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Nested-grid Ocean Modeling in South East Asian Waters

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A nested-grid ocean model in South East Asian Waters is developed to examine the details of the local ocean response to mesoscale atmospheric phenomena in the context of the broader, basin-scale circulation. The model is based on a primitive equation. The realistic coastline geometry, bottom topography and climatological surface forcing are incorporated. The model provides the means to forecast littoral circulation and allows for the appropriate coupling of the circulation and wave effects. Assimilation capabilities are integrated into the system to provide means of handling open boundary conditions for coupling with larger scale models, data for initializing the model, and surface forcing of different types.

The variables needed to nest in the model are: potential temperature, salinity, the two total (barotropic + baroclinic) velocity components (normal and tangential), and the two barotropic velocity components. To obtain the higher resolution prediction for small domain, the model is nested from the South East Asian Waters to Malacca Straits, and further down to Singapore Waters, as show in Figure 1.

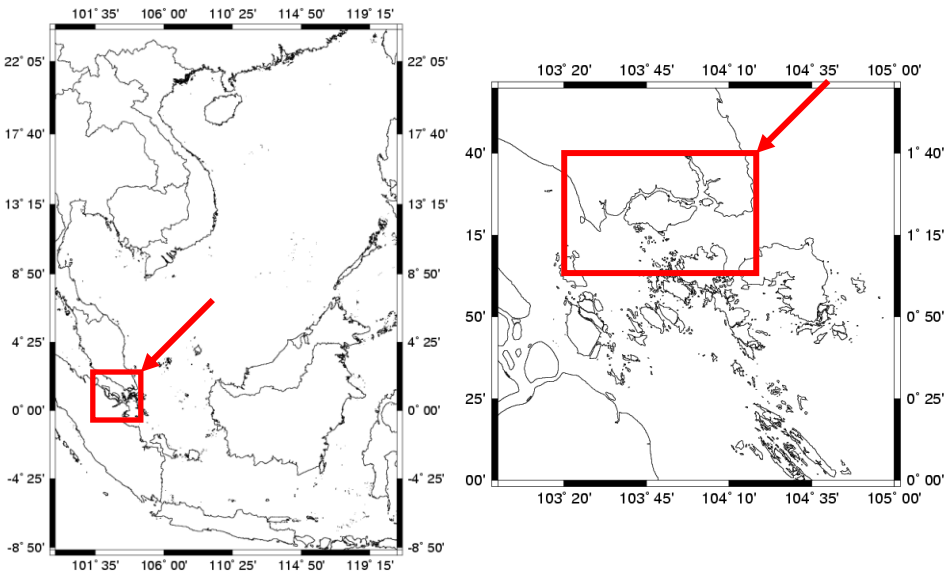

Figure 1: The nested model domains.