



Interannual Variations in the Synoptic-Scale Disturbances over the western North Pacific

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The present study investigates the interannual variation of synoptic disturbance activities over the western North Pacific (WNP) and its relationship with the large-scale circulation and tropical SST during June-November for the period 1958-2014. It is shown that the interannual variability of 850-hPa eddy kinetic energy (EKE) anomalies over the WNP could be well described by its two leading modes of EOF, i.e. northeast pattern and southwest pattern. The high value zone of former is located over the WNP, while latter around the Philippines, which just overlap a broad area of the WNP. Background flows play an important role in the formation of these two patterns, it could induce the cyclonic (anticyclonic) anomalies over the variation centers which favors (disfavors) synoptic eddies to get kinetic energy from the mean flows through barotropic energy conversion. The SST anomalies of the equatorial central and eastern Pacific also contribute to these two patterns. When the SST of equatorial central and eastern Pacific above (below) the normal, a cyclonic (anticyclonic) anomaly appears in the Philippine Sea while an anticyclonic (cyclonic) anomaly happens in the South China Sea, which will induce positive (negative) EKE anomalies over the WNP but negative (positive) anomalies over the South China Sea and the Philippines.