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Scientists uncover reasons behind ongoing cold wave conditions in North India

Cold wave Linked to atmospheric blocking and Siberian high, study finds

Web Desk

Updated: February 02, 2024 12:42 IST



A man warms himself with a bonfire during a cold and foggy winter morning, in Patna | PTI

The ongoing cold wave conditions sweeping across North India have been unraveled by a pioneering study conducted by researchers at the Indian Institute of Science Education and Research (IISER) Mohali. The study, published in the esteemed journal *Weather and Climate Extremes*, sheds light on the underlying causes and alarming trends behind the bone-chilling temperatures gripping the region.

Led by Professor Raju Attada and his dedicated team at IISER Mohali, this groundbreaking research has uncovered crucial insights into the factors propelling these extreme winter conditions. The culprit, it seems, lies in the intrusion of cold and dry air from none other than the formidable Siberian High – a colossal gathering of frigid air that engulfs northeastern Eurasia from November to February.

By meticulously analyzing data spanning the years 1982 to 2020, the scientists identified a reduction in the number, duration, and intensity of cold wave events during this period. This decline has been attributed to rising winter minimum temperatures, a consequence of global warming, as well as a decreasing number of western disturbances (WDs). These WDs, originating from the Caspian or Mediterranean Sea, are responsible for bringing non-monsoonal rainfall to northwest India.

However, this year's winter atmospheric blocking has intensified the cold waves, extending their persistence from the end of December well into January. Atmospheric blocking refers to the persistence of high-latitude weather systems, which exacerbates the influx of cold air, leading to the extreme cold conditions experienced in northern India.

The implications of these bone-chilling cold waves extend far beyond human health, impacting crucial sectors such as agriculture, livestock, and transportation. The risk of hypothermia and frostbite, particularly among vulnerable groups, underscores the urgent need for comprehensive policies at various administrative levels to address this pressing issue.

Professor Attada emphasised the necessity of prioritising actions to safeguard human lives during these frigid events, highlighting the importance of understanding the synoptic features and dynamics behind the formation of cold waves for accurate prediction.

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