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Simulation of Earthquake-Generated Sea-Surface Deformation CHRIS VOGL, RANDY LEVEQUE, University of Washington — Earthquake-generated tsunamis can carry with them a powerful, destructive force. One of the most well-known, recent examples is the tsunami generated by the Tohoku earthquake, which was responsible for the nuclear disaster in Fukushima. Tsunami simulation and forecasting, a necessary element of emergency procedure planning and execution, is typically done using the shallow-water equations. A typical initial condition is that using the Okada solution for a homogeneous, elastic half-space. This work focuses on simulating earthquake-generated sea-surface deformations that are more true to the physics of the materials involved. In particular, a water layer is added on top of the half-space that models the seabed. Sea-surface deformations are then simulated using the Clawpack hyperbolic PDE package. Results from considering the water layer both as linearly elastic and as nearly incompressible are compared to that of the Okada solution.

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