



## **The early events after the June 17 2000 mainshock in South Iceland: constraints for instantaneous dynamic triggering with rate- and state-dependent friction.**

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We analyze the coseismic stress redistribution during the seismic sequence of June 17 2000 in South Iceland in which a mainshock ( $M_S$  6.6) was followed by three quite large events within few tens of seconds (8, 26 and 30 s respectively) at a distance up to about 90 km. We use this observational case to investigate the possibility of fault interaction by purely transient coseismic stress changes and in particular nearly instantaneous triggering. We compute the stress changes as functions of time in a stratified elastic half space by means of the discrete wavenumber and reflectivity method (Cotton and Coutant, 1997). We evaluate the dynamic stress caused by the mainshock at the three hypocenters of the subsequent events. Our results show that the onset of the last two events is slightly delayed with respect to the arrival time of the second positive peak of Coulomb Failure Function variation, while the first event stroked after the first positive peak. We also analysed the response of a rate- and state-dependent spring-slider model of fault perturbed by the shear stress and the normal stress variations that we computed as generated by the June 17 2000 mainshock at the three hypocenters. Assuming an initial sliding velocity comparable with tectonic velocity of the region, for the last two events, we obtained failure times close to the observed origin times, provided that the value of the initial effective normal stress is low enough, whereas the 8 s event requires closer to failure initial conditions to be reproduced. The 8 s event might already be close to failure at the time of the mainshock, due to its vicinity to the main event and the subsequent June 21 ( $M_S$  6.6) mainshock. Therefore the first aftershock does not provide us a clear evidence of dynamic triggering.