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Investigating the associated dynamics of 2019 Heat wave over India

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India witnessed the second longest recorded heat wave during May-June 2019 causing more human deaths with the maximum temperature recorded was about 51.8°C in a place called Churu in the state of Rajasthan. The present study investigated the spatio-temporal pattern of the maximum temperature and the associate heat waves in the country. The relationship of the heat wave spread and the variables like temperature, humidity, soil moisture as well as the land use and land cover is explored. The dynamics of large scale oceanic and atmospheric features resulting advection and local heating mechanism is found to be the reason of such high intense heat wave in 2019 summer season. The anomaly of all the related weather parameters are linked with the intense maximum temperature and resultant heat wave and the hot spots are identified. The impacts of ENSO (including 'El Niño Modoki') and MJO on the longest and highest heat wave phenomena are also quantified for the year 2019. The role of soil moisture and the evapotranspiration also observed in the analysis which clearly shows lack of these parameters also triggers the intense heat wave events. This study will help in better understanding of the local heat wave dynamics and these informations can be useful for the public health interventions against the intense heat wave situations.