GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA

UNSTARRED QUESTION NO:2637
ANSWERED ON:05.08.2015
Weather Forecasts
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Will the Minister of EARTH SCIENCES be pleased to state:

(a) Whether the Government has any latest radar technology to predict flash floods and landslides in the country;

(b) If so, the details thereof along with the location of such radars, State-wise;

(c) If not the reasons therefor and the steps taken/ being taken by the Government in this regard; and

(d) the major achievement made in regard to weather forecast during the last three years and the current year?

Answer

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

(a) No Madam.

(b) Does not arise.

(c) Earth System Science Organization (ESSO)-IMD is responsible for monitoring, detection and forecasting of severe and hazardous weather phenomena like norwesters (severe thunder storms), dust storms, heavy rains and snow, cold and heat waves, cyclones 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.

Doppler Weather Radar (DWR) network is however employed to improve the severe and hazardous 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). Currently, 19-DWRs are commissioned at Agartala, Chennai, Delhi-Airport, Delhi-Lodi Road, Hyderabad, Jaipur, Kolkata, Machilipatnam, Mumbai, Nagpur,
Patna, Visakhapatnam, Lucknow, Patiala, Mohanbari, Bhopal, Bhuj and Srinagar.

(d) ESSO-IMD had expanded its observing systems network by installing a network of DWRs, Automatic Weather Stations (AWS), Automatic Rain Gauge Stations (ARGS), etc. for monitoring abnormal and hazardous weather patterns and upgrading its forecasting capabilities, so that advance warning can be provided to National Disaster Management Authority (NDMA), Ministry of Home Affairs, state Government authorities and Ministry of Agriculture to tackle the impacts of the adverse and extreme weather phenomena.

The high-resolution forecasts of heavy rainfall (at 9Km grid scale) are generated using data from all observing systems in weather forecast models using high performance computing (HPC).

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.

Seeing such significant benefits, Government had scaled up available High Performance Computing (HPC) power up to 1.2petaflops during this year. Government is also committed to make all such necessary investments as and when necessary in times to come whether it is observing systems or support infrastructure so as to maintain the cutting edge level quality services to Indian people.