

Yamaguchi, M., and S. Maeda, 2020: Increase in the number of tropical cyclones approaching Tokyo since 1980. *J. Meteor. Soc. Japan*, **98**, 775-786. <https://doi.org/10.2151/jmsj.2020-039>

Plain Language Summary: This study investigated whether tropical cyclones (TCs) approaching Tokyo have changed in terms of number and environmental conditions using observational and reanalysis data during the geostationary satellite era (1980-2019). The number of TCs approaching the southern coast of Japan, including Tokyo, has increased over the last 40 years. The environmental conditions for TC development have become more favorable, with warmer sea surface temperature, less vertical wind shear, and more moisture in the atmosphere. In addition, the translation speed of TCs has decreased, which indicates a longer influence time.

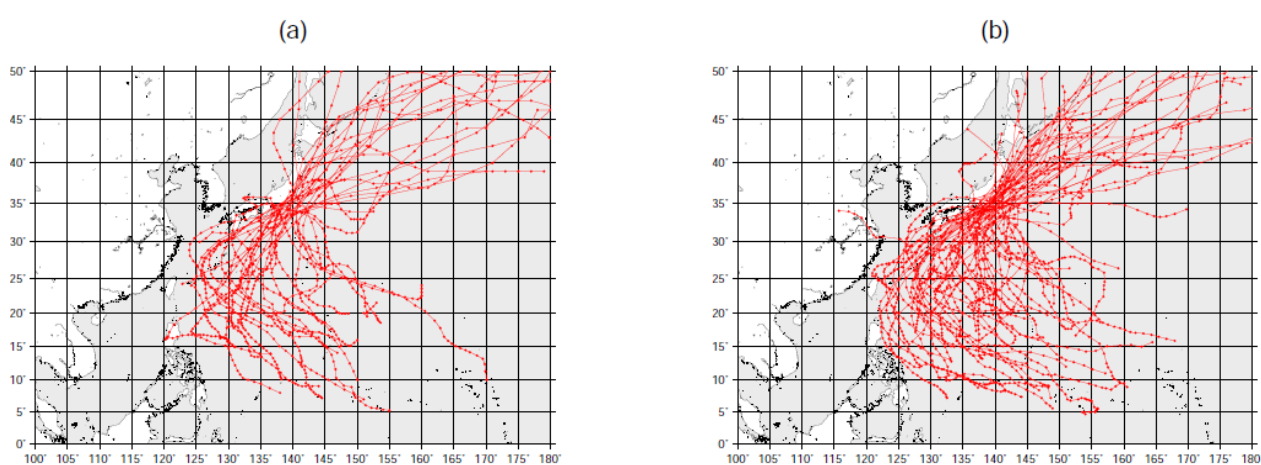


Figure. 1. All tracks of TCs that approached Tokyo in 1980-1999 (a) and in 2000-2019 (b). Dots are TC positions plotted every 6 hours.

- Comparison of the synoptic environment during July–October between the first (1980–1999, P1) and second (2000–2019, P2) 20 years shows that the sub-tropical high is strengthened in P2.
- Also, the westerly jet is weakened in P2 over and south of Japan in the middle-to-upper troposphere.
- Decadal oscillations may have played some role in the increase in the number of approaching TCs and in the changes in the synoptic environment.