Prediction and attribution of quiescent tropical cyclone activity in the western North Pacific in the early summer of 2016

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This study investigated the inactive tropical cyclone (TC) condition in the western North Pacific (WNP) during the early summer (May–July) of 2016. We conducted and analyzed seasonal predictions and sensitivity experiments with an atmosphere–ocean coupled prediction system (JMA/MRI-CPS2). The system used in this study successfully predicted the inactive TC condition during the period. We also conducted sensitivity experiment simulations, in which the warmer-than-normal sea surface temperature (SST) in the Indian Ocean (IO) was restored to the climatology. This sensitivity experiment results in a weakened lower-tropospheric anticyclonic anomaly and near-normal TC activity over the WNP. These results indicate that the inactive TC condtion can be attributable to the warm IO SST anomalies induced by the preceding 2015/2016 El Niño. Verification and analysis of reforecasts show that the TC count in early summer is more predictable than other seasons due to a strong influence of IO warming induced by preceding El Niño events, indicating the high seasonal predictability of the TC activity in the early summer.

Keywords: tropical cyclone, seasonal prediction, western North Pacific, indian Ocean