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Land-Marine integrated seismic survey in the western Kii Peninsula on subduction of the Philippine Sea Plate

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The fault segment boundary of the Tonankai and Nankai earthquakes is situated off the Kii Peninsula. This segment boundary region also coincides with a boundary of other tectonic phenomena; a ~30 degree difference in the orientation of the principal stress axis, the lack of low frequency events between this boundary and northeast Shikoku island, and a large downward convex structure of the subducting Philippine Sea Plate with an sudden along-arc depth change beneath the boundary. Ide et al. (2010) suggested a tear in the subducting slab as a possible factor for the formation of this boundary by referring to the locations of past earthquakes and distribution of volcanoes in addition to the above phenomena. Understanding the shape of the subducting slab around this boundary with high resolution is important for clarifying the phenomena, elucidating generation mechanisms of the great earthquakes and their rupture processes. In October, 2010, we conducted a land-marine integrated seismic survey in the western Kii Peninsula. We deployed along a ~200 km long transect from near the Nankai Trough axis to Hannan city, Osaka Prefecture. We conducted airgun-shooting using a research vessel *Kairei* of the Japan Agency for Marine-Earth Science and Technology. We also shot a 300 kg explosive source at a site in Hannan city. We also recorded airgun shooting along a transect beyond the boundary region from the trough axis to near Awajishima Island. We anticipate a good contribution for understanding the shape of the subducting slab around the boundary region from the trough axis downdip to the transition zone of plate coupling strength and revealing characteristics of the plate interface.

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Keywords: Great earthquake, Subduction zone, Seismic survey, Fault boundary