

GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
**RAJYA SABHA**  
**UNSTARRED QUESTION NO. 366**  
ANSWERED ON 28/11/2024

**MONSOON PREDICTION ACCURACY**

366. SHRI SANJEEV ARORA:

Will the Minister of **EARTH SCIENCES** be pleased to state:

- (a) the data on the accuracy of monsoon predictions made by Government over the last five years, including the percentage of correct predictions for the onset, intensity, and distribution of rainfall in key agricultural states;
- (b) the steps taken by Government to enhance the predictive capabilities of the Indian Meteorological Department (IMD); and
- (c) the manner in which Government is working with State Governments to improve water resource management during the monsoon season?

**ANSWER**

THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR  
MINISTRY OF SCIENCE AND TECHNOLOGY  
AND EARTH SCIENCES  
(DR. JITENDRA SINGH)

- (a) During the last five years, from 2020 to 2024, the prediction for all India Southwest Monsoon Forecast (June-September) was accurate for 80% of the time. The details are given in Annexure-1.
- (b) The Ministry has launched the National Monsoon Mission (NMM) to develop a state-of-the-art dynamical prediction system for the monsoon rainfall in different time scales. This has focused on seasonal (June-September) and extended-range prediction of Indian summer monsoon rainfall (ISMR), with delineation of active/break spells, using high-resolution ocean-atmosphere coupled dynamical models with reasonable skill, as well as short-range forecasts. Through NMM, two state-of-the-art dynamical prediction systems were implemented for short-range to medium-range, extended-range, and seasonal forecasts.

IMD has adopted a new strategy for issuing monthly and seasonal operational forecasts for the southwest monsoon rainfall over the country based on the 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. IMD issues monthly and seasonal forecasts operationally for rainfall and temperature (including cold and heat waves) throughout the year.

- (c) IMD closely works with various ministries like the Central Water Commission (CWC), National and State Disaster Management Authorities, Ministry of Agriculture (MoA), State Governments, etc., to issue various forecasts and warnings along with updated weather and climate information.

**Annexure-1**

IMD forecast for All India Summer Monsoon Rainfall for 2020 to 2024:

YEAR	ALL India Monsoon Rainfall		
	Actual	Forecast	Remark
2020	111	102	Outside the forecast error limit
2021	100	101	Accurate
2022	106	103	Accurate
2023	95	96	Accurate
2024	108	106	Accurate

\*\*\*Model error  $\pm$  5% of LPA

Monsoon Rainfall Forecast over Core Monsoon Zone (CMZ)

YEAR	CMZ Monsoon Rainfall		
	Actual	Forecast	Remark
2020		FORECAST NOT ISSUED	
2021	107	Above Normal (>106% of LPA)	Accurate
2022	121	Above Normal (>106% of LPA)	Accurate
2023	101	Normal (94-106% of LPA)	Accurate
2024	122	Above Normal (>106% of LPA)	Accurate

\*\*\*Model error  $\pm$ 6% of LPA

Prediction for Monsoon Onset over Kerala (MOK)

YEAR	ACTUAL ONSET DATE	FORECAST ONSET DATE	Remark
2020	01-Jun	05-Jun	Accurate
2021	03-Jun	31-May	Accurate
2022	29-May	27-May	Accurate
2023	08-Jun	04-Jun	Accurate
2024	30-May	31-May	Accurate

\*\*\*Model error  $\pm$ 4 days

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