GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 1284
TO BE ANSWERED ON MONDAY, JULY 25, 2018

AVERAGE RAINFALL

1284. DR. SANJAY JAISWAL:

Will the Minister of EARTH SCIENCES be pleased to state:

(a)   whether the average rainfall has decreased in the country;
(b)   if so, the details thereof and the reaction of the Government thereto; and
(c)   the strategies and means his Ministry is using to measure and predict the rainfall?

ANSWER
MINISTER FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND
MINISTRY OF EARTH SCIENCES
(Dr. HARSH VARDHAN)

(a)   No Sir. The average rainfall of the country has not shown any significant decrease, considering the rainfall data for the period from 1901 to 2017.

(b)   By the analysis of past data of more than 100 years, it has been reported by several scientists including IMD scientists that All India rainfall has multi decadal/epochal variability and currently it is in dry epoch. Analyzing past 117 years (1901-2017) data, it has been found that the all India Southwest monsoon seasonal rainfall as well as annual rainfall has no significant increasing/decreasing trend. However, if the period 1951-2017 is considered, it has been found that all India SW monsoon as well as annual rainfall has significant decreasing trend. The reason behind is that the initial decade i.e. 1951-1960 was a wet epoch and there after dry epoch has started. Whereas, during the period 1901-2017, initial few decades were dry epochs, then wet epochs again followed by dry epoch and as a result there was no significant decreasing trend.

(c)   The monsoon related forecasts are prepared by the Climate Prediction group and are issued from the office of Climate Research and Services, IMD Pune. The tentative schedule for issuing various operational forecasts for rainfall from this centre in tabular form is given in *Annexure-1.*

IMD uses State of the art statistical models developed through in house research and development work for monsoon related forecasting work. During the period from 1988 to 2002, operational forecast for monsoon seasonal rainfall over for the country as a whole was based on 16 parameter power regression and parametric models. During 2003 to 2006, the operational forecast was issued using the 8 and 10 parameter models based on power regression and probabilistic discriminant analysis techniques. From 2007 onwards, a new Statistical Ensemble Forecasting System (SEFS) based on the ensemble technique is being used for seasonal rainfall forecast for the country as a whole. The use of ensemble forecasting system has resulted in bringing down the average absolute forecast error to 5.95% of Long Period Average (LPA) as compared to its value of 8.56% of LPA prior to its implementation.

From 2017 onwards, IMD started using State of the art dynamical forecasting system along with statistical models for the generation of operational monsoon forecasts. This model was developed under the first phase of National Monsoon Mission (NMM) project of Ministry of Earth Sciences (MoES) with the objective to have a State of the art dynamical prediction system for the monsoon rainfall in different time scales. The advanced dynamical prediction systems are now being used for Seasonal prediction (mainly for SW monsoon season of June to September); Extended range weather prediction (for next 20 days) and Short and Medium range weather prediction (up to 10 days).

Sr.No	Forecast for	Region for which forecast issued	Issued in
1	SW Monsoon Season (June to September) Rainfall	Country as a whole	April
2	SW Monsoon Season (June to September) Rainfall	Country as a whole	June
3	South-West Monsoon Onset	Kerala	May
4	SW Monsoon Season (June to September) Rainfall	Four broad geographical regions: Northwest India, Northeast India, Central India and South Peninsula	June
5	SW Monsoon Monthly Rainfall for July and August	Country as a whole	June
6	SW Monsoon Second half of the Season (August-September) Rainfall	Country as a whole	July
7	September Rainfall	Country as a whole	August
8	NE Monsoon Season (October to December) Rainfall	South Peninsula	September