

Murata, A., S. I. Watanabe, H. Sasaki, H. Kawase, and M. Nosaka, 2019: The development of a resolution-independent tropical cyclone detection scheme for high-resolution climate model simulations. *J. Meteor. Soc. Japan*, **97**, 519-531.

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Plain Language Summary: A new method for detecting tropical cyclones in high-resolution climate model simulations is proposed. The proposed method utilizes a two-dimensional scatterplot based on two quantities that represent the radial gradient and the tangential asymmetry of mid-to upper-level thickness around a simulated vortex. A comparison between the modeled and observed tropical cyclones over a part of the western North Pacific near Japan shows promising results. The detection method is only weakly dependent on the horizontal resolution.

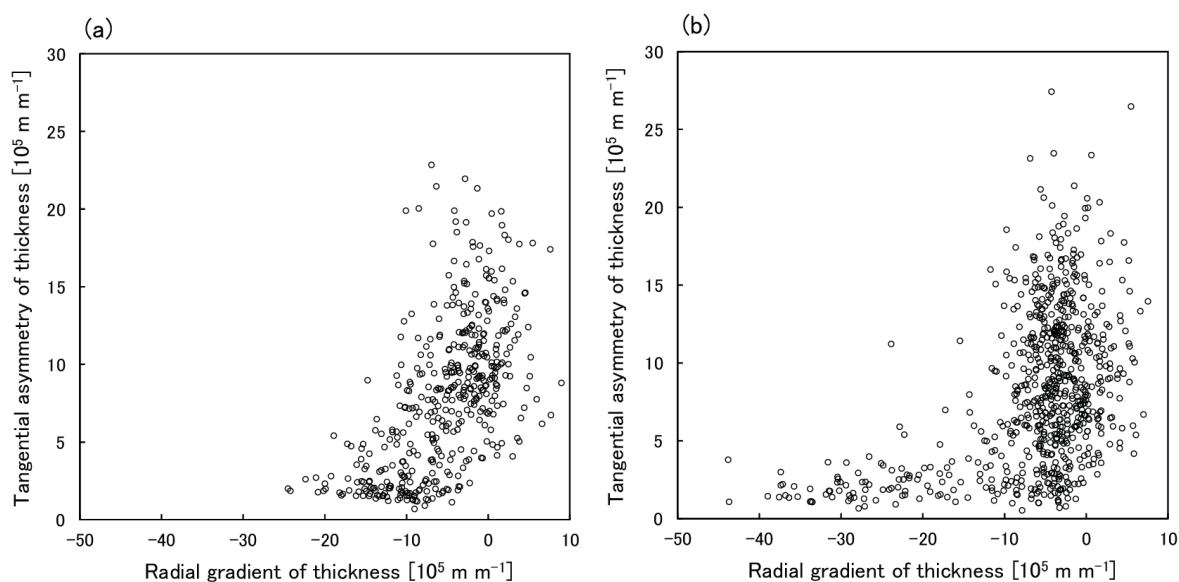


Figure 1. The radial gradient, between the center and the 300 km radius, of the thickness between 500 and 300 hPa versus the tangential asymmetry of the thickness at the 300 km radius. (a) The 20-km grid dataset forced by the AGCM60 and (b) the 5-km grid dataset forced by the AGCM20.

- A new method for detecting tropical cyclones in high-resolution climate model simulations is proposed.
- A comparison between the modeled and observed tropical cyclones using the non-hydrostatic regional climate model (NHRCM) with 20-km grid spacing under reanalysis-driven boundary conditions for one year revealed that no cyclones are missed and there is only one false alarm over a part of the western North Pacific near Japan.
- A comparison of the results obtained from datasets with 5-km and 20-km grid spacing demonstrated that the proposed method is only weakly dependent on the horizontal resolution.