

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 1997
TO BE ANSWERED ON FRIDAY, NOVEMBER 29, 2019**

DELAYED MONSOON

1997. SHRI M.K. RAGHAVAN:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether any study has been conducted on the delayed pattern of arrival of monsoon in the country for several years now, if so, the details thereof;**
- (b) whether any advance scientific upgrades and advanced equipment have been made for progressive predictions, if so, the details thereof and the reasons for delayed occurrences of monsoon in the country; and**
- (c) the details of the steps taken by the Government to ensure a near positive pattern of monsoon hits?**

ANSWER

**MINISTER FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(DR. HARSH VARDHAN)**

- (a) Yes Sir. The arrival (onset) of monsoon over the country is always being monitored. There is no such pattern observed on the late arrival of monsoon over Kerala. However, this year monsoon onset over Kerala was delayed, but it was predicted by the India Meteorological Department (IMD) in May 2019. The dates of onset of monsoon over Kerala for the last 10 years are given in table below:**

Year	Date of onset over Kerala
2009	23 May
2010	31 May
2011	29 May
2012	5 June
2013	1 June
2014	6 June
2015	5 June
2016	8 June
2017	30 May
2018	29 May
2019	8 June

(b) & (c) India Meteorological Department has the state of the art prediction models and other tools for monitoring and predicting various characteristics of monsoon. Under the National Monsoon Mission, Ministry of Earth Sciences (MoES) has implemented two state of the art dynamical prediction systems for short, medium & extended range forecasts and seasonal forecasts. All these initiatives have helped to improve the accuracy of weather forecasts. An improved suite of prediction models has already been implemented operationally at IMD for enhanced short range forecast through assimilation of all available Indian and global satellite data on real time.

The delay in onset of monsoon happens in some years due to the identified factors such as, ElNino, the phase of Madden-Julian Oscillation and enhanced influence of mid-latitude westerlies. Even though there is a method for predicting monsoon onset over Kerala, the prediction of progress of monsoon across the country is made by considering spatial continuity of rainfall pattern and satellite imageries and other meteorological data.
