

## Gravity Anomaly in and around the focal region of December 14, 2004 Rumoi-nanbu Earthquake(M6.1)

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An earthquake, magnitude of which MJMA 6.1, occurred in December 14, 2004, at southern area of Rumoi sub-prefecture, northern Hokkaido. The earthquake intensity of nearly 6 was assumed in Obira town. In Hokkaido, this is the first inland earthquake larger than M6 since Teshikaga earthquake (M6.4, 1967). Institute of Seismology and Volcanology, Hokkaido University operated a temporal seismic observation, and reported detailed aftershock distribution (Ichiyanagi et al., 2005). It shows that the aftershocks occur on an eastward dipping plane of 10 km square, depth of which 5 km. The mainshock assumed to have occurred near the southern end of this plane. The northern part of the Hokkaido is a seismic gap region, where no large earthquake occurs for at least 200 years. This earthquake occurred in a southern end of this seismic gap.

In spite of the sparseness of gravity measurement points existing over the focal region, the comparison between aftershocks and Bouguer Anomaly distribution was attempted. The compiled datasets were as follows. Gravity data of Geographical Survey Institute ( [http://vldb.gsi.go.jp/sokuchi/gravity/grv\\_search/gravity.pl](http://vldb.gsi.go.jp/sokuchi/gravity/grv_search/gravity.pl) ), Gravity CD-ROM of Japan edited by Geological Survey of Japan (Geological Survey of Japan, 2000), Gravity Data of Hokkaido University. It was found that the aftershocks occur just above the gravitational rise of about 20 mGals. The focal region is covered with tertiary sediments. There seems to be a gravitational lineament related to fold lines, though it is not clear because of sparse gravity data.

So the gravity survey was operated in Nov. 2005, to make a detailed Bouguer anomaly map and to explicate the subsurface structure of the focal region. The measurement was done with CG-3 type gravimeter (Scintrex Ltd. No. S227). Measurement positions were carefully decided by operating differential GPS observation. The accuracy of altitude decision is within 1 meter in all of the measurement point. Besides, data provided by Japan Petroleum Exploration Co. Ltd. was very helpful. We report about Bouguer anomaly map by current dataset, and attempt to infer the focal region subsurface structure.

The gravity measurement operated in 2005 was disturbed by instrumental trouble and also by snow. So we could not accomplish our measurement plan. We are going to make additional measurement.

### Acknowledgement

While our gravimeter was in trouble, Professor Yamamoto of Ehime University lent us a gravimeter. Japan Petroleum Exploration Co. Ltd. offered us a gravity dataset around the focal region.

### References

- Geological Survey of Japan (ed.), 2000, Gravity CD-ROM of Japan, Digital Geoscience Map P-2, Geological Survey of Japan.
- Ichiyanagi M., T. Maeda, T. Yamaguchi, H. Takahashi, T. Sasatani, M. Kasahara, and A. Yamamoto, 2005, Aftershocks distribution of the December 14, 2004 Rumoi-nanbu Earthquake (M6.1) in the northern Hokkaido, Abstract for The Seismological Society of Japan 2005 Fall Meeting.