Characteristics of heavy orographic precipitation at Cherrapunji, northeast India

*村田 文絵[1]、寺尾 徹[2]、林 泰一[3]、Syiemlieh Hiambok, J. [4]、Chakravarty Kaustav[5]
*Fumie Murata[1], Toru Terao[2], Taiichi Hayashi[3], Hiambok Jones Syiemlieh[4], Kaustav Chakravarty[5]

1. 高知大学理工学部、2. 香川大学教育学部、3. 京都大学東南アジア地域研究研究所、4. North Eastern Hill University、5. Indian Institute for Tropical Meteorology
1. Faculty of Science and Technology, Kochi University, 2. Faculty of Education, Kagawa University, 3. Center for Southeast Asian Studies, Kyoto University, 4. North Eastern Hill University, 5. Indian Institute for Tropical Meteorology

Heavy precipitation over complex terrain has uncertainties in the physical processes. Cherrapunji is known as the highest rainfall place, and is located in the southern slope of the Meghalaya Plateau, northeast India. The rainfall has active spells continues during several days to two weeks in the monsoon season. The satellite based OLR has difficulty to detect the active spells. Comparison with TRMM/PR near surface rain (NSR) showed significant and large underestimations over the stations over the southern slope of the Meghalaya Plateau and adjacent area during monsoon season (June-September). Underestimation was not detected in premonsoon season (March-May). Major contribution to underestimation came from moderate TRMM/PR NSR from stratiform systems, and missed detection. The contribution of moderate rainfall to total precipitation amount was large during monsoon season. Observation of rain drop-size distribution at Cherrapunji showed that median volume diameter tend to have smaller size in monsoon season than that in premonsoon season. These results implies the dominance of weak to moderate rainfall from lower clouds and the influence of smaller rain drops.

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