



भारतसरकार
Government of India
पृथ्वीविज्ञानमंत्रालय(एम. ओ. ई. एस.)
Ministry of Earth Sciences (MoES)
भारतमौसमविज्ञानविभाग
INDIA METEOROLOGICAL DEPARTMENT

Monthly outlook for rainfall and temperatures during February 2022

Highlights

- a) **Rainfall** – The rainfall during February 2022 averaged over North India consisting of seven meteorological subdivisions (East Uttar Pradesh, West Uttar Pradesh, Uttarakhand, Haryana, Chandigarh & Delhi, Punjab, Himachal Pradesh, Jammu Kashmir & Ladakh) is most likely to be **above** normal ($\geq 121\%$ of Long Period Average (LPA)).
- b) **Temperature** - During the month of February 2022, below normal minimum temperatures are most likely over most parts of the country except eastern parts of northeast India, south peninsular India and southeastern parts central India, where normal to above normal minimum temperatures are likely. Below normal maximum temperatures are likely over most parts of the country except along the eastern and southwestern coastal areas of peninsular India where it is likely to be normal to above normal.
- c) **SST Conditions** - Currently, weak La Niña conditions are prevailing over equatorial Pacific region. The latest Monsoon Mission Climate Forecast System (MMCFS) forecast indicates that these La Niña conditions are likely to weaken starting from the northern hemisphere spring season and to reach cold ENSO neutral conditions during the second quarter of 2022. At present, neutral IOD conditions are present over Indian Ocean and the latest MMCFS forecast indicates that the neutral IOD conditions are likely to continue during the forecast period.

Monthly outlook for rainfall and temperature during February 2022

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) receives² about 18% of its annual rainfall during January to March. The Jammu Kashmir and Ladakh in particular receive about 31% of their annual rainfall during this period. The winter rainfall 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 the forecasting models. This year, IMD has adopted a new strategy for issuing monthly and seasonal outlooks of rainfall and temperature over the country. The new strategy is based on the newly developed Multi-Model Ensemble (MME) based forecasting system. 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.

On 3rd January, 2022 IMD had issued seasonal forecast (January-March 2022) and monthly forecast (January 2022) for the rainfall over north India. Also, monthly forecast for minimum and maximum temperature were issued over the country. IMD has now prepared a monthly rainfall outlook over north India and monthly temperature outlook for the country for February 2022.

2. Probabilistic rainfall forecast for February 2022

The 2022 February rainfall averaged over North India is most likely to be above normal (>121 % of LPA). The LPA of rainfall over North India during February based on the data of 1961-2010 is about 65.3 mm.

The probabilistic forecast for the spatial distribution of tercile rainfall categories (above normal, normal, and below normal) over the country for the month of February is shown in Fig.1. The forecast suggests that normal to below normal rainfall is most likely over most parts of North India except most parts of Punjab and Haryana where above normal rainfall is most 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 Temperature Forecast for February 2022

Fig.2 and Fig.3 show forecast probabilities of the minimum and maximum temperatures respectively for February 2022. The probability forecast for the minimum temperatures (Fig.2) indicates that during the month of February 2022 below normal minimum temperatures are most likely over most parts of the country except eastern parts of northeast India, south peninsular India and southeastern parts of central India, where normal to above normal minimum temperatures are likely.

The probability forecast for the maximum temperatures (Fig.3) during the month of February 2022 indicates that below normal maximum temperatures are likely over most parts of the country except eastern and southwestern coastal areas of peninsular India where normal to above normal maximum temperatures are likely.

Climatological probabilities (indicated by white shaded areas) are predicted over the remaining areas of the country.

4. SST conditions in the Pacific and the Indian Oceans

Currently, weak La Niña conditions are prevailing over the equatorial Pacific region. The latest MMCFS forecast is indicating that these La Niña conditions are likely to persist during the FMA season. Thereafter the La Niña conditions are likely to start

weakening to reach to cold ENSO neutral conditions during the second quarter of the 2022.

At present, neutral IOD conditions are present over the Indian Ocean and the latest MMCFS forecast indicates that the neutral IOD conditions are likely to continue during the entire forecast period.

5. 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 & 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 forecasts are available through the IMD website (https://mausam.imd.gov.in/imd_latest/contents/extendedrangeforecast.php).

The extended range forecast is followed by short to medium range forecast issued daily by IMD.

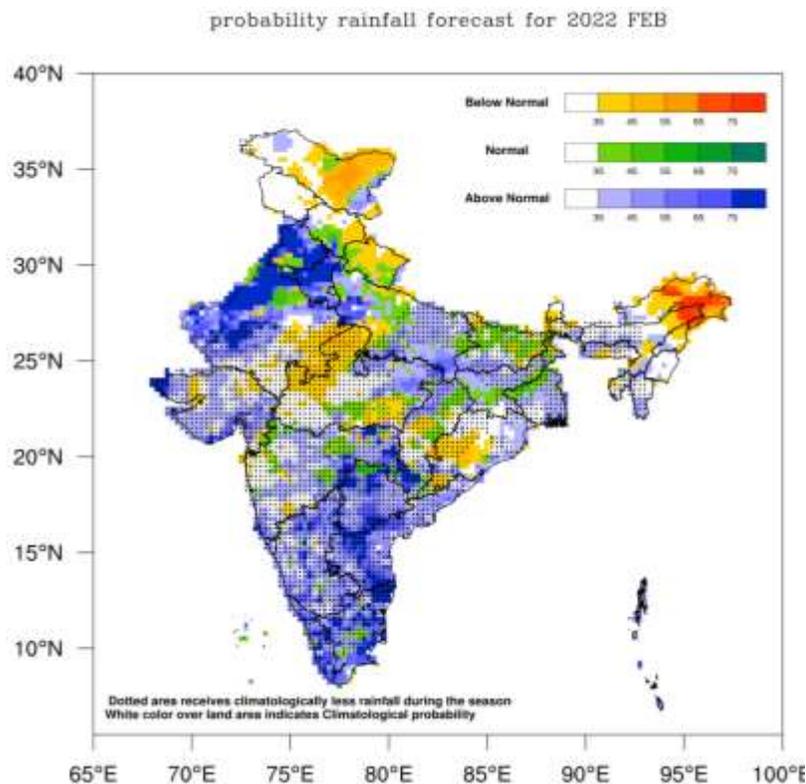


Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) of the rainfall over India during February 2022. The figure illustrates the most likely categories as well as their probabilities. The dotted area shown in the map climatologically receives very less rainfall during February and the white shaded areas within the land areas represent climatological probabilities. The probabilities were derived using the MME forecast prepared from a group of coupled climate models. (*Tercile categories have equal climatological probabilities, of 33.33% each).

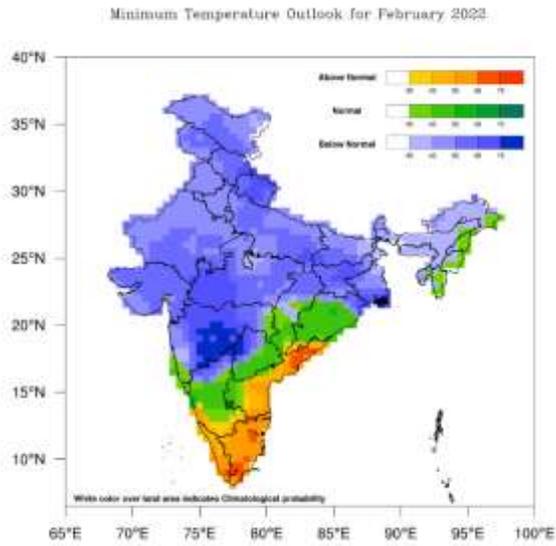


Fig2. Probability forecast of Minimum Temperature for the month of February 2022.

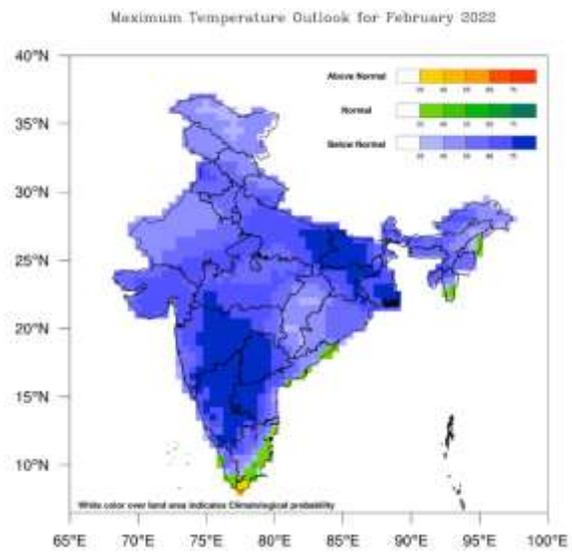


Fig3. Probability forecast of Maximum Temperature for the month of February 2022.