

Figure S1. Downsampled line-of-sight (LOS) deformation observations.

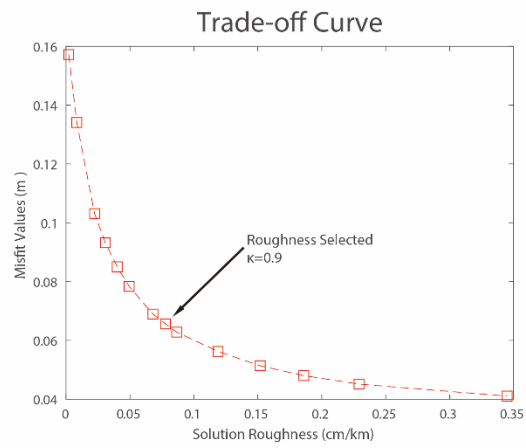


Figure S2. Trade-off curve between misfit and solution roughness.

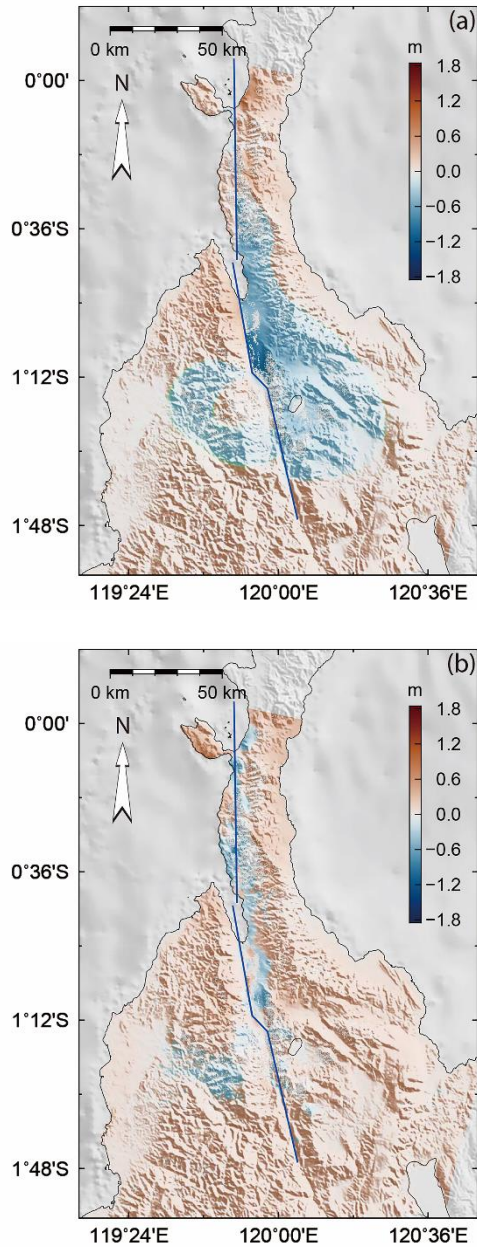


Figure S3. (a) Synthetic line-of-sight (LOS) deformation based on the source mechanism variation model. (b) Residual LOS deformation between the observed and synthetic deformation.

Table S1. The source parameters of the 2005 M 6.3 and the 2012 M 6.3 earthquakes constructed.

| Parameters | The 23 January 2005 | The 18 August 2012 |
|---------------------------|---------------------|--------------------|
| Top Central Latitude (°) | -1.239 | -1.326 |
| Top Central Longitude (°) | 119.900 | 120.092 |
| Top depth (km) | 0 | 0 |
| Length (km) | 10 | 10 |
| Width (km) | 20 | 20 |
| Strike (°) | 321 | 339 |
| Dip (°) | 61 | 84 |
| Rake (°) | -59 | -4 |
| Net slip (m) | 0.473 | 0.609 |