A Boundary Fitted Nested Grid Model for Tsunami Computation along Penang Island in Peninsular Malaysia

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Abstract : This paper focuses on the development of a 2-D Boundary Fitted and Nested Grid (BFNG) model to compute the tsunami propagation of Indonesian tsunami 2004 along the coastal region of Penang in Peninsular Malaysia. In the presence of a curvilinear coastline, boundary fitted grids are suitable to represent the model boundaries accurately. On the other hand, when large gradient of velocity within a confined area is expected, the use of a nested grid system is appropriate to improve the numerical accuracy with the least grid numbers. This paper constructs a shallow water nested and orthogonal boundary fitted grid model and presents computational results of the tsunami impact on the Penang coast due to the Indonesian tsunami of 2004. The results of the numerical simulations are compared with available data.

Keywords : boundary fitted nested model, tsunami, Penang Island, 2004 Indonesian Tsunami