



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

Southwest Monsoon Rainfall Forecast for the Month of September 2022

Highlights

- a) **Rainfall** - Normal to above normal rainfall probability is likely over most parts of India except many parts of northeast India and some parts of east and northwest India where below normal rainfall is likely. Monthly rainfall for September 2022 over the country as a whole is most likely to be above normal (>109 % of Long Period Average (LPA)).
- b) **Temperature** - Normal to below normal maximum temperatures are likely over most parts of the country except many parts of east and northeast India, some pockets of central India and northwest 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 southeastern parts of Peninsular India where below normal minimum temperatures are likely
- c) **SST** - Currently, La Niña conditions are prevailing over the equatorial Pacific region. The latest Monsoon Mission Climate Forecast System (MMCFS) model forecast indicates that the La Niña conditions are likely to continue up to the end of the year. Other climate models are also indicating continuation of La Niña conditions during the upcoming season. At present negative IOD conditions are evolving over the Indian Ocean and the latest MMCFS forecast indicates that the negative IOD conditions are likely to strengthen during the upcoming months.

IMD will issue the forecast for the rainfall during Post-Monsoon (Oct-Dec (OND) season, 2022 and for October, 2022 towards the end of September 2022 or beginning of October, 2022.

1. Background

Since 2021, IMD has adopted a new strategy for issuing monthly and seasonal operational forecasts for the southwest monsoon rainfall over the country. The new strategy is based on the 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 Climate Forecasting System (MMCFS) model.

Accordingly, IMD had issued the first stage forecast for the 2022 southwest monsoon seasonal (June to September) rainfall over the country on 14th April and update for the forecast on 31st May 2022. Subsequently, IMD has issued the monthly outlook for July 2022. IMD has also issued Southwest monsoon rainfall Forecast for the second half of the season and for the month of August 2022 on 1st August 2022.

2. Probabilistic Forecast of Rainfall over the Country during September 2022

The rainfall averaged over the country as a whole during September 2022 **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 of 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 normal to above normal rainfall probability is likely over most parts of India except many parts northeast India, and some parts east and northwest India where below normal rainfall is likely. The white shaded areas within the land area represent climatological probabilities.

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

Fig.2a and Fig.2b show forecast probabilities of the maximum and minimum temperatures respectively during September 2022.

During September, normal to below normal maximum temperatures are likely over most parts of the country except many parts of east and northeast India, some pockets of central India and northwest India where above normal maximum temperature 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 southeastern parts of Peninsular India where below normal minimum temperatures are likely (Fig. 2b).

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

Currently, La Niña conditions are prevailing over the equatorial Pacific region. The latest MMCFS forecast indicates that the La Niña conditions are likely to continue up to the end of the year. Other climate models are also indicating continuation of La Niña conditions during the upcoming season.

In addition to ENSO conditions over Pacific, other factors such as the Indian Ocean Sea Surface Temperatures (SSTs) also have some influence on Indian monsoon. At present the negative IOD conditions are evolving over the Indian Ocean and the latest MMCFS forecast indicates that the negative IOD conditions are likely to strengthen 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 followed by a short to medium range forecast issued daily by IMD.

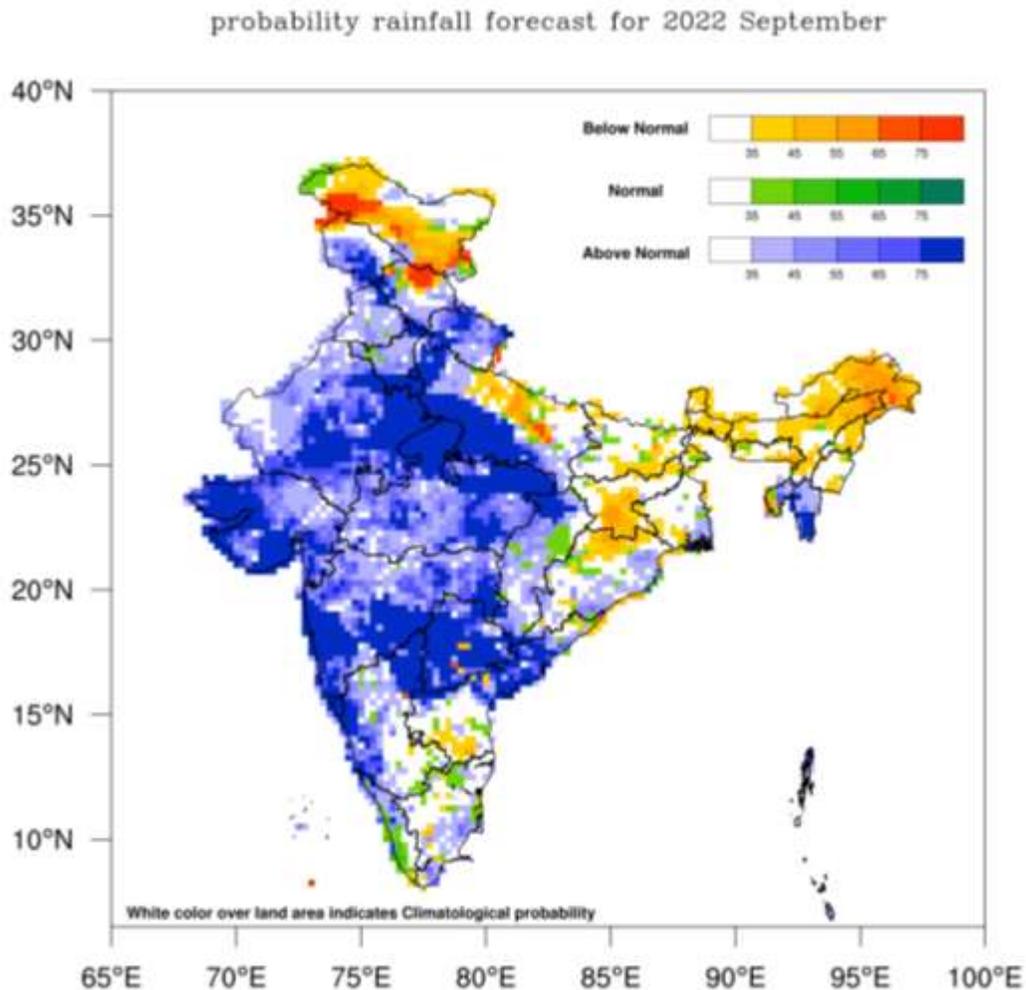


Fig.1. Probability forecast of tercile categories* (below normal, normal and above normal) for the rainfall over India during September 2022. The figure illustrates the most likely categories as well as their probabilities. The white shaded areas within the land area represent climatological probabilities. *Tercile categories have equal climatological probabilities of 33.33% each.

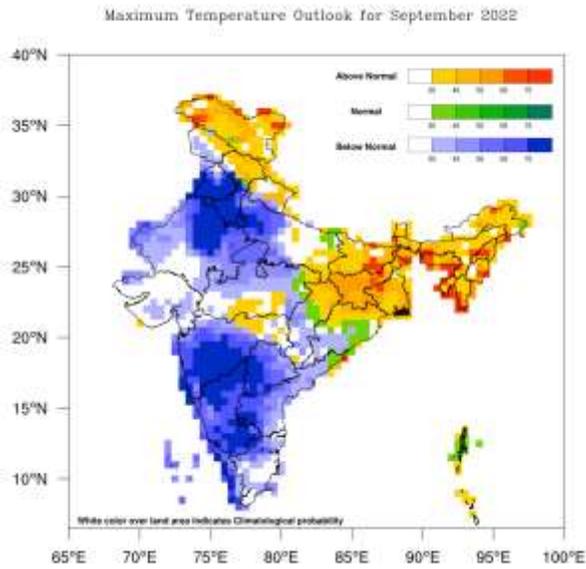


Fig.2a. Probability forecast of Maximum Temperature during September 2022.

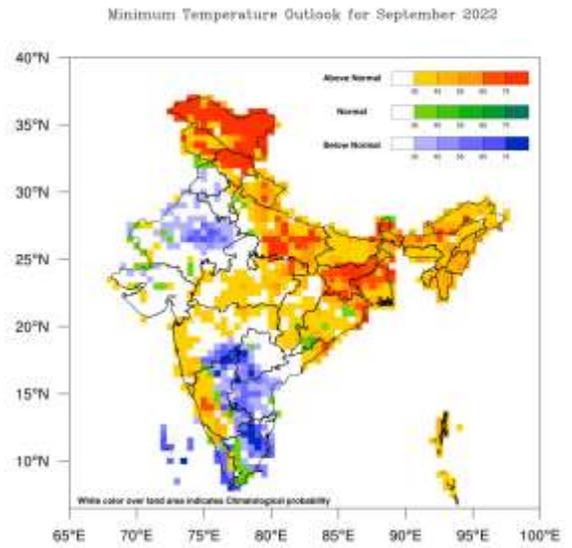


Fig.2b. Probability forecast of Minimum Temperature during September 2022.