



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 2022

Highlights

- a)** Monthly rainfall for November 2022 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 above normal (>123% of Long Period Average (LPA)). Monthly rainfall over the country as a whole during November 2022 is also most likely to be above normal (>123 % of Long Period Average (LPA)). Normal to above normal rainfall is likely over most parts of the country except some areas of South Peninsula, Northwest India and Northeast India where below normal rainfall is likely.
- b)** Normal to below normal maximum temperatures are likely over most parts of the country except many parts of Northeast and Northwest India and some parts of Eastern India, where above normal maximum temperatures are likely. Normal to above normal minimum temperatures are likely over most parts of the country except some parts of Northwest India and some areas of foothills of Himalayas where below normal minimum temperatures are likely.
- c)** Currently La Niña conditions are prevailing over Equatorial Pacific Ocean and negative Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. The latest global model forecasts indicate that the La Niña conditions are likely to continue during the upcoming season and negative 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

South Peninsular India consisting of five meteorological subdivisions (Tamil Nadu, Puducherry & Karaikkal, Coastal Andhra Pradesh & Yanam, Rayalaseema, Kerala & Mahe and South Interior Karnataka) receives a good amount of rainfall from November to January (NDJ) season. Since 2021, IMD has adopted a new strategy for issuing monthly and seasonal operational forecasts for the rainfall and temperature over the country. The new strategy is based on the existing statistical forecasting system and 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's Monsoon Mission CFS (MMCFS) model. Accordingly, IMD had issued various seasonal forecasts for the 2022 Southwest Monsoon seasonal (June to September) and monthly rainfall over the country and Post-monsoon seasonal (October to December (OND)) rainfall over South Peninsular India as well as the spatial distribution of probabilistic forecasts for the OND season rainfall over the country.

Now, IMD has prepared the forecast for rainfall and temperature for November 2022.

2. Probabilistic Forecast for the Rainfall during November 2022

Monthly rainfall for November 2022 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 above normal (>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 2022 is most likely to be above normal (>123 % of Long Period Average (LPA)). The LPA of rainfall over the country as a whole during the month of November based on data from 1971 to 2020 is about 29.7 mm.

The spatial distribution of probabilistic forecasts for tercile categories (above normal, normal, and below normal) over the country for the November rainfall is shown in Fig. 1. The spatial distribution suggests normal to above normal rainfall is likely over most parts of the country except some areas of South Peninsula, Northwest India and Northeast India where below normal rainfall is likely. The dotted area shown in the map climatologically receives very less rainfall during November and the white-shaded areas within the land represent climatological probabilities.

3. Probabilistic Forecast of Temperatures over the Country during November 2022

Fig.2a and Fig.2b show probabilistic forecasts of the maximum and minimum temperatures respectively during November 2022.

During November, normal to below normal maximum temperatures are likely over most parts of the country except many parts of Northeast and Northwest India and some parts of Eastern India, where above normal maximum temperatures are likely (Fig.2a). Normal to above normal minimum temperatures are likely over most parts of the country except some parts of Northwest India and some areas of foothills of the Himalayas where below normal minimum temperatures are likely (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 La Niña conditions. The latest forecasts from MMCFS and other global models suggest that La Niña 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, negative Indian Ocean Dipole (IOD) conditions are prevailing over the Equatorial Indian Ocean. The latest MMCFS forecast indicates that the negative IOD conditions are likely to weaken by the end of the year.

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 followed by short to medium-range forecast issued daily by IMD.

probability rainfall forecast for 2022 November

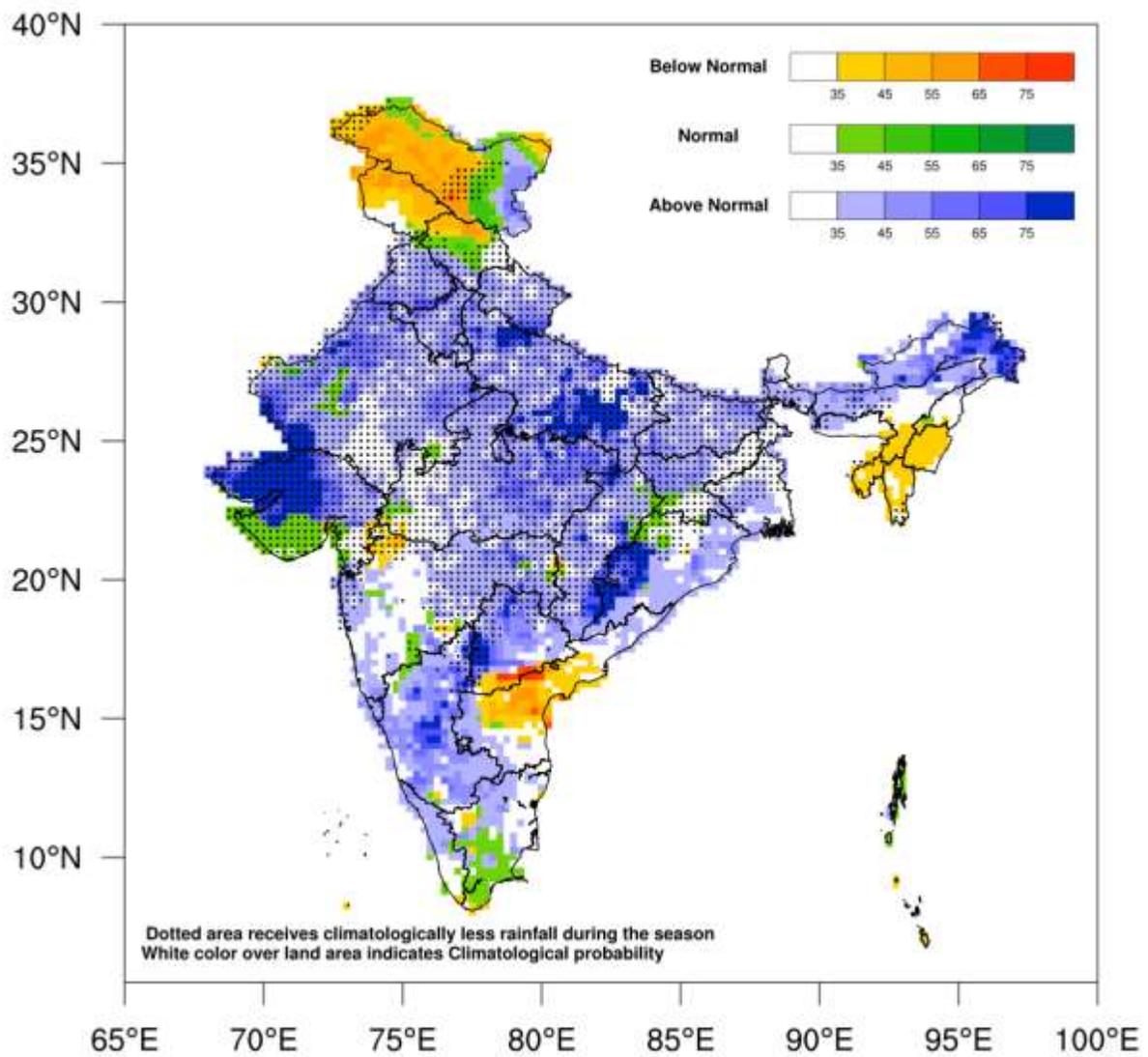


Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) for the 2022 November rainfall over India. The figure illustrates the most likely categories as well as their probabilities. The dotted areas shown in the map climatologically receive very less rainfall during November month 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).

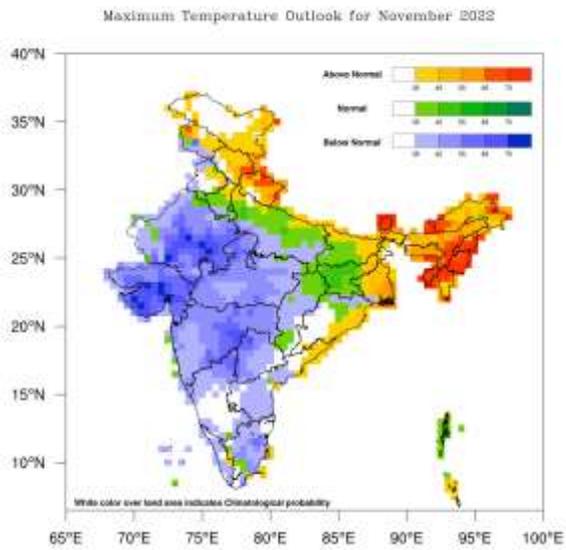


Fig.2a. Probability forecast of Maximum Temperature over India during November 2022.

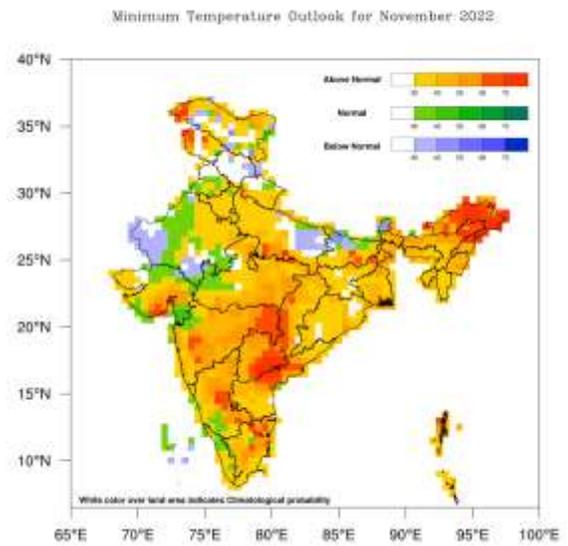


Fig.2b. Probability forecast of Minimum Temperature over India during November 2022.