



## **Seismic velocity change and slip rate during the 2006 Guerrero (Mexico) slow slip event**

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We measure temporal change of the seismic velocity in the crust below the Guerrero region during the 2006 slow sleep event (SSE). We use repeated cross-correlations of ambient seismic noise recorded at 26 broad-band stations of the MesoAmerica Seismic Experiment (MASE). The cross-correlations are computed over 90 days with a moving window of 10 days from January 2005 to July 2007. To insure measurements independent of noise source variations, we only take into account the travel time change within the coda. For period of 8 to 20s, we observe a decrease in velocity starting in April 2006 with a maximum change of -0.3% of the initial velocity in June 2006. At these periods, the Rayleigh waves are sensitive to velocity changes down to the lower crust.

In the other hand, we compute the deformation rate below the MASE array from a slip propagation model of the SSE observed by means of the displacement time-series of 15 continuous GPS stations. Slip initiates in the western part of the Guerrero Gap and propagates southeastward. The propagation velocity is of the order of 1 km/day. We then compare the seismic velocity change measured from continuous seismological data with the deformation rate inferred from geodetic measurements below the MASE array. We obtain a good agreement between the time of maximal seismic velocity change (July 2006) and the time of maximum deformation associated with the SSE (July to August 2006). This result shows that the long-term velocity change associated with the SSE can be detected using continuous seismic recordings. Since the SSE does not emit seismic waves, which interact with the superficial layers, the result indicates that the velocity change is due to deformation at depth.