



Coseismic and Postseismic deformation of the 2008 Mw7.9 Wenchuan earthquake using GPS and InSAR

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The Wenchuan earthquake (Mw7.9, May 12, 2008) ruptured more than 300km of faults in the Sichuan province, China. We study coseismic and postseismic deformation of the 2008 Mw7.9 Wenchuan earthquake using GPS and InSAR. GPS data observed from a continuous array and campaign, a surface displacement field around the rupture zone using near and far-field GPS data recorded at about 200 sites. The Interferometry SAR (InSAR) data from ALOS/PALSAR satellite ascending orbits, along 6 adjacent paths covers almost the whole rupture. The correlation data and azimuth offset map from SAR data are used to map the fault geometry produced by the event. The two datasets complement each other, with the InSAR providing dense sampling of motion in the range of the satellite and GPS providing more sparse, but three-dimensional measurements of ground motion.

GPS and Interferograms and offset data are then inverted to solve for co-seismic slip on the fault using dislocation model in elastic half-space by A Sensitivity-based Iterative Fitting Method. The best-fit model shows that there are two faults with 5 rupture segments, the southern parts has a significant thrust component while the other segments have predominantly right-lateral slip. Post seismic deformation is unevenly distributed across the fault.