

A discussion on improvement of calculation technique for questionnaire survey of seismic intensities

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We compared the seismic intensity from the average intensity with a 1km mesh obtained in the vicinity of the instrumental seismic intensity observation sites. Only in the case of the 2011 off the Pacific coast of Tohoku Earthquake, questionnaire seismic intensities were about 0.5 larger than the instrumental seismic intensities, however, in the cases of other earthquakes, the questionnaire ones were smaller than the instrumental ones. The differences between the instrumental seismic intensity and the questionnaire one are 0.1 to 0.2 at the sites where the instrumental seismic intensities indicate 6 weak. However, at the sites where the instrumental seismic intensities indicate 5 strong, the differences were more than 0.5. Results of the earthquakes of 2008 and 2003 show that the questionnaire seismic intensity is about 0.3 smaller than the instrumental one in the range of 5 weak to 5 strong. Therefore, we compare the method by Inoue et al.(1999) as another method capable in the larger seismic intensity range with the method by Ohta et al.(1998). Inoue et al.(1999) had pointed out that the questionnaire seismic intensity estimated by Ohta et al.(1998) were low in the middle seismic intensity range near about 4.5. They proposed a method capable in large seismic intensity range using the empirical formula to modify the difference without changing the calculating method of Ohta et al. (1979). When questionnaire seismic intensities were calculated using the empirical equation by Inoue et al.(1999), they showed a better correlation with the instrumental seismic intensity for other earthquakes except the 2011 off the Pacific coast of Tohoku Earthquake.

Keywords: Calculation technique for questionnaire seismic intensities, Instrumental Seismic Intensity, Large seismic intensity range