

Validation of Satellite Derived Cloud Parameters with Those of Ground Based C-band Radar Data and Rainfall Data

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Two MODIS (Moderate Resolution Imaging Spectroradiometer) instruments were launched by NASA – the first one on 18 Dec 1999 on board the Terra Platform and the second one on 4 May 2002 on board the Aqua Platform. These are uniquely designed with wide spectral range and high spatial resolution covering the entire globe. The MODIS cloud product combines infrared and visible techniques to determine both physical and radiative cloud properties. Data such as Cloud particle phase, effective cloud-particle radius and cloud optical thickness are derived using the MODIS visible and near- infrared channel radiances with 1 km pixel resolution.

The key radiative properties of clouds such as cloud phase, optical thickness, Liquid Water Content (LWC) and cloud Top Temperatures retrieved daily during the two passes of the satellite at 10.30 and 13.30 hours IST and these parameters validated with those of C- band Radar data. The validated LWC data correlated with the rainfall data obtained from TRMM as well as with raingauge data. INSAT KALPANA satellite data is also utilized for the required intervening period. Along with the radar data, local Radiosonde information of IMD Hyderabad is used in validating the cloud parameters. The rainfall occurred especially from the seeded clouds is validated with the 3-hourly TRMM precipitation radar data. The results have been encouraging to obtain correlation between MODIS LWC, C-band radar data and rainfall .