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Plain Language Summary: To identify the unusual characteristics such as frequent landfall and extratropical transition in August 2016, this study examines typhoons in August and September by conducting *k*-means cluster, cyclone phase space and composite analyses and case study. We also compare the results of the analyses for this period with those in August from 2001 to 2015 and those in September 2016. As a result, the synoptic environments around the typhoons explain the unusual track and the frequent extratropical transition in August 2016.

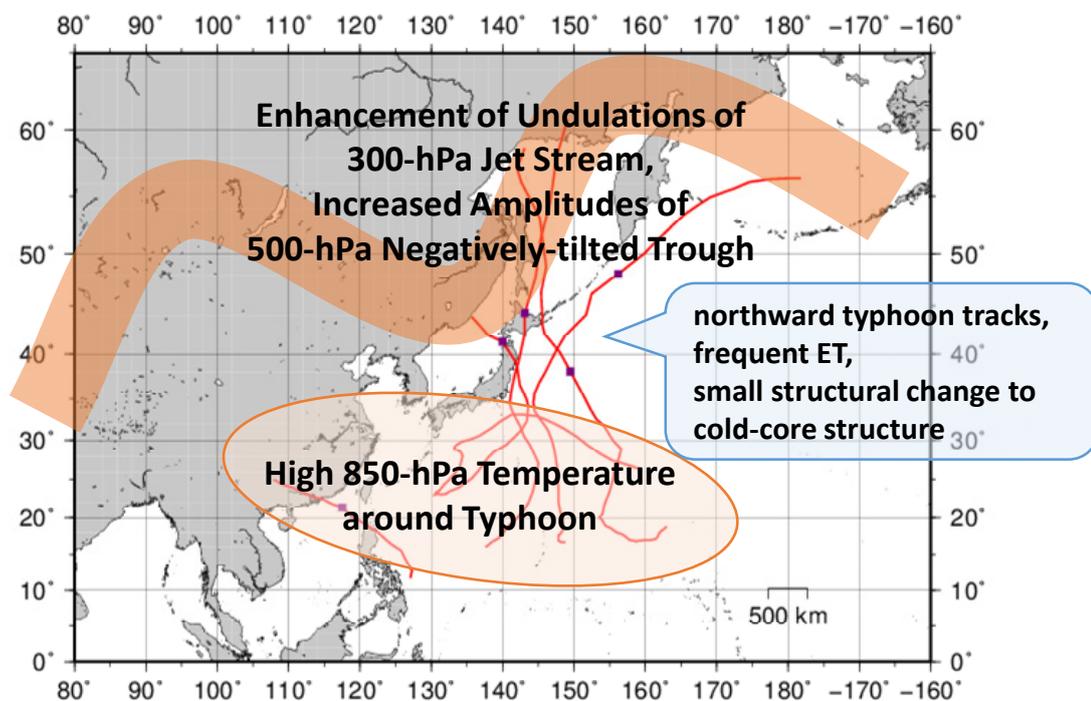


Figure. 1. Diagram of the characteristics of typhoon tracks and synoptic environments in August 2016. The red lines and purple squares indicate the typhoon tracks and the position of typhoon at completion of extratropical transition (ET), respectively. In August 2016, there were enhanced undulations of the upper-tropospheric (300 hPa) jet stream and increased amplitudes of the mid-tropospheric (500 hPa) negatively tilted trough. Moreover, the relatively warm air existed around the typhoon in the lower troposphere (850 hPa). These synoptic environments resulted in the northward typhoon tracks, frequent ET, and indistinct structural change to the cold-core structure.

- The direction of the typhoon tracks in August 2016 is northward.
- Extratropical transition in August 2016 is characterized by an indistinct structural change from a warm-core structure to a cold-core structure.
- The synoptic environments around the typhoons in August 2016 are characterized by enhanced undulations of the upper-tropospheric jet stream, increased amplitudes of the mid-tropospheric trough, and relatively warm air around the typhoons in the lower troposphere.