A Study on Dynamic of Strike-slip and Reverse Faults Based on Numerical Simulation

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The use of dynamic rupture models to simulate earthquakes have received considerable attention in recent years among earthquake engineers and seismologists because these models let us deal with the detailed physical processes of rupture dynamics and improve our capability to interpret the kinematic earthquake models derived from seismic recordings. As a consequence, the dynamic rupture models provide a more accurate assessment of the seismic hazard and risk management.

With strike-slip and reverse faulting being the most common type of crustal earthquakes in Japan, we are interested in studying the seismic source process for these two earthquake types.

The purpose of this study is to understand the differences between the rupture of the strike-slip and the reverse fault. For this purpose, we use a 3D numerical approach by adopting the asperity model.

Our hypothetical models consist of faults which are embedded in a semi-infinite homogenous medium and subjected to the same normal stress and frictional parameters. We consider two different depths to represent the shallow and deep earthquakes, we placed one asperity at 5km then at 12km down dip respectively. We assume to have a shallow area, 2 km along the dip, with zero stress drop and a longer dc compare to another area on the fault. The result of our dynamic simulation provides useful clues to understand our question.

Keywords: dynamic simulation, reverse fault, strike-slip fault

