

Numerical study of afterslip following the 2003 Tokachi-oki earthquake

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We perform a numerical simulation for the afterslip following the 2003 Tokachi-oki earthquake, and compare the result with a time-dependent inversion result. We employ the same fault geometry as is used for the time-dependent inversion. Frictional resistance follows rate- and state-dependent friction law and evolutions of state variables follows a composite law [Kato and Tullis, 2001]. In this study we consider two models: (1) steady-state velocity weakening friction at asperities for the 2003 Tokachi-oki and the 1973 Nemuro-oki earthquakes and steady-state velocity strengthening friction elsewhere, (2) steady-state velocity weakening friction at depth of seismogenic zone but evolution length L is small at asperities and large elsewhere [Hori and Miyazaki, JGU 2008]. Significant afterslip was observed in both models. In our presentation we compare two simulation results with the time-dependent inversion result.