MetaFOCUS

A Python Toolbox for Optimising, Characterising, and Understanding Structure-from-Motion Pipelines in Agisoft Metashape Professional

Geert J. Verhoeven[1], Camillo Ressl[2], Martin Wieser[2]

[1] Department of Prehistoric and Historical Archaeology, University of Vienna, Austria (*geert.verhoeven@univie.ac.at*)
[2] Department of Geodesy and Geoinformation, TU Wien, Austria

code on GitHub

Python toolbox
Runs inside Metashape Professional 2.x

15 tools
In four groups of the MetaFOCUS menu

Shared core
Photogrammetry Utilities, for all tools

Documented
Every tool explained in depth

Open source
Free, GNU GPL version 3 or later

SfM Process Diagnostics

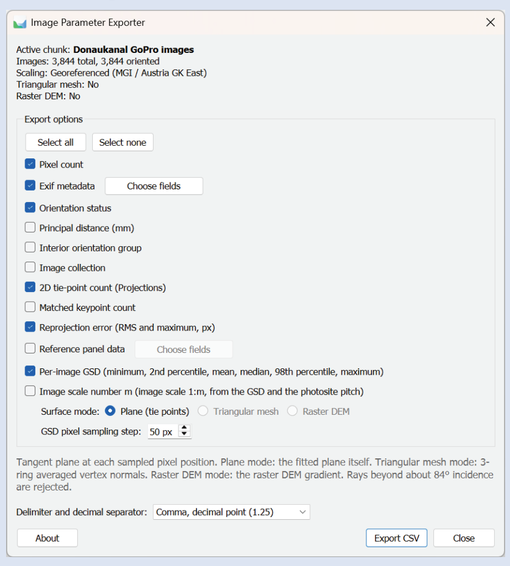
SfM Log Parser

Summarises the log of an SfM run in a flowchart and six graphs.

Interior Orientation Viewer

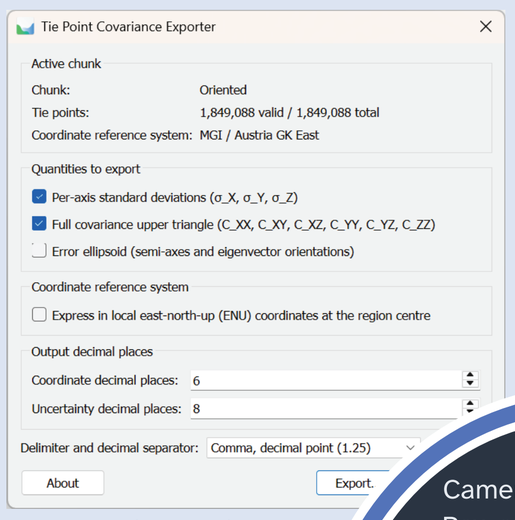
Shows the estimates, standard errors, and distortion of each interior orientation group.

Image Parameter Exporter



Exports the Exif metadata, orientation, and 2D tie point counts of each image.

Tie Point Covariance Exporter



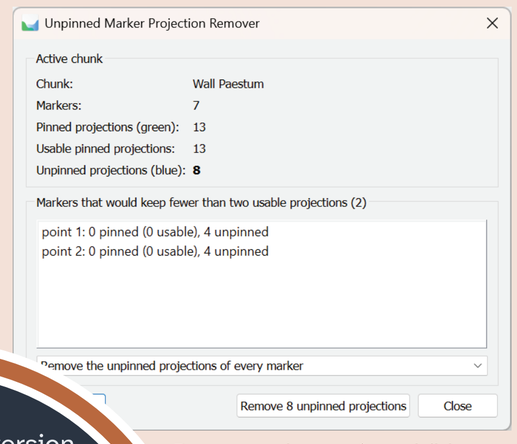
Exports the covariance matrix and error ellipsoid of each 3D tie point.

Control Measurements and Residuals

Marker Residual Inspector

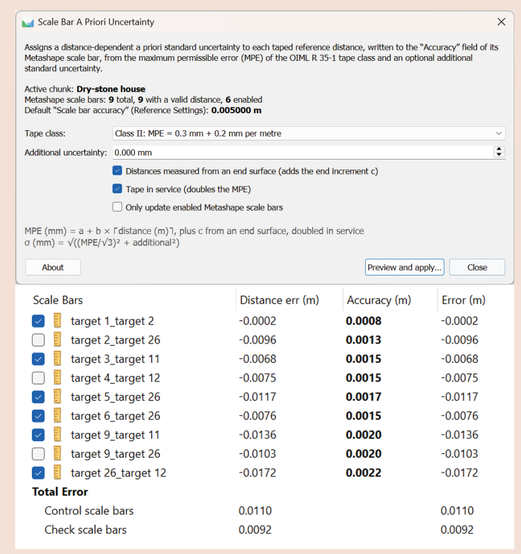
Shows the residuals and object-space errors of markers and flags suspect ones.

Unpinned Marker Projection Remover



Removes the unpinned (blue-flagged) marker projections and keeps pinned ones.

Scale Bar A Priori Uncertainty



Derives the a priori standard uncertainty of a scale bar from its tape class.

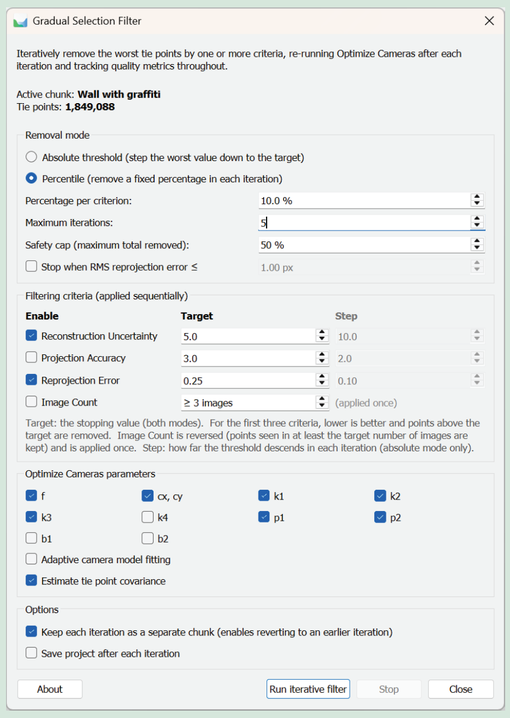
Camera model inversion
Ray–surface intersection
Redundancy computation

Photogrammetry Utilities

Surface normal computation
Least-squares plane fitting
Covariance propagation

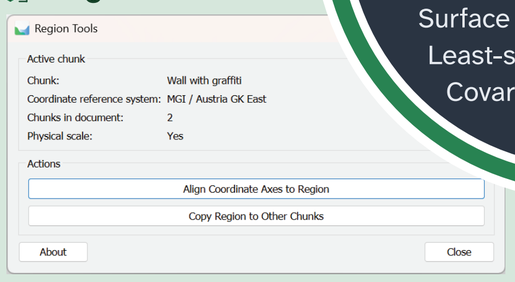
Filtering and Project Management

Gradual Selection Filter



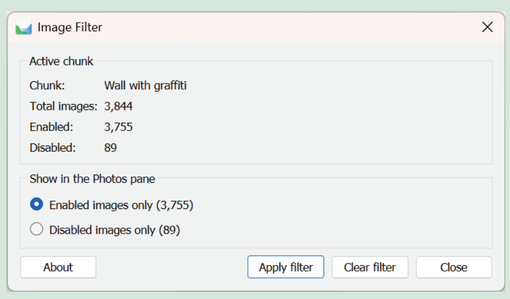
Removes 3D tie points in iterations, re-adjusts after each, and suggests a state.

Region Tools



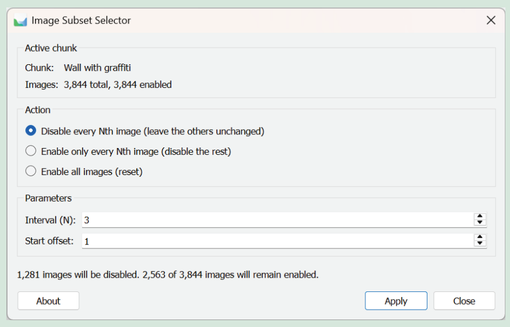
Aligns the coordinate axes of a chunk with its region and copies regions between chunks.

Image Filter



Shows only the enabled or only the disabled images in the Photos pane.

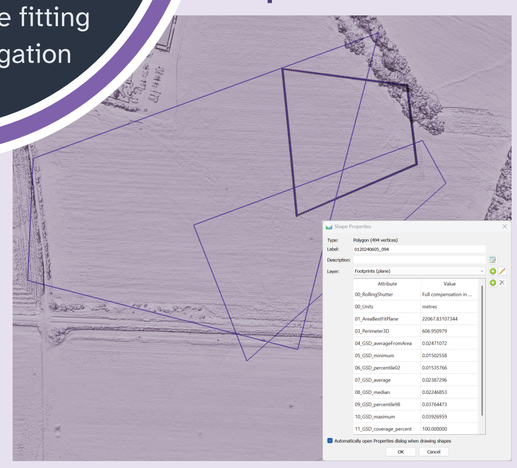
Image Subset Selector



Enables or disables images at regular intervals, for thinning or validation.

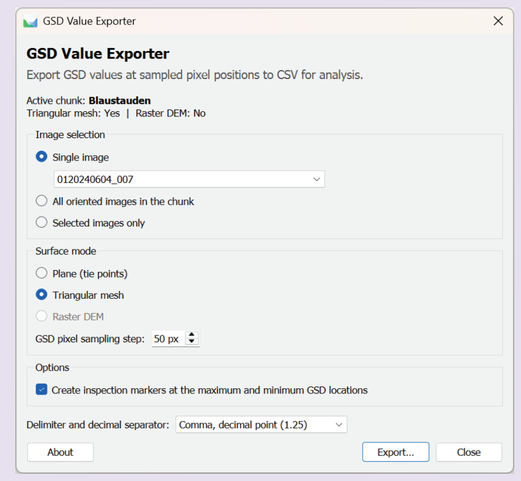
Surface-Derived Project Outputs

Image Footprint Generator



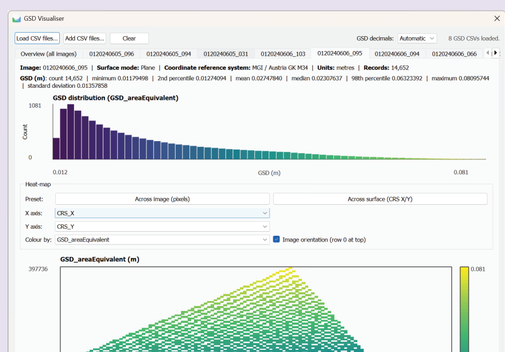
Generates image footprints on a plane, a triangular mesh, or a raster DEM.

GSD Value Exporter



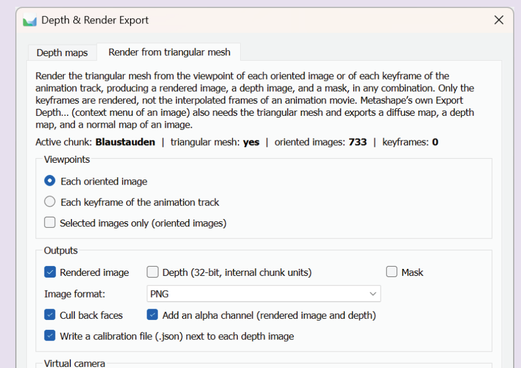
Exports the GSD along rows and columns at sampled pixel positions of each image.

GSD Visualiser



Shows exported GSD values as a heat map per image, with their statistics.

Depth & Render Export



Exports the stored depth maps and renders images, depth, and masks from the mesh.

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