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Long Range Forecast for Rainfall and Temperature for November 2024

Highlights

- a)** Monthly rainfall for November 2024 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)).
- b)** Monthly rainfall over the country as a whole during November 2024 is most likely to be normal (77-123 % of LPA). Normal to above normal rainfall is likely over most parts of the country except northwest India and some areas of central India where below normal rainfall is likely during November 2024.
- c)** Above normal maximum temperatures are likely over northeast & east central India and some parts of northwest and Peninsular India. Normal to below normal maximum temperatures are likely over west central India and adjoining areas of northwest India and north peninsular India.
- d)** Above-normal minimum temperatures are likely over most parts of the country except some areas of northwest India, where normal to below-normal minimum temperatures are likely.
- e)** Currently, neutral El Niño-Southern Oscillation (ENSO) conditions are prevailing over the Equatorial Pacific Ocean and neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. The latest global model forecasts indicate a higher chance of La Niña conditions developing during November-December, 2024 and neutral IOD conditions are likely to continue over the Indian Ocean during next several months.

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 2024 Southwest Monsoon season (June to September), as well as monthly rainfall forecasts 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.

IMD has prepared the forecast for rainfall and temperature for November 2024 as given in the following sections.

2. Probabilistic Forecast for the Rainfall during November 2024

Monthly rainfall for November 2024 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 118.7 mm. Monthly rainfall over the country as a whole during November 2024 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 rainfall in tercile categories (above normal, normal, and below normal) over the country during November 2024 is shown in Fig.1. The above-normal to normal rainfall is likely over most parts of the country except northwest India and some areas of central India where below normal rainfall is likely during November 2024. The dotted areas shown in the map receive very less rainfall during November as per climatology. There is no forecast signal by the model over the white-shaded areas within the land region of the country.

3. Probabilistic Forecast of Temperatures over the Country during November 2024

Fig.2a and Fig.2b show a probabilistic forecast of the maximum and minimum temperatures, respectively, during November 2024. During November 2024, above normal maximum temperatures are likely over northeast & east central India and some parts of northwest and Peninsular India. Normal to below normal maximum temperatures are likely over west central India and adjoining areas of northwest India and north peninsular India (Fig. 2a). The above-normal minimum temperatures are likely over most parts of the country except some areas of northwest India where normal to below normal minimum temperatures are likely (Fig. 2b).

4. SST conditions in the Pacific and the Indian Oceans

The sea surface temperatures are below average in the eastern equatorial Pacific Ocean. Currently, neutral El Niño-Southern Oscillation (ENSO) conditions are observed over the equatorial Pacific. The probability forecast indicates a higher chance of La Niña conditions developing during November-December, 2024.

In addition to ENSO conditions over the Pacific, other factors, such as the Indian Ocean Sea Surface Temperatures (SSTs), also influence the Indian climate. Above-average sea surface temperatures (SSTs) are currently seen across most of the Indian Ocean. Currently, neutral Indian Ocean Dipole (IOD) conditions are observed over the Indian Ocean. The latest MMCFS forecast indicates that the neutral IOD conditions are likely to continue for the next several months.

5. Extended Range Forecast and Short to Medium range forecast Services

IMD 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.

probability rainfall forecast for 2024 November

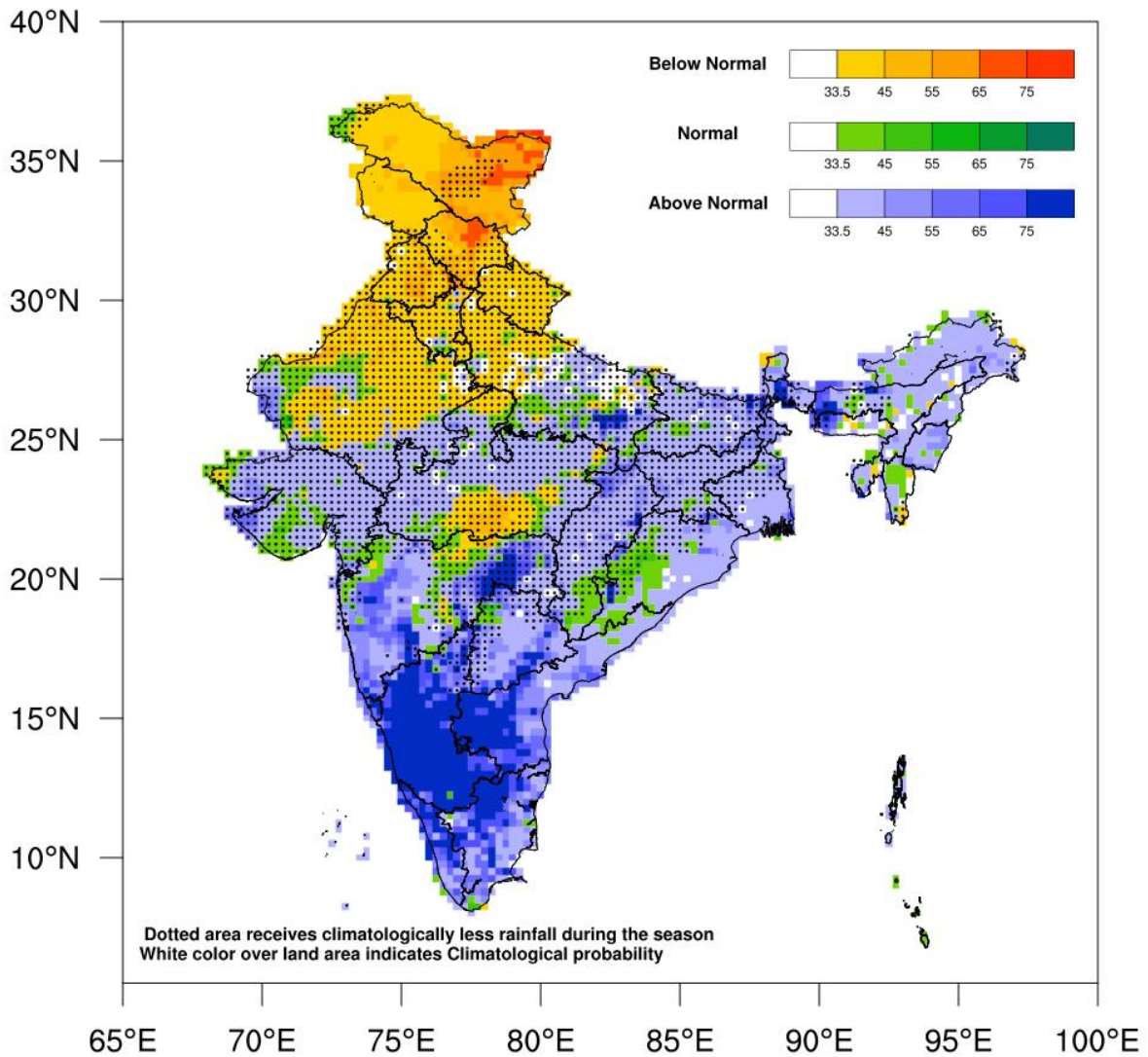


Fig.1. Probability forecast of rainfall in tercile categories* (below normal, normal, and above normal) over India during November, 2024. The figure illustrates the most likely categories as well as their probabilities. The dotted areas shown in the map climatologically receive very less rainfall during November and the white-shaded areas over the land represent no forecast signal by the model.

(*Tercile categories have equal climatological probabilities of 33.33% each).

Maximum Temperature Outlook for November 2024

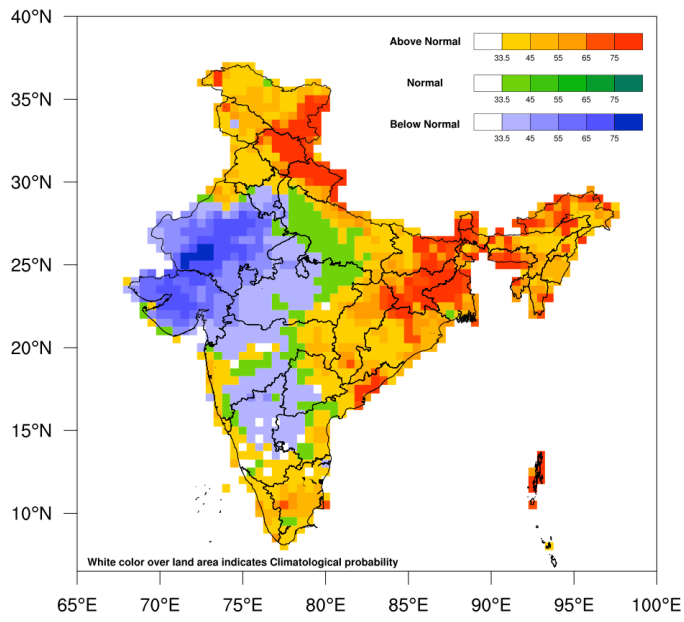


Fig.2a. Probability forecast of Maximum Temperature over India during November 2024

Minimum Temperature Outlook for November 2024

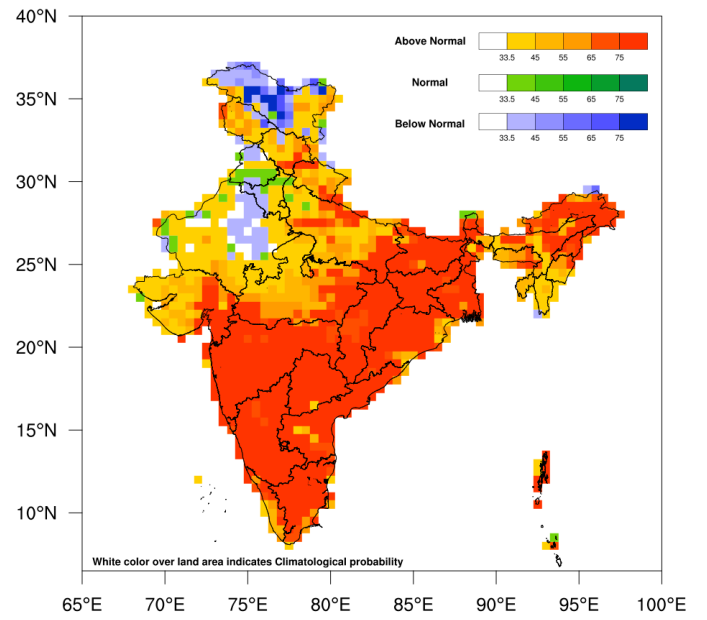


Fig.2b. Probability forecast of Minimum Temperature over India during November 2024.