



The Mw=6.3 Saintes earthquake (West Indies) : source kinematics determination and uncertainties in a poorly known crustal structure

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On 21 November 2004, a Mw=6.3 earthquake occurred close to Saintes Islands (West Indies) and was well recorded by 8 accelerometric stations of the RAP (French accelerometric Network), located between 25km and 70km from the source. Three dimensional structure effects on the wavefield are obvious and have required the determination of a crustal model before any attempt of source inversion. To do so, we model aftershock waveforms to obtain an equivalent 1D crustal structure at each station. Kinematic inversions are then conducted for the mainshock, taking into account uncertainties on hypocenter location and fault plane solution. Rupture process is compared to an alternative method based on Empirical Green function analysis. Finally, we present a procedure to estimate solution robustness by fixing the source parameters on some subfaults, inverting for the remaining parameters and representing the variance reduction as a function of the fixed parameters. This study illustrates a methodology to study earthquake source in a poorly known propagation medium, when the mainshock and some aftershocks have been recorded by a few close stations.