

Statistical comparison between seismic intensities calculated by the method of national seismic hazard maps for Japan an

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We compared the seismic intensity prediction by the method of national seismic hazard maps for Japan with observed ones for past large earthquakes in order to examine the prediction accuracy statistically. Earthquakes that match the following conditions were selected in this study. 1) occurred between 1926 and 1995, 2) focal depth was shallower than 200 km, 3) magnitude was 7 or larger, or largest observed seismic intensity was 6 or more. We used only the records that observed seismic intensity were 4 or more for comparison. The total number of seismic intensity data was 782 from 70 earthquakes.

We applied the conventional method using empirical relations such as attenuation relation (ground motion equation) to calculate seismic intensities for the past earthquakes. The amplification factor evaluated for the mesh including target observation point was applied to obtain seismic intensity on the ground. As for the fault model of huge subduction earthquake or large earthquake occurred in major active faults, fault plane modeled in the national seismic hazard maps was used here. For other earthquakes, a horizontal circular fault plane with the area corresponding to its magnitude was assumed. The moment magnitude to apply attenuation relation was converted from magnitude by Japan Meteorological Agency (JMA) following the method in national seismic hazard maps for Japan.

About 50% of the calculated seismic intensity matches to the observed seismic intensity scale, and 95% of the calculated seismic intensity is an error within 1 against the observed seismic intensity scale. As a result, it can be said that the prediction accuracy is good. The tendency on which the accuracy fell by growing of the observed seismic intensity can be seen. Moreover, the tendency that calculated seismic intensity is underestimated is also seen for the data that observed seismic intensity was 6 or more.

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