

OrthoEngine WorldView-1 Module

WORLDVIEW -1

The OrthoEngine WorldView-1 Module supports WorldView-1 data for correction.

Rigorous models are developed to compensate for distortions and produce orthorectified satellite images. Distortions caused by the platform (position, velocity, and orientation), the sensor (orientation, integration time, and field of view), the Earth (geoid, ellipsoid, and relief), and the cartographic projection (ellipsoid and cartographic) are all taken into account using these models.

WorldView-1 is a High resolution (50cm) panchromatic sensor providing highly detailed imagery for precise map creation, change detection, and in depth analysis.

MODULE PREREQUISITIES

The WorldView-1 module is an add-on to Geomatica Core.

FORMAT SUPPORT

Direct support for GeoTIFF and NITF formats for use in rigorous and RPC models for orthorectification.

RIGOROUS MATH MODELS

Rigorous math models:

- Calculate the position and orientation of the sensor when an image is taken
- Accurately account for known distortions in an image
- Use GCPs and tie points, combined with the knowledge of rigorous geometry of sensors, to calculate the best fit for all images in a project

RPC MODELS FOR WORLDVIEW-1

The Rational Function is a simple math model that:

- Builds a correlation between the pixels and their ground locations

- Obtains RPC data with images and imports coefficients automatically
- Calculates the polynomial coefficients from GCPs
- Refine RPC data with one or more GCPs
- Zero- or first-order GCP refinement available

Ground Control Collection

GCP Collection

GCPs can be collected manually or by using:

- A geocoded image
- Geocoded vectors
- A chip database
- A digitizing tablet
- An imported text file

Other features include:

- Stereo-GCP collection
- Conversion of GCPs to check points to exclude from model calculation
- Display of individual and overall RMS error for GCPs

Tie-Point Collection

Tie points:

- Extend ground control over areas without GCPs
- Identify how the images in a project relate to each other
- Ensure the best fit for all the images in a project
- Let you enter tie-point elevations manually or extract them from a DEM
- Let you import and export tie points
- Show individual and overall RMS error for tie points

Residual Report

Using residual reports, you can:

- Show GCP, check-point, tie-point, and Stereo-GCP error information in one report
- Edit points in a residual report and update bundle adjustment

Technical Specifications

- View in ground units or pixel units
- Print the report to a file

Overall Layout

The OrthoEngine High-Resolution Models offer a quality-control tool that displays image footprints, distribution of GCPs, and tie points for your project

ORTHORECTIFICATION

Orthorectification:

- Lets you perform batch processes
- Utilizes a DEM for terrain correction
- Increases working cache for processing
- Increases sampling interval for faster processing
- Offers the following resampling methods:
 - Nearest Neighbor
 - Bilinear Interpolation
 - Cubic Convolution
 - 8-pt SinX/X
 - 16-pt Sin X/X
 - Average filter
 - Median filter
 - Gaussian filter
 - User-defined filter
- Clips image size upon orthorectification
- Lets you set a processing start time

MOSAICKING

With manual mosaicking, you can:

- Define a mosaic area
- Collect cutlines manually by:
 - Importing and exporting cutlines
 - Blending seams using Blend Width
- Perform manual color balancing:
 - Based on samples identified in overlap between images
 - By using samples (match areas) to compute look-up tables (LUTs) to adjust new images to match an existing mosaic
 - By adjusting the dark end or light end
 - By importing and exporting LUTs for color balancing
- Mosaic unreferenced images

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