

Relationship between the South China Sea summer monsoon onset and tropical cyclone genesis over the western North Pacific in May

*Jingliang Huang¹, Wen Chen¹, Ronghui Huang¹

1. Institute of Atmospheric Physics, Chinese Academy of Sciences

This study investigated the relationship between the onset date of the South China Sea summer monsoon (SCSSM) and tropical cyclone (TC) genesis over the western North Pacific (WNP) in May. The interannual number of TC genesis over the WNP in May is significantly negatively correlated with the onset date of the SCSSM for the epoch of 1979–2015. In the early (late) onset SCSSM years, more (less) TCs tend to be generated. The monsoon trough would enter the WNP earlier in the early SCSSM years and its easternmost location would extend to the east of 140°E. This process would enhance the barotropic eddy energy conversions, which would supply more energy for TC genesis over the WNP. A predicted early (late) onset of the SCSSM might correlate with more WNP TC genesis in May.

In addition, there were cases in which TCs were generated before the onset of the SCSSM, accounting for 43.2% of the TCs generated during late April and May. This study examined a representative case, super typhoon Chanchu (0601), providing an example in which a TC triggered the onset of the SCSSM. The correlation between the onset of the SCSSM and the WNP TCs highlights not only the influence of the monsoon trough on TC genesis but also the impact of TC on the onset of the SCSSM.

Keywords: South China Sea summer monsoon, Tropical cyclone genesis, Western North Pacific

