

GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 364
ANSWERED ON 28/11/2024

MICROCLIMATE FORECASTING

364. SHRI PRAMOD TIWARI:

Will the Minister of **EARTH SCIENCES** be pleased to state:

- (a) whether Microclimate forecasting is required to predict extreme local weather events;
- (b) if so, whether it is becoming apparent that blocks and localities within cities and districts require information on the magnitude of heat or rainfall;
- (c) if so, the steps taken to increase the number of meteorological stations to monitor weather in different urban and rural zones;
- (d) whether there is any proposal to set up a weather station in each panchayat to provide data on rainfall, frost and humidity; and
- (e) if so, the details thereof?

ANSWER

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

- (a) Yes.
- (b) The generalization of characteristics of weather extremes for a certain long duration defines the microclimate of a location. Consequently, extreme weather events must be forecasted over districts, cities, and blocks/wards, as they require information about weather parameters for the specified locations. Moreover, several factors (land use, vegetation, urban buildings, water bodies, aerosols, pollutants, etc.) modulate/control the spatial and temporal variability of microclimate characteristics.
- (c) The India Meteorological Department (IMD) works through various schemes to enhance and upgrade observing networks to monitor smaller-scale characteristics of weather extremes all over India.

Ministry has established a dense observation network of AWS/ARGs over megacities like Mumbai to provide rainfall data at the local scale. In cities like Delhi and Mumbai, IMD has installed multiple radars (especially X-Band) to monitor rain and thunderstorms at the hyper-local level.

Present satellites from India and other countries, as well as radars, provide immense scope for continuously monitoring weather phenomena. Specialized observing systems like wind profilers, ground-based radiometers, and Lidar provide added advantages in monitoring and forecasting extreme weather systems over Urban regions.

All those observations are then processed and analysed through a GIS-based Decision Support System (DSS). Under its urban weather forecasting and warning services, IMD, in collaboration with other organizations, provides important impact-based forecasts and warning information regarding extreme weather events in urban areas.

- (d) No. However, weather forecasts are issued at the Panchayat level.
- (e) The Ministry has started implementing Panchayat-level weather forecasting to nearly 2.6 lakh panchayats. The innovative Mausamgram platform, developed by the IMD, delivers precise weather forecasts, offering hourly updates for an immediate 36 hours and comprehensive forecasts for the next 10 days. These updates cover critical parameters such as temperature, rainfall, humidity, wind, and cloud conditions, which are essential datasets for farmers to make informed decision-making regarding sowing, harvesting, and irrigation. The platform makes weather forecast information accessible anytime and anywhere at the panchayat level across the country.
