

# Sensitivities of daily accumulated satellite rainfall estimates to the GPM PMW satellite constellation configurations

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**Abstract:** In this study, the impact of the Global Precipitation Measurement (GPM) passive microwave (PMW) satellite constellation (i.e., imagers and sounders) configurations on the accumulated rainfall yields at one degree-daily (1DD) is explored over the tropics. This is achieved considering the latest version of Megha-Tropiques Tropical Amount of Precipitation with an Estimate of ERRors (MT-TAPEER) framework, which is adapted to make use of the full constellation of satellites, through the GPM-L2 V05 rain rate database, from the GPROF (Goddard Profiling algorithm) and PRPS (Precipitation Retrieval and Profiling Scheme) PMW rainfall retrieval algorithms. Given that flexibility of MT-TAPEER approach, which allows to choose the constellation for calculating, independently, the daily rain fraction (i.e., detection) and the conditional rain rate (i.e., intensity) to compute the accumulated precipitation, a suite of data-denial experiments considering multiple combinations of platforms with distinct framework configurations (i.e. the intensity and detection thresholds), are exploited through a sensitivity analysis. The experiment performances are also contrasted with other satellite-only precipitation products.