On the Relationship between Typhoon Intensity and Formation Region: Effect of ENSO

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This study investigates the influence of the developing and decaying El Niño-Southern Oscillation (ENSO) on the relationship between typhoon intensity and its formation. From the long-term data of 49 years (1960~2008), we define two types of the developing ENSO and the decaying ENSO, respectively: the former is divided into an eastern-Pacific type and a central-Pacific type, the latter is divided into the Type Ⅰ (case of the decaying El Niño that turnovers to La Niña) and the Type Ⅱ (case of the recovering years to the neutral condition). During the developing ENSO years, the typhoon intensity has a strong relationship with formation region of the tropical cyclone, which results in an increase of the accumulated cyclone energy and intensity of the energy of typhoon. The genesis potential function and the low-level cyclonic vorticity have an important role on the formation of strong tropical cyclones, which eventually develop as a typhoon class. In this study, the dynamic potential (DP) function and EOF1 and EOF2 time series (RMM1 & RMM2) of real-time multivariate Madden-Julian oscillation (MJO) are used to measure the genesis potential and the low-level cyclonic vorticity, respectively. The changes of DP and MJO caused by the ENSO cycle effect on the relationship between typhoon intensity and its formation.

Key words: *Typhoon, intensity, formation, ENSO, accumulated cyclone energy, energy of typhoon, dynamic potential, Madden-Julian oscillation*