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

Monthly Outlook for Rainfall and Temperature during September 2024

Highlights

a) Rainfall over India - Above-normal rainfall is likely over most parts of India, except some parts of the extreme north India, many parts of south Peninsular India, and most parts of northeast India where normal to below-normal rainfall is likely. Monthly rainfall for September 2024 over the country as a whole is **most likely to be above normal (>109 % of the Long Period Average (LPA)).**

b) Surface Air Temperature over India - Above-normal maximum temperatures are likely over most parts of the country, except for some areas in northwest India, south peninsular India, and some pockets of east-central India, where normal to below-normal maximum temperatures are likely. Above-normal minimum temperatures are likely over most parts of the country, except for some isolated pockets of northwest India, foothills of Himalayas and south Peninsular India, where normal to below normal minimum temperatures are likely.

c) Sea Surface Temperature (SST) - Currently, El Nino-Southern Oscillation (ENSO) neutral conditions are observed over the equatorial Pacific. The latest MMCFS forecast indicates higher likelihood of La Niña conditions are likely to develop during end of monsoon season. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. Most global climate models suggest that neutral IOD conditions are likely to continue during the remaining period of the monsoon season.

IMD will issue the **forecast for the rainfall during Post-Monsoon (Oct-Dec) season, 2024 and for October, 2024 towards the end of September 2024.**

1. Background

Since 2021, the India Meteorological Department (IMD) has been issuing monthly and seasonal operational forecasts for the southwest monsoon rainfall in India. These forecasts are based on the Multi-Model Ensemble (MME) forecasting system, which utilizes coupled global climate models (CGCMs) from various global climate prediction and research centers, including IMD's Monsoon Mission Climate Forecasting System (MMCFS) model.

On 15th April 2024, IMD issued the first stage forecast for the 2024 southwest monsoon seasonal rainfall in India, covering the period from June to September. An update to this forecast was issued on 27th May 2024. Additionally, IMD released the rainfall forecast specifically for June on May 27th, 2024. Subsequently, on July 1st, 2024, the monthly outlook for July 2024 was issued by IMD. IMD has also issued the Southwest monsoon rainfall Forecast for the second half of the season and for the month of August 2024 on 1st August 2024.

IMD has prepared an outlook for the rainfall and temperature during the remaining period the Southwest monsoon season in 2024, which includes the month of September.

2. Probabilistic Forecast of Rainfall over the Country during September 2024

The rainfall averaged over the country as a whole during September 2024 is most likely to be above normal (>109 % of LPA). The LPA of rainfall over the country during the month of September, based on data from 1971-2020, is about 167.9 mm.

The spatial distribution of probabilistic forecasts for tercile categories (above normal, normal, and below normal) for September rainfall is shown in Fig.1. The spatial distribution suggests that above-normal rainfall is likely over most parts of India, except some parts of the extreme north India, many parts of south Peninsular India, and most parts of northeast India where normal to below-normal rainfall is likely. There is no 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 September 2024

Fig.2a and Fig.2b show forecast probabilities of the maximum and minimum temperatures, respectively, during September 2024.

In September, above-normal maximum temperatures are likely over most parts of the country, except for some areas in northwest India, south peninsular India, and some pockets of east-central India, where normal to below-normal maximum temperatures are likely (Fig.2a).

Above-normal minimum temperatures are likely over most parts of the country, except for some isolated pockets of northwest India, foothills of Himalayas and south Peninsular India, where normal to below normal minimum temperatures are likely (Fig. 2b) during September.

4. Sea surface temperature (SST) conditions in the Pacific and the Indian Oceans

The sea surface temperatures are cooler than average in the eastern equatorial Pacific Ocean. Currently, El Nino-Southern Oscillation (ENSO) neutral conditions are observed over the equatorial Pacific. The latest MMCFS forecast indicates higher likelihood of La Niña conditions are likely to develop during end of monsoon season.

In addition to ENSO conditions over the Pacific, other factors, such as the Indian Ocean SSTs, also have some influence on the Indian monsoon. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. Most global climate models suggest that neutral IOD conditions are likely to continue during the remaining period of the monsoon season.

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 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

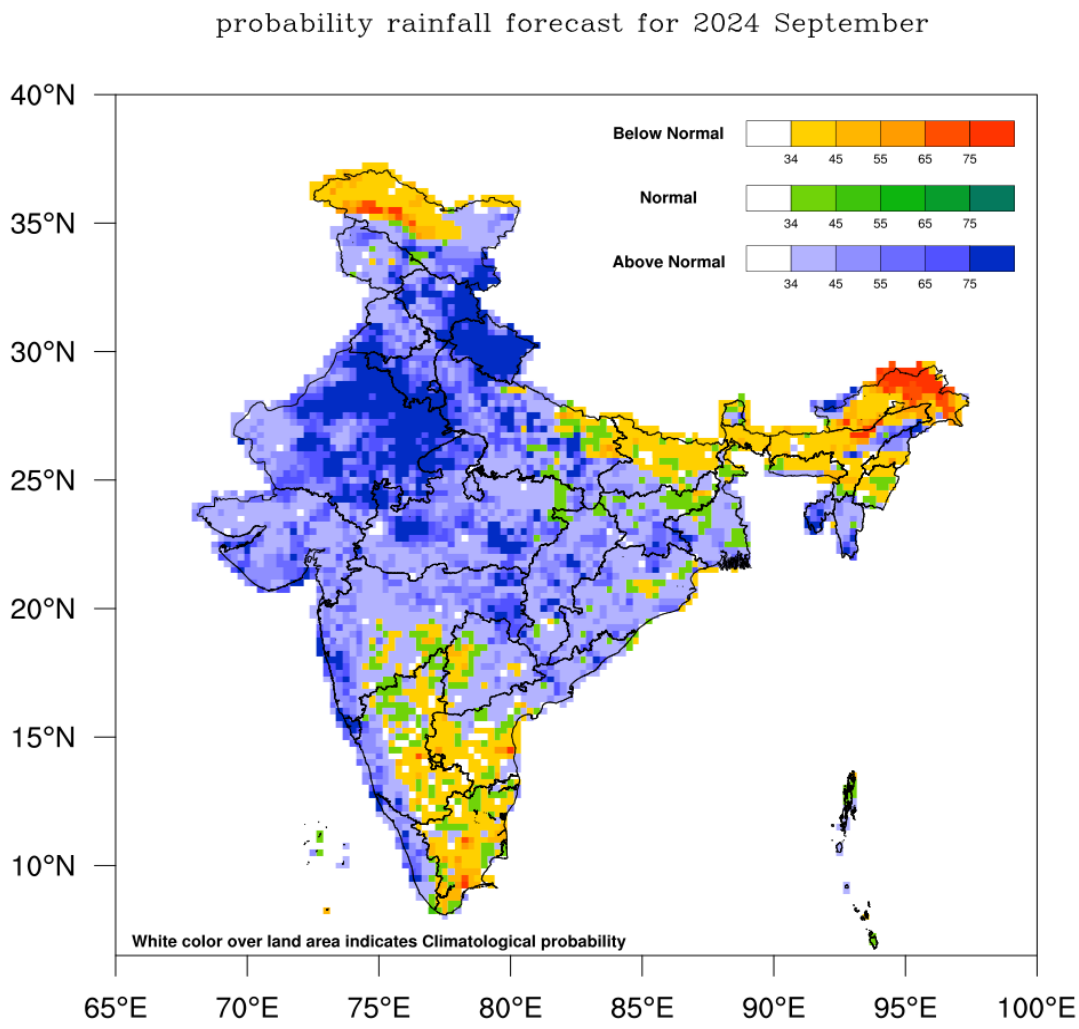

Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) for the rainfall over India during September 2024. The figure illustrates the most likely categories as well as their probabilities. The white shaded areas within the land region represent the climatological probabilities, which are equally distributed among the tercile categories (33.33% each).

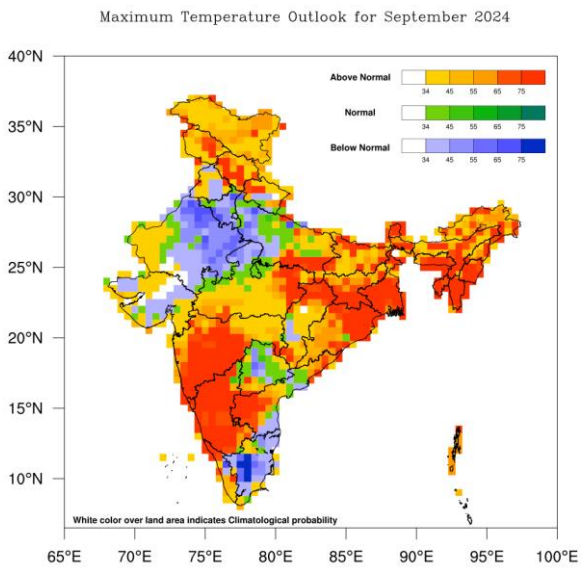

Fig.2a. Probability forecast of Maximum Temperature during September 2024.

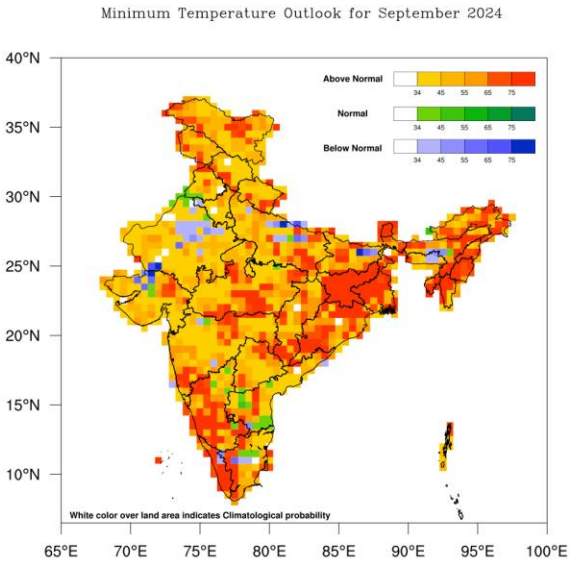

Fig.2b. Probability forecast of Minimum Temperature during September 2024.