

# Rupture process inversion using 3-D Green's functions: The 1923 Kanto earthquake

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The available geodetic (Matsu'ura et al, 1980) and teleseismic data (Kanamori, 1971) were studied by Wald and Somerville (1995) for the source process of the 1923 Kanto earthquake. Recently, Takemura et al. (2003) and Kikuchi et al. (2003) compiled historical strong motion seismograms. Kobayashi and Koketsu (2003, SSJ fall meeting) combined these dataset and applied the inversion method of Yoshida et al. (1996) for a detailed image of the source process. The slip distribution shows that two asperities located around the Uraga Channel and around the base of the Izu Peninsula, which are consistent with the result of Wald and Somerville (1995).

The previous studies of source process analyses used a half-space structure for geodetic data and a 1-D structure for waveform data to calculate Green's functions. Koketsu et al. (2003, SSJ fall meeting) suggested that the 3-D Green's functions for the near-field waveform and geodetic data can improve the source process analysis. Thus we analyze the source process of the 1923 Kanto Earthquake using 3-D Green's function.

We added the strong motion data at Hongo, which was restored by Yokota et al. (1989), to our dataset. We first inverted the data using the 1-D Green's functions. The synthetic seismograms at Hongo show good agreement with the observed one at 20-50 s after the first arrival, but are bad in the coda part.

The Green's functions for the strong motion at Hongo and geodetic data are calculated by using the finite-element method with voxel mesh (Koketsu et al. 2004). The 3-D model of the Kanto Basin obtained by Afnimar et al. (2003) is used for the calculation. We then apply the inversion method of Yoshida et al. (1996).