

## Seismic velocity structure off the Boso Peninsula, Central Japan, revealed by an ocean bottom seismographic experiment

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Off the Boso Peninsula, central Japan, where the Sagami trough is in the south and the Japan trench is in the east, there is a triple junction where the Pacific plate (PAC), the Philippine Sea plate (PHS) and the North America plate (NA) meet each other. In this region, PAC subducts beneath PHS and NA, and PHS subducts beneath NA. Due to these subductions, numerous seismic events took place in the past, such as the Enpo-Boso earthquake 1677, Genroku-Kanto earthquake 1703, the Taisyo-Kanto earthquake 1923, and the Boso slow slip events. In order to understand these events, it is important to image structure under Kanto region, and many researchers attempted to reveal the substructure from natural earthquakes and seismic experiments.

Because most of the seismometers are placed inland area and the regular seismicity off Boso is inactive, it is difficult to reveal the precise substructure off Boso area only from analyzing natural earthquakes. Although several marine seismic experiments were held, vast area remains unclear off Boso Peninsula. In order to improve the situation, a marine seismic experiment was conducted from 30th July until 4th of August, 2009. The survey line has 216 km length and 20 Ocean Bottom Seismometers (OBSs) were placed on it.

In this study, we analyzed the airgun data acquired from the OBSs by using PMDM (Progressive Model Development Method; Sato and Kenett, 2000) and FAST (First Arrival Seismic Tomography; Zelt and Barton, 1998), then obtained 2-D seismic velocity structure.

According to the previous studies, the P wave velocity of the upper surface of Philippine Sea plate (UPHS) is around 5 km/s, then, we drew the line which represents the UPHS at 5.0 km/s zone. The result shows that the UPHS inclines gently toward east, and the high P-wave velocity area which has 35 km width, locates off southernmost Boso Peninsula, 4 km depth from the sea surface.

The estimated depth of UPHS corresponds to that of Nakahigashi et al. (2012) and Kimura et al. (2009). We also compared our result with other studies and delineated the isodepth contours of UPHS off the Boso Peninsula. We gained a rough image that the 10 km isodepth contour is almost parallel to the Sagami trough, the 15 km isodepth contour runs toward east, and the 20 km isodepth contour runs toward northeast. It indicates that the Philippine Sea plate subducts gently off the Boso Peninsula and it gets sharpened gradually toward the land.

The width and location of the high P-wave velocity area correspond to that of a bump on the UPHS revealed by Tsumura et al. (2009). The velocity is higher than 6 km/s in the center therefore, we concluded that the bump is the buried seamount and our result supports the result of Tsumura et al. (2009).

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