

Modelling of Tsunamis in the South American Pacific coast

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The modeling of the Chile mega-tsunami of May 22, 1960, and the regional observations of this mega-tsunami at 6 tide gauges along the coast of Chile, are used to explore the possibility to develop a real-time methodology to minimize flooding risk estimations uncertainty from regional tsunamis, based in the analysis of early sea level observations and tsunami modeling. The propagation of tsunamis generated by synthetic earthquakes, as impulse functions, with sources in several areas of the eastern Pacific subduction zones, are computer simulated. This ensemble of synthetic tsunamis define a universe of Green functions. The optimum location and number of real-time seal level observing stations along the coast are determined to minimize the uncertainty in the evaluation of source area size and location. These sea level observations determine in real-time the number and magnitude of impulse functions needed to reproduce the initial conditions. The expected wave heights at each location are so determined in real time from their corresponding Green functions, and are already available for a more confident and less uncertain issue of tsunami warning messages to nearby and remote locations.