



Modulation of Subseasonal Tropical Cyclone Genesis In The Western North Pacific By Wave Activities

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Tropical cyclone (TC) activity is well known to possess variability on multiple timescales, ranging from inter-decadal to intraseasonal. In this study, the subseasonal variability of TC genesis in the western North Pacific (WNP) is examined during summer (May-October) for the period of 1979-2015. In particular, clustering of TC activity within subseasonal timescale is the focus. First, three phases (active, normal and inactive phases) of TC clustering are defined based on the statistics of genesis frequency. Then the modes of subseasonal modulation of these three phases by intraseasonal (30-60-day) oscillation (ISO), biweekly (10-20-day) oscillation (BWO), and the convectively coupled equatorial waves (CCEW), including Rossby, Kelvin, and mixed Rossby-gravity and tropical depression-type waves are considered. It is found that the embedding large-scale circulation is significantly different between the inactive phase and the other phases. Further, the intensities and propagation phases of the ISO, BWO and CCEW play different roles to modulate TC genesis frequency during the active and normal phase. Considering the lag correlation of these subseasonal modulation modes and TC genesis, it is possible to construct a statistical model for the purpose of extended-range forecasting of subseasonal variability of TC occurrence over the WNP.