

Metadata Report

Note: This is a suggested template for descriptive metadata for datasets uploaded to the OpenTopography Community Dataspace. Information below is optional, but please fill in fields as appropriate. The goal of this document is to enable data reuse, so please provide as much information as possible.

Project Name Satellite stereoimagery pointclouds of the Yasman and Vakhsh Valleys, Tajikistan, collected 2020-2021

Note: This title will be used in your data citation, so make it unique and descriptive. It's best to follow a template of "Measured Feature, Location, Date" For example:

"Survey of Ozaukee South Beach Bluff, Wisconsin, May 2018"

Summary

This data was collected to search for surface ruptures of the 1949 $M_w 7.6$ Khait Earthquake. It is a 232 km² area of Worldview-3 imagery which has been processed to create an elevation pointcloud. The area encompasses the northern slope of the Yasman Valley, the town of Khait, the Khait Landslide, triggered by the 1949 earthquake. The point cloud was derived by applying the NASA Ames Stereo Pipeline toolkit. These worldview footprints are labelled P00X where X=1,2,3,4.

Also included is a footprint derived from Pleiades stereo imagery 174km² on the Vakhsh Fault covering near vertical ruptures higher up the valley side. This was derived using Agisoft Metashape Pro v1.6

- PI(s)

Richard Walker

- Field staff

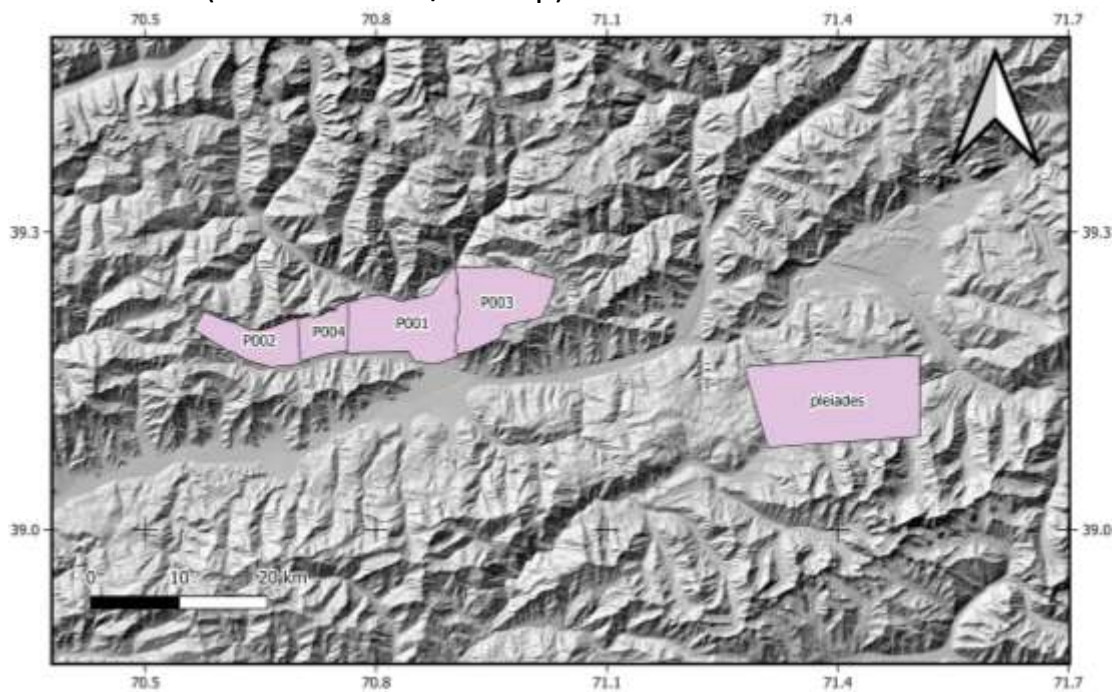
n/a

- Additional team members

Benedict Johnson

Site Information

- Site description: a ~40km long and ~3-10km wide section of the Yasman Valley and Khait Landslide. The Yasman Valley is a tributary of the much larger Vakhsh Valley. In addition a 20km x 9km section of the south side of the Vakhsh Valley to examine near vertical surface ruptures on the Vakhsh Fault.
- Site objective: to identify surface ruptures associated with the 1949 M_w 7.6 Khait Earthquake, Tajikistan
- Site location (GPS cords and/or map)



- Site conditions

Nearly cloudless, no snow

- Date/time spent at each site
- P001 05-Sep-2021
- P002 05-Sep-2021
- P003 22-Aug-2021
- P004 22-Jul-2021
- Pleiades 21-June-2020

Each stereo pair was acquired by rotating the camera within the same satellite orbit

Survey Results

- Equipment used

Worldview-3 Satellite

Pleiades Satellites

- GPS solutions

n/a

- Errors

n/a

- Alignments

n/a

- Collection methods

Raw Worldview images are stereo OR2A product. These come pre-projected into the WGS84 UTM 42N coordinate system.

Products

- Date of dataset collection

P001 05-Sep-2021

P002 05-Sep-2021

P003 22-Aug-2021

P004 22-Jul-2021

Pleiades 21-June-2020

- Coordinate system of datasets

Worldview 3 WGS 84 / UTM zone 42N EPSG:32642

Pleiades WGS 84 / UTM zone 42N EPSG:32642

- Spatial resolution

Worldview Imagery used for photogrammetry = 0.3m horizontal resolution

P001,P002,P003 0.5m resolution; P004 0.3m resolution

Pleiades imagery used for photogrammetry = 0.5m horizontal resolution

- Horizontal Accuracy

?

- Vertical Accuracy

?



- Data formats

LAZ

- Data processing methods

Nasa Ames Stereo Pipeline (ASP) version 2.6.2. Raw images are orthorectified using the ALOS AW3D30 DEM to remove first order topographic distortion. This allows a smaller search window to be used for correlation, saving compute time. Correlation was done using the Semi-Global Matching algorithm. Point clouds are referenced to the same coordinate system as the source imagery.

Misc Notes

Example scripts to rerun the NASA Ames Stereo Pipeline analysis can be found on github https://github.com/bwwjohnson/asp_dem_creation/blob/main/wv3_single_pair.sh

Note