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INDIA METEOROLOGICAL DEPARTMENT

Southwest Monsoon Rainfall Forecast for the Month of July, 2021

Highlights

a) Monthly rainfall for the July 2021 over the country as a whole is most likely to be **normal (94 to 106 % of Long Period Average (LPA)).**

b) The latest global model forecasts indicate that the prevailing neutral El Nino-Southern Oscillation (ENSO) conditions are likely to continue over the equatorial Pacific Ocean and that there is enhanced possibility of development of negative Indian Ocean Dipole (IOD) conditions over the Indian Ocean during July to September 2021**.**

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, 2021) and for the month of August during end of July or beginning of August 2021.**

1. Background

This year, IMD has adopted a new strategy for issuing monthly and seasonal operational forecasts for the southwest monsoon rainfall over the country by modifying the existing two stage forecasting strategy. 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 Climate Forecasting System (MMCFS) model.

Accordingly, IMD had issued the first stage forecast for the 2021 southwest monsoon seasonal (June to September) rainfall over the country on 16th April and first update for the forecast on 1st June 2021.

Now, IMD has prepared the forecast outlook for the month of July 2021 southwest monsoon season.

2. 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 neutral ElNino-Southern Oscillation (ENSO) conditions. The latest forecasts from MMCFS and other global models indicate that ENSO neutral conditions are likely to continue during remaining part of the monsoon season.
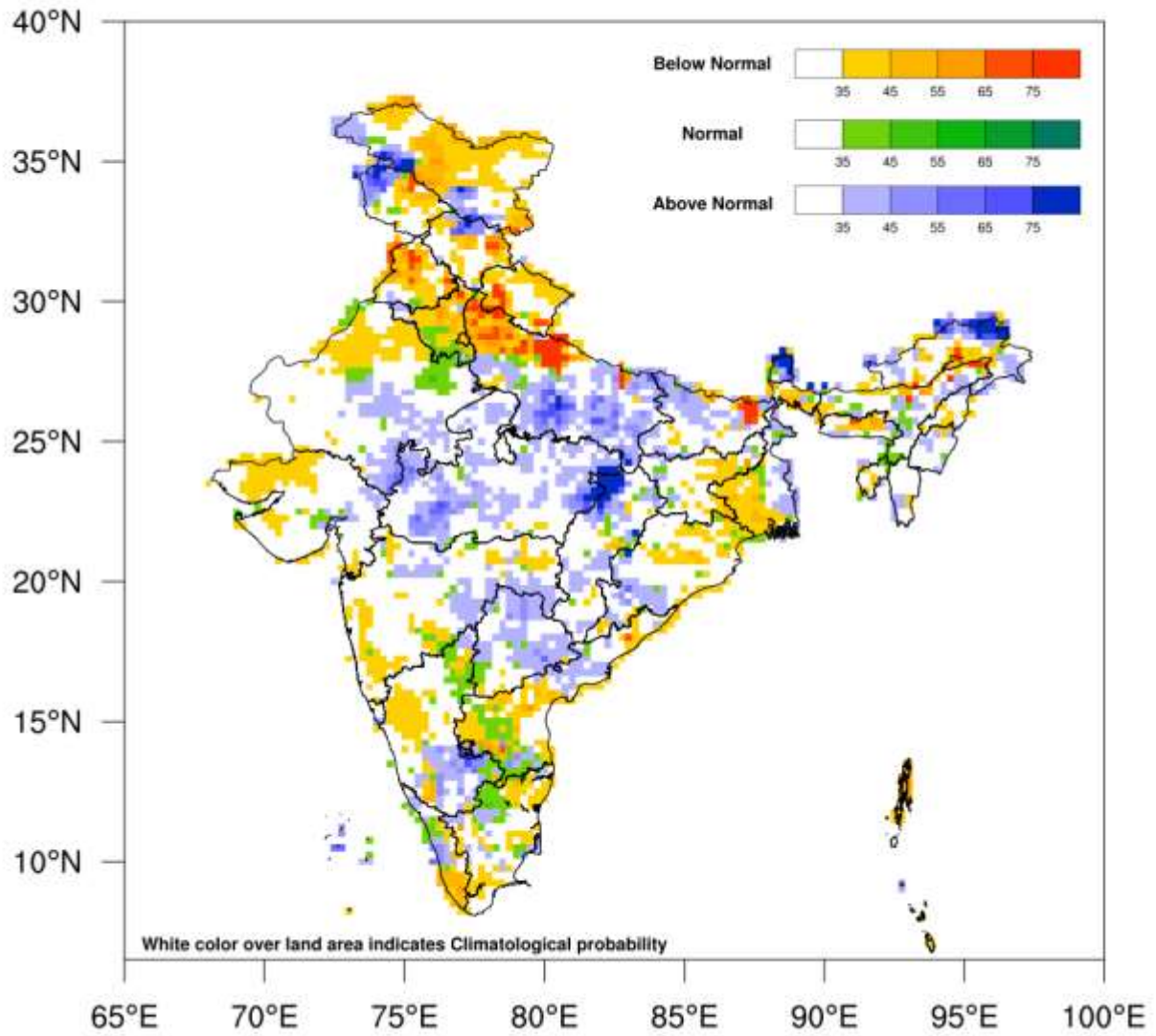
In addition to ENSO conditions over Pacific, other factors such as the Indian Ocean Sea Surface Temperatures (SSTs) have also some influence on Indian monsoon. Currently, the SST conditions over equatorial Indian Ocean are very close to the threshold level for negative Indian Ocean Dipole (IOD) conditions. The latest forecasts from MMCFS and other global models indicate negative IOD conditions are likely to develop during remaining part of the monsoon season.

3. Probabilistic Forecast for the 2021 July Rainfall over the Country

The rainfall averaged over the country as a **whole** during July 2021 **is most likely to be normal (94 to 106 % of LPA).**

The spatial distribution of probabilistic forecasts for tercile categories (above normal, normal and below normal) for the July rainfall is shown in Fig.1. The spatial distribution suggests that below normal to normal rainfall probability is likely over many areas of northwest India and some parts of south peninsula, central, east and northeast India. Normal to above normal rainfall is most likely to experience over parts of central India and adjacent areas of peninsular India and Gangetic plains. The white shaded areas within the land area represent climatological probabilities.

Fig.1. Probability forecast of tercile categories[*] (below normal, normal and above normal) for the rainfall over India during July 2021. 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).