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Here we explore the constraints that our data place on coseismic slip for the two events, and their ensuing postseismic deformation.

Diagram illustrating the relationship between Green's functions and displacement data for two events:

- Green's functions for M6(.4) event:**  $\begin{pmatrix} A_{GPS6} & 0 \\ 0 & A_{GPS7} \\ A_{InSAR6} & A_{InSAR7} \end{pmatrix}$
- Green's functions for M7(.1) event:**  $\begin{pmatrix} 0 & A_{GPS7} \\ A_{GPS6} & 0 \\ A_{InSAR7} & A_{InSAR6} \end{pmatrix}$
- Displacement data:**  $\begin{pmatrix} m_6 \\ m_7 \end{pmatrix}$
- Relationship:** The displacement data is calculated as the product of the Green's functions and the slip vectors.
- Slip vectors:**
  - slip in the M6(.4) event:**  $\begin{pmatrix} d_{GPS6} \\ d_{GPS7} \\ d_{InSAR6} \end{pmatrix}$
  - slip in the M7(.1) event:**  $\begin{pmatrix} d_{GPS7} \\ d_{GPS6} \\ d_{InSAR7} \end{pmatrix}$

Figure 1 consists of two rows of plots. The top row shows GPS station positions and displacement vectors for the 2007 July 4th earthquake. The left plot is for a 0.05 m scale, and the right plot is for a 0.2 m scale. The bottom row shows ASC data for the same event, including data points, model predictions, and residuals for stations asc and dsc.

**GS04**

Reference latitude: 36.20354144°N  $v_\alpha = -5.88 \pm 3.73$  mmyr  $v_\delta = -12.08 \pm 3.74$  mmyr  
 WRMS = 5.02 mm; NRMS = 1.26

Reference longitude: 242.003410416°E  $v_\alpha = -19.97 \pm 2.76$  mmyr  $v_\delta = -20.80 \pm 2.76$  mmyr  
 WRMS = 14.19 mm; NRMS = 6.51

**GS04**

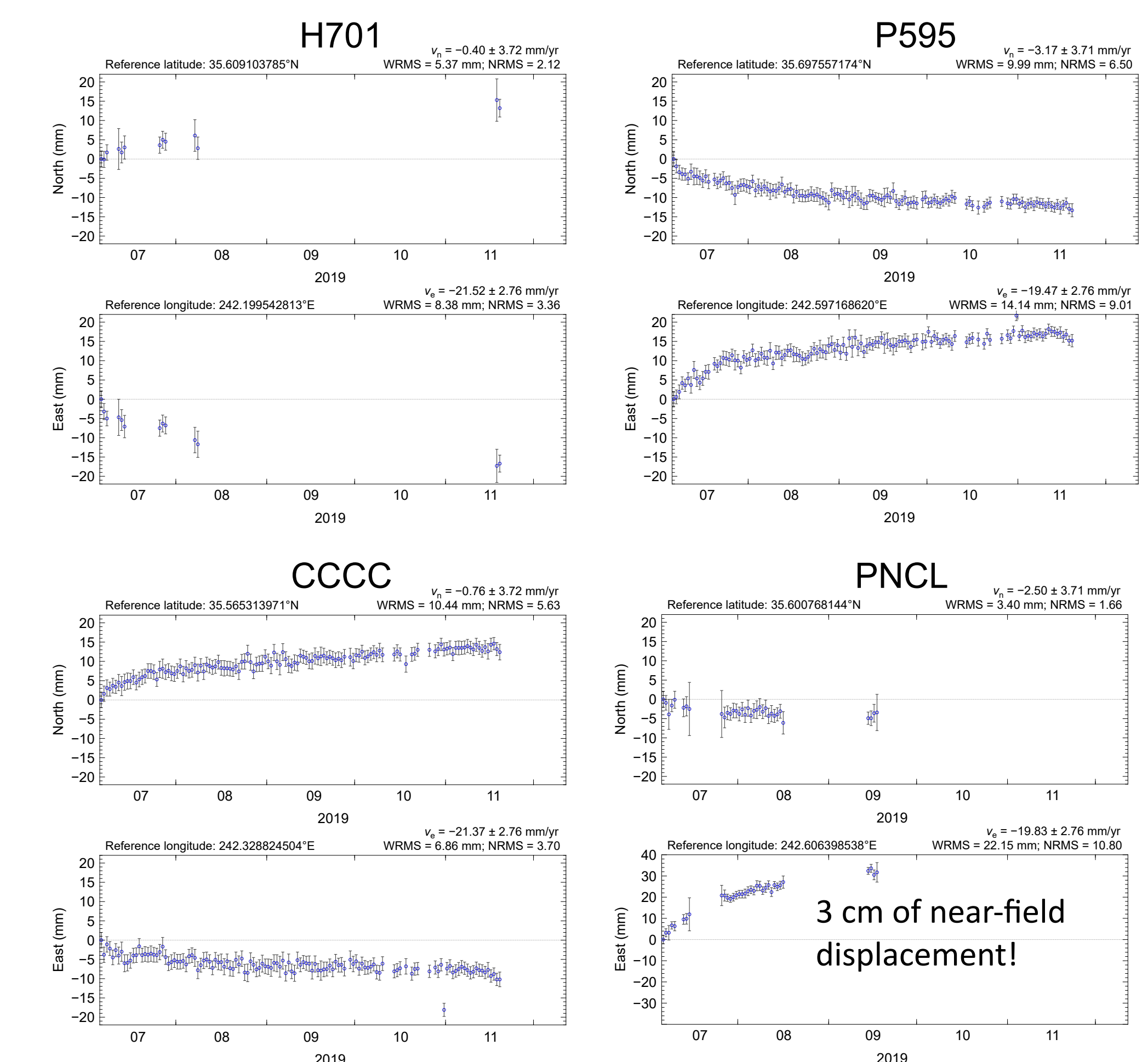
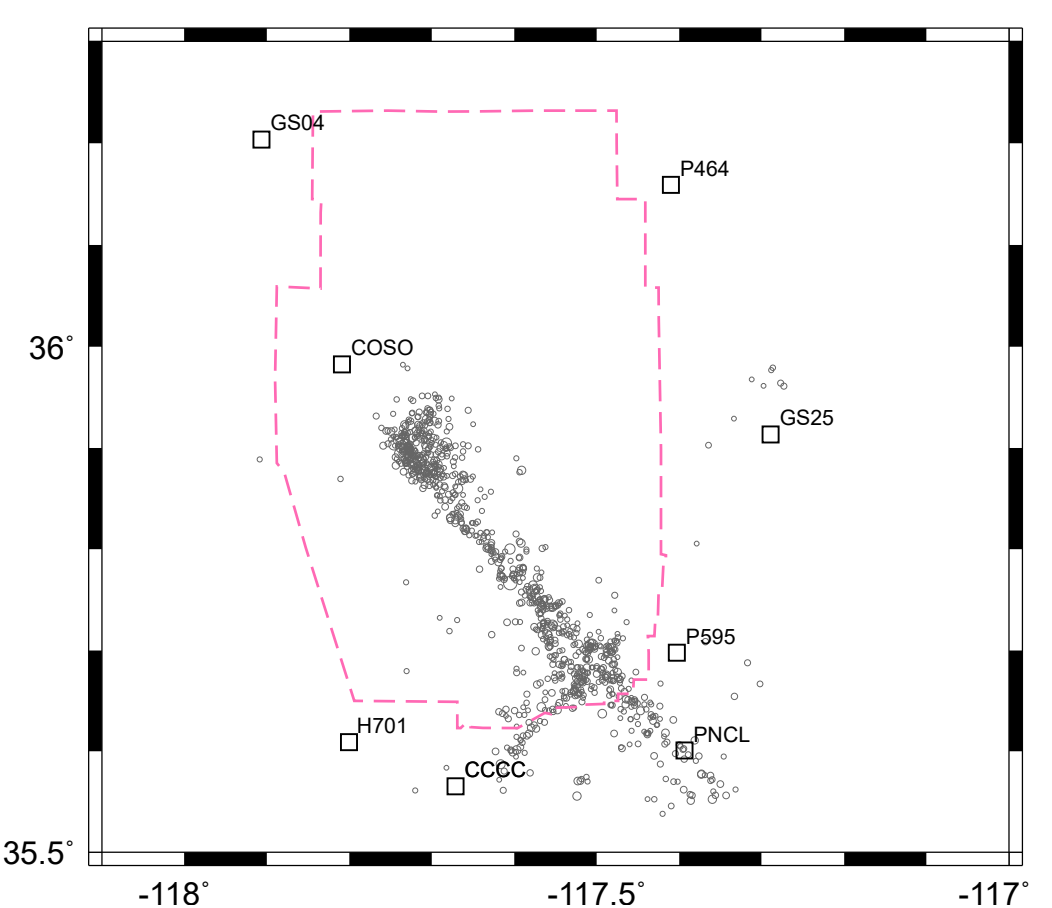
Reference latitude: 35.98234307°N  $v_\alpha = 2.73 \pm 3.72$  mmyr  $v_\delta = -7.86 \pm 3.73$  mmyr  
 WRMS = 4.43 mm; NRMS = 2.60

Reference longitude: 242.191107792°E  $v_\alpha = -16.22 \pm 2.75$  mmyr  $v_\delta = -17.94 \pm 2.77$  mmyr  
 WRMS = 14.77 mm; NRMS = 8.83

**GS25**

Reference latitude: 35.91322623°N  $v_\alpha = -7.86 \pm 3.73$  mmyr  $v_\delta = -17.94 \pm 2.77$  mmyr  
 WRMS = 3.46 mm; NRMS = 1.55

Reference longitude: 242.710871776°E  $v_\alpha = -16.22 \pm 2.75$  mmyr  $v_\delta = -17.94 \pm 2.77$  mmyr  
 WRMS = 6.26 mm; NRMS = 2.85



3 cm of near-field displacement!

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