

**COSI-CORR: A SOFTWARE TO MONITOR GROUND SURFACE DEFORMATION FROM SATELLITE IMAGERY.** F. Ayoub<sup>1</sup>, S. Leprince<sup>1</sup>, J.P Avouac<sup>1</sup>, and N.T. Bridges<sup>2</sup>, <sup>1</sup>Caltech GPS, 1200 East California Blvd, Pasadena, CA91125 (fayoub@gps.caltech.edu), <sup>2</sup>Johns Hopkins University Applied Physics Laboratory, 11100 Johns Hopkins Road, Laurel, MD 20723.

**Introduction:** COSI-Corr is a software developed at the California Institute of Technology for the accurate geometrical processing of optical satellite and aerial imagery. The software allows precise co-registration of time-series of images and sub-pixel measurement of ground surface deformation.

Released to the academic community in 2007, COSI-Corr is used in Earth Sciences to monitor surface processes such as co-seismic deformation, glacier flow, landslide, sand dune migration. The method has recently been applied on Mars using HiRISE imagery to monitor sand ripple displacement on the Nili Patera dune field [1,2]. Complete HiRISE and CTX imagery support was released to the community in October 2014.

**Tutorial:** This presentation is in essence a tutorial about COSI-Corr, with emphasis on the processing of HiRISE imagery. After a few illustrations of the software capability, a detailed presentation of the software use will be presented: software installation and resources, description of the standard processing steps, HiRISE specificities, and post-processing tools. The objective is to provide enough information to the audience for it to be aware of the software capability and be able to process Martian (or Earth) imagery.

COSI-Corr (an ENVI plugin) is available at:  
[http://www.tectonics.caltech.edu/slip\\_history/spot\\_cos\\_eis/](http://www.tectonics.caltech.edu/slip_history/spot_cos_eis/)

**References:** [1] Bridges N.T. et al. (2012) *Nature* 485, 339-342. [2] Ayoub F. et al. (2014) *Nature Communications* 5:5096 doi: 10.1038/ncomms6096