

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 461
TO BE ANSWERED ON WEDNESDAY, 3RD DECEMBER, 2025**

MAPPING OF HEATWAVES

461. SHRI Y S AVINASH REDDY:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government is planning to invest in latest advancements in geospatial technology and field-based assessments to provide effective mapping of heatwaves, such as granular scale heat vulnerability and hotspot mapping and if so, the details thereof;
- (b) whether the Government is also planning to mandate establishment of locally-defined temperature thresholds in all heat action plans taking into account the local risk multipliers while declaring a heatwave to provide a more region-specific approach and if so, the details thereof; and
- (c) whether the Government is also contemplating to reform forecast models to region-specific thresholds for energy and water demand, crop and health impacts to enable impact-based heat forecast alerts in order to help policy-makers plan in advance about predicted heatwave events and 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. The India Meteorological Department (IMD) has been providing heatwave forecasts and warnings at multiple spatial and temporal scales and shares them with the public and disaster management authorities for mitigation and preparedness. For this, IMD has developed a web-based GIS (Geographic Information System) heatwave portal, where current heatwave conditions and 5-day forecasts are displayed at the district and sub-city scales on interactive maps. IMD has also developed a Climate Hazards and Vulnerability Atlas of India for 13 major meteorological hazards, including heatwaves. This Atlas, hosted on a GIS-based web platform, provides district-level maps of hazard occurrence and vulnerability for each month and annually, and identifies hotspots with high hazard potential and higher vulnerability for heatwaves.
- (b) IMD issues impact heat wave forecasts and warnings in a colour-coded format, considering different meteorological parameters like maximum temperature, minimum temperature, relative humidity, winds, and their co-existence & persistence. The heat action plan & any thresholds within it are developed under the aegis of the National Disaster Management Authority (NDMA) and other concerned disaster management authorities.

- (c) IMD issues heat wave alerts tailored to geographic characteristics—plain, hilly, or coastal stations—to better capture region-wise temperature extremes. Heat wave and temperature outlooks are provided on multiple temporal scales (from seasonal to monthly, followed by extended range and medium to short range) to facilitate both anticipatory and immediate response measures. IMD issues a dedicated heat wave bulletin specifically for Indian Railways, ensuring operational preparedness for this critical sector. Heat wave and temperature information is disseminated via a web-based GIS system, making the data accessible to various sectoral stakeholders for customised use. The heat wave bulletins include generalised impact assessments and recommended actions aligned with NDMA guidelines. The generation of sector-wise heat thresholds (e.g., for health, agriculture, energy) is possible, contingent on the availability of detailed impact data from those sectors.
