

Fault Geometry and Earthquakes

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Earthquakes have been recognized as resulting from stick-slip frictional instabilities along the faults between deformable rocks. The finite element code ESyS-Crustal is applied here to investigate the fault geometry effects on the earthquake dynamics. The relevant cases include rock experiments with/without fault bends, a string of major earthquakes since 2004 in Sumatra subduction zone, the Wenchuan earthquake in Chuan-Dian Fault system. The numerical results demonstrate that the geometry of the fault significantly affects nucleation, termination and restart of the stick-slip instability (i.e. earthquakes) in such fault systems. What I would like to share with you is how/why the fault geometry might dominate the relevant nucleation and rupture process of earthquakes.