Asperities along the Sagami trough using 1-D and 3-D Green's functions for geodetic data

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We investigated the source process of the 1923 Kanto earthquake using the geodetic, teleseismic and strong motion data, and indicated that two asperities (area of large slips) are located around the base of the Izu Peninsula and the Uraga Channel. We also investigated the slip distribution of the 1703 Genroku earthquake using geodetic data and indicated that an asperity is located around the south part of the Boso Peninsula.

Our previous studies used Green's function calculated for a halfspace model. However, the real structure in the Kanto region should be three-dimensionally complex as suggested by the geographical setting. Thus we analyze the slip distributions of the 1703 and 1923 earthquakes using 1-D and 3-D Green's function for geodetic data, and assess the effects of these Green's functions on the slip distributions.

The resultant slip distribution for the 1923 earthquake using 1-D Green's functions shows that the maximum slips in both asperities decreased, because the soft sedimentary layer in the 1-D structure increases the displacements. The total seismic moment, however, increased due to higher rigidities in deeper part on the fault plane than that for the halfspace model.