



Diurnal cycle of convective activity over ocean in the Tropics

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In this study, the influence of land mass on the diurnal cycle of convective activity is analyzed. 17-year observation of Tropical Rainfall Measuring Mission (TRMM) 2A25 V7 (1998-2014) Estimated Surface Rain (ESR) is used as a precipitation data. We rasterized the ESR data into 0.1x0.1 degree mesh for each local solar time (LST) of observation. U. S. Geological Survey Global Land Cover Characterization (USGS GLCC) Version 2 data is used for determining the shoreline. As the many studies indicated, the precipitation peak time is about 3 LST over the Tropical ocean near the coastline, and about 15 LST over the Tropical land. Although the total precipitation amount strongly depends on the distance from the shoreline, The phase of the diurnal cycle over the ocean is not dependent on the distance from the nearest shoreline. We also performed a series of ideal experiments with a quasi-three dimensional domain using non-hydrostatic atmospheric model to elucidate the detailed feature of the relationship between land-sea contrast and local convection systems.