

## GPS-Acoustic seafloor geodetic observation by Japan Coast Guard - results and future plan -

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The Hydrographic and Oceanographic Department of Japan Coast Guard has been developing a system for precise seafloor geodetic positioning with the GPS-Acoustic combination technique and deploying seafloor observation sites on the landward slope of the major trenches around Japan, such as the Japan Trench and the Nankai Trough.

In this presentation, we summarize seafloor geodetic observation results and future observation plans.

Summary of the observation results:

### (1) Seafloor sites along the Japan Trench

We have been carried out seafloor geodetic observations along the Japan Trench in order to detect post-seismic deformation of the Tohoku-oki earthquake. The results of the observations show that the displacements vary with the sites even in the directions. MYGI and KAMS had moved toward west-northwest at constant rate. MYGW had moved toward south-southeast. KAMN had moved toward northwest. FUKU and CHOS had moved toward east-southeast. In addition, the displacements at FUKU and CHOS decay with time.

### (2) Seafloor sites along Nankai Trough

Along the Nankai Trough, we deployed six seafloor reference points in the sea area from off-Omae-zaki through off-Muroto in early 2000s and had been carrying out campaign observations. From the observation data obtained before the 2011 Tohoku-oki earthquake, we detected the intraplate velocities of 2-5 cm/year toward WNW, which were generally consistent with those detected by on-land GPS measurements.

Furthermore, to monitor seafloor movement spatially in the whole expected focal regions along the Nankai Trough, we deployed nine new seafloor reference points mainly off Shikoku in January 2012. It's been 3 years since we installed new sites, we obtain provisional results which suggests the velocities are different among some regions. It is expected that a spatial variation of interplate coupling will be revealed in the sea area along the Nankai Trough.

Keywords: GPS-Acoustic combination technique, seafloor geodetic observation, Japan Trench, Nankai Trough