

A proposal of building a ship for marine-geodetic surveys

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Japanese Islands are surrounded by the subduction boundaries and are greatly deformed by these subductions. However, the major crustal deformation associated with the subductions occur offshore away from the land. Therefore, the observations at the ocean-bottom are necessary to understand the subduction processes. Nagoya University has been conducting to position transponders installed at the seafloor offshore Kii peninsula and in the Suruga bay for the last three years. The positioning accuracy has reached to a sufficient level to be able to detect crustal deformation caused by the 2004 Off-Kii peninsula earthquake of M7.4.

The Maritime Safety Agency has also detected the crustal deformation accompanied by the subduction of the Pacific plate at the Japan trench offshore Sanriku. Since the crustal deformation rapidly decreases with distance from the disturbance source it is necessary to perform the observation of deformation due to the subduction processes at the sea. For that, the surveying ship only for submarine diastrophism is needed. Nagoya University has collaborated with the Science and Technology Promotion Center of Mie Prefecture in using its surveying ship with a high speed of 24 knots with relatively low noise levels. It is well equipped with advanced oceanographic instruments.

We propose a plan to build such a geodetic survey ship with a high speed hopefully with remarkable accuracy and efficiency for crustal deformation observation of the Japanese Islands. The ship should have the specification of the surveying ship of about a 100 ton with a high speed of 25-knot and low screw noise level. In addition to oceanographic instruments, it will have six RTK-GPS antennae and single-positioning star-fire, and RVO.