

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
LOK SABHA  
UNSTARRED QUESTION NO. 355  
TO BE ANSWERED ON WEDNESDAY, 24<sup>TH</sup> JULY, 2024**

**MAPPING HEATWAVES**

355. SHRI P V MIDHUN REDDY:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government is looking into investing in latest advanced geospatial technology and field-based assessments to provide effective mapping of heatwaves, such as granular scale heat vulnerability and hotspot mapping;
- (b) if so, the details thereof;
- (c) whether the Government is planning to mandate establishment of locally-defined temperature thresholds in all Heat Action Plans taking local risk multipliers in account while declaring a heatwave to provide for a more region-specific approach;
- (d) whether the Government has any plans 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
- (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) India Meteorological Department (IMD) issues forecasts and warnings related to severe weather events, including heatwaves, in different spatial and temporal scales and shares the same with public and disaster management authorities to initiate required mitigation measures. Using geospatial technology, IMD has recently advanced in heatwave forecasting, monitoring, and early warning services. The prevailing heatwave condition information and the forecast and warnings for next five days, up to districts and sub-city scale, are available on a web Geographic Information System (GIS) based map. The link for the heatwave information web page is [https://internal.imd.gov.in/pages/heatwave\\_mausam.php](https://internal.imd.gov.in/pages/heatwave_mausam.php).

Also, IMD has prepared a Climate Hazards and Vulnerability Atlas of India for the thirteen most hazardous meteorological events, including heat waves. The web Atlas is depicted using GIS tools and is available at (<https://www.imdpune.gov.in/hazardatlas/index.html>). The Atlas provides district maps on hazard events and vulnerability for all the calendar months and at an annual scale. This Atlas identifies the hotspots in terms of high hazard potential and higher vulnerability.

- (c) Yes. IMD defines heatwave conditions based on temperature criteria as reported by the stations located across various districts in the country. It also considers station-wise percentile-based analysis of temperature, humidity, and wind information as noted in real-time from multiple observatories situated in a region. Hence, IMD considers mainly meteorological parameters at local levels as the impact of heatwaves are aggravated due to prevailing humidity, winds and climatological information.
- (d)-(e) Various forecast model products are used to issue early warning alerts to different sectors and regions. The climate hazards and vulnerability Atlas of India provides information mainly to help policy makers to plan in advance.

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