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The accuracy evaluation of attitude of buoy using GPS receivers

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We observed the seafloor crustal movement using the ship, towed buoy and moored buoy. On these platforms, there is the important information to monitoring an attitude. It is a key point to determine the position of the acoustic transducer from the position of a GPS antenna after a correction for the motion of the surface platform for the improvement of accuracy on seafloor geodesy. There are two methods on the measurement of attitude. One thing is the combination of GPS and inertial navigation system (RLG and MEMS). Another is the multi antennas GPS receiver. In this presentation we carried out the accuracy evaluation of attitude using the multi antennas GPS receivers.

We use three GNSS receivers (Sigma@Javad GNSS, PolaRx2@septentrio, and GRX1200+@Leica Geosystems) for the accuracy evaluation. Basic test is the static test. We carried out the basic test for PolaRx2@ receiver on June 2006 and for Sigma receiver on October 2010. The following was obtained by this examination. The resulted accuracy is comparable to the catalog accuracy. The results of power spectrum density for the Sigma receiver was about one order smaller at the noise level than those for the PolaRx2 receiver, and there was a good correlation between the variability and DOP. However, because we did not carry out these observations at the same time, it is difficult to do a detailed comparison of receivers. Therefore, it is scheduled that using all receivers will carried out the static observation and the moving observation for the accuracy evaluation.

Keywords: GPS, attitude