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Numerical Simulation of the 29 November 1975 Island of Hawaii Tsunami by the Finite-Element Method

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ABSTRACT

The finite-element method is applied to study the transient response of a locally generated tsunami. The model time-steps the linearized shallow-water wave equation over a variable mesh of triangular and quadrilateral elements. Actual bathymetry is used. Numerical results are obtained for a simulation of the 1975 tsunami which occurred off the southeast coast of the island of Hawaii.

Attention is focused on properly representing the initial tsunami disturbance as well as qualitative and quantitative comparisons of predicted-to-observed wave heights. These comparisons support the viability of the finite-element method for such tsunami applications.

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