

海底地震観測から得られている日本海下の地震学的構造：今後の観測に向けて Seismic structures below the Japan Sea compiled from results of ocean bottom seismo- graphic observations

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The Japan Sea is one of back-arc basins in the northwestern Pacific, and is believed to be formed in association with subduction of an oceanic plate below the Japan island arc. Because seismic structure below the Japan Sea is important for revealing the formation of the Japan Sea and the present tectonics of the Japan island arc system, numerous seismic survey using ocean bottom seismometers and controlled seismic sources have been carried out since 1980's. As a result, the Japan Sea becomes one of the most well studied back-arc basins in the world. The northeastern area of the Japan Sea (the Japan Basin) has an oceanic crust. The crustal structures which are neither a typical oceanic nor continental crust were found in the Yamato Basin and the Tsushima Basin in the central part of the Japan Sea. The crustal thicknesses of both the basins are approximately twice that of the oceanic crust. The Kita-Oki Bank which is a topographic high in the southern Japan Sea comprises. In eastern margins of the Japan Sea, it is found that the crusts become thicker toward the Japan island and a variation of thickness of the upper crust is larger than that of the lower crust. It is also essential to obtain the deep seismic structure beneath the Japan Sea. From 2001 to 2004, long-term seismic observations were performed in the Sea using OBSs including broadband type to estimate the deep structure. The broadband OBS data enable an analysis of surface waves, and the estimated S-wave model does not have a large low-velocity zone in the upper mantle. In addition, travel time tomography analysis shows a high velocity anomaly in the mantle wedge extends down to a depth of approximately 150 km beneath the Yamato Basin. To obtain a variation of thickness of the lithosphere of the Japan Sea is necessary to elucidate the formation of the Sea and the dynamics of the arc-trench system at the present. Therefore sea floor long-term seismic observations using broadband seismic sensor are needed.