Introduction to Agisoft Metashape

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Tutorial notes
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OpenTopography
High-Resolution Topography Data and Tools
Example for the demo is from the Eolian Islands north of Sicily: Vulcano Island.
Step 1: Check OT for images/data (image folder provided)

**OT Community data space**

Find Topography Data

Information and Instructions

- US View
- Global View
- Terrain

RESULTS:

Total 7 datasets found for all data sources.

- OT High Resolution Topography (6)
- USGS 3D PE Point Cloud (0)
- Community Contributed (2)
- Global & Regional DEM (5)

Datasets listed below were contributed to OpenTopography by members of our community data space. These datasets are not hosted by OpenTopography, but are shown here as a service to our users. For each dataset basic metadata are shown. Click the button to the right of the dataset to access these data. OpenTopography is not responsible for the accessibility of these data.

1. **Geomorph/Phys** - Global High Resolution Geomorphometric Layers
2. **2018 Faraglione, Vulcano Island, Sicily, Italy (simple demo)**

Photos are here

For the demo, we zipped the photos: see link on course page
Step 1: Add Folder of photos
Step 2: Align photos (=SIFT plus Structure from Motion)

Most processing steps are located in the “Workflow” tab. A job can be batched or each step processed individually.

Alignment parameters set the foundation for following workflow steps. High accuracy may take substantial time. We use medium alignment here to save time and still acquire a desirable model. Medium means the photos are downscaled by a factor of 4 leading to possible errors in camera position calculations.

Generic preselection pairs photos on first pass and speeds up alignment. Reference is most useful with quality GPS tagged photos or georeferenced model.
Step 2: Align photos (=SIFT plus Structure from Motion)

Now we have a sparse cloud along with calculated camera positions.
Step 2: Build Dense Cloud

High quality dense cloud is recommended but again is time consuming. A first pass with low quality is good for visualization and helps determine errors within alignment settings.

Use the workspace on left side to navigate or see symbols in toolbar.

Take some time to explore.

This may be the last step for some purposes. Dense point cloud can now be exported and analyzed in software such as CloudCompare.
Step 3: Build Mesh

Using Dense Cloud as source data gives best results. Arbitrary surface type is recommended although height field can be useful with flat topography.

Use the workspace on left side to navigate or see symbols in toolbar.

Triangle calculated from dense point cloud
Step 4: Build Texture

Default settings work here. Detailed explanations for all settings are provided in Agisoft Metashape User Manual.

Not bad. Have a look around.
Step 5-6: Build DEM and Orthomosaic

Note the product resolution quality and that they are derived from previous workflow options.

Need paid version to complete these steps
Finished. We can now export all models and generate a processing report