Interannual variability of Extreme Rain Events in TRMM Precipitation Measurements

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In the recent years, the scenario is that Extreme Rain Events contribute significantly to Seasonal rainfall of India during the southwest monsoon season (June to September). An attempt has been made to construct interannual variability in Extreme Rain Events of monsoon season for the domain (4N–38N:67E–99E), which includes both Indian land and oceanic regions, based on TRMM 3B42 data available every 3 hourly at 0.25^{O}X0.25^{O} resolution for ten years period from 1999 to 2008. Seasonal Mean Rainfall for the domain considered lies in the range of 793.5 cm–1070.3 cm for the study period based on TRMM data, with maximum corresponding to the normal monsoon year 2007 and minimum occurring in the severe drought year 2002.

Considering the spatial inhomogeneity in Rainfall distribution over Indian land and oceans, criteria have been devised to extract Extreme and Moderate Rain Events at each TRMM grid based on the corresponding seasonal rainfall, number of rainy days and number of rainy hours. During the period, maximum of average seasonal rainfall per rainy day and similarly, maximum of average seasonal rainfall per rainy hour lie in the ranges 36.2-59.3 mm and 18.0-26.2 mm in the domain. Extreme Rain Events (ERE) defined here at each grid cross the corresponding thresholds of average seasonal rainfall per rainy day and the Moderate Rain Events (MRE) are bound between average seasonal rainfall per rainy day and the average seasonal rainfall per rainy hour. Maximum number of EREs and MREs in the domain turn out to be in the ranges 55-100 and 127-177 during the ten years period.; however the average number of respective events per grid are in ranges 16-20 and 22-30. It is striking to note that contribution from EREs to seasonal rainfall is ~67-76%, while MREs

contribute only ~25-28% to seasonal rainfall. Homogeneous regions in rain contribution from both EREs and MREs have been identified.

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