Relationship between various Source Characteristics and Slip Distribution determined by Source Process Analysis with Teleseismic Body-Wave

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1. Introduction
We have examined optimized preset parameters for automate source process analysis with teleseismic body-wave, and we have become possible to preset optimized parameters based on scaling law without trial and error by analysts.
Then, we compared semi-automatic analysis (automatic analysis except for selecting stations and picking up initial P-wave) with manual analysis, and we confirmed that results were roughly consistent with each other for many events regardless of event magnitude. But, there were differences of slip distribution between semi-automatic analysis and manual analysis for some events.
We examine source characteristics which would reflect differences of slip distribution by comparing with aftershock distribution, tsunami source area, etc.

2. Analysis Methods
We used the same program package as Iwakiri et al. (2014) for analyzing source process with teleseismic body-wave. We used broadband waveform data which were downloaded from IRIS DMC HP, and set sampling time and band-pass filter depending on event magnitude. We used epicenter data of JMA for events in and around Japan, and USGS for events in other areas. We used focal mechanism data of JMA for events in and around Japan, and GCMT or others for events in other areas. Hypocenter was set at center of assumed fault plane, and subfaults size and number were set depending on event magnitude. Source-time function were set with triangle functions, and number of basis function and rise time were set depending on event magnitude. Analysis time was set at sum of time necessary for rupture front arriving at most distant subfault (from hypocenter) and time destruction allowed at subfault. Velocity structure for Green's functions were set based on the IASP91 model, and the CRUST2.0 model for near hypocenter. We used the ABIC (Akaike (1980)) for temporal and spatial smoothing constraints, and set hyperparameters as ABIC value become minimum. Maximum rupture speed was set at 0.72 times of S-wave velocity from empirical relationship of Geller (1976).

3. Comparing Methods
(1) We investigated number of aftershock on subfaults, and compared with slippage.
(2) We calculated crustal deformation of land or seafloor surface from slip distribution, and compared with tsunami source area.
(3) We investigated location of the maximum aftershock and slip distribution of the maximum aftershock, and compared with slippage.

Keywords: Source Process Analysis, Slip Distribution

