A tsunami propagation modeling based on the adaptive mesh refinement

MAEDA, Takahiro[1]* ; AOI, Shin[1] ; IWAKI, Asako[1] ; HAYAKAWA, Toshihiko[2]

[1]NIED, [2]Mitsubishi Space Software Co.,ltd.

For the efficient tsunami modeling, reduction of grid number is effective. It is important to construct the most suitable grid spacing according to the topography of the seabed and to connect the grids appropriately because the grid spacing depends on a propagation speed of tsunamis. A nesting is usually employed as the method to connect the grids and is suitable for the tsunami modeling for specific area. However, it is necessary to calculate several times to cover up a wider area in case of large tsunamis like the 2011 Tohoku tsunami. In this study, we employ the adaptive mesh refinement (AMR) by discretizing a domain spatially using tree-structure grid automatically based on the CFL condition.

Keywords: tsunami, simulation, adaptive mesh refinement, tree-structure grid