

Three-dimensional P- and S-wave velocity structure in and around western Kanagawa area associated with the Izu collision zone

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The region of the Izu peninsula and its surroundings is located in the site of ongoing collision zone between the Izu-Bonin arc, a part of the Philippine Sea Plate (PSP), and the Japan island arc, called the Izu collision zone [e.g. Matsuda, 1978]. The Izu collision zone gives rise to a very complex tectonics and structures. Recently, new model of depth distribution of upper surface of the PSP was proposed by Sato *et al.* [2005]. However, this new model does not correspond to previous ones [e.g. Ishida, 1992] under western Kanto region. In this study, we determined three-dimensional seismic velocity models for crust and upper mantle by tomographic inversion under the Izu collision zone to develop understanding of complex tectonics.

We used data obtained by the routine seismic network in the Hot Springs Research Institute (HSRI) of Kanagawa prefecture. This network consists of 56 permanent stations, which are operated by our institute, the Earthquake Research Institute, University of Tokyo, and the National Research Institute for Earth Science and Disaster Prevention (Hi-net). The method used is the double-difference tomography method [Zhang and Thurber, 2003].

Remarkable features in the result of seismic tomography focused on an iso-velocity line of 6.0 km/s for P-wave velocity are as follow.

- (1) High-velocity body under the Tanzawa mountains (6.0 - 6.5 km/s)
- (2) Wedge-like low-velocity body between Hakone region and Tanzawa mountains (5.2 - 6.0 km/s)
- (3) High-velocity anomaly under Hakone region

High-velocity body under the Tanzawa mountains, under which there is a velocity inversion with depth, is interpreted as a plutonic body of tonalite (Tanzawa Tonalite) within an accreted crustal slice of the PHS plate [Taira *et al.*, 1998]. Compared with the velocity model for the intraoceanic Izu-Bonin arc by Kodaira *et al.* [2007], this high-velocity body is interpreted as a thrust sheet of upper/mid crust of the Izu-Bonin arc, which detached from the PSP. A low-velocity wedge between the Tanzawa mountains and Hakone region corresponds to trough-filled deposits (sandstone and conglomerate), where the Izu-Bonin arc collides and accretes with the Japan island arc [Taira *et al.*, 1998].

We will relocate the regional seismicity with new developed tomographic models to compare with them. In this presentation, we will show present results and its interpretations.