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Evaluation of extreme precipitation derived from long-term global satellite Quantitative Precipitation Estimates (QPEs)

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This study evaluates the ability of different satellite-based precipitation products to capture daily precipitation extremes over the entire globe. The satellite products considered are datasets belonging or in transition to the Reference Environmental Data Records (REDRs) program. Those products include PERSIANN-CDR, GPCP, CMORPH, and AMSU-A,B, Hydrologic bundle. PERSIANN-CDR is a 30-year record of daily-adjusted global precipitation. GPCP is an approximately 30-year record of monthly and pentad adjusted global precipitation and 17-year record of daily-adjusted global precipitation. CMORPH is a 17-year record of daily and sub-daily adjusted global precipitation. AMSU-A,B, Hydro-bundle is an 11-year record of a bundle of perceptible water, cloud water, and ice water among others. Other satellite QPE products such those from the PMM/GPM suite of products (TMPA, TMPA-RT, IMERG) are also included in the analysis. The evaluation of the satellite products will be performed against in-situ from the Global Precipitation Climatology Centre (GPCC) gridded full data daily product (conditional analysis, false alarm rate, probability of detection, threat score). The analysis will focus on seasonal patterns and trends and precipitation extremes in relation with cyclonic activity around the globe.