



Heat Index

For Prelims: India Meteorological Department (IMD), Heat Index, Urban heat Island Effect, National Disaster Management Authority (NDMA).

For Mains: Issues Related to Heat Waves in India.

Why in News?

The [India Meteorological Department \(IMD\)](#) is planning to introduce a 'heat index' warning system in Delhi and other parts of the country.

What are Recent Studies of IMD Suggests?

- The IMD has conducted a study on the impact of meteorological factors on [heatwaves](#) and the "heat wave hazard zonation" of the country.
- According to "Hot Weather Analysis over India," IMD revealed that the mechanism by which heat impacts humans is complex; it is a result of the interactions between temperature, radiation, wind, and humidity.
 - There is strong experimental evidence that physiologic stress from high temperatures is greater if humidity is higher.

What is the Proposed Heat Index?

- **About:**
 - Heat Index will calculate the temperature along with the humidity levels to provide a more accurate measure of what the temperature actually feels like.
 - In the US, the heat index is color-coded to provide warnings based on the impact of the heat index.
 - The IMD is planning to introduce a similar color-coded warning system in India.
- **Significance:**
 - Heat Index has important considerations for the human body's comfort.
 - When the body gets too hot, it begins to perspire or sweat to cool itself off. If the perspiration is not able to evaporate, the body cannot regulate its temperature. Evaporation is a cooling process. When perspiration is evaporated off the body, it effectively reduces the body's temperature.
 - When the atmospheric moisture content (i.e., relative humidity) is high, the rate of evaporation from the body decreases. The human body feels warmer in humid conditions. The opposite is true when the relative humidity decreases because the rate of perspiration increases. The body actually feels cooler in arid conditions.
 - There is direct relationship between the air temperature and relative humidity and the heat index, meaning as the air temperature and relative humidity increase (decrease), the heat index increases (decreases).

What is a Heatwave?

- A **heatwave is a period of abnormally high temperatures**, a common phenomenon in India during the months of **May-June** and in some rare cases even extends till July.
- The Heatwave is considered when the maximum temperature of a station reaches at least **40°C for Plains and at least 30°C for Hilly regions**.
- In 2016, the [National Disaster Management Authority \(NDMA\)](#) issued comprehensive guidelines to prepare national level key strategies for mitigating the impact of heatwaves.

What are the Factors Responsible for Delhi's Higher Temperature than its Actual Value?

- **Urban Heat Island Effect:** Delhi is a highly urbanized area, with **large amounts of concrete, buildings, and asphalt**. These surfaces absorb and retain heat, creating an [urban heat island effect](#). This can make the temperature feel hotter than it actually is.
- **Air Pollution:** Delhi experiences high levels of air pollution, because of [stubble burning in Punjab and Haryana region](#), **vehicular and industrial emissions, dust from construction activities**.
 - This pollution can **trap heat and create a blanket effect, keeping the city warmer**.
 - Also, Delhi's high humidity can also exacerbate air pollution levels.
- **Lack of Water Bodies in Close Proximity:** Delhi is **not located near any large water bodies, such as a sea or a lake**. This means that there is **no source of cool air coming from the water**, which can make the air feel hotter.

[Source: IE](#)

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