# GOVERNMENT OF INDIA
# EARTH SCIENCES
# LOK SABHA

UNSTARRED QUESTION NO:6634
ANSWERED ON:06.05.2015
ACCURACY OF MONSOON PREDICTONS
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**Will the Minister of EARTH SCIENCES be pleased to state:**

(a) the names of research institutions in the country engaged in forecast/research on monsoon, institution-wise;

(b) the details of the predictions made by these institutions for the coming monsoon season, month-wise;

(c) the parts of the country where less rainfall is predicted than the average rainfall in the current monsoon season;

(d) the steps taken/being taken by the Government to improve the accuracy of monsoon forecast in the country; and

(e) the funds required for improving the technology of weather forecast and the steps taken/being taken by the Government in this regard?

# <span style="color:red">Answer</span>

MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTRY OF EARTH SCIENCES (SHRI Y. S. CHOWDARY)

(a) The names of the research Institutions in the country engaged in forecast/ research on monsoon is given below.

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Sl. No. Institution
1 Earth System Science Organisation (ESSO)-India Meteorological Department(IMD), New Delhi
2 ESSO-Indian Institute of Tropical Meteorology, Pune
3 ESSO-National centre of Medium Range Weather Forecasting(NCMRWF) ,NOIDA
4 Indian Space Research Organisation-Space Applications Centre, Ahmedabad
5 Council of Scientific and Industrial Research-FOURTH PARADIGM INSTITUTE, BENGALURU
6 Indian Institute of Technology, Bhubaneswar
7 Indian Institute of Technology, Kharagpur
8 Indian Institute of Technology, Gandhi Nagar
9 Indian Institute of Technology, Bombay
10 Indian Institute of Technology, New Delhi
11 Indian Institute of Science, Bangalore
12 Andhra University
13 Cochin University
14 University of Pune
15 Centre for Disaster Mitigation, Jain University, Bangalore
16 Center for Development of Advanced Computing, Pune
17 Skymet weather wise
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(b-c) Earth System Science Organization−India Meteorological Department (ESSO-IMD) is the national agency for issuing long range forecast for the country. ESSO-IMD issues various monthly and seasonal forecasts for rainfall during the southwest monsoon season. Seasonal forecasts for the southwest monsoon season (June − September) rainfall are issued in two stages. The first stage forecast is issued in April and the second stage forecast is issued in June. This year first stage forecast was issued on 22nd April, 2015. It is to mention that during the first stage of seasonal monsoon forecast, no regional scale (homogeneous regions) rainfall assessment is made.

Quantitatively, the monsoon seasonal rainfall is likely to be 93% of the Long Period Average (LPA) with a model error of ± 5%. The LPA of the season rainfall over the country as a whole for the period 1951-2000 is 89 cm.

The 5 category probability forecasts for the Seasonal (June to September) rainfall over the country as a whole is given below:

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Category  Rainfall Range  Forecast  Climatological
   (% of LPA)  Probability (%)  Probability (%)

Deficient  < 90   33   16
Below Normal  90 - 96   35   17
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Normal     96 -104   28   33
Above Normal  104 -110   3   16
Excess   > 110   1   17
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ESSO-IMD will issue the update forecasts in June, 2015 as a part of the second stage forecast. Along with the update forecast, separate forecasts for the month (July and August) rainfall over the country as a whole and seasonal (June-September) rainfall over the four geographical regions of India will also be issued.

Seasonal rainfall forecast assessment inputs generated by some other agencies are listed below:

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Sl No. Institution     Forecast for the 2015 southwest monsoon season rainfall
      over the country as whole (% of Long Period Average)

1 Indian Institute of     91% Â± 5%
 Tropical Meteorology,
 Pune
2 Space Applications Centre, Ahmedabad  100%
3 Indian Institute of Technology, Bhubaneswar 98%
4 Centre for Disaster Mitigation, Jain   113% Â± 5%
 University, Bangalore
5 Center for Development of Advanced   84%
 Computing, Pune
6 Skymet weather wise    102%
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(d) Under the National Monsoon Mission initiative institutions of Earth System Science Organisation (ESSO), the Indian Institute of Tropical Meteorology (ESSO-IITM), Pune, India Meteorological Department (ESSO-IMD), Indian National Centre for Ocean Information Services (ESSO-INCOIS), Hyderabad and National Centre for Medium Range Weather Forecasting (ESSO-NCMRWF), NOIDA, have developed a coupled ocean-atmospheric climate model for a) improved prediction of monsoon rainfall on extended range to seasonal time scale (16 days to one season) and b) improved prediction of temperature, rainfall and extreme weather events on short to medium range time scale (up to 15 days) so that forecast skill gets quantitatively improved further for operational services of ESSO-IMD.

Through Indo-US collaboration, a "Monsoon Desk" has been set up for working jointly for improving seasonal forecast of Indian monsoon rainfall. Through this forum, Indian and US Scientists are exchanging their ideas and sharing their expertise. This effort has led to appreciable improvements in the efficiency of models in making better and better forecasts.

(e) Government of India has approved an allocation of Rs. 400 crores for implementing the monsoon mission activities.