Use real-time GPS to provide magnitude and fault length on EEW timescale

Targets large (M$>7$) earthquakes

Complements seismic systems
- Provides info where seismic methods saturate
- Relies on event triggering from seismic data
BARD Continuous GPS Network
Real-time Data Availability
Real-time GPS at the BSL

\[
G_m = d \Rightarrow \quad (G_r - G_b)m = (d_r - d_b)
\]
Calculating Offsets

Test case: El Mayor Cucapah EQ
Finite-fault modeling

- Method of Colombelli et al. (JGR, 2013)
- Dynamically adjusts fault length
- Smoothed inversion provides $M_w$ estimate
- Modified for baseline input
Hayward Earthquake Simulation
El Mayor Earthquake Simulation