

PARLIAMENT QUESTION: MISSION MAUSAM

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The Government is implementing Mission Mausam, a Central Sector umbrella scheme of the Ministry of Earth Sciences (MoES), with the objective of making India a "Weather-ready and Climate-smart Nation". The Mission was launched by the Hon'ble Prime Minister on 14 January 2025. It aims to strengthen Earth System observations and prediction systems, improve early warnings for high-impact weather events, and deliver seamless weather and climate services, thereby enhancing climate resilience and disaster preparedness.

The Union Cabinet approved Mission Mausam in 2024 with a budget outlay of ₹2,000 crore for 2024-25 and 2025-26. The major objectives of Mission Mausam are:

- Developing cutting-edge weather surveillance technologies and systems.
- Implementing higher-resolution atmospheric observations with improved temporal and spatial sampling and coverage.
- Deploying next-generation Doppler Weather Radars, wind profilers, and satellites equipped with advanced instrument payloads.
- Implementing advanced high-performance computing systems.
- Enhancing our understanding of weather and climate processes and improving prediction capabilities.
- Developing advanced Earth system models and data-driven methods, including the use of AI/ML.
- Creating technologies and protocols for effective weather management.
- Establishing a state-of-the-art Decision Support System and dissemination system for last-mile connectivity.
- Strengthening capacity building and research collaborations.

For the period 2026–31, Mission Mausam is proposed to be implemented through six verticals, namely OBSERVE_ALL (OBSERVations Enhancement to monitor ALL weather), DEVELOP (Earth System Model DEVELOPMENT), Weather_MOD (Weather MODification Research Strategy), ATCOMP (ATmospheric Composition mOnitoring, Modelling and Prediction), FRONTIER (FRONTIER Technologies), and NEAT (National Enterprise for Atmospheric Technology). The Budget Estimate for Mission Mausam for 2026–27 is ₹1,342.29 crore, comprising ₹855.29 crore under Revenue and ₹487.00 crore under Capital.

Mission Mausam envisages strengthening the weather forecasting and early-warning value chain through advanced observational, modelling and computational technologies. Major interventions include:

- Augmentation and modernization of surface, upper-air, radar, satellite, lightning, aviation, marine, and ocean observational systems, along with advanced remote-sensing technologies;
- Use of high-resolution Numerical Weather Prediction and coupled Earth System Models, ensemble prediction systems, and advanced data-assimilation techniques for improved prediction of high-impact weather events;
- Application of AI/ML and hybrid physics-AI techniques for nowcasting, forecast improvement, post-processing, and development of location-specific weather information;
- Utilization of High Performance Computing (HPC) and associated data-processing and communication infrastructure for high-resolution modelling, data assimilation, and AI/ML applications; and
- Strengthening of impact-based forecasting, Decision Support Systems, and multi-channel dissemination platforms for timely and actionable early warnings and last-mile delivery of weather information.

These interventions are aimed at improving the accuracy, spatial resolution, and lead time of forecasts and warnings, particularly for high-impact weather events such as cyclones, heavy rainfall, thunderstorms, lightning, heatwaves, and urban floods.

Mission Mausam is expected to provide more accurate, timely, and location-specific weather and climate information, benefiting various weather-sensitive sectors as follows:

- Agriculture: Improved weather and agro-meteorological advisories to support crop planning, irrigation, and other farm-level decisions and reduce weather-related risks;
- Fisheries: Improved marine weather forecasts and early warnings of adverse weather and sea conditions, supporting safer fishing operations and coastal livelihoods;
- Aviation: Improved forecasting and nowcasting of fog, thunderstorms, strong winds, and other aviation weather hazards, contributing to safer and more efficient air operations;
- Disaster Management: Improved lead time and impact-based warnings for high-impact weather events, enabling better preparedness, response, and risk reduction; and
- Overall Economy: Reduced weather-related losses, improved planning and operational efficiency across weather-sensitive sectors, and enhanced climate resilience, thereby supporting sustainable economic development.

The observational and numerical modelling infrastructure under Mission Mausam is aimed at enabling higher-resolution forecasting of severe weather hazards, improved lead time for early warnings, impact-based forecasting and risk-based warnings, along with strengthening last-mile dissemination of weather information and warnings. These measures are expected to support informed decision-making, strengthen disaster risk reduction, and enhance the resilience of weather-sensitive sectors and the wider economy.

This information was given by the Minister of State (Independent Charge) for Earth Sciences Dr. Jitendra Singh in a written reply in Rajya Sabha today.

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