

Gravity observation with a superconducting gravimeter CT#043 at Syowa Station, Antarctica

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A superconducting gravimeter (SG) TT-70(#016) was installed at Syowa Station in March 1993 (Sato et al. 1995). Since then, gravity observation with the SG had been continued until early November 2003. Before the end of the observation, a new SG CT(#043) was installed temporarily on a pier for absolute gravimetry in the same building in April, 2003 (Ikeda et al. 2005) and simultaneous observations with the two SG were carried out for more than 6 months. After the parallel observation, TT-70(#016) was replaced by CT(#043) at the end of 2004, and gravity observation by a SG was restarted. Calibration of the CT(#043) was also conducted with an absolute gravimeter FG5(#210) around the same time, and a scale factor of -59.461 micro-gal/volt was obtained (Fukuda et al. 2005). CT(#043) is equipped with a 4 Kelvin cryocooler which enable it to operate without re-filling liquid helium. However, the obtained data show nearly linear large trend of approximately 120 micro-gal/year, which is considered to be an instrumental drift. The unexpected large trend obliges us to re-center the sensor sphere once a year.

In this presentation, we will show gravimetric tidal factors derived from the first 20 months data of the CT(#043) as well as a residual trend after removing the linear trend and effects of polar motion. We will also discuss some relations between the residual trend and sea level variations with time scales from several days to several months.