennai close to midnight of 9<sup>th</sup> December 2022; moving northwestwards further, it crossed north Tamil Nadu-Puducherry coasts and adjoining south Andhra Pradesh coasts near Latitude 12.6°N and Longitude 80.15°E, close to Mamallapuram (Mahabalipuram) between 2330 hrs IST of 9<sup>th</sup> December and 0130 hrs IST of 10<sup>th</sup> December as a Cyclonic Storm with the maximum sustained wind speed of 65-75 kmph gusting to 85 kmph; moving northwestwards further, it weakened into a Deep Depression over north Tamil Nadu in the early morning hours of 10<sup>th</sup> December and lay at a distance of about 70 km northwest of Mamallapuram (Mahabalipuram) and 50 km west of Chennai; then moving nearly west-southwestwards, it weakened into Depression around noon and further into a Well Marked Low Pressure Area over north interior Tamil Nadu and neighbourhood in the evening of 10<sup>th</sup> December, 2022; it weakened further into a Low Pressure Area and lay



over north interior Tamil Nadu and adjoining South Interior Karnataka & north Kerala in the early morning hours of 11<sup>th</sup> before getting less marked in the morning hours of the same day; however, its remnant cyclonic circulation emerged into Arabian Sea and under its influence, a Low Pressure has formed over Southeast and adjoining Eastcentral Arabian Sea off north Kerala-Karnataka coasts in the early morning hours of 13<sup>th</sup> which has become a Well Marked Low pressure area over the same region in the evening of the same day; it concentrated into a Depression in the afternoon of the next day and with the same intensity, it lay at a distance of about 480 km northwest of Aminidivi (Lakshadweep), about 540 km west-southwest of Panjim (Goa) and 1660 km east-southeast of Salalah (Oman) in the evening of 14<sup>th</sup> December 2022; Cyclonic Storm "Mandous" (pronounced as "Man-Dous") crossing north Tamil Nadu Puducherry coasts and adjoining south Andhra Pradesh coasts in the earlier part of the week, movement of its remnants across extreme south Peninsula before emerging into Arabian Sea, formation of Low pressure area over Southeast and adjoining Eastcentral Arabian Sea under the influence of those remnants and its further intensification into Depression off the coast towards the end of the week had caused severe weather activity over South Peninsula during the week; under its influence, fairly widespread to widespread rainfall/thunderstorm activity had occurred over Tamil Nadu, Puducherry & Karaikkal and Rayalseema on four to five days and over remaining parts of south Peninsula (excluding Telangana) on three to four days; isolated to scattered rainfall activity also had occurred over these region on one or two days and over Telangana on four to five days whereas fairly widespread rainfall/thunderstorm activity had occurred over Lakshadweep Islands on one or two days and isolated rainfall/thunderstorm activity had occurred over parts of Maharashtra on two to three days along with; heavy rainfall had occurred over Tamil Nadu, Puducherry & Karaikkal on five to six days, over Rayalseema on three to four days, over Coastal Andhra Pradesh and Yanam on two to three days and over Kerala & Mahe and South Interior Karnataka on one or two days; very heavy rainfall also had occurred over these areas (excluding South Interior Karnataka) on one or two days whereas isolated extremely heavy rainfall had occurred over Tamil Nadu, Puducherry & Karaikkal on two days and over Rayalseema on a single day.

- Movement of Western Disturbances had caused fairly widespread rainfall/snowfall activity over Jammu Kashmir & Ladakh on two days along with isolated rainfall/snowfall activity over these areas and over Himachal Pradesh on a single day during the week
- Under the influence of a cyclonic circulation over south Andaman Sea and adjoining Strait of Malacca & Sumatra extending upto mid tropospheric levels and formation of a low-pressure area over the Equatorial Indian Ocean and adjoining areas of south Andaman Sea & Southeast Bay of Bengal towards the end of the week, scattered rainfall/thunderstorm activity had occurred over Andaman & Nicobar Islands on two days towards the end of the week.

## Fog

- Dense to very dense fog at a few places had been reported over East Uttar Pradesh on one day and at isolated places over Bihar, Tamil Nadu, Puducherry & Karaikkal and Uttarakhand on one day each during the week.
- Dense fog at isolated places had been reported over Gangetic West Bengal and Jammu Kashmir & Ladakh on one day each during the week.

## Heavy rain

- Heavy to very heavy rainfall with extremely heavy rainfall at isolated places had occurred over Tamil Nadu, Puducherry & Karaikkal on two days and over Rayalaseema on one day during the week.
- Heavy to very heavy rainfall at isolated places had occurred over Coastal Andhra Pradesh & Yanam on two days and over Kerala & Mahe on one day during the week.
- Heavy rainfall at isolated places had occurred over Tamil Nadu, Puducherry & Karaikkal on four days; over Rayalaseema on three days; over South Interior Karnataka on two days and over Coastal Andhra Pradesh & Yanam and Kerala & mahe on one day each during the week.

## Temperature Scenario

- The highest maximum temperature of 36.5°C had been recorded at Bulsar (Gujarat Region) on 13<sup>th</sup> December 2022 and the lowest minimum temperature of 4.6°C had been recorded at Churu (West Rajasthan) on 8<sup>th</sup>, 13<sup>th</sup> & 14<sup>th</sup> December 2022 over the plains of the country during the week.

## METEOROLOGICAL ANALYSIS

- Last week's Cyclonic Storm "Mandous" (pronounced as "Man-Dous") over Southwest Bay of Bengal moved nearly west-northwestwards and lay centered at 0830 hours IST of 8th December, 2022 over Southwest Bay of Bengal, near Latitude 9.5°N and Longitude 83.8°E, about 300 km east-northeast of Trincomalee (Sri Lanka), 420 km east-southeast of Jaffna (Sri Lanka), 460 km east-southeast of Karaikal and about 550 km southeast of Chennai; it moved nearly west-northwestwards, intensified into a Severe Cyclonic storm and lay centered at 1730 hours IST of 8th December, 2022 over Southwest Bay of Bengal near Latitude 10.1°N and Longitude 82.9°E, about 250 km northeast of Trincomalee (Sri Lanka), 320 km east-northeast of Jaffna (Sri Lanka), 350 km east-southeast of Karaikal and about 440 km

southeast of Chennai; moving nearly west-northwestwards further, it weakened into a Cyclonic Storm and lay centered at 0830 hours IST of 9th December, 2022 over Southwest Bay of Bengal off north Tamilnadu-Puducherry coasts near Latitude  $11.1^{\circ}\text{N}$  and Longitude  $81.5^{\circ}\text{E}$ , about 280 km north of Trincomalee (Sri Lanka), 230 km northeast of Jaffna (Sri Lanka), 180 km east-northeast of Karaikal and about 260 km south-southeast of Chennai; it then moved northwestwards and lay centered at 1730 hours IST of 9th December, 2022 over Southwest Bay of Bengal off north Tamilnadu-Puducherry coasts near Latitude  $12.0^{\circ}\text{N}$  and Longitude  $80.8^{\circ}\text{E}$ , about 380 km north of Trincomalee (Sri Lanka), 280 km north-northeast of Jaffna (Sri Lanka), 90 km southeast of Mamallapuram and about 130 km south-southeast of Chennai; continuing to move northwestwards, it lay centered at 2330 hours IST of 9th December, 2022 over Southwest Bay of Bengal close to north Tamil Nadu-Puducherry coasts near Latitude  $12.5^{\circ}\text{N}$  and Longitude  $80.3^{\circ}\text{E}$ , about 15 km southeast of Mamallapuram (Mahabalipuram) and about 60 km south-southeast of Chennai; moving northwestwards further it crossed north Tamil Nadu-Puducherry and adjoining south Andhra Pradesh coasts near Latitude  $12.6^{\circ}\text{N}$  and Longitude  $80.15^{\circ}\text{E}$ , close to Mamallapuram (Mahabalipuram) between 2330 hrs IST of 9th December and 0130 hrs IST of 10th December as a Cyclonic Storm with the maximum sustained wind speed of 65-75 kmph gusting to 85 kmph and lay centered at 0230 hours IST of 10th December, 2022 over north Coastal Tamil Nadu near Latitude  $12.8^{\circ}\text{N}$  and Longitude  $80.0^{\circ}\text{E}$ , about 30 km northwest of Mamallapuram (Mahabalipuram) and 30 km southwest of Chennai; moving northwestwards, it weakened into a Deep Depression over north Tamil Nadu and lay centered at 0530 hrs IST of 10th December near Latitude  $13.0^{\circ}\text{N}$  and Longitude  $79.7^{\circ}\text{E}$ , about 70 km northwest of Mamallapuram (Mahabalipuram) and 50 km west of Chennai; it then moved nearly west-southwestwards and lay centred at 0830 hours IST of 10th December, 2022, over north Tamil Nadu near Latitude  $12.8^{\circ}\text{N}$  and Longitude  $79.5^{\circ}\text{E}$ , about 40km west-southwest of Vellore and 140 km east-northeast of Krishnagiri; moving nearly west-southwestwards further, it lay centred at 0830 hours IST of 10th December, 2022 over north Tamil Nadu near Latitude  $12.8^{\circ}\text{N}$  and Longitude  $79.5^{\circ}\text{E}$ , about 40km west-southwest of Vellore and 140 km east-northeast of Krishnagiri; further moving nearly west-southwestwards, it weakened into Depression and lay centred at 1130 hours IST of 10th December, 2022, over north Tamil Nadu near Latitude  $12.7^{\circ}\text{N}$  and Longitude  $79.3^{\circ}\text{E}$ , about 30 km south-southwest of Vellore and 120 km east-northeast of Krishnagiri; moving nearly west-southwestwards further, it weakened into a Well Marked Low Pressure Area over north interior Tamil Nadu and neighbourhood at 1730 hours IST of 10th December, 2022; it weakened further into a Low Pressure Area and lay over north interior Tamil Nadu and adjoining South Interior Karnataka & north Kerala with the associated cyclonic circulation extending upto upper tropospheric levels in the early morning hours of 11th; the Low Pressure Area has become less marked; however, its associated cyclonic circulation persisted over north interior Tamil Nadu and adjoining South Interior Karnataka & north Kerala and extended upto 5.8 km above mean sea level in the morning of the same day; it lay over north Kerala & neighbourhood and extended upto 5.8 km above mean sea level

on 12th; under its influence, a Low Pressure has formed over Southeast and adjoining Eastcentral Arabian Sea off north Kerala-Karnataka coasts with the associated cyclonic circulation extending upto 7.6 km above mean sea level in the early morning hours of 13th; it lay over Eastcentral and adjoining Southeast Arabian Sea off north Kerala-Karnataka coasts with the associated cyclonic circulation extending upto mid-tropospheric levels in the morning of the same day; it lay as a Well Marked Low pressure area over the same region in the evening of 13th with the associated cyclonic circulation extending upto mid-tropospheric levels; maintaining the intensity of Well Marked Low Pressure Area, it lay over Eastcentral and adjoining Southeast Arabian Sea with the associated cyclonic circulation extending upto mid-tropospheric levels in the forenoon of 14th; it concentrated into a Depression in the afternoon of the same day and lay centered at 1430 hrs IST of 14th December, 2022 over Eastcentral and adjoining Southeast Arabian Sea near Latitude 13.5°N and Longitude 69.6°E about 430 km west-northwest of Aminidivi (Lakshadweep), about 500 km west-southwest of Panjim (Goa) and 1710 km east-southeast of Salalah (Oman); it moved west- northwestwards and lay centered at 1730 hrs IST of 14th December 2022 near Latitude 13.7 °N and Longitude 69.2 °E about 480 km northwest of Aminidivi (Lakshadweep), about 540 km west-southwest of Panjim (Goa) and 1660 km east-southeast of Salalah (Oman).

- Last week's Western Disturbance as a trough in mid and upper tropospheric westerlies with its axis at 5.8 km above mean sea level ran roughly along Long.65°E to the North of Lat.30°N on 8th December 2022; it continued as a trough in mid and upper tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 68°E to the North of Lat. 32°N on 9th and roughly along Long. 70°E to the north of Lat. 32°N on 10th; it was seen as a cyclonic circulation over north Pakistan & adjoining Punjab at 3.1 km above mean sea level on 11th; it has moved away east-northeastwards on 12th December 2022
- A Western Disturbance was seen as a trough in mid & upper tropospheric westerlies with its axis at 7.6 km above mean sea level roughly along Long. 56°E to the north of Lat. 26°N on 11th December 2022 and roughly along Long. 58°E to the north of Lat. 32°N on the 12th; it was seen as a cyclonic circulation over East Afghanistan & neighborhood at 5.8 km above mean sea level on the 13th; it was seen as a trough in mid-tropospheric westerlies with its axis at 5.8 km above mean sea level roughly along Long. 68°E and Lat. 32°N on 14th December 2022.
- A cyclonic circulation lay over the south Andaman Sea and adjoining Strait of Malacca & Sumatra and extended up to 3.1 km above mean sea level in the early morning hours of 13th December 2022; it persisted over the same region and extended up to 5.8 km above mean sea level in the remaining parts of the day and in the forenoon of 14th December 2022; Under its influence, a Low-Pressure Area has formed over Equatorial Indian Ocean and adjoining areas of south Andaman Sea & Southeast Bay of Bengal in the afternoon of

14th December 2022 and it lay over Southeast Bay of Bengal and adjoining areas of East Equatorial Indian Ocean and South Andaman Sea in the evening of the same day.

## Weekly rainfall departure (%) at different IMD subdivisions (2022)

During the week under report 9 sub-divisions viz; received large excess rainfall, Coastal Andhra Pradesh, Telangana, Rayalaseema, Tamil Nadu & Pondicherry, Coastal Karnataka, North Interior Karnataka, South interior Karnataka, Kerala, Lakshadweep, and 1 sub-division viz; Chhattisgarh received normal rainfall and the remaining sub-divisions received either deficit/large deficit/no rainfall. (Table 1).



Table 1. Weekly Rainfall Departure (%) at different IMD subdivisions (2022)

S.No.	Meteorological Sub Division	17 Nov (46)	24 Nov (47)	01 DEC (48)	08 DEC (49)
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	Orissa				
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				
17	West Rajasthan				
18	East Rajasthan				
19	West Madhya Pradesh				
20	East Madhya Pradesh				
21	Gujarat Region				
22	Saurashtra, Kutch & Diu				
23	Konkan & Goa				
24	Madhya Maharashtra				
25	Marathwada				
26	Vidarbha				
27	Chhattisgarh				
28	Coastal Andhra Pradesh				
29	Telangana				
30	Rayalaseema				
31	Tamil Nadu & Pondicherry				
32	Coastal Karnataka				
33	North interior Karnataka				
34	South interior Karnataka				
35	Kerala				
36	Lakshadweep				

**LEGEND:**

L. Excess: (+60 % or more)	Blue
Excess: (+20 % to +59 %)	Light Blue
Normal: (+19 % to -19 %)	Green
Deficient: (-20 % to -59 %)	Orange
L. Deficient: (-60 % to -99 %)	Yellow
No Rain: (-100 %)	Grey
No Data:	White

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