Abstract Details

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Title: Intraseasonal Variability of the South China Sea Summer Monsoon

Abstract:

The dominant modes of intraseasonal variability that control the beh the South China Sea summer monsoon (SCSSM) are investigated bas the NCEP/NCAR reanalysis data. The objective is to explore the struct propagation of these modes and interannual variability in the intrasea oscillations (ISO). Moreover, one possible mechanism responsible for origin of the 10-20-day oscillation of the SCSSM is proposed. The 30- (hereafter the 3/6 mode) and 10-20-day (the 1/2 mode) oscillations found to be the two intraseasonal modes that determine the active ar inactive periods of the SCSSM for most of years. Although both the 3/ and 1/2 modes are distinct, they may not always exist simultaneousl one summer. Thus, the interannual variability in the significance of IS activities exhibits three categories. In years of the 3/6 category, the mode is more significant than the 1/2 mode, while in years of the 1/2 category the 1/2 mode is dominant. In the dual category summers, b 3/6 mode and 1/2 modes are pronounced. Composite analyses based 3/6 category cases indicate that the 30-60-day oscillation of the SCS exhibits a trough-ridge seesaw in which the monsoon trough and sub ridge exist alternatively over the SCS, with anomalous cyclones (anticyclones), along with enhanced (suppressed) convection, migrati northward from the equator to the midlatitudes. The northward-migra 3/6 mode monsoon trough/ridge in the lower troposphere is coupled eastward-propagating 3/6 mode divergence/convergence in upper troposphere. It is confirmed that for the dual category, the SCSSM ac are controlled by the 3/6 mode and further modified by the 1/2 mode Composite results for the 1/2 category cases show that the 10-20-da oscillation manifests an anticyclone/cyclone system with a largely zon orientation propagating westward into the SCS. The closely coupling between the upper-level convergence (divergence) and low-level anti (cyclone). It is found that the 1/2 mode of the SCSSM mainly originat the equatorial central Pacific. Note also that the disturbance from the northeast of the SCS seems to contribute to the 1/2 mode. The evolu the cyclone that causes the 1/2 mode to be active are closely related response of tropical atmosphere to convective forcing, which suggest Gill-type response may be one of the mechanisms responsible for the formation and propagation of the 1/2 mode. Such a mechanism is fur demonstrated using a case of 1982.