Velocity Structure for hypocenter locating --Aftershock distribution of the 2024 Noto Peninsula Earthquake--

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We have been studying a velocity structure for hypocenter locating. The velocity structure of the whole Japanese Islands was estimated with the tomography method using the data of the Seismological Bulletin of Japan. In the tomography, the velocity structure was estimated from the shallower to deeper parts sequentially to avoid correlation between shallower and deeper parts. We estimated aftershock distribution of the 2024 Noto Peninsula Earthquake with the estimated velocity structure.

The estimated aftershock distribution is shown in the figure with the cross section of the velocity structure. Since the velocity structure was estimated with the seismic data until 2019, the data from the seismic swarm in Noto Peninsula was not included. The estimated velocity near the surface is slower than that of the JMA2001 structure (Ueno et al., 2002), and that at lower crust is faster than that of the JMA2001. The velocity structure of this study is not so smooth, and this may be related to insufficient ray path density around this region.

Whereas the northeast cluster of this study is shifted a little from that by the JMA2001, the epicenter distribution of this study is not so different from that by the JMA2001 structure. The depths of this study are generally shallower than those of the JMA2001. Some hypocenters of the JMA2001 are at the surface, and the number at the surface of this study is less than that of the JMA2001. The focal depths of the JMA2001 in the northeast part are deeper than 20 km, the depths of this study in the northeast part are not so deep. The depths of JMA2001 are considered too deep because they are in the lower crust where the seismicity is usually low. Aftershock distribution of the northeast near the Noto Peninsula is interrupted and looks a strange distribution. This may be related to poor resolution of the velocity distribution around there.

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