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Speaker: Po-Yu Chen

Advisor: Prof. Ming-Cheng Yen

Inactive Period of Western North Pacific Tropical Cyclone Activity in 1998–2011

Abstract

Tropical cyclone (TC) activity, measured as the annual number of tropical storms, over the western North Pacific (WNP) has shown a significant interdecadal variation during the last five decades, with two active periods (1960–74 and 1989–97) and two inactive periods (1975–88 and 1998–2011). This study mainly focuses on the recent inactive period, namely, B2. The change in the spatial distribution of TC genesis location is examined first. The author found that the TC formation number shows a linear downward trend in the main development region (130°E-150°E, 10°N-20°N) and shows an interdecadal variation in the southeastern part of WNP, with the recent inactive period covering most parts of period B2. Thus, the decrease in TC genesis frequency in these two regions partly contributes to the low TC activity in period B2.

Other studies have argued that ENSO plays an important role in the TC formation number in the southeastern WNP. This study further states that PDO also plays a role in it.

Furthermore, to investigate how the atmospheric conditions impact the annual TC number in WNP, this study defines two indices to quantify the strength of the vertical wind shear (VWS) and subtropical high, respectively. It shows that both the VWS and the subtropical high are stronger than normal in period B2. And it is worth noting that the regional impact on TC genesis between the VWS and subtropical high is different. Thus, the combined effect of the VWS and the subtropical high may explain the variations of TC genesis in most parts of the WNP.

Keyword

El Niño-Southern Oscillation (ENSO, 聖嬰-南方振盪現象)

Pacific Decadal Oscillation (PDO, 太平洋年代際振盪 (太平洋十年振盪))

Reference

Liu, K. S., and J. C. L. Chan. (2013). Inactive Period of Western North Pacific Tropical Cyclone Activity in 1998–2011. *J. Climate*, **26**, 2614–2630, <https://doi.org/10.1175/JCLI-D-12-00053.1>.