

INDIA METEOROLOGICAL DEPARTMENT

Long Range Forecast Outlook for the Second Half (August –September) of Southwest Monsoon Rainfall

1. Background

India Meteorological Department (IMD) issues operational long range forecasts for the southwest monsoon Season (June to September) rainfall over the country as a whole in two stages; in April and in June. Along with update forecast for the season rainfall over the country as whole issued in June, forecast for monthly rainfall (for July and August) over the country as a whole and season (June to September) rainfall over the four geographical regions (Northwest India, Central India, Northeast India and South Peninsula) are also issued. From last year (2009) IMD has started to issue forecast outlook for the rainfall during second half (August-September) of the monsoon season. IMD has now prepared a forecast outlook for the second half of the 2010 monsoon season.

2. First & Second Stage Forecasts issued respectively in April and June, 2010

This year, the first stage forecast was issued on 23rd April and Second stage forecast was issued on 25th June. Summary of IMD's long range forecasts for the 2010 south-west monsoon season (June to September) issued in two stages are given in the table below. In the last column, the actual rainfall received so far is also given.

Region	Period	Forecast (% of LPA)		Actual Rainfall Received so far (1 June- 28 th July) % of LPA
		1 st Stage	2 nd Stage	
All India	June to September	98 ± 5	102 ± 4	95
Northwest India	June to September	-	102 ± 8	98
Central India	June to September	-	99 ± 8	99
Northeast India	June to September	-	103 ± 8	76
South Peninsula	June to September	-	102 ± 8	113
All India	July	-	98 ± 9	101
All India	August	-	101 ± 9	-

3. 5-Parameter Model for the rainfall during second half of monsoon season (August- September) for the country as a whole

During the second half of the monsoon season (August to September) the long period average (LPA) of the rainfall over the country as whole is 43.7cm based on the 1941-90 climatology. The coefficient of variation (C.V) of the rainfall time series is 15%. For the forecast of August - September rainfall over the country as a whole, a Multiple Linear Regression (MR) Model based on 5 predictors has been used. The model error of 5-parameter MR model is 7% of LPA.

4. La Nina conditions over Equatorial Pacific

The El Nino conditions over equatorial Pacific that started in the mid June 2009 peaked in December and dissipated during early May, 2010. Since then, ENSO-neutral conditions are prevailing with negative SST anomalies observed over the equatorial Pacific from the middle of May. This continued till mid June when weak La Nina conditions emerged. The latest model forecasts from a majority of the dynamical and statistical models indicate very high probability (about 80%) for the La Nina conditions to continue during the remaining part of the monsoon season. The La Nina in general is associated with the normal or above normal rainfall during the monsoon season as a whole and that during the second half of the season.

5. Summary of the Forecast outlook for the Rainfall During the Second Half of the 2010 Southwest Monsoon Rainfall

Rainfall over the country as a whole for the second half (August to September) of the 2010 southwest monsoon season is likely to be normal. Quantitatively, rainfall for the country as a whole during the period August to September, 2010 is likely to be 107% of long period average (LPA) with a model error of $\pm 7\%$.

The outlook for the 2010 Southwest Monsoon Season Rainfall is that the monsoon season (June to September) rainfall for the country as a whole is likely to be within the normal limits as predicted by IMD earlier. The season (June to September) rainfall over the 3 geographical regions (Northwest India, Central India and South Peninsula) is also likely to be within the normal limits. However, the season rainfall over Northeast India is likely to be below normal.