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Detailed seismic attenuation structure in the focal area of the 2008 Iwate-Miyagi Nairiku earthquake (M7.2), NE Japan

Kenta Shikasho[1*], Tomomi Okada[1], Junichi Nakajima[1], Naoki Uchida[1], Erika Hayami[2], Toru Matsuzawa[1], Norihito Umino[1], Akira Hasegawa[1], Group for the aftershock observations of the Iwate-Miyagi Nairiku Earthquake[3]

[1]RCPEV, Grad. Sch. of Sci., Tohoku Univ., [2]Japan Meteorological Agency, [3]GIMNE2008

The Iwate-Miyagi Nairiku earthquake with a magnitude of 7.2 occurred in the southwestern part of Iwate Prefecture and the northwest part of Miyagi Prefecture on June 14, 2008. The earthquake occurred in the zone of concentrated deformation along of the Ou Mountain Range. After the quake, the dense temporary seismic network was deployed by the group for the aftershock observations of the 2008 Iwate-Miyagi Nairiku earthquake. From the aftershock distribution, it seemed westward dipping aftershock alignment, and the earthquake was shallow intraplate earthquake with the high-angle reverse-type focal mechanism (Okada et al., 2010).

In this study, we estimated the detailed seismic attenuation structure by using t$*$ (Eberhart-Phillips and Chadwick, 2002). But, it's difficult to estimate the correct t$*$ because there is the tradeoff between t$*$ and the corner frequency (Scherbaum, 1990). In this study, asShikasho et al. (2010, SSJ) supposed, we assume the range of stress drop of the earthquakes.As the result, the data variance could become decreased.

We used the data obtained by the temporary aftershock seismic network, the routine network (JMA and Hi-net) and the other temporary network (JNES and temporary seismic stations installed for "Intensive Surveys and Studies on the High Strain-Rate Zones" sponsored by MEXT). In this study We used the data obtained by the temporary aftershock seismic network, the routine network (JMA and Hi-net) and the other temporary network (JNES and temporary seismic stations installed for "Intensive Surveys and Studies on the High Strain-Rate Zones" sponsored by MEXT). In this study, we added the data of the hizumi temporary network and estimated the seismic attenuation structure in the western part of the focal area, especially around Mt. Choukai volcano. As a result, we found the high attenuation anomalous area below the Chokai volcano. It seems that this anomalous area is separately distributed from the high attenuation area below the focal area. The distribution of high attenuation area seem to similar with the low seismic velocity area (e.g. Okada et al., 2010).

The spectral ratio method enables us to estimate the corner frequency without the trade-off between t$*$ and the corner frequency. We compared the corner frequency by the spectral ratio method to the one by the simultaneous estimation with t$*$. As a result, we cannot found the remarkable difference between them.This suggest that we could estimat the almost correct t$*$ by the simultaneous estimation.

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Keywords: Inland earthquake, seismic attenuation, spectral ratio