

Public Abstract  
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Infrared and Passive Microwave Satellite Rainfall Estimate over Tropics  
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Precipitation is an important but highly variable atmospheric parameter. Existing rain gauge networks cannot provide the temporal and spatial coverage that is needed to monitor it sufficiently. Weather radars are directly sensitive to precipitation elements, and hence are valuable tools in precipitation observation. However, their application for accurate precipitation estimation with good spatial coverage is hampered by the existing gaps in radar networks, and by technical problems. Satellite measurements have the advantage of providing spatially homogenous observations over large areas.

The study was conducted to evaluate the performance of the infrared and passive microwave its calibration (MWL) compared to rain gauge values over the tropical region.

The results indicated that generally the MWL performed better than that of only infrared estimate (LUT). The correlation coefficients of the MWL varied from 0.70 to 0.74 as compared to rain gauge values. The gradient of the MWL regression line to the rain gauges is 0.86 that of LUT is 0.47.

Despite the improvements, there are many difficulties and challenges in satellite rainfall estimation. The nature of rainfall, the temporal and spatial resolutions of satellite observations, the time lag between satellite and ground observations are some factors that have a significant impact on the result of the study.