

**EXELIS**

Visual Information Solutions

# ENVI Orthorectification Module

Orthorectify Your Imagery Quickly and Easily.



# Rigorous Orthorectification. Simple Workflow. Trusted Method.

## THE NEED FOR ORTHORECTIFICATION

Satellite and aerial imagery is used increasingly in GIS and scientific applications for the rich information it provides about a geographic area. If you use imagery as a source of information, you've encountered a need to perform orthorectification - the process of accurately registering imagery to ground coordinates and geometrically correcting it to remove distortions that occur during image capture.



## A RIGOROUS SOLUTION FROM ENVI

Previously, methods for orthorectifying imagery required extensive knowledge of the process and complex software systems that were not necessarily available to the typical image consumer. Now, the add-on ENVI Orthorectification Module delivers a trusted, rigorous orthorectification method and robust capabilities, all distilled into an easy-to-use workflow.

This solution creates a seamless data transition, easily taking you from data ingest to orthorectification and further exploitation of results using your ENVI software. Designed for use by non-expert and expert users alike, the wizard-based interface guides users through orthorectification steps to quickly produce accurate results.

## TRUSTED METHOD FOR RIGOROUS ORTHORECTIFICATION

The method in the ENVI Orthorectification Module is based on the mathematical model for rigorous orthorectification designed by worldwide ortho experts, Spacemetric. Spacemetric's engineers have worked closely with satellite and aerial providers for many years, optimizing their models to accurately work with today's most popular airborne and satellite sensors.

This extensive research and development has produced a solid, truly rigorous method that is widely accepted as an industry standard in image orthorectification technology. Spacemetric's highly optimized software allows imagery users to produce high quality results quickly. Since this trusted method is now combined with the image processing and analysis capabilities in ENVI, you can trust that your orthorectification results are scientifically accurate and of the highest quality.

Orthorectify your imagery quickly and easily.



# Automated Workflow

ENVI is known for making scientifically advanced image processing and analysis capabilities accessible to all levels of geospatial imagery users by incorporating easy-to-use, automated processes and procedures. Now, the ENVI Orthorectification Module delivers orthorectification capabilities in an automated, wizard-based workflow, so you can perform advanced techniques, regardless of your experience with image processing or orthorectification.

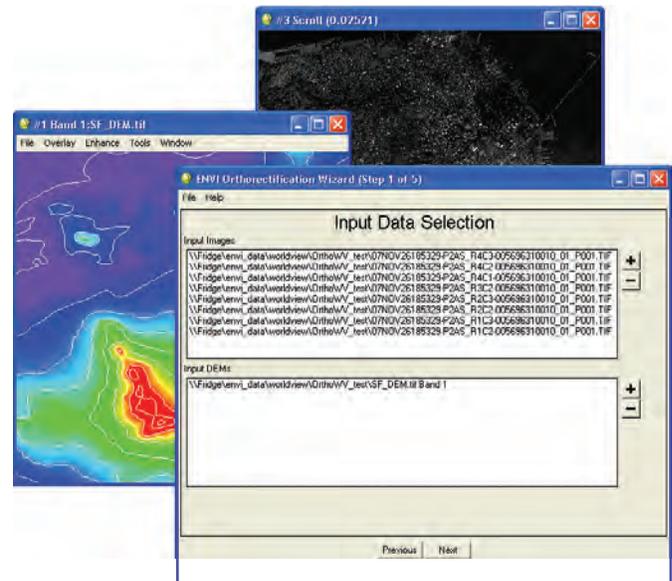
And, since ENVI is integrated with ArcGIS, you can seamlessly output your results to a GIS without ever interrupting your workflow.

## Steps to Orthorectify an Image with the ENVI Orthorectification Module:

### SELECT INPUT IMAGERY AND DEM

The first step in the ENVI Orthorectification workflow is to load your imagery and digital elevation models by simply choosing files from the current available bands list.

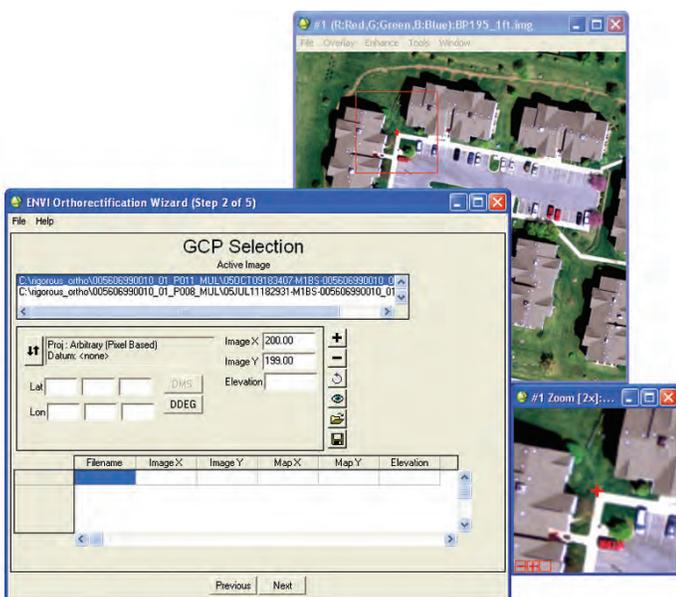
- Include multiple data files, even from multiple sensors
- Restore a project file to work with previously saved results

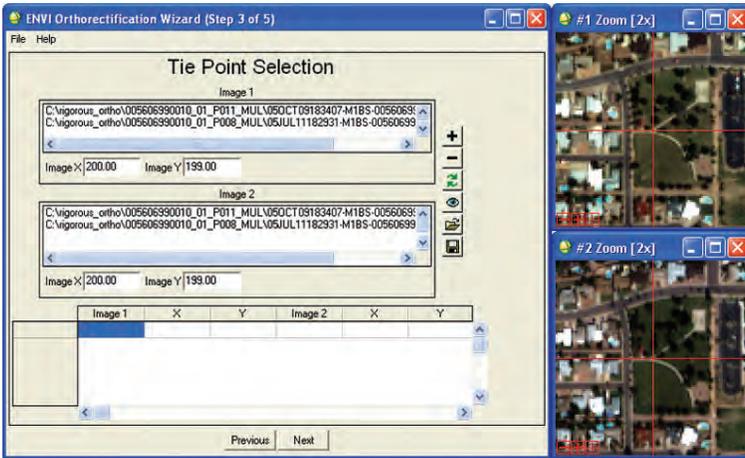


### COLLECT AND EDIT GROUND CONTROL POINTS

Once input data is defined, this optional step allows you to associate image pixels with points on the ground whose locations are known through geographic coordinate data.

- Manually enter ground control points or restore points from a previous session
- View the distribution of ground control points over the project area
- Evaluate errors between the ground control points and the model solution





## COLLECT AND EDIT TIE POINTS

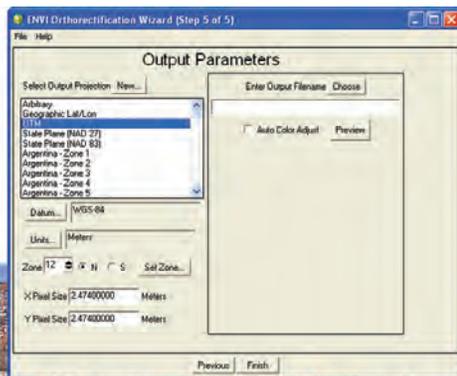
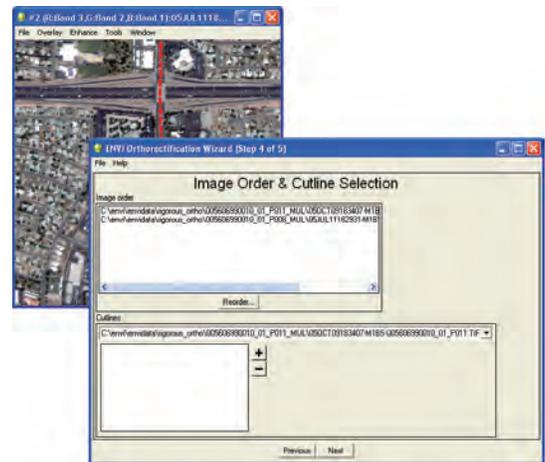
When multiple images are orthorectified and mosaicked, you may choose to establish tie points in areas of image overlap.

- Restore previously created tie point files
- Add new tie points
- Edit existing tie points

## REORDER IMAGES AND DEFINE CUTLINES

Once tie points are collected, you can define the image extent and specify which areas between two or more overlapping images should appear in the final output.

- Define the hierarchy of each image relative to all others
- Define an optional cutline for the image by simply drawing a polygon or polyline on the image



## SELECT OUTPUT PARAMETERS

In the final step of the workflow, you will specify the output map projection, pixel size, filename and path.

- Perform automatic image-to-image color balancing
- Preview option will show you preliminary results before the entire result is processed

Rigorous Orthorectification.  
Simple Workflow. Trusted Method.

# Robust Capabilities

The ENVI Orthorectification Module delivers a rigorous method for precision orthorectification. When compared with simple geometric registration or the RPC method, ENVI's rigorous method is far more accurate and essential to applications where precision matters, such as engineering roadways or bridges, or targeting specific objects of interest.



## **Orthorectify Using an Automated Workflow**

A wizard-based interface guides you through the rigorous orthorectification process step-by-step to achieve expert level results.

## **Utilize Imagery from a Broad Range of Sensors**

The ENVI Orthorectification Module comes with built-in sensor model support for the following sensors: SPOT 1-5, IKONOS-2, QuickBird-2, WorldView-1, EROS A1, Landsat 4-5, Landsat 7 ETM+, ERS SAR, Radarsat-1, IRS P6, CARTOSAT-1, FORMOSAT-2, OrbView-3, KompSat-2, and ASTER. You can also add your own sensor model via custom coding.

## **Perform Block Bundle Adjustment**

Achieve optimized results and minimize model error using GCP's and tie points.

## **Create Mosaics Using Cutlines**

Easily draw cutlines for control of multiple image output seams.

## **Preview Your Results**

Try different parameters and preview your results before processing the entire image.

## **Extend the Module's Functionality**

Add custom sensor support using XML sensor definition files. Additionally, access the module programmatically using IDL to automate your workflow and perform batch processing.

# ENVI Orthorectification Module

Orthorectifying your imagery is easier than ever.

To learn more about the ENVI Orthorectification Module or about our custom implementation services, visit [www.exelisvis.com/ENVI/Ortho](http://www.exelisvis.com/ENVI/Ortho).

## ENVI. Get the Information You Need from Imagery.

Today's imagery analysts and scientists in a wide variety of disciplines choose ENVI®, the premier software solution for extracting information from geospatial imagery. ENVI provides advanced, user-friendly tools to access, analyze, and share information from geospatial imagery.

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