

Mathematical modeling for initial profile of tsunami by instantaneous- or slow-faulting

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Tsunami is one of the most catastrophic disasters in the world. Most of them are generated by the faultings. As the faulting speed is of several thousand meters per second, many tsunamis are generated instantaneously and therefore their initial profiles are assumed to be identical to the profiles of the uplifted sea bottom. This assumption is often adopted in numerical simulation for the sake of simplification. However, in some faulting cases, the speed is comparatively slow which results in the profile discrepancy between sea bottom and surface. To this end, present study aims to mathematically analyze the initial wave profiles generated by either the instantaneous or slow faulting. Results show that the initial profiles greatly differ from the variation of sea bottom for the slow-faulting scenarios.

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