

Long-term seismic quiescence before the 2018 Hokkaido Eastern Iburi earthquake

*Hideaki Ito¹, Kei Katsumata¹

1. Institute of Seismology and Volcanology, Hokkaido University

The Hokkaido Eastern Iburi earthquake occurred on September 6, 2018 and caused damages such as a blackout throughout Hokkaido, landslides, and liquefactions. Even though this earthquake was an interplate earthquake, the hypocentral depth was extraordinarily deep (37km) compared to earthquakes that occur in other areas in Japan.

In this study, we investigated the seismic quiescence just before the main shock occurrence using the Region-Time-Length (RTL) algorithm (Sobolev and Tyupkin, 1997). This method has three parameters associated with distance, time and rupture length. The RTL value is calculated by these parameters and, the positive value is the seismic activation and the negative value is the seismic quiescence. We used all events with the magnitude $M \geq 3.0$ in the earthquake catalog of the Japan Meteorological Agency during 2002.68-2018.68 in this study. We calculated rupture lengths with magnitude using the method of Kasahara (1981). We calculated the RTL value for the various parameters. As a result, we found the seismic quiescence in the study area before about one year of the main shock occurrence.

The future works are as follows : (1)changing the threshold magnitude such as from $M \geq 3.0$ to $M \geq 2.0$. (2)testing of earthquake data with declustering. (3)testing how frequently the seismic quiescence before the main shock of the Hokkaido Eastern Iburi earthquake occur with numerical simulations by the ETAS model.