Analysis of Intra-seasonal, Tropical Variability in TRMM Precipitation and Outgoing Longwave Radiation Data

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Abstract

Data from the Tropical Rainfall Measuring Mission (TRMM) Microwave Imager and Precipitation Radar are used to study the wavenumber-frequency characteristics of the precipitation and outgoing longwave radiation (OLR) signals in the tropics. At the lowest resolvable frequencies, interannual, annual and semi-annual variability is readily apparent. Not surprisingly, the characteristics of the higher-frequency intra-seasonal waves are strongly affected by the El Nino event that ended in 1998. On intra-seasonal timescales, both eastward and westward moving waves can be detected in both the precipitation and OLR data. The effects of sampling and aliasing on the results are discussed, and the relationship between the wavenumber-frequency spectra of the precipitation and OLR data is described.