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**Investigation of extreme Heat wave spells over the Indian sub-continent
during 2022: A satellite perspective.**

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Climate change is causing an increase in the number of longer, more intense heat waves and higher daily peak temperatures worldwide. India is also experiencing the effects of climate change in the form of an increase in the frequency of heat waves, which are becoming more extreme over time and have serious negative effects on human health, leading to an increase in the number of heat wave fatalities. According to a recent fast attribution assessment conducted by climate experts, the extreme heat that engulfed huge portions of India and Pakistan was rendered manifold times more likely by climate change. In one of the most densely populated regions in the planet, the protracted, widespread heat and below-average rainfall affected hundreds of millions of people. In accordance with the WMO initiative to increase early warnings and early action and to adopt heat-health action plans, the national meteorological and hydrological departments in both nations have been working closely with health and disaster management organizations to save lives. In this study, the extreme heat wave spells over northwest India during April-May 2022 is investigated. Maximum temperatures reached as high as 50°C over parts of Pakistan and India severely impacting the water supplies, livestock and general livelihood of the common people. This study utilizes the INSAT 3D Land Surface temperature data to analyze the extreme heat wave spells over the region. The satellite data is also compared with different reanalysis datasets to envisage the heat wave signatures over the region for swift action by the national disaster managers for effective mitigation of the extreme weather event