Metadata Report

Project Name: Bilila-Mtakataka Fault, Mua Segment

Summary:

Point cloud data derived from Pleiades imagery of the Bilila-Mtakataka Fault, Malawi. The bi-stereo Pleiades imagery (50 cm pixel^{-1}) was processed using the Leica Photogrammetry Toolbox within ERDAS Imagine. Processing was carried out by Michael Hodge and Austin Elliot, supported by Juliet Biggs and Ake Fagereng. Luke Wedmore prepared the files for upload.

The Imagery was purchased using a small grant from COMET (Centre for Observation and Modelling of Earthquakes, Volcanoes and Tectonics). Michael Hodge was supported by the NERC GW4+ Doctoral Training Partnership (NE/L002434/1) and COMET. Austin Elliott was supported by COMET and NERC Large Grant Looking into the Continents from Space(LICS; NE/K011006/1). Luke Wedmore was supported by EPSRC Global Challenges PREPARE project (EP/P028233/1). Juliet Biggs was supported by LICS (NE/K010913/1) and PREPARE(EP/P028233/1). Ake Fagereng was supported by PREPARE (EP/P028233/1).

This data has contributed to the following publications:

Hodge, M., Biggs, J., Fagereng, A., Elliot, A., Mdala, H., Mphepo, F. (2019). A semi-automated algorithm to quantify scarp morphology (SPARTA): application to normal faults in southern Malawi. *Solid Earth*, 10, 27-57. doi.org/10/5194/se-10-27-2019

Hodge, M., Biggs, J., Fagereng, A., Mdala, H., Wedmore, L., Williams, J. Evidence from high resolution topography for multiple earthquakes on high slip-to-length fault scarps: the Bilila-Mtakataka fault, Malawi. *In Preparation for Tectonics*.

Site Information

Bilila-Mtakataka Fault, Mua Segment, Malawi.

Bounds: min x: 655556; max x: 665696; min y: 8419685; max y: 8442917 (EPSG: 32736)

Survey Results

Imagery: Bi-Stereo Pleiades.
Imagery date: 2016-06-01
Sun azimuth: ~35°
Sun Elevation: ~46°
Cloud cover: <10%

Products

Data was collected as 1 panchromatic band and 4 multispectral bands. Multispectral bands were converted to 8-bit colour. A 0.7m pan-sharpened multispectral image was created using the high-resolution panchromatic images.

The panchromatic stereo-pair was used to create the ~50 cm point cloud. In each scene, ~20 tie points were identified and used to refine the image alignment. The image alignment has a RMSE of <0.2 pixels which equates to <0.1 m.