

## A new curved fault model and method development for asperities of the 1923 Kanto earthquakes

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Great earthquakes along the Sagami trough, where the Philippine Sea slab is subducting, have repeatedly occurred. The 1703 Genroku and 1923 (Taisho) Kanto earthquakes (M 8.2 and M 7.9, respectively) are known as typical ones, and cause severe damages in the metropolitan area. The recurrence periods of Genroku- and Taisho-type earthquakes inferred from studies of wave cut terraces are about 200-400 and 2000 years, respectively (e.g., Earthquake Research Committee, 2004). We have inferred the source process of the 1923 Kanto earthquake from geodetic, teleseismic, and strong motion data (Kobayashi and Koketsu, 2005). Two asperities of the 1923 Kanto earthquake are located around the western part of Kanagawa prefecture (the base of the Izu peninsula) and around the Miura peninsula. After we adopted an updated fault plane model, which is based on a recent model of the Philippine Sea slab, the asperity around the Miura peninsula moves to the north (Sato et al., 2005). Sato et al. (2005) presented the shape in inland part, but less information in oceanic part except for the Tokyo bay. Kimura (2006) and Takeda et al. (2007) presented the shape in oceanic part. In 2008-2010, multi-channel seismic (MCS) survey have been done off Boso peninsula and in the Sagami bay. In this study, we compiled these slab models, and reanalyze the slip distributions of the 1923 earthquakes. We developed a new curved fault plane on the plate boundary between the Philippine Sea slab and inland plate. The curved fault plane was divided into 56 triangle subfaults. Point sources for the Green's function calculations are located at centroids of the triangles. At the present stage, we assume a 1-dimensional seismic structure model for geodetic data. The Green's functions are calculated by the frequency-wavenumber method of Zhu and Rivera (2002) for geodetic data. We have proposed geophysical monitoring off Boso as a part of the Kanto Asperity Project, which is an IODP drilling proposal, to characterize asperity and non-asperity regions. The geometry of the fault plane is one of important issues. The Kanto Asperity Project and its site surveys can provide us more information on the Philippine Sea slab in oceanic part and revise the asperity map.

Keywords: the 1923 Kanto earthquake, asperity, Sagami trough