Surface deformation in Central Nevada Seismic Belt observed by Satellite Radar Interferometry

Presentation - Poster

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We present the contemporary velocity field in the western Basin and Range province observed by satellite radar interferometry. A recent study in the Central Nevada Seismic Belt (CNSB) reported a broad area of uplift (~2-3 mm/yr) explained by postseismic mantle relaxation after a sequence of four earthquakes (M ~ 7) that occurred in the first half of the 20\(^{th}\) century. To investigate the contemporary crustal deformation at the CNSB we use SAR imagery that covers a swath nearly 700 km long (seven conventional SAR frames) acquired by the European Remote Sensing Satellites ERS-1 and ERS-2 between 1992 and 2009, and Envisat between 2004 and 2010. In order to observe variations in the rates of velocity in CNSB, we produce line of sight (LOS) velocity fields for different time periods (1992 – 2000, 1999 – 2009 and 1992 - 2009) by averaging independent interferograms with small perpendicular baselines (< 150 m). Time-Series results from ERS 1/2 suggest that the uplift velocity decreased for the last decade, which is consistent with models of postseismic relaxation. Additionally we identify high rates of deformation at Long Valley Caldera, land subsidence due to water pumping on mines and agricultural exploitation areas, and ground deformation associated with moderate earthquakes.