GOVERNMENT OF INDIA
EARTH SCIENCES
LOK SABHA

UNSTARRED QUESTION NO:1631
ANSWERED ON:09.12.2015
Technology for Flood and Land Sliding
Ram Shri Janak

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government has any modern radar technology to forecast flood and land sliding in the country;

(b) if so, the details thereof and the details of each radars installed, State-wise including Bihar;

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

(d) the major successes achieved regarding the 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) There is no such radar based technology to forecast flood and land sliding in the Country. Earth System Science Organization-India Meteorological Department (ESSO-IMD) operates a network of Weather Radars, which is helpful in issuing current weather forecast/ Nowcasts of severe weather and Cyclone monitoring. This service activity currently covers 156 urban centres under which nowcast of severe weather (Thunderstorms; heavy rainfall from lows/depressions over the land) in 3-6h range is issued. Origin, development/movement of severe weather phenomena are regularly monitored through Doppler Weather Radars (DWRs) and with all available other observing systems (Automatic Weather Station-AWSs; Automatic Rain Gauge -ARGs; Automatic Weather Observing Systems-AWOS; satellite based monitoring systems. However, consequences of heavy rainfall events leading to land sliding and floods over different river basins of the country are dealt differently. River basin floods are dealt by the Central Water Commission (CWC). Flood Meteorological Offices (FMOs) operated by the ESSO-IMD provide meteorological support to the 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. As on today, no warning system exists for land sliding however, land sliding prone vulnerable zones are mapped so as to alert respective local governments to put such areas under watch in association with heavy rainfall warnings as and when issued for such zones.

(b) The details of Doppler Radar Systems installed in various states including Bihar is given in Annexure-I
(c) Improvement of weather forecasting services is a continuous process. As part of its XI five year plan, Government has initiated a comprehensive modernization programme for ESSO-IMD covering upgradation of (i) observation systems (ii) advanced data assimilation tools (iii) advanced communication and IT infrastructure (iv) high performance computing systems and (v) intensive/sophisticated training of ESSO-IMD personnel to facilitate the implementation of advanced global/regional/ meso-scale prediction models for improving the accuracy of severe weather forecasts in all temporal and spatial scales and for quick dissemination of weather forecast assessments/warnings to the users.
Operational implementation of improved forecast suite of models after the commissioning of the High Performance Computing (HPC) systems have enhanced the weather forecasting capacities through assimilating all available global satellite radiance data for the production of forecast products at 22km grid globally and 9km/3km grid over India/regional/mega city domains. The HPC systems have been recently up-scaled to 1.2petaflops to support the ongoing efforts.

(d) the major successes achieved regarding the weather forecast during the last three years and the current year are as under:

(i) Verification report on the performance of long range forecast for the period 2012 to 2015 SW monsoon Rainfall is given below:

S.No. Year ALL India- South West Monsoon Rainfall
Forecast
(% of LPA) Actual Rainfall
(% of LPA)
1 2012 96 Â± 4 93
2 2013 98 Â± 4 106
3 2014 87 Â± 4 88
4 2015 88 Â± 4 86

(ii) In short & medium range, accuracy of monsoon heavy rainfall warnings in the last three years is given below:
â€¢ False Alarm Rate (FAR) & Missing Rate (MR) have been reduced by 77% & 36% in last three years (2013-15) as compared to its mean values from 2002-12.

â€¢ Probability of Detection (PoD) &Critical Success Index (CSI) have been improved by 38% & 46% in last three years (2013-15) as compared to its mean values from 2002-12.

(iii) The improvements in Tropical Cyclone Forecasts during 2011-2015 against the forecasts during 2006-10 is as follows:
Parameter 2006-10 2011-15 Change
24-hr track forecast error 141 km 97 km Reduced by 31%
24-hr track forecast skill 24% 49% Improved by 25%
24-hr landfall point error 99 km 56 km Reduced by 43%
24-hr landfall time error 6.9 hr 4.2 hr Reduced by 39%
24-hr intensity forecast error 30 kmph 27 kmph Reduced by 10%
24-hr intensity forecast skill 12% 12% No change