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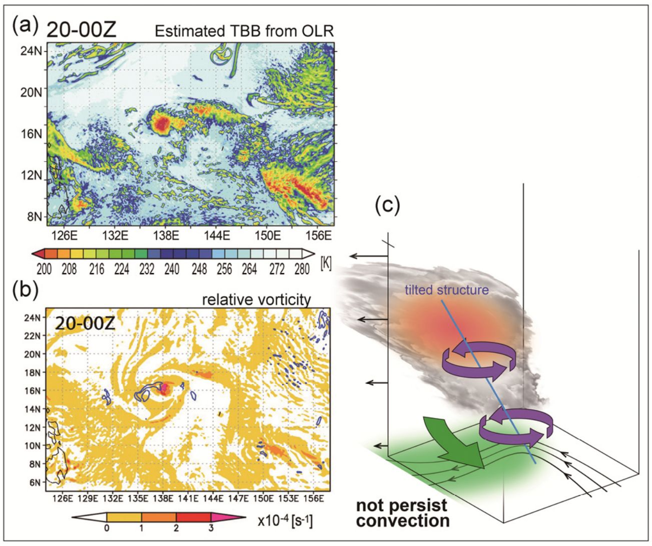
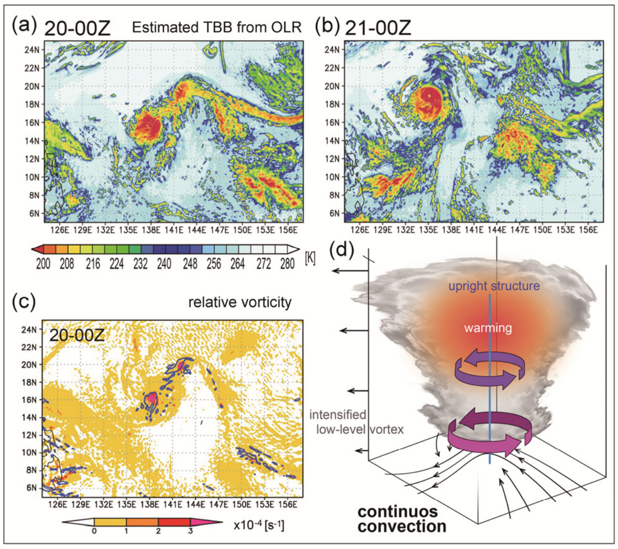


↑ Figure 1. Horizontal distributions of numerical experiment based on reanalysis data for (a) Estimated TBB and (b) vertical vorticity. (c) Schematic illustration of the vortex structure.



↑ Figure 2. Horizontal distributions of numerical experiment based on reanalysis data for (a), (b) Estimated TBB and (c) vertical vorticity. (d) Schematic illustration of the vortex structure. the continuous convection allows persistence of the upright structure of the vortices.

- The environmental conditions for tropical cyclone genesis is examined by numerical experiment. We clarify the importance of abundant moisture around the disturbance for continuous convection and demonstrate that the collocation of a mid-level vortex and a low-level vortex, i.e., the persistence of an upright structure of vortices, is important in tropical cyclone genesis.
- The experiment based on reanalysis data, the disturbance did not develop into a tropical cyclone in spite of the existence of the mid-level and low-level vortices (Fig. 1).
- In the experiment with increased water vapor content, a tropical cyclone was formed from the disturbance. The presence of persistent upright vortices was supported by continuous convection until genesis of tropical cyclone (Fig. 2).