The effect of error sources on the results of one-way nested ocean regional circulation model

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Abstract

This research evaluated the effect of two main sources on the results of the ocean regional circulation model (ORCMs) during downscaling and nesting the results from the coarse data. The two sources should be the domain size, and temporal and spatial resolution different between driving and driven data. The Big-Brother Experiment is applied to examine the impact of them on the results of the ORCMs separately. Within resolution of 3km grid point ORCMs applying in the Big-Brother Experiment framework, it showed that the simulation results of the ORCMs depend on the domain size and specially the spatial and temporal resolution of lateral boundary conditions (LBCs). The domain size can be selected at 9.5 times larger than the interest area, and the spatial resolution between driving data and driven model can be up to 3 of ratio resolution and updating frequency of the LBCs can be up to every 6 hours per day.

Key words: ORCMs, domain size, lateral boundary conditions

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