



## GPS source solution of the 2004 Parkfield earthquake

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We compute a series of finite-source parameter inversions of the fault rupture of the 2004 Parkfield earthquake based on 1 Hz GPS records only. We confirm that some of the co-seismic slip at shallow depth (<5 km) constrained by InSAR data processing results from early post-seismic deformation. We also show 1) that if located very close to the rupture, a GPS receiver can saturate while it remains possible to estimate the ground velocity ( $\sim 1.2$  m/s) near the fault, 2) that GPS waveforms inversions constrain that the slip distribution at depth even when GPS monuments are not located directly above the ruptured areas and 3) the slip distribution at depth from our best models agree with that recovered from strong motion data. The 95th percentile of the slip amplitudes for rupture velocities ranging from 2 to 5 km/s is  $55 \pm 6$  cm.