How Heat wave in North India is unusual

Part of: GS-I- Geography (PT-MAINS-PERSONALITY TEST)

Heatwave in India: The last several days have brought heatwaves in parts of the country, but the preceding weeks had seen no such conditions. A look at how this breaks trends, Cyclone Amphan's role, and what is expected to follow.

For the past five days, Rajasthan, Delhi, Uttar Pradesh, Madhya Pradesh, and Maharashtra have been experiencing severe to very severe heatwave conditions. In its very first spell this summer, this heatwave pushed day temperatures significantly above normal, with Churu in Rajasthan reporting 50 degrees. Here is why this summer is slightly unusual.

What is a heatwave and when is it declared?

Heatwaves occur over India between March and June. Meteorologists declare a heatwave event when the maximum (day) temperature for a location in the plains crosses 40 degrees Celsius. Over the hills, the threshold temperature is 30 degrees Celsius. When the day temperature jumps by 4 to 5 degrees above the normal maximum temperature of a location, it is declared as a heatwave (PT).

For example, if the normal maximum temperature for a location in the plains on a given day should be 40 degrees but records 45 degrees, then that location is experiencing a heatwave. Alternatively, any location where maximum temperature crosses 45 degrees or shows a departure of over 6 degrees from normal, it is a severe heatwave condition.

How long can a heatwave spell last?

A heatwave spell generally lasts for a minimum of four days. On some occasions, it can extend up to seven or ten days. The longest recorded heatwave spell, in recent years, was between 18 – 31 May 2015. This spell had severely affected parts of West Bengal along with Odisha, Andhra Pradesh, and Telangana. A similar spell in 2014 was reported during June 2 – June 11.

The current heatwave spell commenced on May 22 and is likely to continue till May 29. Heatwave conditions occurring in May have been observed to last longer, as the season reaches its peak this month. Whereas those reported in June often die down sooner, often due to the onset of Southwest monsoon over the location or in its neighbourhood.

Does all of India experience heatwave conditions?

No. Heatwaves are common over the Core Heatwave Zone (CHZ) — Rajasthan, Punjab, Haryana, Chandigarh, Delhi, West Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Orissa, Vidarbha in Maharashtra, parts of Gangetic West Bengal, Coastal Andhra Pradesh and Telangana, as categorised by India Meteorological Department.

Several recent studies indicate that CHZ experience more than six heatwave days per year during these four months. Many places in the northwest and cities along southeastern coast
report eight heatwave days per season. However, the regions in the extreme north, northeast and southwestern India is lesser prone to heatwaves.

So why did the country experience an unusual summer sans heatwaves, till the third week of May?

- Summer season reaches its peak by May 15 in India, when the day temperatures across north, west, and central India cross 40 degrees and hover close to 45 degrees then on.
- This year, north India did not experience such temperatures till May 21. It was mainly because of the continuous inflow of Western Disturbances that influenced the weather in the north till as late as April.
- Since last winter, there was frequent passing of Western Disturbances over the north, appearing after every five to seven days.
- Originating in the Mediterranean Sea, Western Disturbances are eastward-moving winds that blow in lower atmospheric levels. They affect the local weather of a region during its onward journey.
- Between January and March this year, there were about 20 Western Disturbances, a record of sorts.
- When Western Disturbances interact with weather systems heading from the two southern seas, that is, warm winds blowing in from the Bay of Bengal or the Arabian Sea, they cause snowfall or rainfall over the north.
- A significant influence of Western Disturbances is experienced during December to February. However, this year, its influence persisted till early May.
- The recent Western Disturbances got support from easterly winds blowing over from the Bay of Bengal. It resulted in rainfall and thunderstorm activities over parts of Rajasthan, Punjab, Uttar Pradesh, north Madhya Pradesh and Delhi until mid-May, keeping atmospheric conditions cooler than normal for summer standards.
- As per IMD, the All India average temperature in 2020 recorded fell below normal and remained — January (- 0.6 degrees), February (+ 0.2 degrees), March (- 0.8 degrees) and April (- 0.1 degree). A similar trend is expected even in May.

Has cyclone Amphan influenced the current heatwave?

Since the event of severe heat has emerged immediately after the passing of Cyclone Amphan, experts confirm its role in leading to the present heatwave spell. Cyclone Amphan, which was a massive Super Storm covering 700 kms, managed to drag maximum moisture from over the Bay of Bengal, entire South Peninsula, parts of Central India and to some extent, even from the Arabian Sea.

All the moisture, that was otherwise built during the thunderstorm and rainfall, got gradually depleted from over vast areas as the storm advanced towards West Bengal and Bangladesh between May 16 and 20. It has now triggered dry north-westerly winds to blow over Rajasthan, Madhya Pradesh, Uttar Pradesh and Maharashtra causing severe heatwave.