GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 1614
TO BE ANSWERED ON WEDNESDAY, 27TH JULY, 2022

HEAT WAVE IN INDIA

1614. SHRI GAURAV GOGOI:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government has any data on the number of heat waves in India per year for the last ten years and the current year and if so, the details thereof;
(b) whether it is a fact that India recorded one of its hottest summer months this year in 2022 and if so, the details thereof;
(c) whether the Government has evaluated the impact of increased temperatures on the workers employed in open spaces and if not, the reasons therefor; and
(d) whether the Government has launched any policies/issued any guidelines for health and safety from the heat waves?

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

(a) Yes Sir. The average numbers of heat wave episodes, for the period 2011-2022, reported over different states in the country are given in Annexure.
(b) Yes. India experienced prolonged spells of heatwave during March and April 2022. Hence, the average maximum temperature of March 2022 had been the highest for All India (33.1℃) and Northwest India (30.7℃) and it had been the second highest for Central India (35.2℃) as per the data during the period 1901 to 2022. The average maximum temperature of April 2022 was the highest for Central India (38.04℃) and for Northwest India (36.32℃) and third highest for All India (35.3℃) during the period of 1901 to 2022.
(c) Abnormal temperature events can impose severe physiological stress on the human body as the body operates best within a fairly normal temperature range. There is a marked relationship between human mortality and thermal stress. During unusually hot episodes, deaths from different causes can rise significantly with the elderly at greater risk than others. However, the centralized data on the impact of increased temperatures on the workers employed in open spacesis maintained by this ministry.
(d) Heat wave is one of the severe weather phenomena for which India Meteorological Department (IMD) issues early warning. In the country, appreciable rise in maximum temperatures as well as heat waves are found to be more in the months of April, May & June. As an initiative IMD issues Seasonal Outlook for temperatures for the months of April, May & June in the last week of March for planning purpose. This outlook bring out the expected scenario of heat waves also during the period. The seasonal outlook is followed by Extended Range Outlook issued on every Thursday for next two weeks. In addition to this, the forecast and the colour coded warnings for heat waves are issued on daily basis for next five days with outlook for another two days.

IMD has started Forecast Demonstration Project (FDP) on heat waves from April 2017 for the hot weather season under which a detailed daily report including realized data of heat waves, weather systems leading to the occurrence of heat waves, diagnosis on the basis of Numerical Model outputs and forecast and warnings for five days is prepared. This bulletin is disseminated to all concerned including health departments. IMD also issues an additional bulletin on heat wave in the morning (8 AM) valid for 24 hours for supporting the planning of activities for the day and this bulletin is also disseminated to all concerned. All these bulletins are posted to IMD website also, on a special page created for Heatwaves.

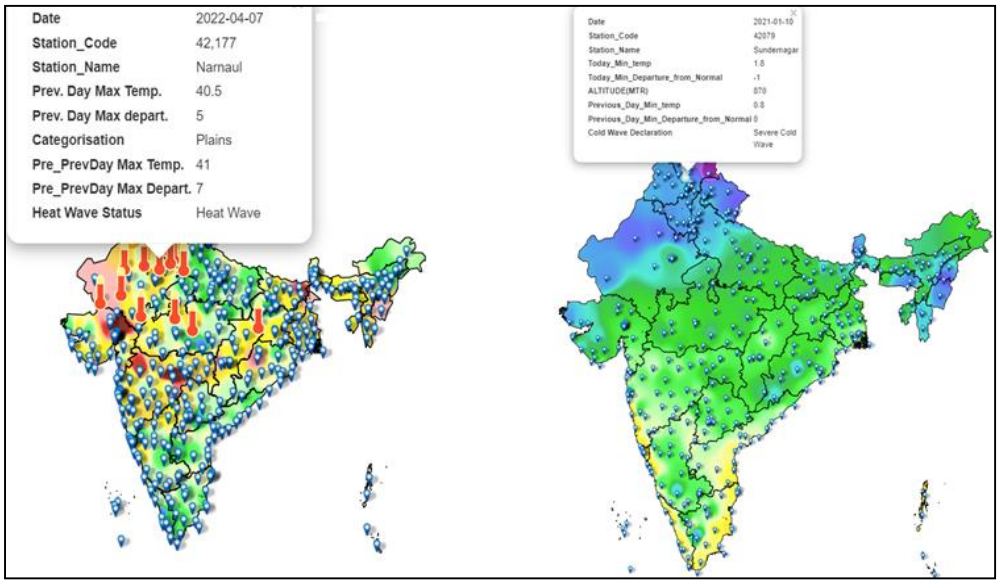
As an adaptive measure, IMD in collaboration with local health departments have started heat action plan in many parts of the country to forewarn about the heat waves and also advising action to be taken during such occasions. Heat action plan became operational since 2013.

The Heat Action Plan is a comprehensive early warning system and preparedness plan for extreme heat events. The Plan presents immediate as well as longer-term actions to increase preparedness, information-sharing, and response coordination to reduce the health impacts of extreme heat on vulnerable populations. NDMA and IMD are working with 23 states prone to high temperatures leading to heat-wave conditions to develop heat action plans.

Recent advancement made in Heat wave forecast and warning follow:-

- **Heat Wave Monitoring and Forecasting Information on GIS**

a) Interactive Map in Web-GIS for actual maximum/minimum temperature & its Departure from normal temperature. (Current Temperature).
b) Interactive Map in Web-GIS for Heat Wave & severe Heat Wave along with Warm Nights & very Warm Nights. (Current Temperature).



c) Interactive Map in Web-GIS for last 5 days actual Maximum/minimum temperature & its Departure from normal temperatures, Heat Wave, severe Heat Waves, Warm Nights and very Warm Nights to assess the impact of the spell of Heat waves. (Past 5 days Heat Wave and Warm Night Situation).
d) Normal Relative Humidity (RH) for March to June months based on 0830hrs and 1730 hrs are provided to assess the impact of RH during the Heat Wave days. The impact of Heat Waves becomes more severe with an increase in the RH.

- Issue special heat wave & its impact bulletin (March to June) at 1600 hrs IST by including impact of Minimum Temperature, humidity and wind.

Heat Wave hazard analysis for entire country for four hot weather months (MARCH, APRIL, MAY & JUNE) considering the Maximum Temperature, Minimum Temperature, Humidity, Wind and Duration is completed. This will lead to identification of hazard scores based on different meteorological parameters aggravating impact of Heat Waves.

The link for Heat Wave information web-page is
https://internal.imd.gov.in/pages/heatwave_mausam.php

Annexure

Average Number of Heat wave days reported													
State / UT	No of stations	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Andhra Pradesh	7	8	16	11	16	7	10	10	8	13	3	4	5
Assam	2	0	0	0	0	0	0	0	0	0	0	0	0
Bihar	3	1	20	1	9	5	11	3	6	12	1	1	6
Chhattisgarh	2	1	6	3	6	1	2	3	0	3	0	1	6
Delhi	1	1	11	7	7	3	2	9	6	8	4	3	17
Gujarat	7	1	1	1	3	2	3	4	3	4	2	0	5
Haryana	2	3	8	8	9	4	10	13	9	8	3	2	24
Himachal Pradesh	1	0	0	0	0	0	0	0	0	0	0	0	0
Jharkhand	3	1	19	5	7	9	16	10	3	10	1	0	18
Karnataka	11	0	2	1	1	2	3	0	0	2	4	0	0
Madhya Pradesh	8	2	4	5	10	4	10	7	7	13	2	1	13
Maharashtra	11	1	3	8	5	5	8	6	8	15	5	0	4
Odisha	5	2	18	9	17	11	19	9	4	8	2	4	5
Punjab	2	6	17	11	12	3	5	12	4	8	1	2	24
Rajasthan	10	7	7	9	11	9	15	14	17	20	6	4	26
Tamil Nadu	5	3	10	4	5	3	3	8	2	11	4	3	3
Telangana	2	0	9	6	2	7	14	5	0	10	2	0	2
Uttar Pradesh	8	2	17	6	9	8	5	4	6	13	2	1	15
Uttarakhand	1	0	27	2	3	2	9	4	5	13	0	7	28
West Bengal	4	1	6	3	12	1	5	2	2	3	0	3	2