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**Government of India**  
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**Ministry of Earth Sciences (MoES)**  
**भारत मौसम विज्ञान विभाग**  
**INDIA METEOROLOGICAL DEPARTMENT**

**Southwest Monsoon Rainfall Forecast for the Month of July, 2022**

**Highlights**

- a) **Rainfall** - Normal to above normal rainfall probability is likely over some parts of North India, Central India and most parts of South Peninsula. Normal to below normal rainfall is most likely over most parts of East and Northeast India and areas adjacent to the east central India and some parts of west south Peninsular India. Monthly rainfall for July 2022 over the country as a whole is most likely to be normal (94 to 106 % of Long Period Average (LPA)).
- b) **Temperature** - Normal to above normal maximum temperatures are likely over most parts of the country except some parts of foothills of Himalayas and Peninsular India where below normal maximum temperatures are likely. Normal to above normal minimum temperatures are likely over most parts of the country except over parts of West India, Northeast India and Peninsular India where below normal minimum temperatures are likely.
- c) **SST** - The latest global model forecasts indicate that the prevailing La Niña conditions are likely to continue over the Equatorial Pacific Ocean and there is enhanced possibility of development of negative Indian Ocean Dipole (IOD) conditions over the Indian Ocean during July to September 2022.

As sea surface temperature (SST) conditions over the Pacific and the Indian Oceans are known to have strong influence on Indian monsoon, IMD is carefully monitoring the evolution of sea surface conditions over these Ocean basins.

IMD will issue the **forecast for the rainfall during the second half of the season (August + September 2022) and for the month of August towards the end of July 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 14<sup>th</sup> April and first update for the forecast on 31<sup>st</sup> May 2022.

Now, IMD has prepared the forecast outlook for the month of July 2022 of Southwest monsoon season.

## 2. Probabilistic Forecast of Rainfall over the Country during July 2022

The rainfall averaged over the country as a whole during July 2022 **is most likely to be normal (94 to 106 % of LPA)**. The LPA of rainfall over the country during the month of July based on data of 1971-2020 is about 280.4 mm.

The spatial distribution of probabilistic forecasts for tercile categories (above normal, normal and below normal) for July rainfall is shown in Fig.1. The spatial distribution suggests that normal to above normal rainfall probability is likely over parts of North India, Central India and most parts of South Peninsula. Normal to below normal rainfall is most likely over most parts of East and Northeast India and adjacent areas to the east central India and some parts of west south Peninsular India. Monthly rainfall for July 2022 over the country as a whole is most likely to be normal (94 to 106 % of Long Period Average (LPA)). The white shaded areas within the land area represent climatological probabilities.

## 3. Probabilistic Forecast of Temperatures over the Country during July 2022

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

During July, Normal to above normal maximum temperatures are likely over most parts of the country except some parts of foothills of Himalayas and Peninsular India where below normal maximum temperatures are likely (Fig.2a). Normal to above normal minimum temperatures are likely over most parts of the country except parts of West India, Northeast India and Peninsular India 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) as well as the atmospheric conditions over Equatorial Pacific Ocean indicate La Niña conditions. The latest forecasts from MMCFS and other global models indicate that La Niña conditions are likely to continue during remaining part of the monsoon season.

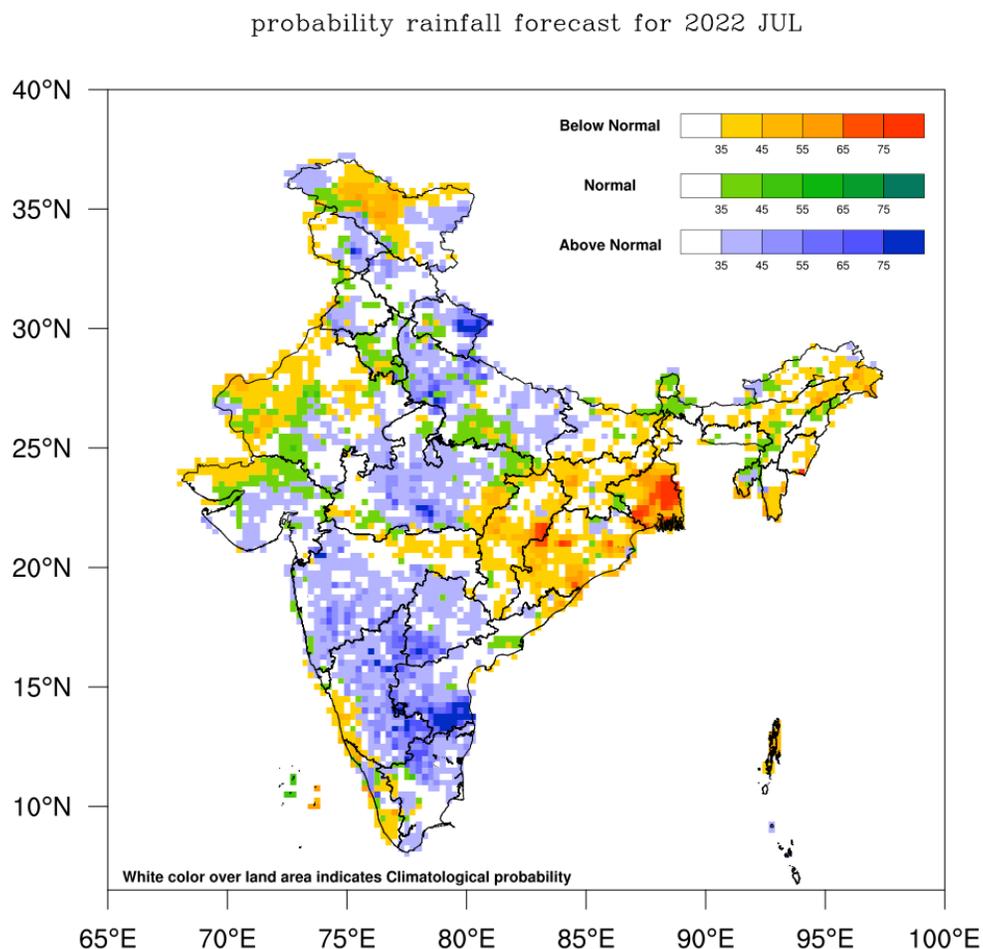
In addition to ENSO conditions over Pacific, other factors such as the Indian Ocean Sea Surface Temperatures (SSTs) also have some influence on Indian monsoon. Currently, the SST conditions over Equatorial Indian Ocean are very close to the threshold level for negative Indian Ocean Dipole (IOD) conditions. The latest forecasts from MMCFS and other global models indicate negative IOD conditions are likely to develop during remaining part 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 forecasts are available through the IMD website

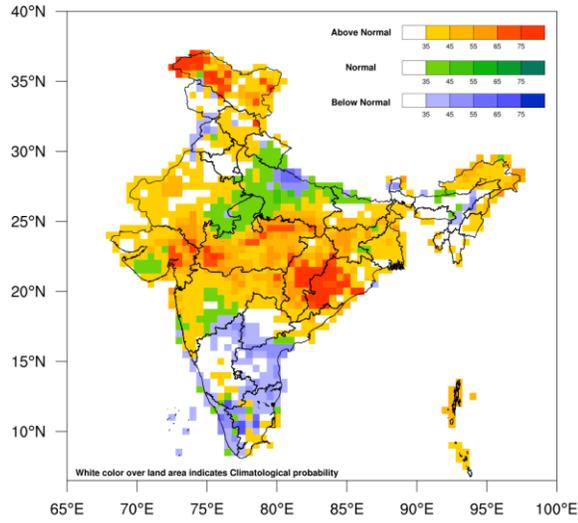
[https://mausam.imd.gov.in/imd\\_latest/contents/extendedrangeforecast.php](https://mausam.imd.gov.in/imd_latest/contents/extendedrangeforecast.php)).

The extended range forecast is followed by a short to medium range forecast issued daily by IMD.



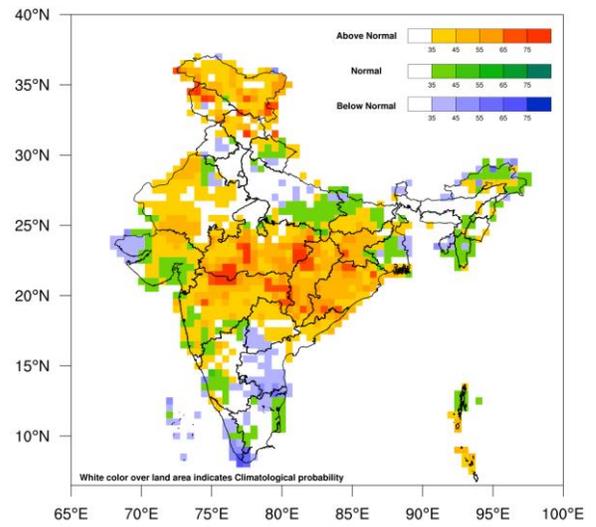
**Fig.1.** Probability forecast of tercile categories\* (below normal, normal and above normal) for the rainfall over India during July 2022. The figure illustrates the most likely categories as well as their probabilities. The white shaded areas within the land area represent climatological probabilities.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

Maximum Temperature Outlook for July 2022



**Fig.2a.** Probability forecast of Maximum Temperature during July 2022.

Minimum Temperature Outlook for July 2022



**Fig.2b.** Probability forecast of Minimum Temperature during July 2022.