

# Diurnal and spatial variation of remotely sensed precipitation over Indian region

Rajan, D., G. R. Iyengar, and A. K. Mitra  
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**Abstract:** The climate of India is dominated by monsoon systems. The remotely sensed estimates obtained from the Tropical Rainfall Measuring Mission (TRMM) are used to examine the most of the Indian monsoon systems. This study deals with the diurnal and spatial variation of precipitation over the Indian region. The precipitation data from TRMM Multi-satellite Precipitation Analysis (TMPA), blended from a variety of sources (including rain gauges over land) and having both daily and 3- hourly output are being used for evaluation of the Numerical Weather Prediction models Basu (2007) of National Centre for Medium Range Weather Forecasting. The precipitation obtained from TRMM 3B42 for this study period has a spatial resolution of  $0.25^{\circ} \times 0.25^{\circ}$  latitude-longitude. The 3-hourly averaged values are centered at the middle of each 3 hr period. South Asian regions are dominated by seasonal climatic fluctuations and the major rainy season is the southwest monsoon season. In addition to the seasonal fluctuations, Indian summer monsoon is modulated by diurnal fluctuations; nature of diurnal variations of rainfall varies from place to place and depends upon the locations, topography of the region. Diurnal variations of rain-rate, frequency of rain, conditional rain rate, and maximum rain occurrence is studied. Over Indian tropical region, maximum rainfall over land and Bay of Bengal regions is observed during the late-afternoon and early-morning period, respectively. Drizzle or less rainfall occur frequently in the morning over most land areas, whereas convective activity occurs during the afternoon. The model predicted diurnal cycle of precipitation peaks too early (by  $\sim 3$ h) and the amplitude is too strong over Indian land region and tropical ocean region. © (2016) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.

**Keywords:** Physical oceanography; Satellites; Weather forecasting