

## **Comparison of diurnal variation in precipitation between pre-monsoon and monsoon seasons in Assam, India**

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We investigated diurnal variation of precipitation in Assam, India. Tipping bucket rain gauge data which observed at 15 locations in Assam from March 2012 to February 2019 were used to analyze the diurnal variation. GSMaP (Global Satellite Mapping of Precipitation) dataset and JRA55 were utilized to analyze storm distributions and environmental conditions, respectively. Nocturnal rainfall (21-09LT) was dominant in both pre-monsoon (March, April and May) and monsoon period. The peak of the diurnal variation occurred few hours earlier in the pre-monsoon season than in the monsoon season over the plain area in the Brahmaputra valley. We found 10 similar cases within total 19 precipitation cases during pre-monsoon season in 2017 in that the storms tended to initiate in the western side of Assam, and propagate eastward in the pre-monsoon season. In the monsoon season, precipitation systems basically initiated in the daytime over the mountainous area, and shifted to the plain area, and covered the Brahmaputra valley during the night time. We detected the 25 similar cases within total 47 precipitation cases in the monsoon season in 2017. The diurnal mountain-valley wind systems is considered as the cause of the diurnal variation in the precipitation. The dominance of westerly wind in the middle and upper troposphere may contribute the eastward propagation of the precipitation systems in the pre-monsoon season.