

**RELATION BETWEEN GEODETIC OBSERVATIONS IN THE VENTURA BASIN AND THE NORTHRIDGE EARTHQUAKE AND POST-SEISMIC MOTIONS ASSOCIATED WITH THE EARTHQUAKE**

Donnellan, A., Lyzenga, G. A., Hager, B. J., and King, R. W., Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, andrea@cobra.jpl.nasa.gov; Harvey Mudd College, Clairmont, CA 91711, gregl@freia.jpl.nasa.gov; Dept. EAPS, Massachusetts Institute of Technology, Cambridge., MA 02.139, brad@meinesz.mit.edu, rwk@chandler.mit.edu

Using the Global Positioning System (GPS), we have found that the Ventura basin shortened at a rate of  $7.2$  mm/yr between 1987 and 1992. The pattern of deformation in the east-central basin is consistent with slip occurring deep on the thrust faults that bound the basin, while the faults are locked from the surface to about 10 km depth. The strain rates are higher in the east-central basin than in the eastern basin (north of Northridge) implying that the faults bounding the eastern basin were locked to greater depths. This is consistent with the 18 km depth of the Northridge mainshock. In addition, the orientation of the maximum compressive strain rate in the eastern Ventura basin is consistent with the NNE-SSW trending Northridge thrust earthquake.

Since the earthquake we have continuously monitored a site on Oat Mountain, which is located in the Santa Susana Mountains, above the greatest concentration of aftershocks. We also located sites in the Granada Hills and at the Cal State Northridge campus (CSUN). A preliminary look at the data suggests that Oat Mountain rose 1.0-2.5 cm in the first few days after the earthquake. While the site moved up and to the northwest during the mainshock, its trend of motion is now to the south. The site moved approximately 3.5 cm south and 1 cm west during the January 29, M S.1 aftershock with no discernible vertical motion, which is consistent with a left-lateral strike-slip event. CSUN shows an easterly drift of 7 mm during an 11 day period in the first two weeks after the earthquake. We will continue to monitor the area to see if these trends continue.

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