

Seismic structure and formation process of the central Tsushima Basin (Ulleung Basin) deduced from OBS measurements

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The Japan Sea is a back arc basin located between the Eurasia continent and Japan Islands. The Japan Sea consists of Japan Basin in the north part, Yamato Basin in the southeastern part, Tsushima Basin (Ulleung Basin) in the southwestern part, and Yamato Rise in the central part. In the Tsushima Basin (Ulleung Basin), many surveys have been conducted to reveal the formation process of the Basin. All of the surveys indicated that the crust of the Basin is thicker than normal oceanic crust, and P-wave velocity structure is similar to normal oceanic crust. Each study, however, showed different formation process, because each study indicated different lower crustal structures and different interpretations of gravitational and magnetic data. The lower crustal structure is one of keys to consider the formation process. Whether high velocity layer at the bottom of the crust exists or not is the evidence whether the Basin rifted volcanic or non-volcanic. The aim of the present study is to reveal the lower crustal structure of the Tsushima Basin (Ulleung Basin). The crustal structure from our result is thicker than normal oceanic crust, and P-wave velocity structure is similar to normal oceanic crust. There is no high-velocity layer at the bottom of the crust. These results suggest that the crust of the central the Tsushima Basin (Ulleung Basin) consists of thinned continental crust without volcanic rifting. This interpretation is different from that by Kim et al (1994, 1998), Lee, G.H. et al. (1999), which is that the Tsushima Basin (Ulleung Basin) is a thick oceanic crust with volcanic rifting.