

The stress change of Nobi earthquake area before and after the Tohoku-oki Earthquake

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Great subduction-zone earthquakes occur frequently in and around Japan off coast of the Pacific Ocean. The Chubu region (central part of Honshu, Japan) has a risk of not only subduction-zone earthquake but also inland earthquake. In 1891, the Nobi earthquake (M8.0) occurred in the Chubu region, which is the largest inland earthquake in Japan. (Milne 1893). Furthermore, after the Tohoku-oki earthquake, the seismicity was activated in the northern Nobi earthquake area. (Toda et al, 2011). In this study, I examined an effect of the Tohoku-oki earthquake on seismicity in the Chubu region by inferring of stress change before and after the Tohoku-oki earthquake.

At first, I demonstrated that a stress field inversion method [Hardebeck & Michael, 2006] works well by using synthetic data. As a result, I found that the inversion method is sufficient for analyzing real data, although there are several points to be noted.

Next, I applied the stress field inversion method to data from the joint observation conducted by eight Universities in Japan and NIED (National Research Institute for Earth Science and Disaster Resilience in Japan) in the Chubu region between 2009 and 2013. As a result, I found that the stress field didn't change in the Chubu region before and after the Tohoku-oki earthquake. This result is consistent with Yoshida et al. (2012)

Additionally, I found a spatial pattern of the variation of the maximum principal stress which might be an error. I also make a discussion on the spatial pattern in detail.

Reference

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