

Supplementary Materials:

# 3D surface velocity field inferred from SAR interferometry: Cerro Prieto Step-Over, Mexico, case study.

Ignacio F. Garcia-Meza <sup>1,2</sup>, J. Alejandro González-Ortega <sup>3,\*</sup>, Olga Sarychikhina <sup>3</sup>, Eric J. Fielding <sup>2</sup> and Sergey Samsonov <sup>4</sup>

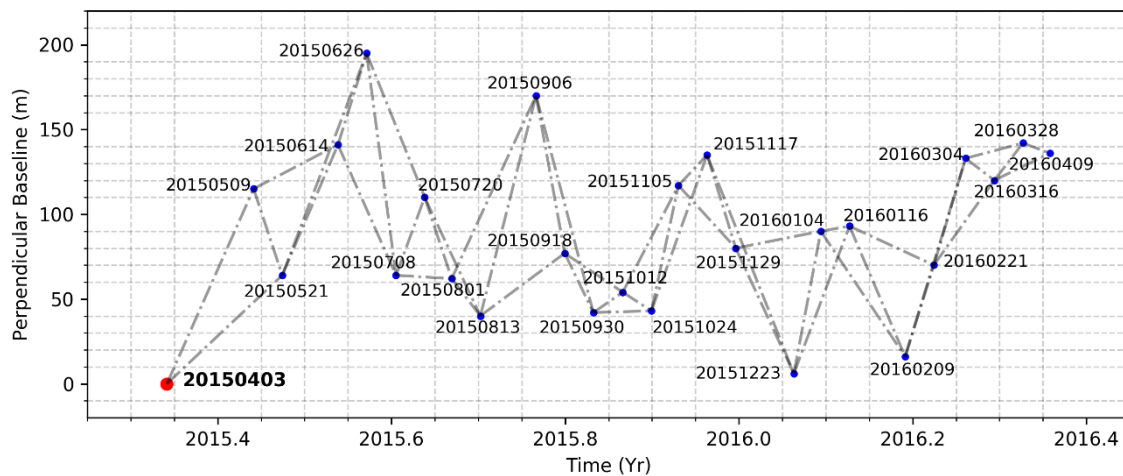
<sup>1</sup> Posgrado en Ciencias de la Tierra, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, B.C. 22860, Mexico; ifgarcia@cicese.edu.mx

<sup>2</sup> Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91011, USA; eric.j.fielding@jpl.nasa.gov

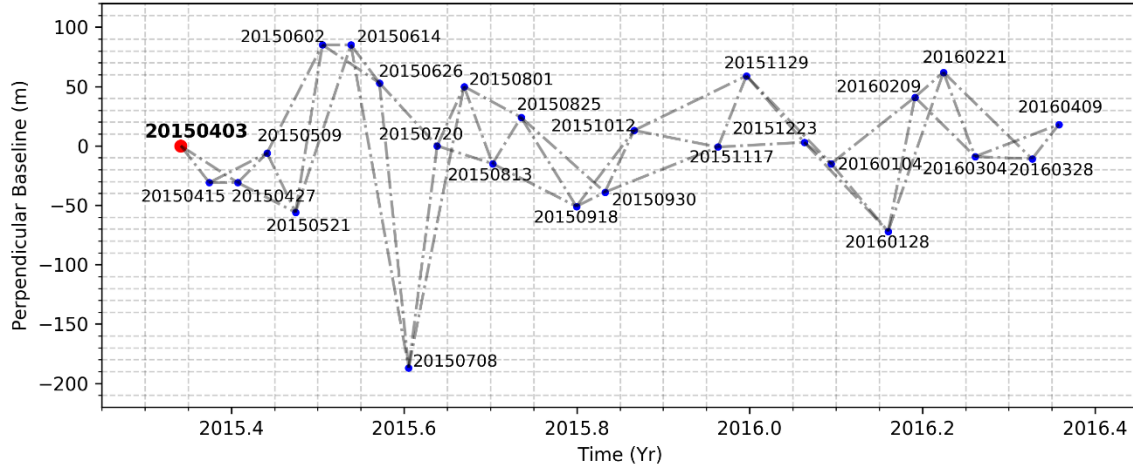
<sup>3</sup> División de Ciencias de la Tierra, Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, B.C. 22860, Mexico; osaritch@cicese.mx

<sup>4</sup> Canada Centre for Mapping and Earth Observation, Natural Resources Canada, Ottawa, ON K1S3L3, Canada; sergey.samsonov@nrcan-rncan.gc.ca

\* Correspondence: aglez@cicese.mx; Tel.: +52-646-175-0500

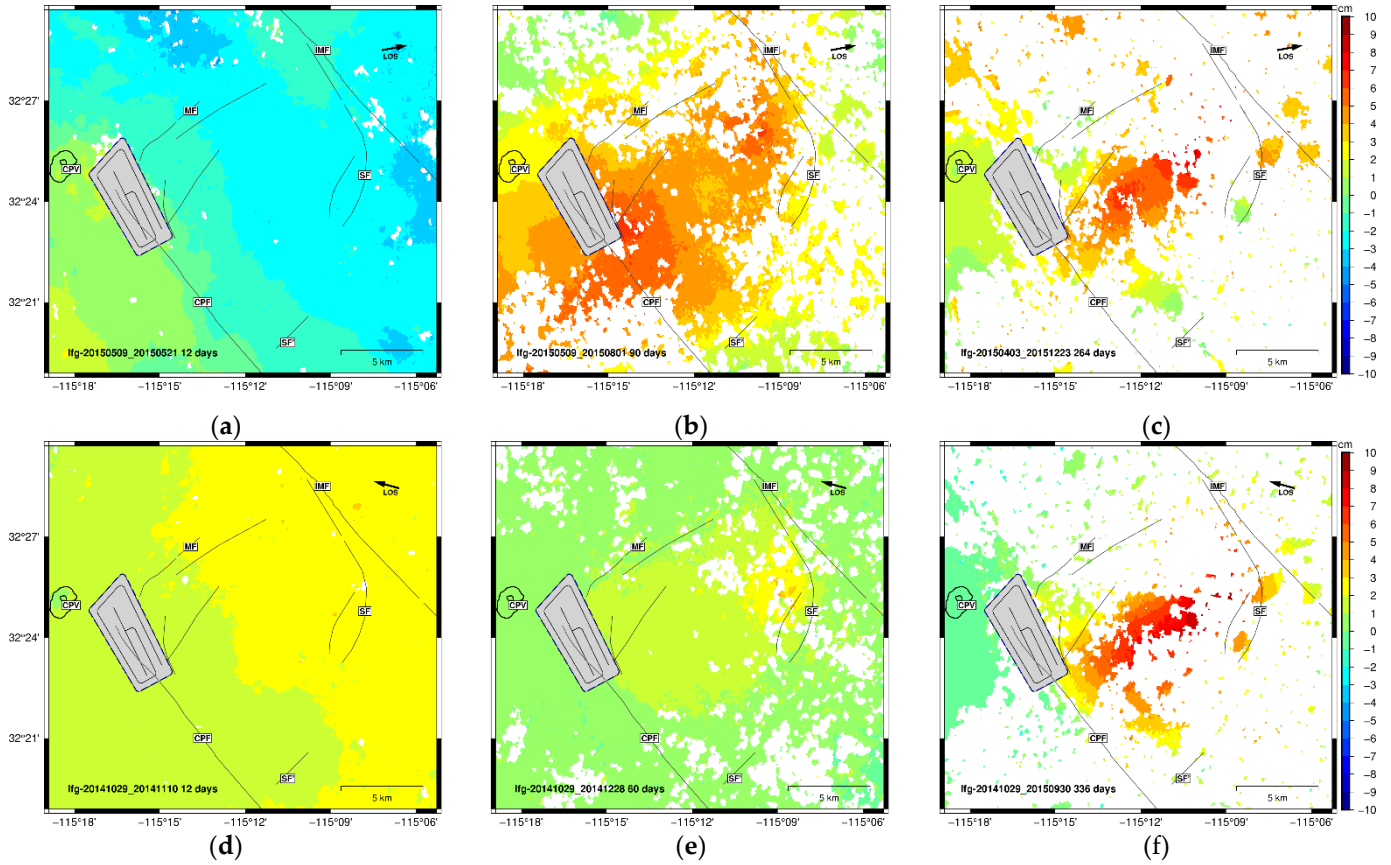


(a)



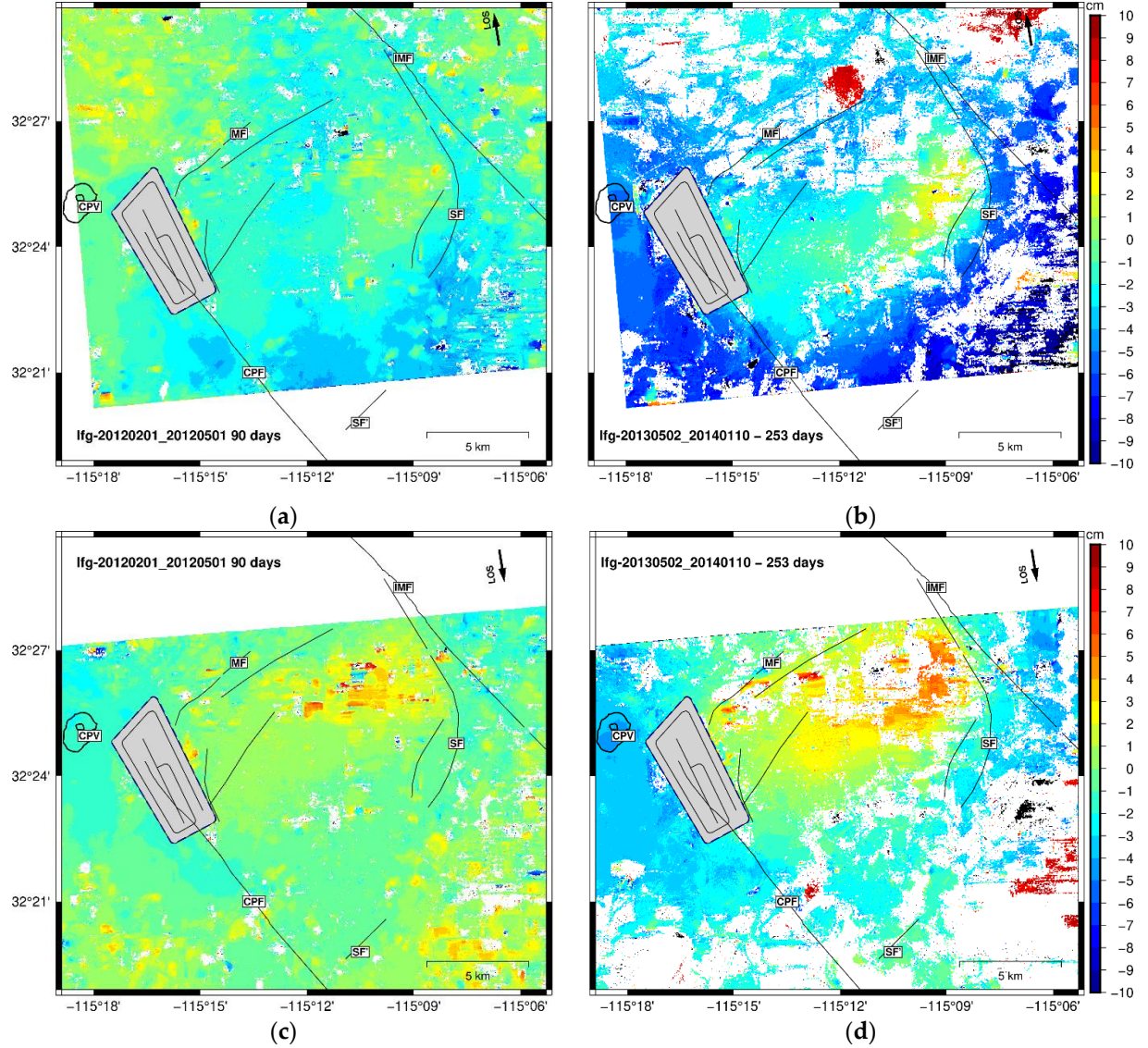
(b)

**Figure S1.** Perpendicular baseline versus time plot for Sentinel 1A ascending orbital pass T166 (a) and descending orbital pass T173 (b). The big red dot is the reference image. The dashed lines denote the selected interferometric pairs with a 200-m baseline and 90-day temporal threshold. The number on every dot corresponds to the acquisition date. Dates format: YYYYMMDD (e.g. 20120201).



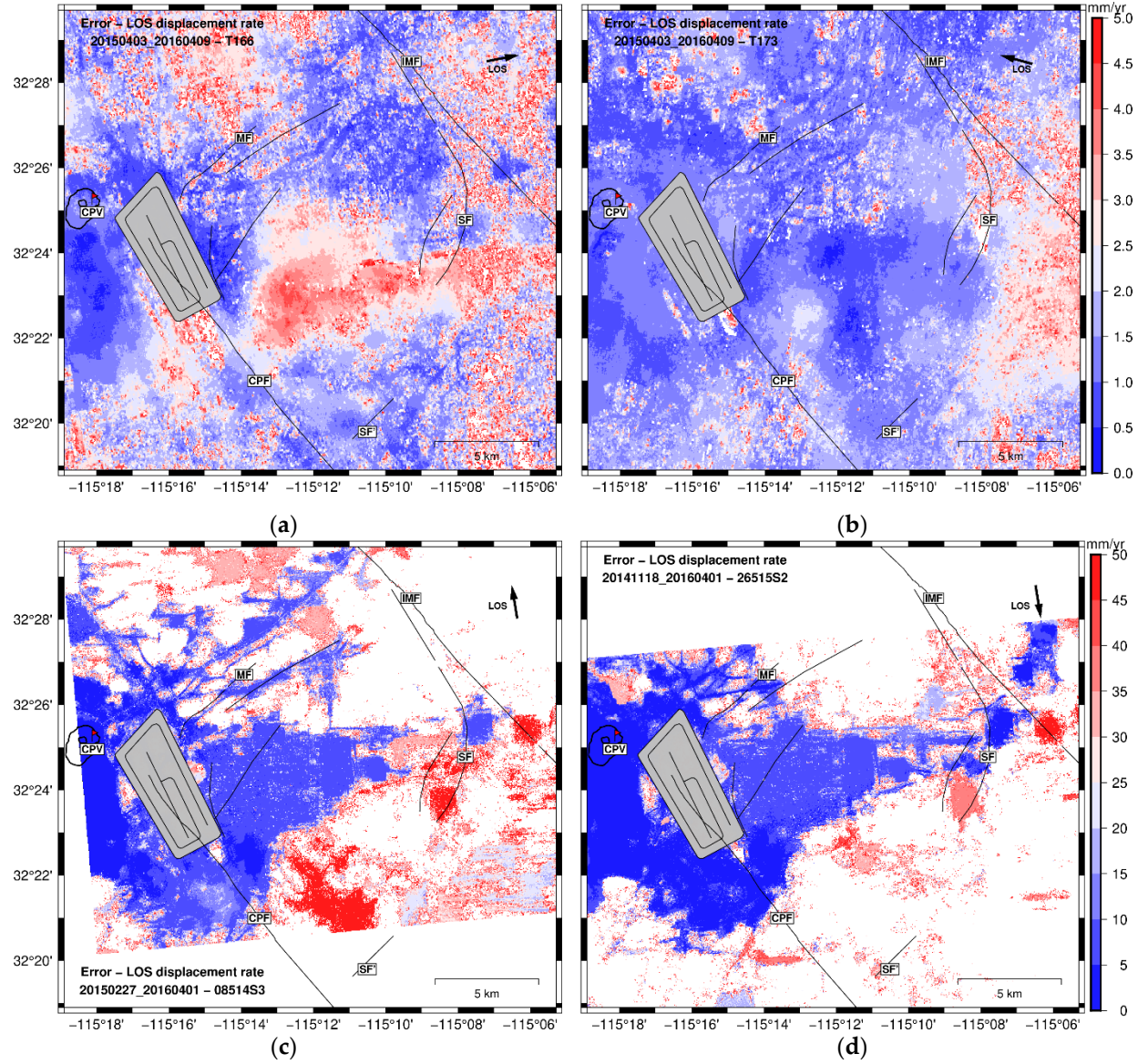
**Figure S2.** LOS displacement maps from Sentinel 1A ascending T166 (a-c) and descending T173 (d-f) orbital pass spanning different periods from 12 to 336 days. The black arrow indicates the line-of-sight (LOS) direction. The color palette corresponds to relative LOS displacement. Warm colors denote relative movement away from the

sensor, while cold colors denote relative movement towards the sensor. Main faults are denoted by continuous black lines. Abbreviations: Ifg = Interferogram, LOS= Line of Sight, CPF=Cerro Prieto Fault, IMF= Imperial Fault, MF= Morelia Fault, SF= Saltillo, FS'= Saltillo Fault continuation [15] and CPV= Cerro Prieto Volcano.

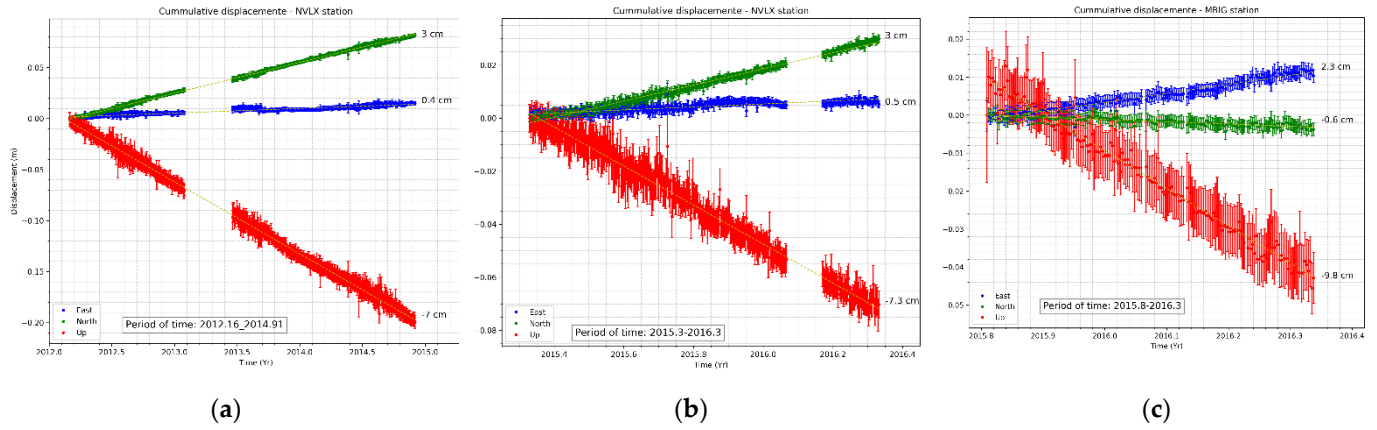


**Figure S3.** LOS displacement maps from UAVSAR flight lines heading to the east 08514S3 (a-b) and to the west 26515S2 (c-d) spanning different periods. The black arrow indicates the line-of-sight (LOS) direction. Warm colors denote relative movement away from the sensor, while cold colors denote relative movement towards the sensor. Notation as in Figure S1.





**Figure S4.** Mean errors of LOS displacement maps from Sentinel 1A and UAVSAR. (a-b) Sentinel 1A ascending and descending orbital passes, respectively. (c-d) UAVSAR east and west flight segments, respectively. In (a) and (b), pixels with errors above 5 mm.yr<sup>-1</sup> are masked. In (c) and (d), pixels with errors above 50 mm.yr<sup>-1</sup> are masked. The red flag shows the location of the reference point. Notation as in Figure S1.



**Figure S5.** Continuous REGNOM sites GPS velocities in Igb14-NOAM. (a) NVLX station: north, east and up velocities for the period Feb/2012-Nov/2014. (b) NVLX station: north, east and up velocities for the period Apr/2015-Apr/2016. (c) MBIG station: north, east and up velocities for the period Sep/2015-Apr/2016. Note: MBIG station started working in October 2015.