Parliament Question: PROGRESS REPORT OF MISSION MAUSAM

Posted On: 21 AUG 2025 6:33PM by PIB Delhi

Mission Mausam is currently in the beginning phase of its implementation. However, once implemented, this project will help in the overall improvement of the short and medium-range weather forecast accuracy by about 5-10 %.

Radars, satellite products and AWS/ARG are needed mainly for nowcast or for very short duration forecasts for improving location-based forecasts of likely occurrences of thunderstorms and heavy rainfall up to 6 hours. Worldwide, for issuing heavy rainfall forecasts and associated flash floods and other types of floods, weather predictions are made using various observational systems and then by running various NWP models. Presently, IMD has a very good observational network consisting of surface, upper air and remote sensing (radar and satellite) observations. These observations are assimilated in various state-of-the-art regional and global numerical models to generate weather forecasts at different time scales. Radar observations help only in further tuning at the local scale in terms of nowcast of small-scale severe weather events, mainly used for nowcast purposes.

The India Meteorological Department has been interacting and collaborating with other MoES institutions, and has undertaken several programmes towards Artificial Intelligence and Machine Learning (AI/ML) related research activities for application in the field of weather forecasting services. Some of them are given Annexure-1.

MoES institutions such as IMD, IITM, NCMRWF, etc., regularly coordinate with other developed countries regarding their technical advancement with respect to meteorological services and early warning systems, like Korea, Japan, the USA, UK and other European countries. Knowledge-based practices are shared in this field through the exchange of visits of forecasters and scientists from various countries to India. Due to such regular interaction, India is moreover under the umbrella of Regional Specialised Meteorological Centres, Tropical Cyclone, Severe Weather and climate services.

Annexure-1

- Virtual Centre at IITM, Pune, has been established by MoES to develop AI/ML/DL based application tools.
- A dedicated functional group has been established in IMD under MoES to strengthen the R&D activities in AI/ML.
- IMD has established a specialized GPU and CPU-based infrastructure for AI computing.
- IMD has signed MoUs with various Academic Institutions like IITs, IIITs, NITs, ISRO, DRDO, Ministry of Electronics and Information Technology (MeitY), etc, for collaborations and R&D activities, utilizing facets of various AI/ML applications to weather and climate.
- The capacity-building in AI/ML domain with respect to weather and climate are being done by nominating scientists in training sessions and workshops.
- A short-term refresher course on Fundamentals of Artificial Intelligence and Machine Learning organized by IMD from 27th May 2024 to 31st May 2024.

The usage of AI-based monitoring tools and forecasting models are as follows:

- To Estimate Tropical Cyclone Intensity, satellite-based AI-enhanced Advanced Dvorak Technique (AiDT), as given by Cooperative Institute for Meteorological Satellite Studies, is utilised by IMD apart from other products.

- IMD also uses AI-based model guidance from the European Centre for Medium-Range Weather Forecasting (ECMWF) for tropical cyclone genesis, track and intensity prediction.

This information was given by Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, Earth Sciences, MoS PMO, MoS Personnel, Public Grievances & Pensions, Department of Atomic Energy and Department of Space, in a written reply in the Rajya Sabha today.

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NKR/PSM/AV

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