Orthorectifying EROS Level 1A Data

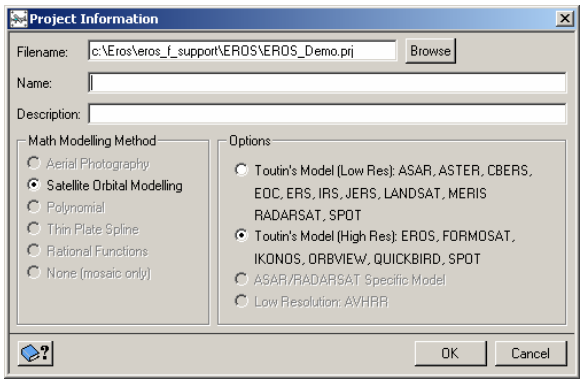
TUTORIAL

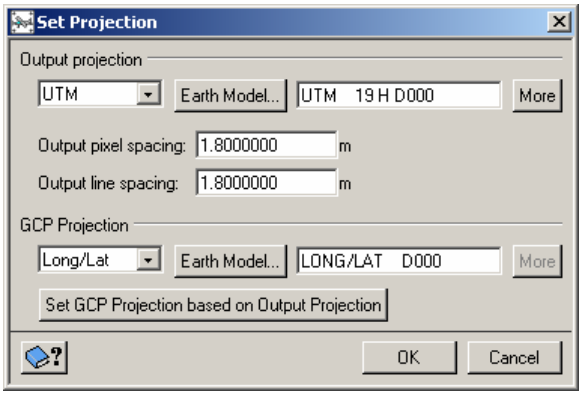
ImageSat International launched the EROS satellite on December 5, 2000 into a circular sun synchronous polar orbit at an altitude of 480 km. It produces a panchromatic image with a resolution of 1.8 m and because of its agility, is able to acquire imagery in same-pass stereo. It has an image swath of 12.5 km.

EROS level 1A data is supported by OrthoEngine's rigorous model. A minimum of 8 GCPs should be collected to increase the accuracy of the model. This brief tutorial will show you how to orthorectify EROS level 1A data using Geomatica OrthoEngine.

1. Project Setup

Start OrthoEngine, and click New on the File menu to start a new project. Give your project a file name, and select Satellite Orbital Modeling as the math modeling method. Under Options choose Toutin's Model, and click Accept. OrthoEngine prompts you to set up the projection information for the output files, the output pixel spacing, and the projection of you GCPs. Enter the appropriate projection information for you project.

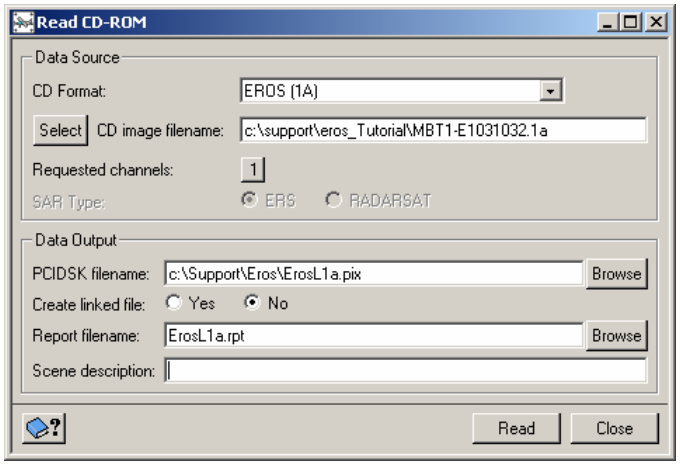




2. Data Input

You will need to order level 1A data to orthorectify your data with Geomatica OrthoEngine.

To import your EROS data for orthorectification, select Data Input under Processing Steps, and select Read Data From CD-ROM. This choice also applies to data on your hard drive that was copied from a CD-ROM. Select EROS (1A) as the CD Format and select the *.1A file for the CD Image Filename.

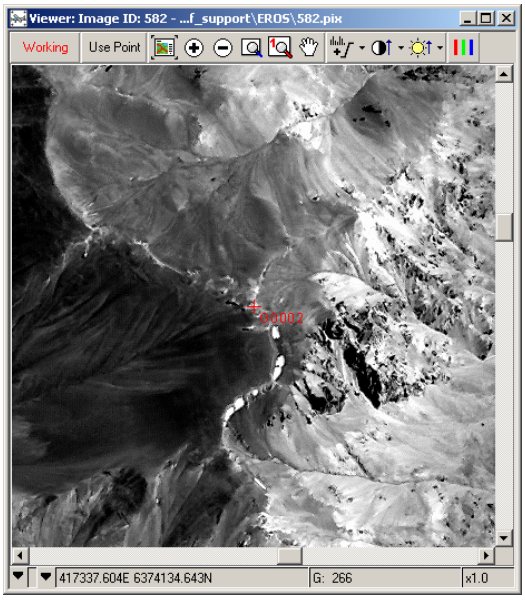


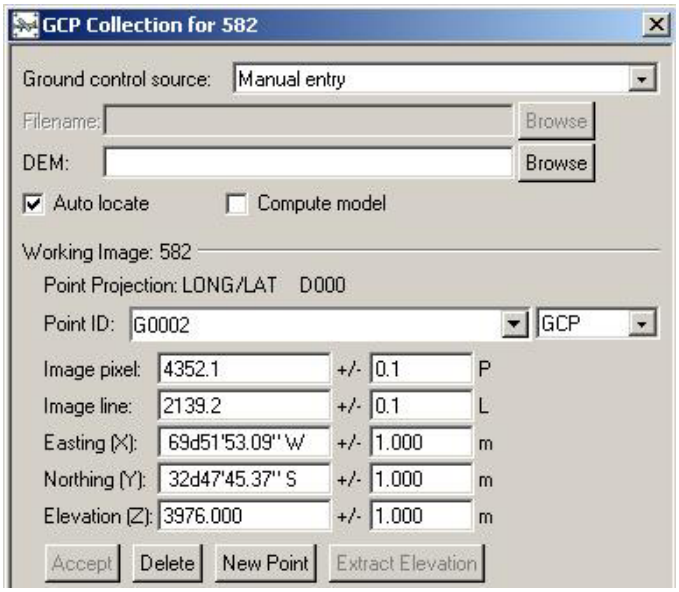
Since the imagery is panchromatic, you only have one channel to import. Supply an output file name, a scene description and a report file name. Once this panel is complete, click the Read button.

Note: In order for OrthoEngine to be able to import the image data to pix, all associated metadata text files should be in the same directory as the image file.

3. **Collect GCPs and Tie Points**

Select the GCP/TP Collection processing step. Collect GCPs for the project using manual entry, from geocoded images, vectors, chip databases, or a text file. If you have multiple scenes in one project, you can also collect tie points to pull the scenes together.

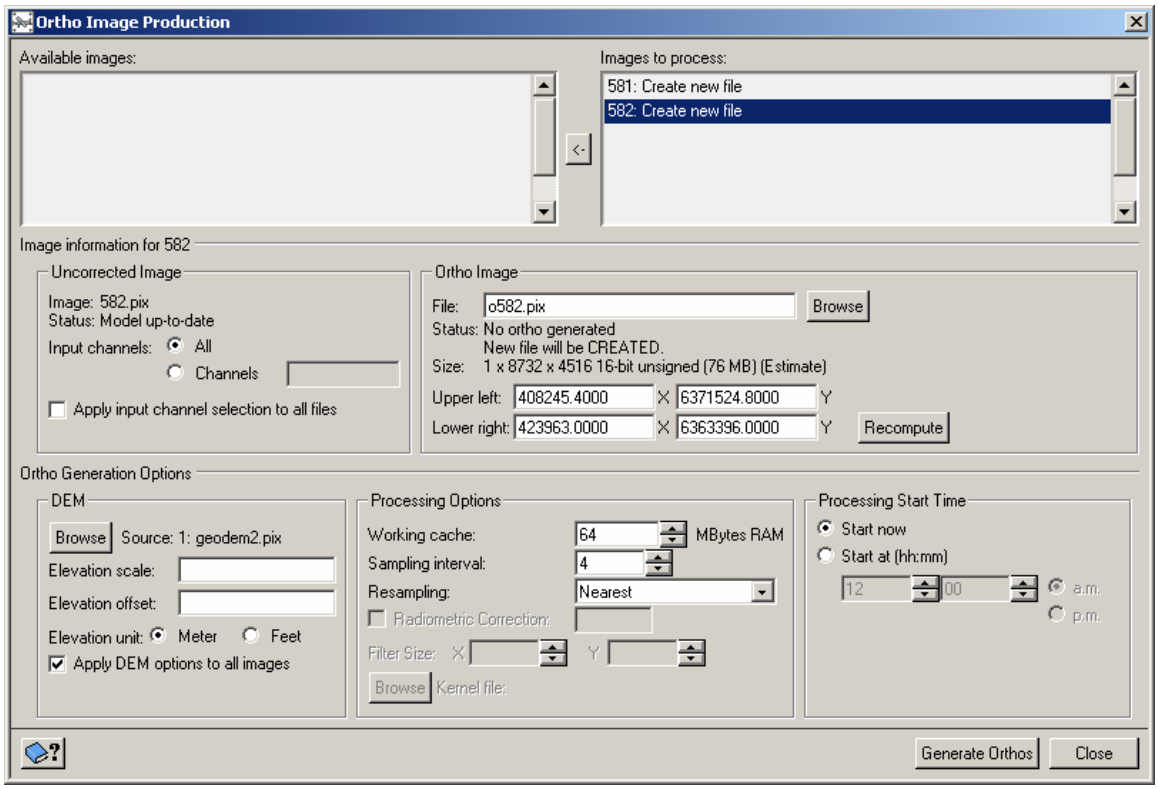




For the EROS rigorous model, you will need a minimum of 8 GCPs per scene and possibly more, depending on the accuracy of the GCPs and the accuracy requirements of the project. Once you have collected your GCPs, run the model calculation and proceed to the residual report panel (under the Reports processing step) to review the initial results.

4. **Generate Ortho Images**

To generate the ortho images, go to the Ortho Generation processing step. Select the files to be processed, select the DEM file to be used, and set your processing options. Click Generate Orthos when the set up of the panel is complete.



The expected RMS for an EROS ortho image processed using the rigorous model in OrthoEngine is 1 to 2 pixels (or 1.8 m to 3.6 m).