

Difference of Analysis Results of Seafloor Crustal Deformation from Gyroscope and Satellite Compass

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Observation system of seafloor crustal deformation using GPS and the acoustic ranging is composed of three sections. First, GPS antenna position on observation vessel is derived from Kinematic-GPS. Second, relative position between GPS antenna and transducer is derived from attitude determination equipment. Finally, two-way traveltimes of acoustic signal is measured between the transducer and three sea-bottom transponders. We had used only the satellite compass as attitude determination equipment. Because the satellite compass has bias of about 1 deg in several 10 minutes, this bias is a large error factor in observation of seafloor deformation. Also, we cannot use the data of the satellite compass for the observation of seafloor deformation because the satellite compass has developed time drift. At the present observation, we use the satellite compass and OCTANSIII which is adopted a fiber-optic gyroscope.

We have measured seafloor crustal deformation in the Kumano basin where is source area of the Tonankai earthquake. And, we installed the sea-bottom transponders in January 2008 to investigate existence or nonexistence of major seduction earthquake in the Ryukyu trench where is thought to be weak plate coupling.

In this meeting, I will compare the analysis results of data from the satellite compass and the OCTANSIII at the Kumano basin and the Ryukyu trench.