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Title: Observed and Projected Climate Extremities in Chennai Metropolitan Area

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Abstract:

Analyses of observed climate throughout world revealed some significant changes in the extremes. Any change in the frequency or severity of extreme climate events would have profound impacts on the resilience of nature and society. It is thus very important to analyze extreme events to reliably monitor and detect climate change.

Chennai is the fourth largest metropolis in India and one of the fastest growing economic and Industrial growth centers in South Asia. Population has grown rapidly in the last 20 years due to its major industrialization and tremendous growth. Already Chennai's day and night time Temperature shows an increasing trend. The past incidence of catastrophic flooding was observed in the city due to heavy rains associated with depressions and cyclonic storm lead floods in major rivers. After 2000, the incidents were reported repeatedly.

The effort has made in this study to find the observed climate extremities over the past years and in the future using climate indices. Climate indices listed by Expert Team (ET) on Climate Change Detection and Indices (ETCCDI) by the CLIVAR are considered in this study. The indices were obtained using the software package RClimDex. Kendall's tau based slope estimator has been used to find the significance level.

For observed changes, high resolution IMD gridded data set, and station data are used. Future climate scenarios are developed through Dynamic downscaling using PRECIS. The boundary data have provided by the UK Met office. The selected members are simulated under the A1B scenario (a mid range emission scenario) for a continuous run till 2100. The results shows the significant increasing tendency of warm days (TX90P) in the past and in future. The trends in extreme wet days (R99P) are also increased.

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