

Crustal structure study of the Sea of Japan: Recent results and future perspectives

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In recent years, crustal structure study of the Sea of Japan has advanced. Various new seismic data have been obtained in the Sea of Japan; for example, the two ship seismic surveys study (Sato et al. 2007) and onshore-offshore seismic survey (Earthquake Research Institute, 2013) conducted by the University of Tokyo, and 2D/3D seismic reflection survey conducted by R/V SHIGEN (JOGMEC, 2013).

From 2007 to 2012, we conducted marine seismic surveys using the multichannel seismic reflection system and ocean bottom seismometers; the surveys covered the area between the Japanese coast of the Sea of Japan and the Yamato and Japan Basins. Based on the results, the crustal structure of the eastern margin of the Sea of Japan was classified into three types: island arc crust, thick oceanic crust, and oceanic crust (Sato et al. 2014; No et al. submitted). In addition, our studies found that the contractive deformation zones of the eastern margin of the Sea of Japan are associated with the crustal structure distribution. Further, seismic data suggests that the crustal structure in the south (off Yamagata to Niigata) differs from that of the north (off Akita to Nishi-tsugaru). These differences are critical in understanding the relation between the spatial distributions of the seismogenic and contractive deformation zones (JAMSTEC, 2013). These results can contribute to the review of long-term evaluations of earthquake occurrence potentials and the discussion of the seismogenic study in the eastern margin of the Sea of Japan.

In 2013, new projects have been observing and studying earthquakes and tsunamis in the Sea of Japan. *Integrated Research Project on Seis* scheduled in 2014 in order to conduct a seismic survey in the blind areas of the existing observations, which are in the southwest region of the Sea of Japan and off western Hokkaido. The addition of new observation data will advance the study of crustal structure in the Sea of Japan. In this study, we aim to improve the accuracy of the position and size of the source faults in the Sea of Japan. In addition, we investigate the relation among tectonic history, crustal structure, and factors that form source faults in the Sea of Japan. In the future, we aim to clarify the seismogenic zone of the Sea of Japan using new seismic data.

Keywords: the Sea of Japan, crustal structure, MCS, OBS