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GPS/acoustic seafloor geodetic observation by Japan Coast Guard - summary of fiscal 2010 and plan of fiscal 2011 -

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We have been developing a system for precise seafloor geodetic positioning with the GPS/Acoustic combination technique and deploying seafloor reference points on the land-ward slope of the major trenches around Japan, such as the Japan Trench and the Nankai Trough.

In March, 2008, we installed an acoustic transducer on the hull of the middle-sized survey vessel and started sailing observations. This improvement enabled us to get more stable observation results. In addition, we installed an observation system in the large-sized survey vessel ”Takuyo” in December 2010.

In this presentation, we summarize seafloor geodetic observation results in fiscal 2010 and observation plans of fiscal 2010.

1. Summary of the observation results

(1) Seafloor reference points along the Japan Trench

Two seafloor reference points have been installed off Miyagi Prefecture. From the past observations, seafloor movements toward west-northwest indicating that the crustal strain restarted to reaccumulation at around 2007 were detected. The observation results of fiscal 2010 show the same trend. The velocities of 5.4-5.6 cm/year relative to the stable part of the Eurasian plate have been estimated from the observations from December 2006 to November 2010.

On the other hand, a westward movement of about 2cm/year has been detected at the seafloor reference point off Fukushima Prefecture. This result suggests that the interplate coupling is very weak in this area.

(2) Seafloor reference points along Nankai Trough

Six seafloor reference points have been installed along the Nankai Trough at intervals of about 100 km. From the past observations, the seafloor movements of 2-5 cm/year toward west/west-northwest have been detected at each reference point from the observations after 2006.

2. Plan of fiscal 2011

We are scheduled to conduct seafloor geodetic observations three times each. In addition, we will compare the observation results obtained by the large-sized S/V ”Takuyo” with those obtained by the middle-sized S/V ”Meiyo”, aiming to full-scale operation by Takuyo. Furthermore, in order to complement the blank area off Shikoku, we plan to install a seafloor reference point off Cape Muroto.

Acknowledgements

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