

Geometry of the upper surface of the subducted Philippine Sea plate beneath the Kanto area, Japan: a review

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The Philippine Sea plate, subducted beneath the Tokyo metropolitan area has generated devastating earthquakes, such as 1703 Genroku and 1923 Kanto earthquakes. To reveal the geometry and structure of the subducted slab is crucial for better estimation of strong ground motion and evaluation of the seismic risk. For such background, the special project for Seismic Hazard Mitigation in Urban Areas started in 2002 as a five-years project. As one of the main part of this project, deep seismic profiling was undertaken in the Kanto area. Total five seismic lines were deployed along the dipping direction of the slab. The down going slab is clearly identified in the obtained seismic sections (Sato et al., 2005). The depth to the top of this plate is much shallower than previous estimates based on the distribution of seismicity. In 2005, aseismic slab was found by the seismic reflection profiling across the northern part of the Izu collision zone in the western part of the Kanto area. To obtain deeper structure of the crust and upper mantle, dense seismic array was deployed along the Boso peninsula. Using the recorded earthquakes and controlled source experiment (Boso 2002), 3D velocity structure of the eastern Kanto area was obtained by tomography (Hagiwara et al., 2006). According to the obtained velocity profile beneath the Boso array, the reflectors identified as a upper surface of the Philippine Sea plate beneath the northern part of the Boso 2002 at 20 to 25 km in depth is interpreted as the reflectors near the Moho discontinuity. In the last five years, mainly using controlled source, the information about the geometry of the upper surface of the Philippine Sea plate has been greatly increased. Since this fiscal year, a new five years project targeting the seismic hazard mitigation in the Tokyo metropolitan area will start. More precise and deeper lithospheric architecture beneath Tokyo will be revealed. The proposed IODP drilling at the Sagami trough will help to improve the knowledge on the geodynamics of the Philippine Sea plate.