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Plain Language Summary: In this study, the effect of the zonally-elongating monsoon trough (MT) on the binary tropical-cyclones (TCs) interaction is investigated by using data analysis and idealized simulations. The binary-TCs interaction is found to be sensitive to the relative orientation, intensities of the two TCs embedded in the MT, the strength of the MT, and the β-effect.

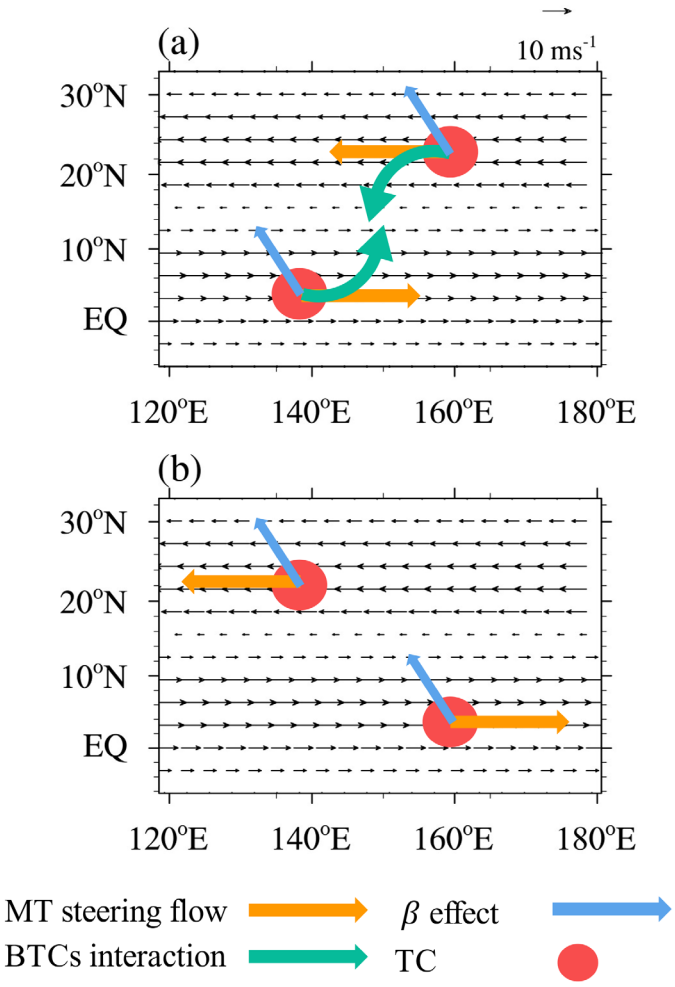

Figure 1. Conceptual model of the influences of monsoon trough on the binary tropical-cyclones interactions in the (a) northeast-southwest and (b) northwest-southeast configuration.

- The partition and reconstruction of wind field in a vortex core area of TC is applied to diagnosis the Fujiwhara interaction.
- The β-induced Rossby wave energy dispersion helps the western TC move northeastward, by which accelerates to reach the critical distance.
- The relative importance of monsoon trough and adjacent TC is assessed by using the decomposition of the steering flows.