

## Cooperative observation of superconducting gravimeters at Kamioka and Matsushiro

# Tadahiro Sato[1]; Yuichi Imanishi[2]; Yoichi Fukuda[3]; Hiroshi Ikeda[4]; Yoshiaki Tamura[5]; Koji Matsumoto[1]; Severine Rosat[6]; Masatake Ohashi[7]

[1] NAO; [2] ORI, Univ. of Tokyo; [3] Geophysics, Kyoto Univ.; [4] Frontier Sci, Applied Sci, Univ Tsukuba; [5] NAOJ, Mizusawa; [6] Mizusawa, NAO; [7] ICRR, Tokyo univ.

Among the eigenmode related to the Earth core, detection of the core undertone of a few hours to 16 hours in period is important to constrain the density structure of the core and to study the stability of the layered structure of the fluid core. High resolution and low noise level of superconducting gravimeters (SGs) are expected to allow us to detect this mode. However, for the previous detections of this mode, opinions opposed to each other are discussed. One of the reasons is the weakness of its amplitude as suggested from the theory. Theoretically, a magnitude is estimated to be at 1-2 nGal, even though it is excited by an earthquake of the maximum class in magnitude.

To improve the reliability of the observation, we have started the cooperative observation of superconducting gravimeters at Kamioka and Matsushiro on October 2004. Kamioka locates at about 80 km west from the Matsushiro SG site in horizontal distance. On the other hand, to improve the accuracy of the correction for the air pressure changes and to reduce the noise level of the SG data analysis, we also develop a local pressure gauge network consisting of 9 sites including the two SG sites. This network is about 100 km in its spatial extent. We introduce here: (1) the observation system, (2) the comparison of the noise level between two sites and (3) the preliminary analysis results for the spatial distribution of air pressure changes between a few minutes to days in period. For the analysis results of the gravest seismic normal modes after the 2004 Sumatra earthquake, we will present by Rosat et al. at other session (S048) of this meeting.

The preliminary analysis for the pressure gauge network data has been done. The analysis was carried out based on the pressure differences to Kamioka at 6 stations of Asama, Matsushiro, Ohmachi, Kamitakara, Toyama, and Toga. The results suggest that the difference in amplitude of the S2 wave is about a half of the S1 wave in magnitude for all stations (i.e. about 0.05 hPa as a mean over the 6 stations). This is due to higher spatial coherency of the S2 wave than that of S1 wave, and it is an advantageous point for the analysis of the core undertone. However, the pressure difference of 0.05 hPa may be not ignored in magnitude as the noise level for our analysis suggesting that usual pressure correction only using the data obtained at the SG site is inadequate for the analysis of such weak signal as the core undertone.