PRESS RELEASE
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भारत सरकार
Government of India
पृथ्वी विज्ञान मंत्रालय (एम. ओ. ई. एस.)
Ministry of Earth Sciences (MoES)
भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

Long Range Forecast for rainfall and temperature for November 2023

Highlights

a) Monthly rainfall for the November 2023 over the South Peninsular India consisting of five meteorological subdivisions (Tamil Nadu, Puducherry & Karaikkal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala& Mahe and South Interior Karnataka) is most likely to be normal (77-123% of Long Period Average (LPA)).

b) Monthly rainfall over the country as a whole during the November 2023 (Fig.1) is also most likely to be normal (77-123 % of (LPA). Above-normal rainfall is likely over some areas of Southern most part of Peninsular India, most parts of northwest India, many parts of east-cental, east and northeast India. Below-normal to normal rainfall is likely over remaining parts of the country.

c) Above-normal maximum temperatures are likely over most parts of the country, except for some parts of Northwest India and Central India, where normal maximum temperatures are likely (Fig. 2a). Similarly, above-normal minimum temperatures are likely over most parts of the country (Fig. 2b).

d) Currently moderate El Niño conditions are prevailing over Equatorial Pacific Ocean and positive Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. The latest global model forecasts indicate that these El Niño conditions are likely to continue during the upcoming season and positive IOD conditions are likely to weaken during the upcoming months.

As the changes in the Sea Surface Temperature (SST) conditions over the Pacific and the Indian Oceans are known to influence the Indian climate, IMD is carefully monitoring the evolution of sea surface conditions over these Ocean basins.

1. Background

The South Peninsular India, which includes five meteorological subdivisions (Tamil Nadu, Puducherry & Karaikkal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe, and South Interior Karnataka), receives a substantial amount of rainfall during the October to December (OND) season. Since 2021, the India Meteorological Department (IMD) has implemented a new strategy for issuing monthly and seasonal operational forecasts for rainfall and temperature over the country. This new approach combines the existing statistical forecasting system with the newly developed Multi-Model Ensemble (MME) based forecasting system. The MME approach incorporates data from Coupled Global Climate Models (CGCMs) obtained from various global climate prediction and research centers, including IMD's Monsoon Mission Coupled Forecast System (MMCFS) model. Accordingly, IMD has issued various seasonal forecasts for the 2023 Southwest Monsoon season (June to September), as well as monthly rainfall forecast for the entire country. IMD also issued forecasts for the Post-monsoon season (October to December) rainfall in South Peninsular India, along with the spatial distribution of probabilistic OND season rainfall forecasts over the country.

Now, IMD has prepared the forecast for rainfall and temperature for November 2023.

2. Probabilistic Forecast for the Rainfall during November 2023

Monthly rainfall for November 2023 over South Peninsular India consisting of five meteorological subdivisions (Tamil Nadu, Puducherry & Karaikkal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala& Mahe and South Interior Karnataka) is most likely to be normal (77-123% of Long Period Average (LPA)). The LPA of rainfall over South Peninsular India during November based on data from 1971 to 2020 is about 118.69 mm. Monthly rainfall over the country as a whole during November 2023 is also most likely to be normal (77-123 % of LPA). The LPA of rainfall over the country during the month of November based on data from 1971 to 2020 is about 29.7 mm.

The spatial distribution of probabilistic forecasts for the tercile categories (above normal, normal, and below normal) over the country for the November 2023 rainfall is shown in Fig.1. The spatial distribution suggests that above-normal rainfall is likely over some areas of Southern most part of Peninsular India, most parts of northwest India, many parts of east-cental, east and northeast India. Below-normal to normal rainfall is likely over remaining parts of the country. The dotted areas shown in the map climatologically receives very less rainfall during November and the white-shaded areas within the land areas represent climatological probabilities.

3. Probabilistic Forecast of Temperatures over the Country during November 2023

Fig.2a and Fig.2b show a probabilistic forecast of the maximum and minimum temperatures respectively during November 2023.

During November 2023, above-normal maximum temperatures are likely over most parts of the country, except for some parts of Northwest India and Central India, where normal

maximum temperatures are likely (Fig. 2a). Similarly, above-normal minimum temperatures are likely over most parts of the country (Fig. 2b).

4. SST conditions in the Pacific and the Indian Oceans

Currently, the Sea Surface Temperatures (SSTs) and the atmospheric conditions over the Equatorial Pacific Ocean indicate moderate El Niño conditions. The latest forecasts from MMCFS and other global models suggest that these El Niño conditions are likely to continue during the upcoming season.

In addition to ENSO conditions over the Pacific, other factors such as the Indian Ocean Sea Surface Temperatures (SSTs) also influence Indian climate. Currently, positive Indian Ocean Dipole (IOD) conditions are prevailing over the Equatorial Indian Ocean. The latest MMCFS forecast indicates that the positive IOD conditions are likely to weaken during the upcoming months.

5. Extended Range Forecast and Short to Medium range forecast 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 forecasts are available through the IMD website https://mausam.imd.gov.in/imd_latest/contents/extendedrangeforecast.php).

The extended-range forecast is complemented by short to medium-range forecasts issued daily by IMD.

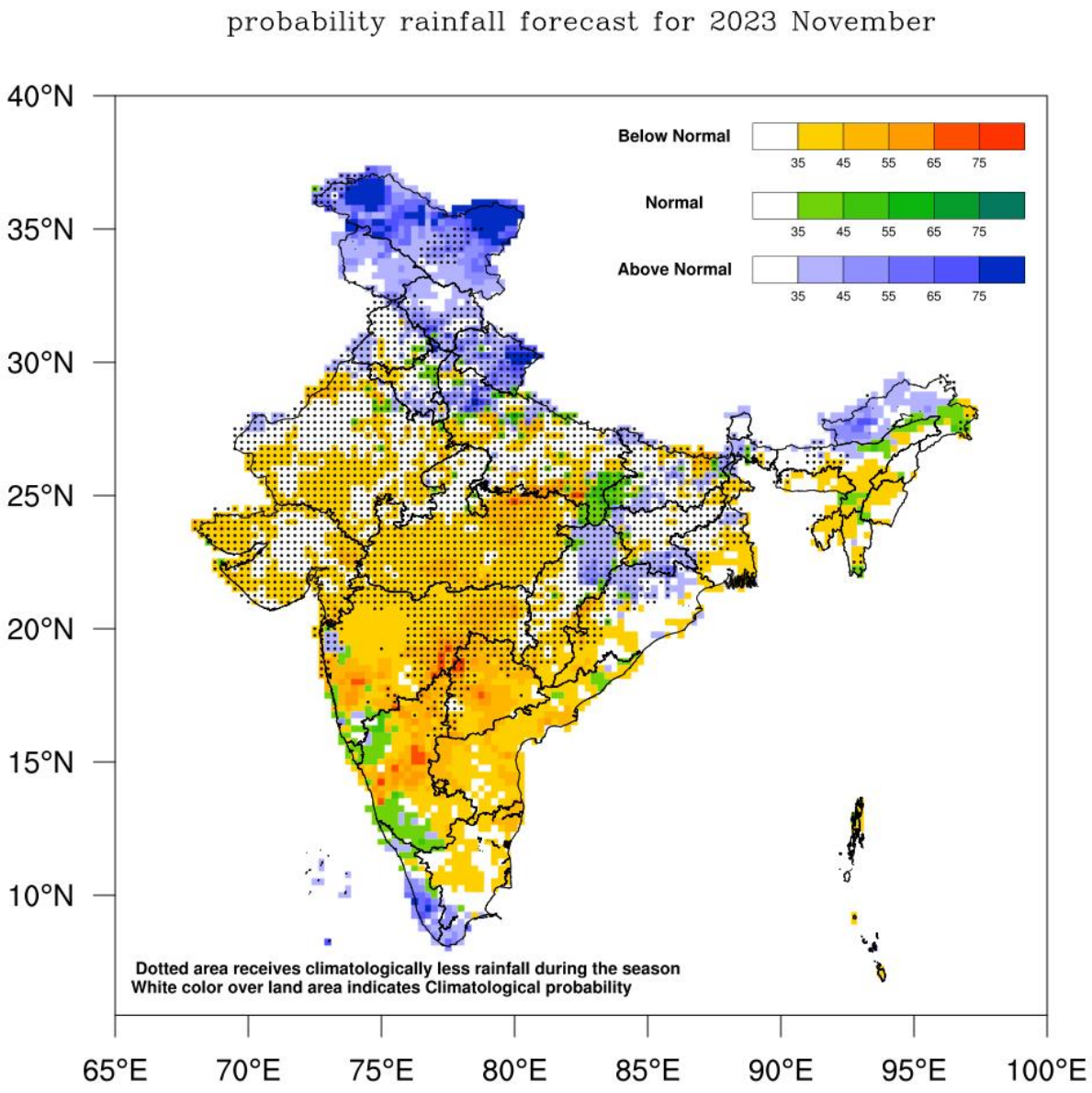

Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) for the 2023 November rainfall over India. The figure illustrates the most likely categories as well as their probabilities. The dotted areas shown in the map climatologically receive very less rainfall during November and the white-shaded areas over the land 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).

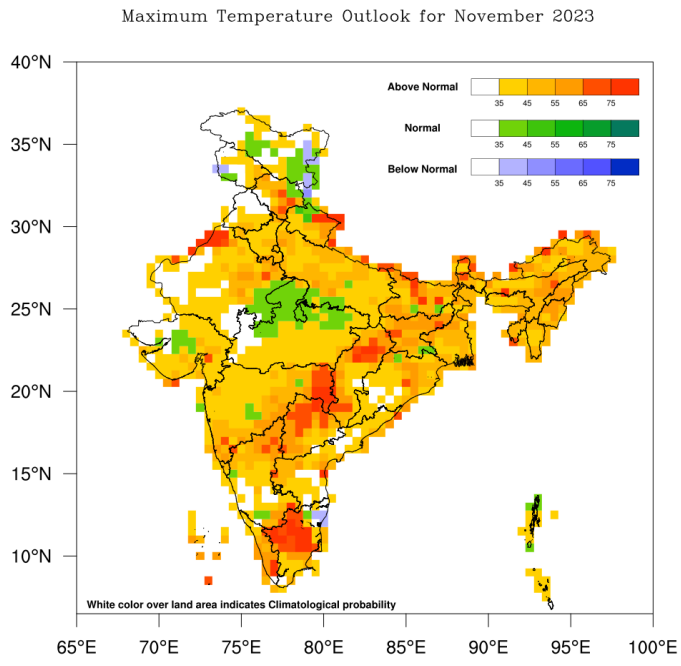

Fig.2a. Probability forecast of Maximum Temperature over India during November 2023.

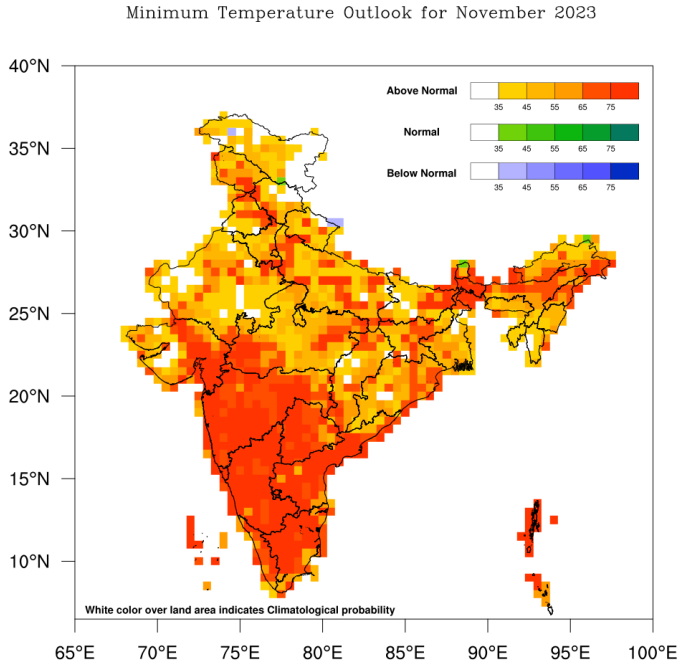

Fig.2b. Probability forecast of Minimum Temperature over India during November 2023.