

Gravity Tide Observation at the VERA Ishigakijima Station

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We started gravity tide observation at the VERA Ishigakijima Station(24 24'.7N, 124 10'.3E, 26m H) with a LaCoste D73 gravimeter since January 26, 2006. The D73 gravimeter was adapted Harrison-Sato type feedback system. The data acquisition system has a 7.5 digits A/D converter. The sampling interval is one second and the time is kept with the accuracy of 1 second by referring NTP server at the Mizusawa Astrodynamics Observatory, National Astronomical Observatory of Japan. Before installing the D73 gravimeter at Ishigakijima Station, the gravimeter was calibrated and test observation was carried out at the basement of Mizusawa Observatory for about one month.

The objectives of the gravity tide observation are,

1) verification of ocean tide models around South-East Islands of Japan, where the amplitude of ocean tides are large, by the analysis of ocean tide loadings.

2) Verification of the theoretical earth tide models.

In the astrometry observations in VERA project, the accuracy of the station coordinates are requested within 1mm. It is not only required for a long term variation such as plate motion, but at the epoch of each VLBI observation. The earth tide causes periodical variation of station coordinates and it is the largest source of variation at the short time. Thus the model of tidal displacements should be verified by the tidal observations or the model should be revised by them.

We are planning to carry out gravity tidal observations at other VERA Stations (Iriki and Ogasawara) by using another spring type gravimeter or by moving the D73 gravimeter. We shall continue the gravity tide observation at lease 6 months at one site, probably we will continue the observation for one year at one site.