

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 3481
TO BE ANSWERED ON WEDNESDAY, 22ND MARCH, 2023**

MONSOON MISSION

3481. SHRI VENKATESH NETHA BORLAKUNTA:
SHRIMATI KAVITHA MALOTHU:
DR. G. RANJITH REDDY:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) the aims and objectives of the Monsoon Mission;
- (b) the extent to which the said Mission is likely to help in improving predictions of monsoon weather and climate; and
- (c) the details of the extent to which the Doppler Weather Radars are helping in achieving the Mission goals?

ANSWER

THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

- (a) The aims and objectives of the Monsoon Mission are given below :
 - To build a working partnership between the academic and R&D organizations both national and international, and MoES to improve the operational monsoon forecast skill over the country and develop relevant climate applications for agriculture, hydrology, and power sectors.
 - To develop and improve a state-of-the-art dynamical modelling framework for improving prediction skill of (a) Seasonal and Extended range predictions and (b) Short and Medium range (up to two weeks) prediction.
- (b) The Monsoon Mission is planned with an overall objective to improve monsoon prediction over India on all time scales. This has focused on seasonal (for June to September months) and extended range prediction of Indian summer monsoon rainfall (ISMR), with delineation of active/break spells, using high resolution ocean-atmosphere coupled dynamical models with reasonable skill, as well as short range forecasts.
 - Monsoon Mission Model development activities resulted in the development of a high resolution (horizontal resolution of 38 Km), which is one of the highest resolution global forecast systems in the world with better prediction skill (on a scale of 0-1, the skill of the present operational model is 0.63) of seasonal monsoon.

- A high resolution coupled system was developed for extended range prediction with a lead predictability of more than 15-days.
- The high-resolution atmospheric model developed for short and medium range prediction, improved the skill by 2 days.
- The forecast accuracy has increased by about 40 percent for different severe weather events like cyclone, heavy rain, heat wave, cold wave and thunderstorms.

The improved accuracy & skill in the seasonal prediction (for prediction of Indian SW monsoon seasonal rainfall and other parameters) and for the extended range prediction (for prediction up to next 4 weeks in advance) have been very useful for the farmers, policy makers, the public and other end-users. Proper prediction and warning of cyclone has helped to save the loss of lives and property in the country.

- (c) Doppler weather radars are extensively used to derive several products of operational meteorological interest. Distribution of rainfall rates, accumulated rain over a period of time, vertical profile of wind, signatures of cyclones maximum wind in cyclones, wind shear and turbulence, probability of severe weather, details of thunderstorms etc. are among the important products.

DWR data is mainly used for Nowcast and also being assimilated in the weather prediction models to get improved forecasts especially in the short-range. Dense network of DWRs are helpful for preparation of high-resolution data, required for high resolution model inputs, that helps in betterment of the initial conditions and forecasts.
