ENVI® PHOTOGRAMMETRY MODULE

The ENVI Photogrammetry Module registers imagery to ground coordinates and geometrically corrects them to remove distortions that occur during image capture. This Module delivers a trusted, rigorous orthorectification method with robust capabilities and also provides a point cloud generation capability using a dense image matching algorithm.

GET THE 3RD DIMENSION OF INFORMATION FROM ELEVATION DATA

BENEFITS

Produce highly accurate orthorectified imagery

Easily create 3D products from stereo pairs

Module support for 30 different sensors

RIGOROUS ORTHORECTIFICATION

The rigorous orthorectification function builds highly accurate orthorectified images by rigorously modeling the object-to-image transformation. The details of this transformation are mostly transparent to the user, which means the orthorectified images are created without defining any detailed model parameters. Rigorous orthorectification is implemented as a workflow wizard in desktop ENVI. Spacemetric designed the underlying block-adjustment model, which provides a precision orthorectification solution for over 30 different sensors and utilizes the metadata and emphemeris data provided with each dataset.

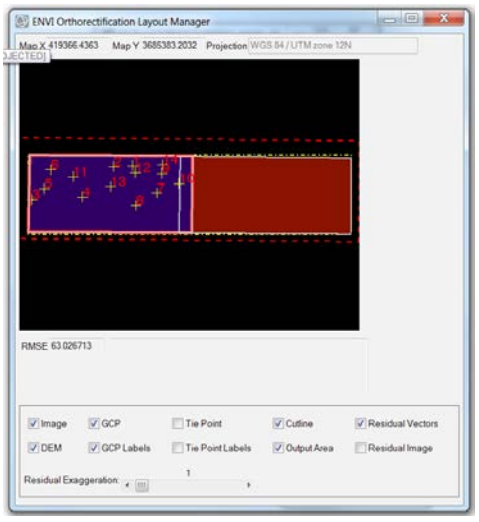

Figure 1: Rigorous Orthorectification Workflow Layout Tool

The workflow wizard allows the user to view the spatial layout of the input imagery, DEM, and ground control points (GCPs) along with the error magnitudes for each GCP (see Figure 1 at right). This enables adjustment of GCPs and tie points to improve the root mean square error (RMSE) of the orthorectified output.

Sensor Support
The rigorous orthorectification workflow supports over 30 different sensors including Worldview-1/2/3, SPOT 1-7, Pleiades-1A/1B, Radarsat, ASTER, Landsat, and others. The workflow requires the metadata and ephemeris data that is provided with a standard data delivery.

OPERATING SYSTEM SUPPORT

WINDOWS		MAC OS X	LINUX
32-BIT	64-BIT	64-BIT	64-BIT
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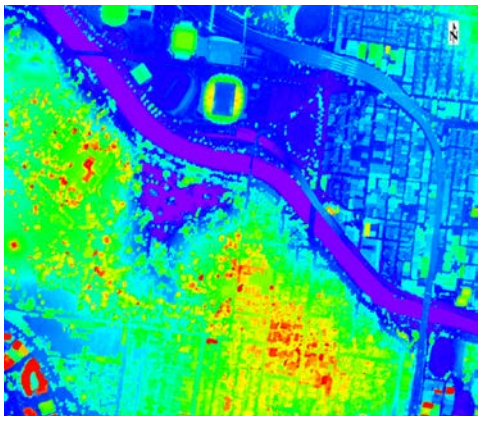
API Support
The rigorous orthorectification workflow is not available via the ENVI API. It can only be accessed in an interactive ENVI session.

GENERATE POINT CLOUD BY DENSE IMAGE MATCHING

The Generate Point Cloud by Dense Image Matching tool creates point clouds in LAS format from two or more images taken from different view points. The capability implements the semi-global matching (SGM) algorithm which identifies corresponding points in at least two images. For a given point in one image, it searches a two-dimensional grid of points in the second image. By having orientation data, the search is reduced to one dimension: along an epipolar line in the second image. The coarse DEM imposes a constraint on the range of heights in the matching area, which constrains the length of the epipolar line. This reduces both the risk of false matches and the time in matching by reducing the search space. The success of the algorithm depends on the intersection angle and similarity between the images. An example output using Worldview-2 data is shown in Figure 2 (Right).



Output using Worldview-2 data.

Sensor Support
The Generate Point Cloud by Dense Image Matching provides support for standard ENVI images with RPCs, Worldview-1/2/3, GeoEye-1, Quickbird, IKONOS, SPOT-6, and Pleiades-1.

API Support
The Generate Point Cloud by Dense Image Matching is available in an interactive session and via the ENVI API. Point clouds can be generated by calling the ENVIGeneratePointCloudsByDenseImageMatchingTask routine.

GENERATE POINT CLOUD BY DENSE IMAGE MATCHING OPERATIONAL SUPPORT

WINDOWS		MAC OS X	LINUX
32-BIT	64-BIT	64-BIT	64-BIT
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FOR MORE INFORMATION:
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* The ENVI Photogrammetry Module is a collaborative module between Harris Geospatial and Spacemetric AB of Stockholm, Sweden and is available with a separate license.