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भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

Monthly Outlook for the Rainfall and the Temperatures over India during February 2025

Highlights

- a) Monthly rainfall during February 2025 over North India consisting of seven meteorological subdivisions (East Uttar Pradesh, West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Jammu and Kashmir, and Ladakh) is most likely to be below normal (<78 % of Long Period Average (LPA)).
- b) Monthly rainfall over the country as a whole during February 2025 is most likely to be below normal (<81 % of LPA).
- c) Below-normal rainfall is likely over most parts of the country except some parts of West Central India and South Peninsular India and some regions of North West India where normal to above-normal rainfall is likely.
- d) Monthly minimum temperatures during February 2025 are most likely to be above normal over most parts of the country except some regions of Northwest India and South Peninsular India where it is likely to be normal. Below normal cold wave days are likely over plains of Northwest India.
- e) Monthly maximum temperatures for February 2025 are likely to be normal to above normal over most parts of the country except some parts West Central India and Southern peninsular India, where below-normal maximum temperatures are likely.
- f) Over the equatorial Pacific Ocean, weak La Niña conditions are present and are expected to persist till April 2025, with a transition to ENSO- neutral conditions likely thereafter.

1. Background

North India consisting of seven meteorological subdivisions (East Uttar Pradesh, West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Jammu & Kashmir and Ladakh) receives about 18% of its annual rainfall during the period of January to March. Jammu & Kashmir and Ladakh in particular receive about 31% of their annual rainfall during this period. The rainfall during this period is very crucial for Rabi crops over the region. It is also crucial for the water management of the region. Because of these reasons, India Meteorological Department (IMD) has been issuing long-range forecast outlooks for the winter rainfall over North India. IMD also continuously works to improve the skill of forecasting models. At present the seasonal and monthly rainfall forecast is prepared based on the newly developed Multi-Model Ensemble (MME) technique. The MME approach uses the coupled global climate models (CGCMs) from different global climate prediction and research centers including IMD/MoES Monsoon Mission Climate Forecast System (MMCFS) model. Since 2016, the India Meteorological Department (IMD) has also been issuing seasonal and monthly forecast outlooks for the maximum and minimum temperatures over the country using the MME approach.

IMD has now prepared and presented the monthly forecast outlook for the following;

- a. Probabilistic forecast for February 2025 rainfall averaged over North India and that over the country as a whole.
- b. Spatial distribution of the probabilistic forecasts of monthly rainfall over the country for February 2025.
- c. Spatial distribution of the probabilistic forecasts of monthly maximum and minimum temperatures over the country for February 2025.

2. Probabilistic Forecast for the Rainfall during February 2025.

The rainfall averaged over North India is most likely to be below normal (<78 % of Long Period Average (LPA)) during February, 2025. Monthly rainfall over the country as a whole during February 2025 is also most likely to be below normal (<81 % of LPA). The LPA of rainfall over North India and the country as a whole during February based on data from 1971-2020 is 65.0 mm and 22.7 mm, respectively.

The spatial distribution of the probabilistic forecast of tercile categories (above normal, normal, and below normal) of monthly rainfall over the country for February 2025 is shown in Fig.1. The forecast suggests that c) Below-normal rainfall is likely over most parts of the country except some parts of West Central India and South Peninsular India and some regions of North West India where normal to above-normal rainfall is likely. The dotted areas in the map climatologically receive very less rainfall during the month and the white-shaded areas within the land areas represent climatological probabilities.

3. Probabilistic Forecast for the Temperatures during February 2025

Fig.2 and Fig.3 show the forecast probabilities of the minimum and maximum temperatures respectively for February 2025. The probability forecast for the minimum temperatures indicates that during February 2025, are most likely to be above normal over most parts of the country except some regions of Northwest India and South Peninsular India where it is likely to be normal.

The probability forecast for maximum temperatures (Fig.3) indicates that during February 2025, normal to above normal over most parts of the country except some parts West Central India and Southern peninsular India, where below-normal maximum temperatures are likely.

4. Outlook for the Cold Wave Days during February 2025

The anomaly (deviation from normal) forecast for the number of cold wave days in the country for the month of February 2025 is presented in Fig. 4. The cold wave days over most parts of the country are likely to be within the normal range. However, below normal cold wave days are likely over some parts of Northwest India.

5. SST Conditions Over the Pacific and the Indian Oceans

Currently, weak La Niña conditions are prevailing over the equatorial Pacific, and the sea surface temperatures (SSTs) are below normal over the central and eastern Pacific Ocean. The latest MMCFS forecast indicates that weak La Niña conditions are expected to persist till April 2025, with a transition to ENSO- neutral condition likely thereafter.

At present, neutral Indian Ocean Dipole (IOD) conditions persist over the Indian Ocean, and the latest MMCFS forecast indicates that the neutral IOD conditions are likely to continue for the next two months.

6. Extended Range Forecast and short to medium-range forecasting services

IMD also provides extended range forecasts (7–day averaged forecasts for the next four weeks) of rainfall and maximum and minimum temperatures over the country updated every week on Thursday. This is based on the Multi-model ensemble dynamical Extended Range Forecasting System currently operational at IMD. The extended range forecasts are available through the IMD website https://mausam.imd.gov.in/imd_latest/contents/extendedrangeforecast.php).

The extended range forecast is followed by a short to medium range forecast issued daily by IMD. The forecasts are available through the IMD website https://nwp.imd.gov.in/gfsproducts_cycle00_mausam.php

7. Likely Impact of expected Below-normal Rainfall and Above-normal Temperatures on Agriculture in February 2025

- Below normal rainfall along with higher temperature over plains of Northwest India would have significant adverse impact on the standing crops like wheat at flowering and grain filling stages. Crops like mustard and chickpea may also experience early maturity.
- Horticultural crops like apple, and other temperate stone fruits may experience premature bud break and early flowering due to warmer temperatures, resulting in poor fruit setting and quality which may ultimately reflect in poor yield.
- The intermittent light irrigation will be required to minimize the adverse impact and sustain the crop growth. However, due to expected normal to below normal maximum temperature over Uttar Pradesh and Madhya Pradesh, the adverse impacts of cold wave on field crops will be limited.

probability rainfall forecast for 2025 February

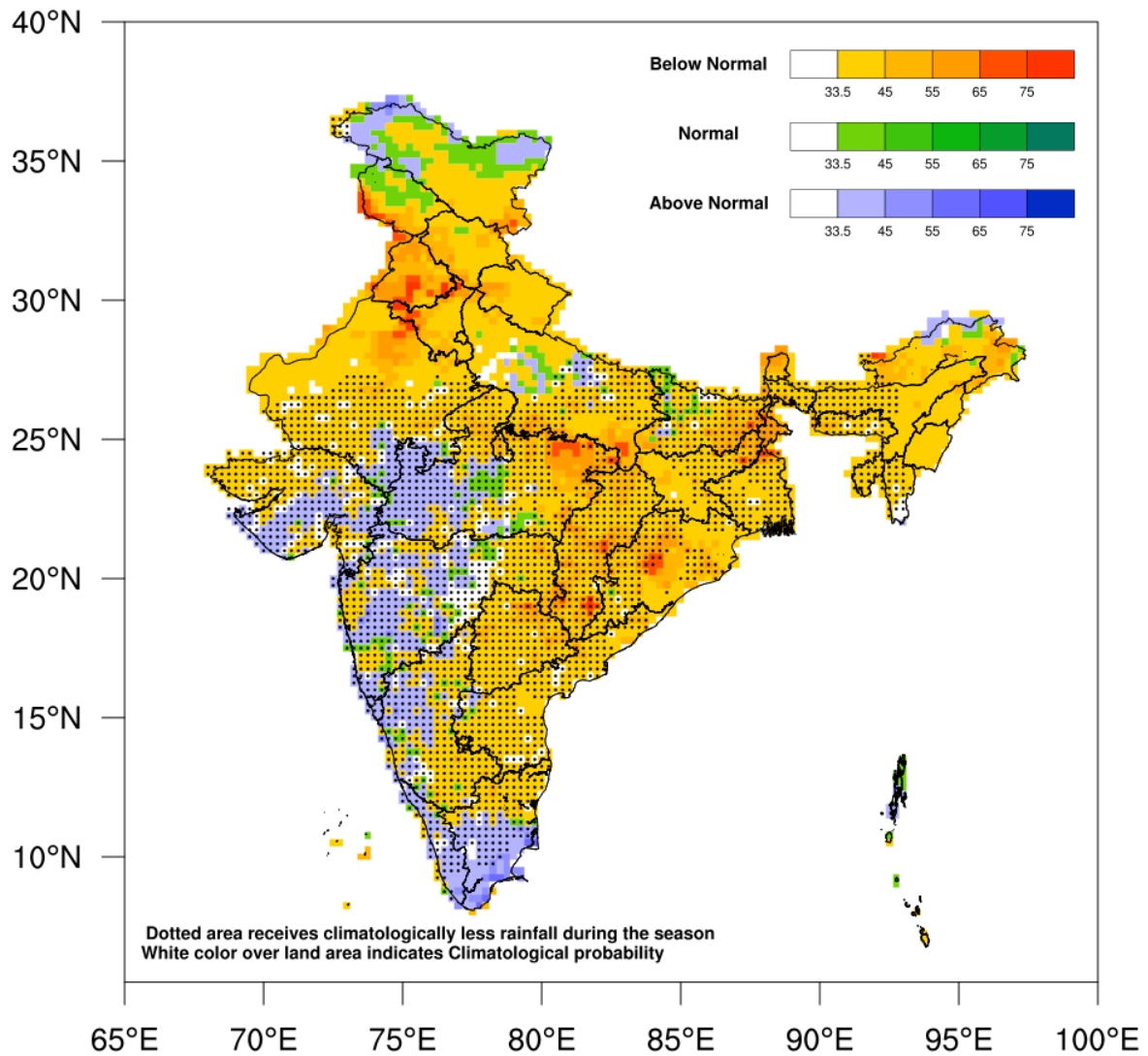


Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) for the rainfall over India during February 2025. The figure illustrates the most likely categories as well as their probabilities. The dotted area shown in the map climatologically receives very less rainfall during February and the white-shaded areas within the land areas represent climatological probabilities (*Tercile categories have equal climatological probabilities, of 33.33% each).

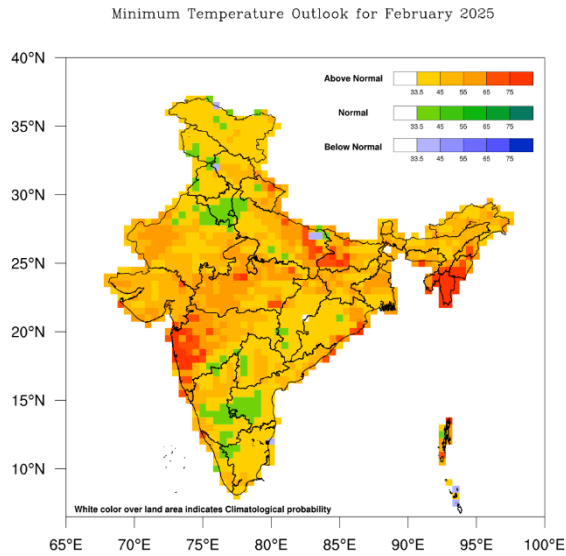


Fig 2. Probability forecast of Minimum Temperature for February 2025.

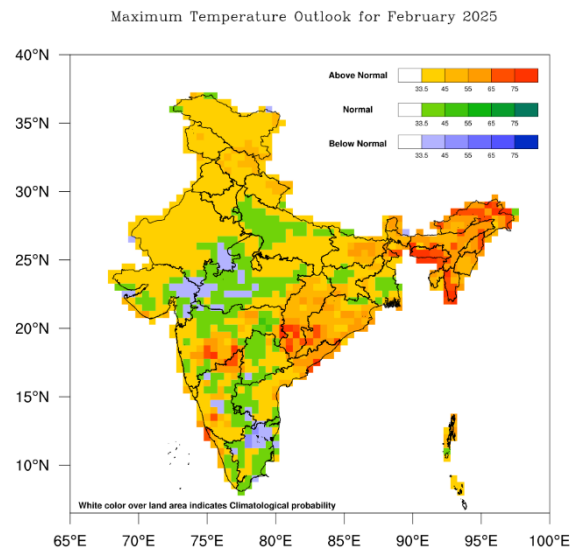


Fig 3. Probability forecast of Maximum Temperature for February 2025.

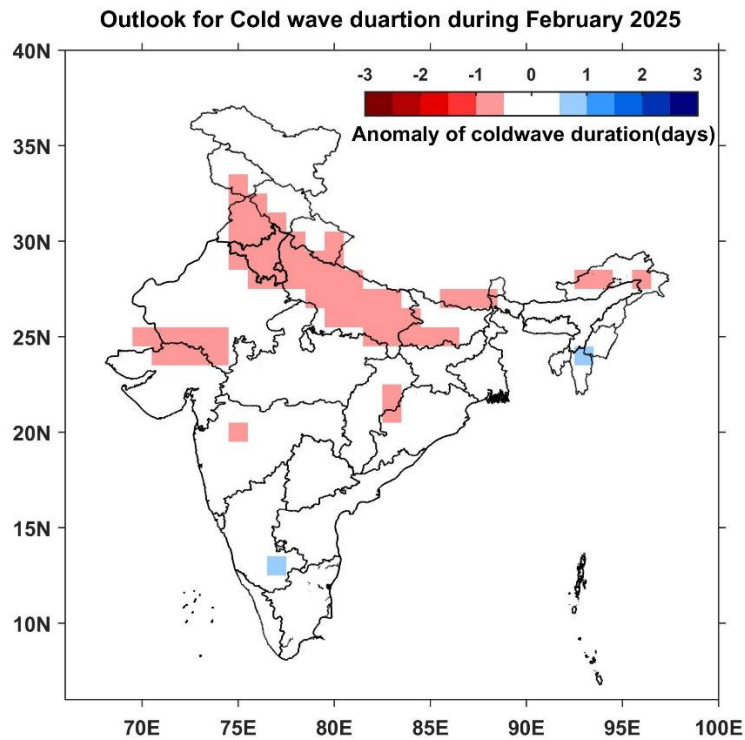


Fig 4. Anomaly (deviation from normal) of Cold Wave Duration (in days) for the month of February 2025