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The 2000 Western Tottori earthquake source imaged through inversion of strong motion data

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The 2000 Western Tottori earthquake ($M_W = 6.6$) stroke a very well instrumented area in southwestern Japan. We choose a set of 18 near-field stations to constrain the fault rupture process using the methodology by Monelli and Mai (see related abstract: Bayesian estimation of kinematic source parameters through inversion of strong motion data).

Preliminary inversions, assuming constant rise time and rupture velocity, have shown a slip distribution mostly concentrated near the surface with low slip around the hypocenter, similar to what has been found by other researchers (Iwata T. and Sekiguchi, 2002; Piatanesi *et al.*, 2005). We test also the need of variable rise time and rupture velocity to fit the near source motion. Another imporant issue we face is the quantitative characterization of ambient noise in the waveforms, a key point for the Bayesian approach. We estimate noise properties by analysing the portion of the signals before the arrival of the first P-wave. The noise characteristics are then used to construct the covariance matrix for the Bayesian estimations. We include this covariance matrix as weight in the L_2 norm used to compare synthetic waveforms with the observed ones. Uncertainties in the inverted parameters are given in terms of posterior marginal probability density functions.