



Local variations in Coulomb static stress perturbations caused by geological heterogeneity

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A 2D discrete numerical scheme is being developed to investigate static Coulomb stress changes in heterogeneous media. The nature of the scheme allows modelling of complex geological structures without an increase in computational demand compared to a completely homogeneous case. The interaction between the discrete elements of the model is governed only by radial forces with brittle elastic rheology from which complex global behaviour emerges. We investigate qualitatively and quantitatively how complex geological structures around master earthquake fault influence static Coulomb stress changes. The Coulomb stress changes is an established method when estimating changes in seismicity rate after large earthquakes. Often the stress changes are calculated only for the master fault(s) ignoring the nearby geological structures. We determine that nearby faults can cause significant perturbations in the static stress field which could have implications for the spatial distribution of aftershocks. Examples will be shown from southern California.