

## TUTORIAL

The OrbView-3 satellite was launched on June 26, 2003. It offers 1-meter panchromatic and 4-meter multispectral imagery at a swath width of 8 km to the commercial market. The OrbView BASIC product can be used with the Rigorous Modeling with Geomatica OrthoEngine. OrbView ORTHO products have correction applied and cannot be re-orthorectified. For more information about these products, please refer to ORBIMAGE's website ([www.orbimage.com](http://www.orbimage.com)).

OrbView-3 data can be delivered in GeoTIFF, TIFF, or NITF format by default; all supported formats of Geomatica OrthoEngine. The data is delivered with a number of associated files that need to reside in the same directory as the image data when importing the data into PCI.

The data can be delivered with RPCs which can be used with a Rational Functions Project. However note that the results for using RPC modeling are not as accurate or dependable as the results obtained from the rigorous model. However, you can add GCPs and tie points to the Rational Functions project to improve the accuracy. If you have at least six GCPs, the Rigorous Model should be used to process your data.

The following is a Geomatica OrthoEngine tutorial that demonstrates how to orthorectify OrbView BASIC Imagery with Toutin's Rigorous Satellite Model.

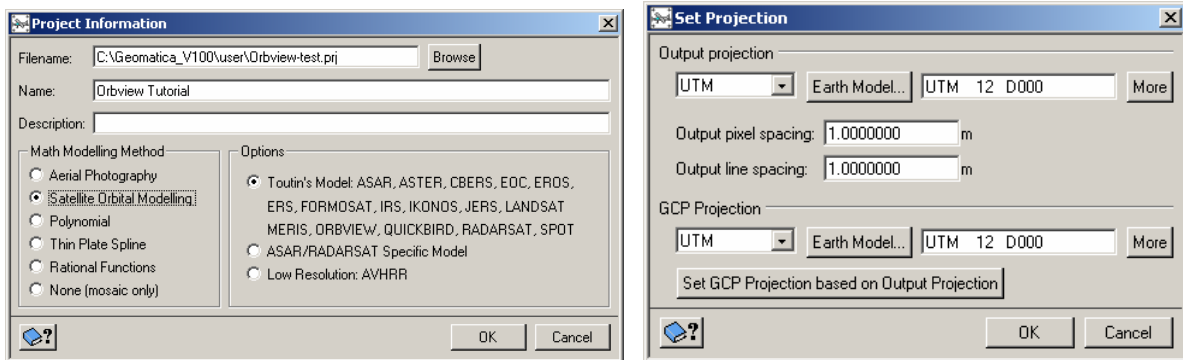


ORBIMAGE Inc. ([http://www.orbimage.com/images/saltlakecity\\_1km-L.jpg](http://www.orbimage.com/images/saltlakecity_1km-L.jpg))

# The Rigorous Modeling Method

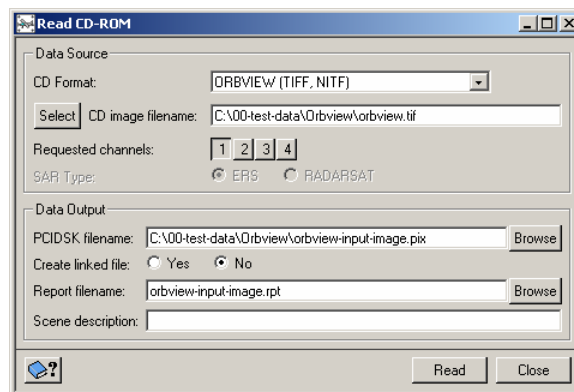
## Step1 (Create a new Project)

- Create a new project with a Satellite Orbital Math Model using Toutin's Model option to calculate the exterior orientation.
- In the Set Projection window select the output projection, enter the pixel size and the GCP projection and click the OK button.



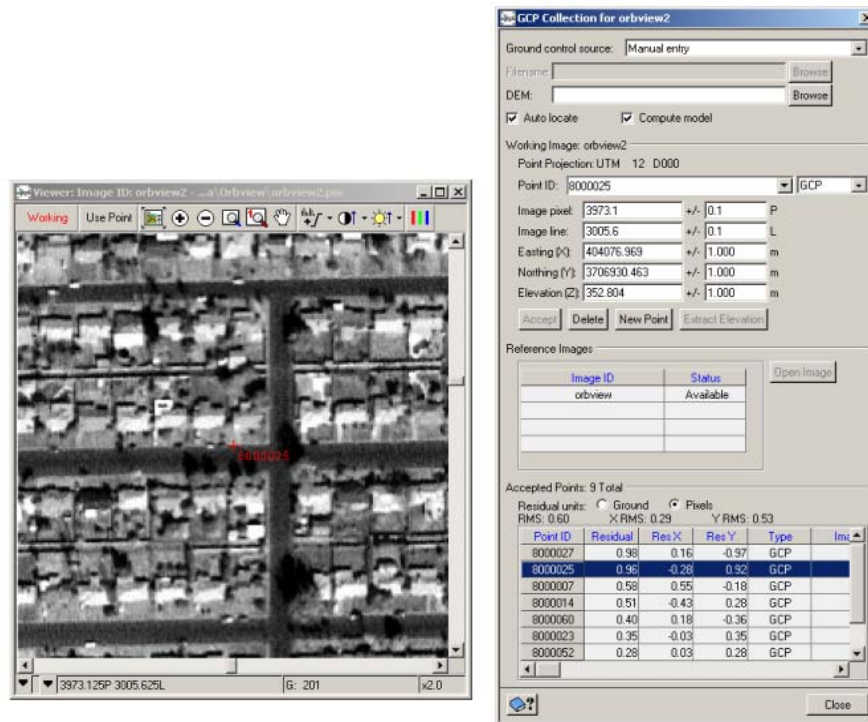
## Step2 (Data Input)

- Ensure that all associated files are located within the same directory and then select the Read from CD-ROM button from the Data Input processing step.
- Select OrbView (TIFF, NITF) for the CD Format, the buttons of the Requested Channels should change to reflect bands of the available data type
- Select the input TIFF Filename, and click the first channel button (Note that the panchromatic and multispectral images must be placed in separate projects since their resolutions are different; this example is using a panchromatic image)
- Enter an output filename and (optional) a scene description.
- Click the Read button to import the data into a \*.PIX file.

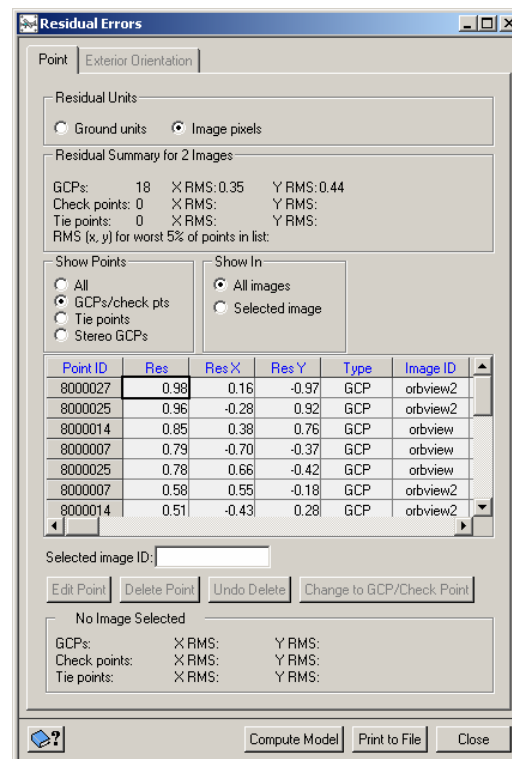


### Step3 (Collect GCPs)

Select the GCP/TP Collection processing step. You can collect GCPs for the project using manual entry, from geocoded images, vectors, a chip database, or a text file.



For the OrbView rigorous model you will need a minimum of six accurate GCPs per scene and possibly more depending on the accuracy of the GCPs and the accuracy requirements of the project. Once you have collected your GCPs, run the model calculation and proceed to the residual report panel in the "Reports" processing step to review the initial results. You can also check "Bundle Update" in the GCP collection panel and the model will be calculated when GCPs are added or removed from the project.



## Step4 (Generate Ortho Images)

To generate the ortho images, go to the Ortho Generation processing step and click the Schedule ortho generation button. Select the available input files to be processed from the left portion of the Ortho Image Production window and add to the list of Images to process on the right hand side. Select a DEM to be used with the process and set the processing options. Click the Generate Orthos button when all of parameters have been setup to begin the processing.

