HyFlux2: a numerical model for tsunami run-up problems

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The **HyFlux2** model has been developed to simulate severe inundation scenario due to tsunami-wave run-up, dam break and flash flood. The model solves the conservative form of the two-dimensional shallow water equations using a finite volume method, where the interface flux is computed by a Generalized Vector Splitting method based on a Godunov-type approach. A second-order scheme is applied to the water surface level and velocity, assuring high accuracy also in case of complex bathymetry and topography, like bottom steps and break-wave.

The developed model is validated with the 1/400 scale laboratory experiment of the 1993 Okushiri tsunami run-up. It is shown that the **HyFlux2** model can correctly account for the presence of islands and compute the temporal and spatial variations of the shoreline location, as well as the temporal variations of the water-surface level at assigned gages.

The results provided by the model are of great importance for the tsunami risk management.