

## Crustal structure off western Noto Peninsula to the Yamato Basin observed by seismic reflection survey

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Since recent years, the source fault of the Japan Sea has been reviewed through several projects (e.g., Ministry of Land, Infrastructure, Transport and Tourism, 2014). As a part of these efforts, we conducted research in collaboration with the "Multidisciplinary research project for construction of fault model in the high strain rate zone" consisting of marine seismic surveys using a multichannel seismic system (MCS) and the ocean-bottom seismographs (OBSs) in the eastern part of the Japan Sea. As a result, these studies revealed the relationship between the distribution of crustal structure and seismic activity or shortening structure in the eastern part of the Japan Sea (e.g., No et al., 2014; Sato et al., 2014). However, observations to evaluate the potential damage of earthquakes and tsunamis had not been carried out fully west of Noto Peninsula and off western Hokkaido in the Japan Sea. Therefore, crustal structure data other than those of the eastern part of the Japan Sea are required.

In July and August 2014, we conducted a marine seismic survey to study the crustal structure from the region off western Noto Peninsula to the Yamato Basin. Some studies of crustal structure had been carried out in this survey area (Ludwig et al., 1975; Katao, 1988; Hirata et al., 1989). However, these studies were not able to obtain the spatial variations of the crustal structure and the relationship with active structure. Recently, seismic acquisition technology for deep and detailed seismic imaging has improved. By using this recent technology, we were able to obtain important data to study the relationship between the active structure and crustal structure in the vicinity of the survey area. Based on the results of these studies, although it is important to identify where the source faults have developed in the Japan Sea, structural factors are an important key for determining the development and size of the source faults. In addition, because there is ODP Leg 127 site 797 (Tamaki et al., 1990) directly beneath our seismic survey line, we contributed to the study on the formation of the Yamato Basin by examining the relation between the ODP results and our results.

We present an outline of the data acquisition and preliminary results of the data processing and interpretations from this study. Asymmetrical anticlines with reverse faults are well developed off the northern to western Noto Peninsula. The basement around the continental shelf and continental slope shows larger deformation. In the Yamato Basin, a clear reflector estimated to be the Moho can be identified in the vicinity of about 9 s (two-way time). The characteristics of the sedimentary layer are common within the survey area. For example, a strong coherent reflector that is estimated to be an opal-A/opal-CT BSR (bottom simulating reflector) (Kuramoto et al., 1992) was confirmed in all survey lines in the Yamato Basin. Furthermore, a coherent reflector across the entire crust was confirmed in some of the survey lines in the Yamato Basin.

Keywords: Japan Sea, Seismic survey, Yamato Basin, off Noto Peninsula, Yamato Rise, source fault