GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 549
TO BE ANSWERED ON WEDNESDAY, 23RD JULY, 2025

BHARAT FORECAST SYSTEM

549. SHRI V K SREEKANDAN:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether it is a fact that the India Meteorological Department adopted the Bharat Forecast System which promises fine tuned and accurate rain forecasts down to the panchayat level and if so, the details thereof;
(b) whether it is also true that the improvement will largely be visible in the short and medium term forecasts but not in the long-range forecasts which is usually given a month in advance and if so, the details thereof;
(c) whether it is a fact that Bharat Forecast System has been tested since 2002 and has shown notable improvements in giving advance warning of heavy rainfall events; and
(d) if so, the details of the new invention generated by the Bharat Forecast System as of now?

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

(a) Yes. India Meteorological Department officially adopted the Bharat Forecast System (BharatFS) on 26th May 2025. This forecast system runs at a resolution of 6 km, typically about the size of a cluster of panchayats/villages. The goal of BharatFS's development was to enhance the accuracy of extreme weather prediction and produce forecasts at the panchayat cluster level. The new model supersedes its predecessor in terms of model configuration and forecast accuracy. It has improved representation of orography, better filtering, and better conservation properties.

(b) The recently launched BharatFS has been developed primarily for improving the short- and medium-range weather prediction and not for long range forecasting.

(c) The development of the BharatFS began about five years ago and was successfully tested in 2022 not in 2002. Since then, it has undergone rigorous evaluation. The results have been promising, with the system showing significant improvement in predicting the rainfall over central monsoon region and a 30% increase in accuracy for extreme rainfall compared to the previous operational model.

(d) Directly increasing the model resolution using conventional methods in the earlier operational 12 km GFS T1534 model would have led to significant computational and theoretical challenges. These limitations underscore the need for a more advanced and efficient forecasting system like BharatFS. Consequently, the BharatFS was designed using the newly implemented dynamical grid known as TCo (Triangular Cubic Octahedral). This TCo grid enhances resolution specifically over the tropics, enabling the model to achieve a horizontal resolution of approximately 6 km in these regions. Due to the enhanced resolution, the BharatFS is able to provide more accurate local weather forecasts. Rigorous analysis of the model since 2022 has shown a 30% improvement in the accuracy of extreme rainfall predictions.

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