GPS Observations of Postseismic Deformation Associated with the 1994 Northridge Earthquake

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Measurement of postseismic deformation following the 1994 M 6.7 Northridge earthquake indicates continued shortening of the region since the earthquake. In the year following the earthquake a station located shout 15 km southwest of the epicenter has moved northward 15 mm. The site moved northeast 54 mm during the mainshock. Another station located about 15 km northwest of the northern edge of the rupture moved 98111111 southwest on the mainshock and has moved an additional 5 mm southward in the year since the earthquake. Both stations show a decrease in motion since the earthquake consistent wit In an exponential Li]il('scale of decay of about 3 years. The data cannot be explained by a model of an elastic layer over a viscoelastic half-space. With our current models is appears that the later data, and the preseismic data can be fit with sucl I a model, and a relaxation time of shout 20 years for the lower crust. More data are required to confirm this, however. We are testing whether afterslip 011 the downdip extension of the fault or other faults or nonlinear relaxation of the lower crust can explain the postseismic data for the months following the earthquake. At present we favor afterslip.

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