GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 466
TO BE ANSWERED ON WEDNESDAY, 22ND JULY, 2026

IMPLEMENTATION OF MISSION MAUSAM

466. SMT. MALA RAJYA LAXMI SHAH:
SHRI ARUN GOVIL:
SHRI ALOK SHARMA:
SHRI CHAVDA VINOD LAKHAMSHI:
SHRI BHOJRAJ NAG:
SHRI KOTA SRINIVASA POOJARY:
SHRI VISHWESHWAR HEGDE KAGERI:
SHRI ASHISH DUBEY:
SHRI RAHUL SINGH LODHI:
DR. SANJAY JAISWAL:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) the details of progress made under Mission Mausam since its launch including the major infrastructure and technological upgrades undertaken;
(b) the status of deployment of Doppler Weather Radars, upper-air observation systems and other weather monitoring infrastructure under the Mission;
(c) the details of measures taken to improve forecasting and early warning of cyclones, heavy rainfall and other extreme weather events;
(d) the details of roadmap for achieving Panchayat-level weather forecasting and strengthening climate services under the Mission;
(e) the time by which the early warning of sudden storms, hail storms and heavy rains in major agricultural areas like Meerut and Hapur in Uttar Pradesh is likely to be established; and
(f) whether there is any plan to set up State level weather centre in the country and if so, the details thereof, State/UT-wise particularly Bhopal of Madhya Pradesh and if not, the reasons therefor?

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

(a)-(b) The Mission Mausam was launched by the Honorable Prime Minister on 14 January 2025 with the goal of making country a 'Weather-ready and Climate-smart' nation. The objective of Mission Mausam is to strengthen various components of the Earth System observations, to realize Earth System approach to provide an early warning system, for seamless weather and climate services to all. The scheme seeks to exponentially enhance the country's weather and climate observations, understanding, modelling and forecasting, leading to better, more useful, accurate, and timely services. The key objectives of this Mission include:

- Developing cutting-edge weather surveillance technologies and systems.
- Implementing higher-resolution atmospheric observations with improved temporal and spatial sampling and coverage.
- Deploying next-generation radars, wind profilers, and satellites equipped with advanced instrument payloads.
- Implementing advanced high-performance computing (HPC) 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 (DSS) and dissemination system for last-mile connectivity.
- Strengthening capacity building and research collaborations.

The current status of the observational network and modeling capability are as follows:

- India Meteorological Department (IMD) presently receives data from a network of 50 Doppler Weather Radars (DWRs) operated by IMD and other MoES institutions and ISRO across the country. The present network shall be augmented through ongoing projects with the deployment of 29 C-Band DWRs, 45 X-Band DWRs and 12 S-Band DWRs throughout the country.
- Under the project, various global and regional Numerical Weather Prediction (NWP) modeling systems have been implemented and operationalize to generate seamlessly short range, medium range and extended range forecasts. There are two different framework of global modeling systems based on global forecast systems (GFS) of IMD and Mithuna modeling systems of NCMRWF Noida. Both the models run on real time with horizontal resolution 12 KM. The New Bharat Forecasting System (BharatFS) operational at a very high resolution of 6 km to cater to block levels and further to panchayat levels. In order to provide computational support of such high resolution models and to make it regularly run in real time, the Computing facilities also has been substantially increased with computational power to integrate voluminous data and to run mesoscale, regional and global models at higher resolution. Recently, with "Arunika" and "Arka" systems, the Ministry of Earth Sciences has enhanced its total computing power to 28 Peta FLOPS in 2025, a substantial increase from the previous capacity of 6.8 Peta FLOPS which was in 2014.

- Currently three AI based global models are regularly operational to provide guidance to the forecaster to predict severe weather. Artificial Intelligence (AI) and Machine Learning (ML) applications and tools have been developed indigenously by weather scientist of MoES organization on various aspects of monitoring and observational processing such as Nowcasting tool, downscaled urban forecasting etc.

(c) Various initiatives were taken by IMD for the improvement of disaster early warning systems. The important majors taken are as follows:

- Augmentation of observational network.

- Development of indigenous, technology-driven, and citizen-centric weather forecasting systems that strengthen disaster preparedness and improve public safety across India (Points 2 & 3 above). IMD's in house developed Decision Support System (DSS) is a major step in the direction of promoting self-reliance under the "Atmanirbhar Bharat" initiative. As a result, there is 40% improvement in forecast accuracy for all type of severe weather events in recent decades as compared to previous decade.

- Impact-based forecasts and risk-based warnings are being disseminated at the district level, empowering authorities to take timely preventive actions against cyclones, heavy rainfall, thunderstorms, heatwaves, and cold waves.

- Developed "Mausamgram" (Har Har Mausam, Har Ghar Mausam) a unique citizen-focused platform providing location-specific, hyperlocal weather forecasts down to the village level. "Mausamgram" delivers hourly forecasts for the next 36 hours, three-hourly forecasts for the next five days, and six-hourly forecasts for up to ten days. Users can conveniently access weather information by searching through PIN code or location name, or by selecting the state, district, block, and gram panchayat. This user-friendly system ensures easy access to hyperlocal forecasts, enabling citizens to obtain accurate and timely weather updates tailored to their specific location.

- Development of climate hazard and vulnerability maps at district level (https://imdpune.gov.in/hazardatlas/index.html)

- Development of geospatial services for weather forecast and warnings (https://imdgeospatial.imd.gov.in/)

- IMD is one of the agencies that generate CAP alerts for severe weather warnings. These CAP alerts are disseminated through SMS as well as the SACHET app, developed by the NDMA. These CAP feeds are also being used by APPLE, GOOGLE and GMAS for the dissemination of weather-related warnings. IMD has developed an Application Programming Interface (API) which is being used by various private and public organisations for further dissemination of IMD's forecasts and warnings to the general public through different media including mobile apps developed by different stakeholders.

- IMD has developed various mobile apps for the dissemination of weather-related warnings such as MAUSAM App for weather forecasting and warnings, MEGHDOOT App for agro met services, DAMINI App (developed by IITM) for lighting warning, UMANG App (developed by Meity) for Weather forecasting and warnings.

(d) To ensure localised relevance and last-mile connectivity of weather updates in remote and vulnerable regions, IMD, in collaboration with other ministries, has undertaken the following major initiatives:

- In collaboration with the Ministry of Panchayati Raj, IMD has developed the Panchayat Mausam Seva Portal, providing Panchayat-level weather forecasts through e-GramSwaraj (https://egramswaraj.gov.in), Meri Panchayat App, e-Manchitra and Mausamgram (https://mausamgram.imd.gov.in).
- The mobile numbers of Panchayat Members, Ward Members and Panchayat Secretaries have been integrated with the Panchayat Mausam Seva Portal, enabling timely dissemination of weather forecasts and agrometeorological advisories through WhatsApp for further dissemination at the Gram Panchayat level.
- IMD also leverages the Krishi Sakhis and Pashu Sakhis network of the Ministry of Rural Development for last-mile dissemination of weather forecasts and agrometeorological advisories.
- IMD has organized over 7,300 Farmers' Awareness Programmes (FAPs) across 373 districts, benefiting nearly 3.67 lakh farmers, including 83 Aspirational Districts, to promote climate-resilient agriculture and the effective use of weather-based advisory services.
- Under Mission Mausam, IMD has developed KALP (Krishi Advisory based on Location-specific Weather Prediction) for generation of location-, crop- and crop-stage-specific advisories and Mausam SANKALP (Systematic Agrometeorological aNalytics, Knowledge and Advisory enabLing Platform) to strengthen weather analytics, advisory generation and climate-resilient agricultural planning.

(e) Government of India through MoES institutions and IMD has undertaken continuous monitoring & rigorous review of operational meteorological services covering all temporal and spatial scales in seamless manner. There has been significant progress in modernising the national, regional and local meteorological early-warning system in recent past with implementation of Multi-Hazard Early Warning System of IMD with state of art suit of GIS enabled Decision Support System with objective of "No Weather should go Undetected and Unpredicted". To meet primary objective of the goal, meteorological observational infrastructure in Uttar Pradesh is being strengthened continuously under the Urban Meteorology and Mission Mausam schemes of Government of India to fill the observational gaps comprehensively with multilateral approach though Mission Mausam to increase the preparedness and effectiveness of disaster risk reduction measures for various desired targeted vulnerable groups/communities of the state including major agricultural areas like Meerut and Hapur districts of Uttar Pradesh in close co-operation with the local/state government allied departments & agencies to address the multilateral impacts & challenges offered due to severe weather hazards thunderstorms, hailstorms, heavy rainfall etc.

Furthermore, numerous efforts have been undertaken by the Government of India through IMD and other MoES institutions to strengthen climate resilience through effective early warning system, heat-action plan, sectoral disaster management plans and district-level preparedness. As an effective initiative to monitor and track the extreme weather and climate events such as heat waves, thunderstorms, extreme rainfall and floods for the state of Uttar Pradesh and to improve disaster preparedness and weather forecasting of the state recently IMD, GoI and GoUP has taken joint initiative and signed an MoU for enhancing the existing observational network. A network of 29 automated instruments (05-AWS + 24-ARG) in district Meerut and that of 13 automated instruments (03-AWS + 10-ARG) in district Hapur (all quipped with temperature, humidity and rainfall sensors) has already been established and commissioned in addition to the pre-existing IMD network of 01 Departmental Observatory at CCSU (Ramgarhi), 01 Agromet Observatory at SVPUAT (Modipuram), 04 DRMS stations (Meerut Tehsil, Meerot Observatory, Sardhana & Mawana) and 03 automated instruments (01-AWS-CCSU + 02-ARG-Sardhana & Mawana) in Meerut district and 02 DRMS stations (Garhmukteshwar & Hapur) in Hapur district. Apart from the aforesaid network there is an existing robust network of 3 Doppler Weather Radars in Delhi (Aya Nagar, Plam & Lodhi Road) and 01 each in Patiala and Lansdown to cater the needs of monitoring and forecast of severe weather elements like Thunderstorms, Lightning, Hailstorm, Intense Rainfall Episodes and related Hazard of Northwest Uttar Pradesh including Meerut and Hapur.

(f) IMD has 8 Regional Meteorological Centres (RMCs) and there are 25 Meteorological Centres (MCs) which are under the direct control of concerned RMC, as listed below:

S.No.	RMCs/ MCs	Services provided to State/ U.T.
1	RMC New Delhi	Delhi, Chandigarh, Rajasthan, Punjab, and Haryana,
2	RMC Jammu	UT/State of Jammu & Kashmir, Ladakh and Himachal Pradesh
3	RMC Lucknow	Uttar Pradesh, Uttarakhand
4	RMC Guwahati	Assam and other NE Region of the country
5	RMC Mumbai	Parts of Maharashtra, Goa, Gujarat

6	RMC Kolkata	West Bengal, Odisha, Bihar, Jharkhand, A&N Islands
7	RMC Chennai	Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, Kerala, Puducherry & Lakshadweep
8	RMC Nagpur	Madhya Pradesh, Chhattisgarh, Parts of Maharashtra
9	MC Bengaluru	Karnataka
10	MC Hyderabad	Telangana
11	MC Thiruvananthapuram	Kerala
12	MC Amaravati	Andhra Pradesh
13	MC Agartala	Tripura
14	MC Itanagar	Arunachal Pradesh
15	MC Shillong	Meghalaya
16	MC Aizawl	Mizoram
17	MC Kohima	Nagaland
18	MC Imphal	Manipur
19	MC Bhubaneswar	Odisha
20	MC Gangtok	Sikkim
21	MC Patna	Bihar
22	MC Ranchi	Jharkhand
23	MC Sri Vijaya Puram	Andaman & Nicobar Islands
24	MC Ahmedabad	Gujarat, Daman, Dadra Nagar Haveli and Diu
25	MC Goa	Goa
26	MC Raipur	Chhatisgarh
27	MC Bhopal	Madhya Pradesh
28	MC Chandigarh	Haryana, Punjab and Union Territory of Chandigarh
29	MC Dehradun	Uttarakhand
30	MC Jaipur	Rajasthan
31	MC Shimla	Himachal Pradesh
32	MC Srinagar	Jammu & Kashmir
33	MC Leh	Ladakh

Therefore, the state/ UT level weather services of all states/ UTs are covered by these 8 RMCs and 25 MCs. A Meteorological Centre (MC) is already in Bhopal, Madhya Pradesh. In addition, there are many meteorological observatories spread across various states from where regular weather observations are taken.

*****