

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
RAJYA SABHA  
STARRED QUESTION NO. \*108  
TO BE ANSWERED ON THURSDAY, JULY 30, 2015**

**ROLE OF IMD IN FORECASTING CALAMITIES**

**\*108 SHRI GULAM RASOOL BALLYAWI:**

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

- (a) the role being played by the Indian Meteorological Department (IMD) in forecasting and in preventing floods and other calamities;**
- (b) the technology being used for the same; and**
- (c) the extent of success achieved on each head and the plans for the future?**

**ANSWER**

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

**(a)-(c) A statement is laid on the Table of the House.**

**STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY (a) to (c) TO  
STARRED QUESTION NO. \*108 REGARDING  
"ROLE OF IMD IN FORECASTING CALAMITIES"  
TO BE ANSWERED ON THURSDAY, JULY 30, 2015**

- (a) **Earth System Science Organization (ESSO)-IMD is responsible for monitoring, detection and forecasting of severe weather phenomena like norwesters (severe thunder storms), dust storms, heavy rains and snow, cold and heat waves etc. including Quantitative Precipitation Forecast (QPF) up to 72 h at sub-basin scale through Flood Meteorological Offices (FMOs). FMOs provide meteorological support to the Central Water Commission (CWC) for issuing flood warnings in respect of the 43 rivers of India covering 137 sub-basins. CWC issues flood forecasts 6 h to 30 h in advance for 176 stations using QPF received from FMOs of ESSO-IMD and in-situ hydro-meteorological data.**
- (b) **The high-resolution forecasts of heavy rainfall (at 9Km grid scale) are generated using data from all observing systems, viz. surface and upper air observations, satellite observations, aircraft observations, Doppler Weather Radars (DWRs), etc. in weather forecast models using high performance computing (HPC). Further, DWR network is primarily employed to improve the severe weather surveillance capability and for operating now-casting (very short range up to 6 h in advance) service (operated for about 147 locations across India).**
- (c) **The measure of success has been estimated based on forecast lead-time and accuracy. The lead time of forecasts/warnings of QPF and cyclone warnings have been increased to 72 h to 120 h, respectively. The success achieved in improving the accuracy of heavy rainfall warnings during the summer monsoon season is enumerated below:**
- 1. Probability of Detection (PoD) has been assessed at 0.71.**
  - 2. False Alarm Rate (FAR) has been dipped to 0.13.**
  - 3. Missing Rate (MR) has also been reduced to 0.29.**
  - 4. Percent correct (PC) of yes/no rainfall forecast for monsoon season 2014 is 91%.**

**The success achieved in improving the accuracy of cyclone warnings is enumerated below:**

- 1. The landfall point error at present has been 60 and 90km for 24, 48 h lead period, respectively.**
- 2. The landfall time error has been 3.4 and 4.4 h for 24, 48 h lead period, respectively.**
- 3. The track forecast error has been 110, 165, 230km for 24, 48 and 72 h lead period, respectively.**

**The observing systems, HPC, communication, forecast/warning systems, product dissemination systems etc. are continuously improved/upgraded as per the emerging needs to provide state-of-the art science and technology tools to the scientists engaged in weather research and forecasting towards enhancing the service quality.**