

Characteristics of dependency of frictional properties on after-slip propagation speed

*Keisuke Ariyoshi¹, Toru Matsuzawa², Akira Hasegawa², Ryota Hino², Takane Hori¹

1. Research and Development Center for Earthquake and Tsunami, Earthquake and Tsunami Forecasting System Research Group, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Research Center for Prediction of Earthquakes and Volcanic Eruptions, Graduate School of Science, Tohoku University

We have investigated relations between the after-slip process, effective normal stress, and friction parameters for a rate- and state-dependent friction (RSF) law from the view of theoretical analysis. For Nagata-law of RSF, the results show that the after-slip propagation speed (APS) increases exponentially with the higher value of $A(=a\sigma)$, where 'a' is a frictional parameter of RSF and σ is the effective normal stress. APS is approximately positive and negative proportional to the value of b and d_c , respectively, where 'b' and ' d_c ' is also frictional parameter of RSF. We also check the dependency of frictional parameter 'c' of Nagata's RSF law.

Keywords: rate- and state-dependent friction, effective normal stress, numerical modeling