

Ito, K., C.-C. Wu, K. T. F. Chan, R. Toumi, and C. Davis, 2020: Recent progress in the fundamental understanding of tropical cyclone motion. *J. Meteor. Soc. Japan*, **98**, 5-17.

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Plain Language Summary: Because of its importance of the tropical cyclone (TC) track, extensive studies have been carried out. While the understanding of the motion of TCs is fairly mature, notable advancements are still being made very recently. This paper summarizes new concepts and updates to the existing theories, particularly since 2014, as follows: revisiting the concept of steering flow, barotropic framework, recurvature, influence of topography, role of atmosphere-ocean interaction, large scale features, and dynamics of large forecast errors in TC tracks.

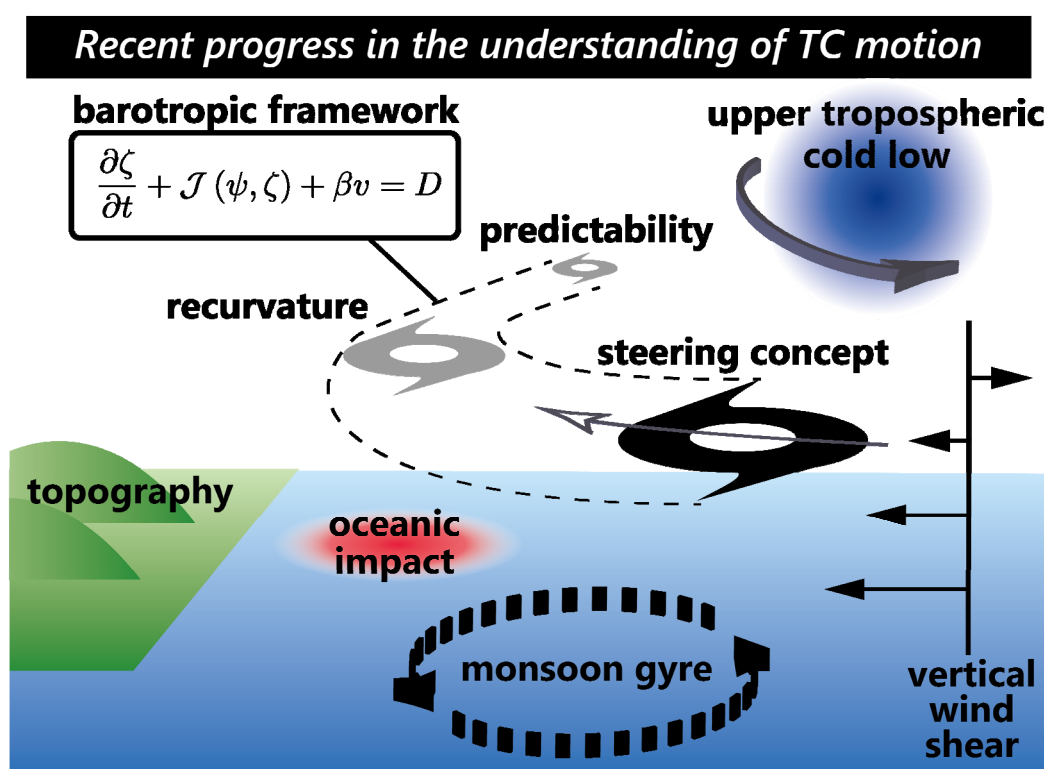


Figure 1. Schematic diagram of relevant topics in this review.

- New concepts and updates to the existing fundamental theories on TC movement obtained from simplified barotropic models, full-physics models, and data analysis are reviewed.
- The content includes the following topics: steering flow, barotropic models, vortex Rossby waves, singular vector analysis, horizontal wind shear, recurvature, potential vorticity tendency equation, terrain-induced gyre, channeling effect, oceanic impact, monsoon gyre, upper tropospheric cold low, subtropical high, saddle point, vertical wind shear, and cumulus convection scheme.
- Although the conventional concepts remain important, the deeper understanding of existing theories and the consideration of the physical processes that were previously thought of as "minor" have become important with the errors in track forecasts decreasing over several decades.