

## Seafloor geodetic observation by Japan Coast Guard

# Yoshihiro Matsumoto[1]; Tadashi Ishikawa[1]; Koji Kawai[1]; Masayuki Fujita[1]; Tetsuichiro Yabuki[2]; Masashi Mochizuki[3]; Akira Asada[4]

[1] Hydrogr. and Oceanogr. Dept. of Japan; [2] Hydrographic and Oceanographic Dept. of Japan; [3] IIS, Univ. of Tokyo; [4] IIS

We have been developing a system for precise seafloor geodetic observation with the GPS/Acoustic combination technique and deploying reference points on the land-ward slope of the major trenches around Japan, such as Japan Trench and Nankai Trough. The primary purpose of our observation is to detect and monitor the crustal deformation caused by the subduction of the oceanic plate near the plate boundary. In this presentation, we summarize the latest results and future plan of our observations.

### 1. Seafloor reference points along the Japan Trench

The site labeled as MYGI is situated about 100km landward from the axis of the Japan Trench. An array of four acoustic transponders has been installed on the seafloor, at a depth of about 1700m. This reference point has been working since 2001, and intensively observed since 2002. In October 2004 another array of acoustic transponders, labeled as MYGW, has been installed on the seafloor about 150km landward from the axis of the Japan Trench, at a depth of about 1100m. This reference point has also been observed intensively. Off Fukushima prefecture, the other seafloor reference point, labeled FUKU, has been founded in 2001. In campaign observations of FY 2006 we acquired three epochs of data for MYGI and two epochs for MYGW and FUKU.

### 2. Seafloor reference points along Nankai Trough

Starting with the installation of the first seafloor reference point at Kumano-Nada in 2000, We have founded a chain of reference points along Nankai Trough: Off Tokai (TOKE, TOKW), Off Shiono-Misaki (SIOE, SIOW) and Off Muroto-Misaki (MURO). In campaign observations of FY 2006 we acquired one epoch of data for each of TOKE, SIOE and MURO.

### 3. Seafloor reference point SAGA

The site labeled as SAGA is situated about 10km to the east of Ito city. The seafloor reference point has been installed at a depth of about 1340m. This reference point has been working since 2002, and observed approximately every one year. In campaign observations of FY 2006 we acquired one epoch of data. The obtained coordinates at six epochs show stable trend and the repeatability of several centimeters.

### Acknowledgements

The installment of the seafloor reference point MYGW was financially supported by Ministry of Education, Culture, Sports, Science and Technology, Japan under the project 'Pilot survey focused on off-shore Miyagi Prefecture'. We thank Dr. Oscar L. Colombo of NASA/GSFC for providing us with the kinematic GPS software 'IT'. We thank the Geographical Survey Institute of Japan for providing us with the GEONET GPS data at 1 sec sampling for our kinematic GPS analyses. A lot of staff members of the Hydrographic and Oceanographic Department and IIS, the University of Tokyo have been supporting us for observations and data analyses.