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## Decadal Variability of Precipitation Extremes over India

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The occurrence of extreme precipitation events is a severe concern to any nation due to its socio-economic impacts. In this study, spatiotemporal variability of precipitation extremes was analyzed over the Indian sub-continent using the quantile perturbation method (QPM). QPM is a non-parametric method that requires very few assumptions. The gridded data of precipitation with  $0.5 \times 0.5$ -degree resolution CRU (Climate Research Unit, University of East Anglia, UK) and 117 years (1901-2017) data set has been used. The result shows that the initial decade (1910s to 1940s) and the recent decade (1990s to 2000s) are the decades when significant anomalies found in most of India. The northeast part of India shows positive anomalies while the central region and northern region show negative anomalies in the 1910s. In the period of 1930-1940s central India shows positive anomalies, and the northern region shows negative anomalies. Significant positive anomalies found in the west part of southern India in the period of 1950-1960s. In the period of 1960-2000s, the northern region shows positive anomalies. Indo-Gangetic plain and central India have negative anomalies while the western part shows positive anomalies in the 2000s in most of the grid. To partially address the reason behind the perturbation correlation analysis has been applied between extreme precipitation anomaly and Indian Ocean Dipole. Results show a moderately negative correlation found in most of the eastern and north-eastern regions of India, while a positive correlation found in some northern and southern parts of India. Analysis suggests that Indian Ocean sea surface temperature might be the main driver for the decadal perturbations in precipitation extremes.