

## Improvement of real-time estimation of seismic intensity for large earthquakes

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To estimate asperity locations and seismic intensity distribution in real-time, we have developed a new method using an attenuation relation of seismic intensity magnitude and sub-network approach (Yamamoto et al., 2008). Though the method makes it possible to image the most likely areas where asperities are located by plotting estimation residuals of seismic intensity, investigation has not been carried out to evaluate possible values of estimation residuals corresponding to real asperities. In this study, we investigate possible range of estimation residuals by using the real records (Hi-net data, 119 earthquakes, 10145 records) and also improve an algorithm of the method. First, we calculate estimation residuals of Hi-net data by changing number of stations used for the analysis (10-92 stations), and find that the residuals get larger as number of stations is decreased. The varying ranges are 0.436-0.584 with station correction and 0.622-0.855 without station correction. If we assume 15 stations are used for each sub-net analysis, estimation residuals of 0.5-0.7 are possible values for real asperities. Next, in order to obtain higher spatial-resolution, we improve an algorithm which produces the final image of asperities from all sub-net data. In the new algorithm, after regional averaging by nearby sub-net data, the smallest residual is selected as a value for every grid point. We carry out simulations by the new algorithm and find the results with higher resolution can be obtained.