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Latest results of GPS/acoustic seafloor geodetic observation along the Japan Trench and the Nankai Trough

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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 the Japan Trench and the 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 plans 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. This reference point has been working since 2001. In 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. In Aug. 16, 2005, a 7.2-magnitude earthquake occurred on the plate boundary off Miyagi Prefecture. The epicenter is located about 10km west of MYGW. So we succeeded in detecting an eastward co-seismic movement associated with the event and a westward movement indicating that the crustal strain has restarted to reaccumulation at around 2007.

Off Fukushima prefecture, the other seafloor reference point, labeled FUKU, has been founded in 2001. From the past observations, the velocity vector of about 3cm/year at FUKU was detected.

2. Seafloor reference points along Nankai Trough

Starting with the installation of the first seafloor reference point at Kumano-Nada(KUMA) 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). Intraplate crustal movements at each reference point are starting to show.

Acknowledgements

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