

Sea level oscillations observed with an iGrav SG at Tomakomai, Hokkaido, Japan

*Kazunari Nawa¹, Mituhiko Sugihara¹, Yuji Nishi¹, Hiroshi Ikeda²

1.National Institute of Advanced Industrial Science and Technology, 2.University of Tsukuba

A superconducting gravimeter installed near the coast may detect gravity effects induced by sea level variation. For example, Nawa et al. (2003) show the relationship between sea level variation and gravity variation from a superconducting gravimeter installed at Syowa Station, Antarctica. These effects are interpreted to be due to loading and attraction by seawater in Lutzow-Holm Bay around the station (Nawa et al., 2007). We tried to extract gravity changes induced by sea level variation from the gravity data acquired by an iGrav superconducting gravimeter newly installed at Tomakomai, Japan (Sugihara et al., 2015). As a result, at the period of passing low pressure in the vicinity of Hokkaido (e.g. several days in April and December 2015), we could detect signals corresponding to the sea level oscillations of the period 74 minutes.

Acknowledgement

This SG observation is supported by Ministry of Economy, Trade and Industry, Japan CCS, and the Tomakomai local government. We thank Hokkaido regional development bureau for providing sea level data of the Tomakomai port.

References

- Nawa, K., N. Suda, S. Aoki, K. Shibuya, T. Sato, and Y. Fukao (2003) Sea level variation in seismic normal mode band observed with on-ice GPS and on-land SG at Syowa Station, Antarctica, *Geophys. Res. Lett.*, 30 (7), 1402, doi:10.1029/2003GL016919.
- Nawa, K., Suda, N., Satake, K., Fujii, Y., Sato, T., Doi, K., Kanao, M., Shibuya, K. (2007) Loading and Gravitational Effects of the 2004 Indian Ocean Tsunami at Syowa Station, Antarctica, *Bull. Seismol. Soc. Am.*, 97(1A), S271-S278.
- Sugihara, M., H. Ikeda, K. Nawa, T. Ishido, and Y. Nishi (2015) Field test of a portable superconducting gravimeter observation system at the Tomakomai CCS site, Japan, 124th Meeting of the Geodetic Society of Japan, 38.

Keywords: superconducting gravimeter, noise, seiche, atmospheric pressure