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Abnormal Activities of Tropical Cyclones in 2019 Over the Korean Peninsula

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Approximately, 25.6 tropical cyclones (TCs) occur in the western North Pacific (WNP) each year, of which 3.4 TCs affect the Korean Peninsula (KP). In 2019, a record of seven TCs affected the KP. We investigated and elucidated the favorable conditions influencing the TCs approaching the KP using the Weather Research and Forecasting model version 4.0 (WRFv4). The cold Maritime Continent-warm WNP sea surface temperature (SST) was found to be a major factor. The effect of the SST gradient was examined for one representative case using WRFv4 with varying SST anomalies. This study suggests that the SST gradient-induced change in the circulation over the Maritime Continent is a main factor causing the TCs to approach the KP.