Oral | Symbol S (Solid Earth Sciences) | S-SS Seismology

[S-SS29_28PM2]Earthquake Source Processes and Physics of Earthquakes

Convener:*Yuko Kase(Active Fault and Earthquake Research Center, AIST, GSJ), Chair:Naofumi Aso(Graduate School of Science, The University of Tokyo), Yasuo Yabe(Research Center for Prediction of Earthquakes and Volcanic Eruptions, Graduate School of Science, Tohoku University)
Mon. Apr 28, 2014 4:15 PM - 5:30 PM 416 (4F)
The goal of this session is to integrate theoretical, experimental, and observational perspectives to define what is known about earthquake source processes. We solicit submissions that address such issues as pre-, co-, and post-seismic processes, earthquake cycles, laboratory experiments on elementary processes, numerical models based on frictional laws, estimates of in situ stress field.

5:00 PM - 5:15 PM

[SSS29-P05_PG]Study on the source process of the largest aftershock of 1923 Kanto earthquake

3-min talk in an oral session
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Keywords:1923 Kanto earthquake, the largest aftershock, source process

The largest aftershock of M7.5 (Takemura, 1994) occurred at off Boso Peninsula following the 1923 Kanto earthquake. Although the hypocenter have been estimated by previous studies (e.g., Takemura, 1994; Hamada et al, 2001), precise source process have not been estimated yet. The source region of the largest aftershock is characterized by the region of seismic and aseismic phenomena associated with subduction motion of the Philippine Sea Plate, including slow slip events (SSEs), large backslip events, and repeating earthquakes. Kimura et al. (2009) estimated fault plane of the largest aftershock from geodetic data and they concluded that the fault plane lies within the region of large backslip and the large slip area of the Boso SSE. Estimation of the source process during the largest aftershock is, therefore, important to understand earthquake preparation process around the region. We set three point sources on the fault plane estimated by Kimura et al. (2009); shallow part (S1), middle part (S2) and deep part (S3). We calculated synthetic seismograms and evaluated the cross correlations between the observed and the synthetic waveforms. We tested the nine hypocenter-asperity combinations using S1, S2 and S3. The combination with the highest value of the average cross correlation is regarded as the best model. We obtained the best score for combination of S2 (hypocenter) and S3 (asperity). This result shows that rupture started from S2 and propagated toward S3. The observed data used in this study were provided by Kajima Corporation. We are grateful for their kind considerations.