



## A new map of tsunami hazard for the South Kuril Islands

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### Abstract

The maps of tsunami hazard of the South Kuril Islands coasts (the probable tsunami run-up height for return periods of 50 and 100 years) have been updated in the framework of the statistical approach, the validity of which is caused by the comparatively large amount of historical data on the tsunami manifestations. The probability model of the tsunami regime in the region is clarified due to new data, first of all, on the heights of the dangerous Tohoku tsunami happened on 11.03.2011. The parameters of recurrence function of the tsunami heights in the region are currently determined by 7 main events, 5 of which are related to tsunamis from the close earthquakes (Iturup 06.11.1958, Urup 13.10.1963, Shikotan 11.08.1969, 10.06.1975 and 05.10.1994) and 2 events from the remote sources (Chilean 22.05.1960 and Tohoku 11.03.2011). The numerical simulations of these tsunamis have been performed in order to use estimates of the probable run-up heights in reference points (with a sufficient amount of data) to adjacent parts of the coast. The computations have been carried out on a detailed grid of depths with a spatial resolution in longitude/latitude: for the main massif – 15", and for the nested grids in the Malokuril'skaya, Krabovaya, Yuzhno-Kuril'skaya Bays and Kitoviy Gulf – 2". To set the initial conditions, we used information on the co-seismic deformations in the tsunamigenic earthquake foci, given in literature. Detailed maps of tsunami hazard of scale 1: 100 000 have been constructed for the coast with the nearby settlements of Yuzhno-Kuril'sk, Kuril'sk, Malokuril'skoye, and Krabozavodskoye.

### Keywords

Tsunami, Run-up, Wave height, Earthquake,  
Magnitude, Recurrence, Modeling

### References



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