



Numerical modeling of fault activation caused by fluid injection. Analysis of nonlinear effects

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It's known that fluid injection into the subsurface can lead to critically stressed fault activation. But there are several questions concerning this phenomena. The one is the relation between injections parameters and seismicity. Another one is friction law controlling the process of sliding on the fault. These issues were explored by numerical simulations of fault activation caused fluid injection. The rate of injection and porosity of the porous media were altered and response of the system was obtained. Moreover, several friction laws were considered including two-parametric rate-and-state law. Results of numerical modeling show how injection parameters and other conditions influence seismicity caused by fault slip. Also, models with different friction laws were compared and cases where a particular type of law of friction matter, were obtained.