

SSS026-P06

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Hypocenter distribution before and after in the source region 2008 Iwate-Miyagi Nairiku Earthquake

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Koshika et al.(2011) relocated the hypocenters of earthquakes that occurred before the 2008 Iwate-Miyagi Nairiku Earthquake using the Hi-net data, and studied whether the source fault form could be estimated from hypocenter distribution before the main shock. As a result, the hypocenters relocated were not distributed on a plane corresponding to the source fault, and it was difficult to estimate the source fault form. Comparing with aftershock distribution by Okada et al.(2008), the hypocenters were not located in the aftershock region, but they were distributed surrounding aftershocks. However a method and a velocity structure used for locating hypocenters were different between Okada et al.(2008) and Koshika et al.(2011). It is necessary that aftershocks and earthquakes before the occurrence of the main shock are determined in the same manner for comparing hypocenter locations.

Therefore in this study, aftershock and earthquakes before the main shock occurrence were located simultaneously by using the DD method. Earthquakes before the main shock were the same as those used by Koshika et al.(2011). They occurred in about 60km*35km region covering the aftershock area in 2006-2007. We selected aftershocks that occurred from 8:43 to 23:59 on the same day of the main shock. We used 40 stations whose epicentral distance was within about 50km from the main shock. We displayed waveforms on the computer screen, and picked P- and S- wave arrival times. The number of earthquakes before the main shock and aftershocks was 383 and 324, respectively (total: 707).

A vertical cross section showed that hypocenters were not located within 3km from the main shock hypocenter while aftershocks were distributed in this area. In the north and south parts of the aftershock, aftershocks seemed to occur in the region where hypocenters were not distributed before the main shock, though it was not as remarkable as around the main shock hypocenter. From a WNW-ESE vertical cross-section of S-wave velocity perturbation around the main shock by Okada et al.(2008), both main shock and aftershocks were distributed in a high-velocity zone that extended in WNW-ESE direction. Hypocenters before the main shock were also included in this high velocity zone. Hypocenter distribution relocated in this study may indicate a small scale heterogeneity that can be estimated by velocity perturbation.

Acknowledgment

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Reference

- Koshika et al., 2011, Zisin2, 63(4), in press.
- Okada et al., 2008, Kagaku, 78(9), 978-984.