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Southwest Monsoon Rainfall Forecast for the Month of September 2021

Highlights

- a) Monthly rainfall over the country as a whole during September 2021 is most likely to be **above normal (> 110 % of Long Period Average (LPA))**.
- b) The latest global model forecasts indicate that the prevailing cool ENSO neutral conditions are likely to continue over the equatorial Pacific Ocean and the negative IOD conditions are likely to continue over the Indian Ocean during September. However, sea surface temperatures over central and east equatorial Pacific Ocean is showing cooling tendency and there is an increased possibility of re-emergence of the La Nina condition at the end of the monsoon season or thereafter.

As the 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.

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 Forecast System (MMCFS) model.

Accordingly, IMD had issued the first stage forecast for the 2021 southwest monsoon seasonal (June to September) rainfall distribution over the country on 16th April. The update for this forecast along with the forecast for the four homogeneous regions and the forecast for the rainfall distribution over the country for June 2021 were issued on 1st June 2021. Subsequently, forecasts for July rainfall distribution were issued on 1st July and the forecasts for the second half of the season and for August rainfall distribution were issued on 2nd August 2021.

Now, IMD has prepared the forecast for rainfall distribution over the country during September 2021.

2. Sea Surface Temperature (SST) conditions in the Pacific and the Indian Oceans

Currently, the sea surface temperatures (SSTs) and the atmospheric conditions over the Equatorial Pacific Ocean indicate cool neutral El Niño-Southern Oscillation (ENSO) conditions. The latest global model forecasts indicate that the prevailing ENSO neutral conditions are likely to continue over the Equatorial Pacific Ocean during the month of September. However, the observed sea surface temperatures over the central and east equatorial Pacific Ocean are showing a cooling tendency, and there is an increased possibility of re-emergence of the La Niña condition at the end of the monsoon season or thereafter.

In addition to ENSO conditions over the Pacific, other factors such as the Indian Ocean SSTs also have some influence on the Indian monsoon. Currently, negative Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. The latest forecasts from MMCFS and other global models indicate that negative IOD conditions are likely to continue till the end of the monsoon season.

3. Forecast for the 2021 September Rainfall over the Country

The rainfall averaged over the country as a **whole** during the September 2021 **is most likely to be above normal (> 110 % of long period average (LPA))**. The LPA of rainfall during September based on the data of 1961-2010 is about 170 mm.

Considering the expected above normal rainfall activity during September 2021, the current deficiency of 9% in seasonal rainfall during June to August is very likely to reduce and **accumulated seasonal rainfall during 1 June to 30 September 2021 is very likely to be around lower end of the normal.**

The spatial distribution of probabilistic forecasts for tercile categories (above normal, normal, and below normal) for the September rainfall is shown in Fig.1. The forecast suggests that above normal to normal rainfall is likely over many areas of central India. Normal to below normal rainfall is most likely over many areas of northwest and northeast India and southern most parts of peninsular India. The white shaded areas within the land region represent climatological probabilities.

probability rainfall forecast for 2021 SEP

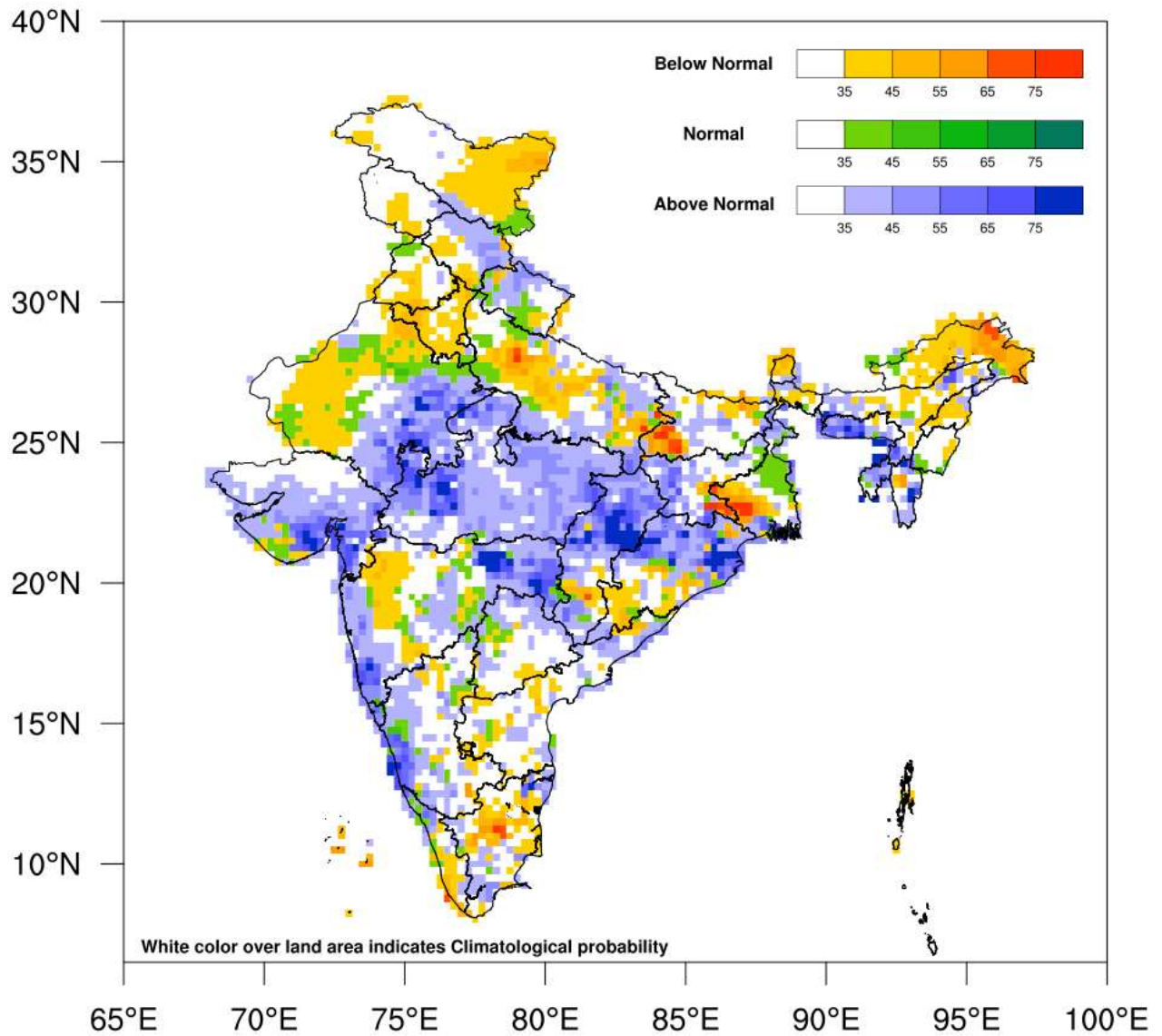


Fig.1. Probability forecast of tercile categories* (below normal, normal, and above normal) for the rainfall over India during September 2021. The figure illustrates the most likely categories as well as their probabilities. The white shaded areas within the land area represent climatological probabilities. 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).