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Evaluating the diurnal variability of NCMRWF model precipitation

In meteorology and climatology the spatial and temporal variability of precipitation is important. Atmospheric model-based precipitation presents an alternative to in situ-based datasets. At NCMRWF Unified Model (NCUM) is being used for generating weather forecasts routinely. The NCUM system is upgraded periodically to adapt new scientific developments for improving the numerical weather predictions. Uniqueness of the unified model is its seamless modeling approach. It is important that none of the years since 1901 experienced excess/deficit rainfall during all the four months except 1972. Monsoon rainfall alternates between phases with copious rainfall and quiescent phases. The monsoon 2019 began with a massive deficit, but July and August have experiences wettest India since in the past 25 years. Indian summer monsoon is modulated by diurnal fluctuations. Diurnal variation of rain-rate, frequency of rain, and maximum rain occurrence is presented here. Over tropical region maximum rainfall over land and Bay of Bengal regions is seen during the late-afternoon and early-morning period, respectively.

The predicted diurnal cycle of precipitation peaks too early and the amplitude is too strong over Indian land region and tropical ocean region. The hour of max precipitation computed from model forecasts amounts indicates the early release of convective instability. The frequency of model precipitation in the model forecasts increases from west to east as seen in the observations. The characteristics features of composite of wet/dry conditions occurred during monsoon 2015~2019 are studied.

Biography:

Dr. D Rajan, is a Scientist 'F', his Present Affiliation: NCMRWF, Ministry of Earth Sciences, Noida. Professional Training: Meteorologist- II, Pune 1990 Batch No: 8, He completed his Post-Graduation: M.Sc. (Applied Sciences) 1986, Madurai Kamaraj University, Madurai, Tamil Nadu Doctoral Degree: Ph.D. (Atmospheric Science- Monsoon Studies) 2001 University of Delhi, Delhi. He is also a Post-Doctoral Fellow: PDF JSPS (Monsoon Diagnostics Studies) 2005 University of Tokyo, Tokyo, Japan. Senior Post Doctoral Fellow: JSPS Invitation Fellowship 2011, University of Tokyo, Tokyo, Japan. He received IMD Biennial Mausam Award during 2017. His Publication in peer reviewed journals national/international: 30 (approx.)