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General View of Dispersion in Tsunami Modeling

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There are numerous numerical approaches for assessment of tsunamis from source to target locations. Tsunami generation and propagation are solved by numerical modeling with a reasonable and acceptable error limit. However, tsunami behavior in shallow region and at land may not solved clearly because of (i) breaking, (ii) dispersion because of the increase of water surface elevation and (iii) wave shoaling.
The conventional models in the global-scale tsunami modeling are based on the nonlinear shallow water equations (NSW) that can be derived directly from the Navier-Stokes equations, if one neglects viscous effects that is to say frequency dispersion effects in wave propagation. However, recent studies on tsunami modeling revealed that the frequency dispersion effects in the long distance propagation of tsunami fronts in shallow zone for seismic tsunamis may become significant. Therefore, working on dispersion effects in tsunami modeling may be important and necessary.
The scope of this study is to understand the tsunami wave profile at shallower region by numerical modeling considering the dispersion effect. The tsunami numerical model NAMI DANCE (with open MP module and graphical interface) is modified including dispersion effect in computations. The results are compared with the outcomes of analyzes of other numerical codes.
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