



Modeling quasi-dynamic slip on multiple fault system governed by rate- and state-dependent friction

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Models incorporating rate-and-state friction share the feature of investigating rupture on a single fault. Often, however, the tectonic settings are complex, and include faults with different orientations and slip directions operating simultaneously; so it is necessary to not only adopt the proper failure criterion, but also to incorporate realistic structural configurations. Motivated by this view I have constructed a quasi-dynamic model of slip on a spatially discrete system of several faults, embedded in an elastic half-space that is governed by rate- and state-dependent friction. At the time of this writing I have simulated a few tens of thousands of earthquakes on a system of two faults discretized by 1600 elements each. I will present earthquake magnitude statistics and will explore the effect of stress transfer between the faults. The long-term objective of this study is to construct a 3D model that simulates the large scale features of an actual fault system (e.g., the San Andreas fault).