

Orthorectifying MERIS Level 1B Data

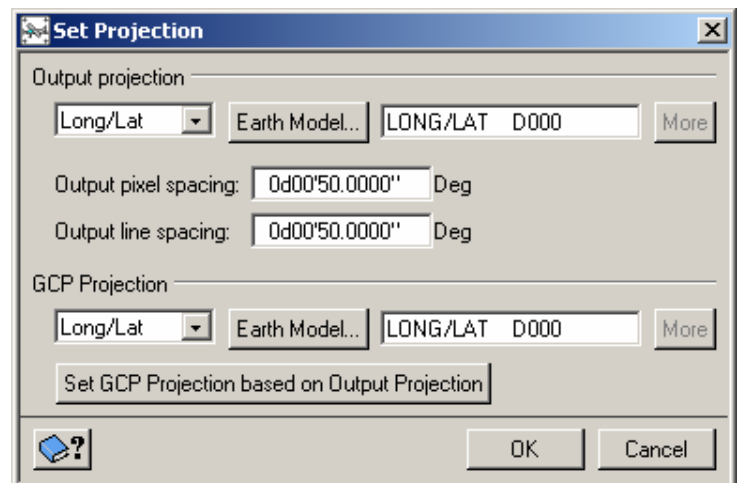
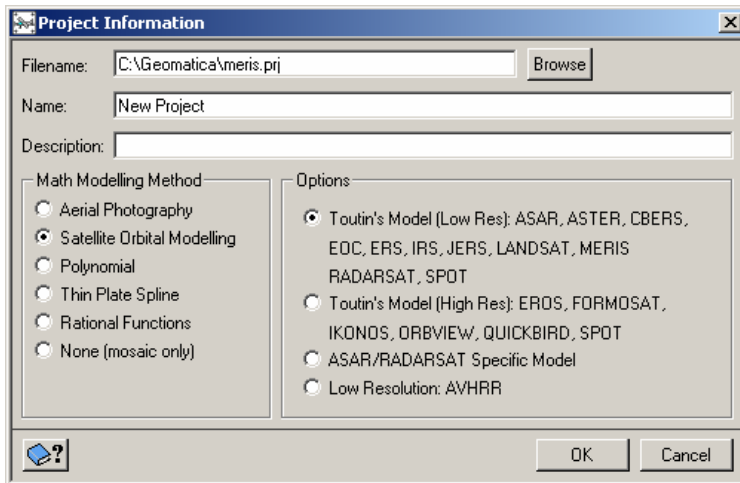


MERIS (Medium Resolution Imaging Spectrometer) is an optical sensor aboard the Envisat satellite. It collects data in 15 spectral bands ranging from 390 nm to 1040 nm at a resolution of 300m. MERIS is primarily intended for observing oceanic biology and marine water quality. Additionally, it will contribute to atmospheric and land surface studies. The sensor's 68.5° incidence angle covers a swath width of 1,150 km providing global coverage in 2 to 3 days.

MERIS level 1B is supported in OrthoEngine by Toutin's Rigorous model. This includes the full resolution (300m) and reduced resolution (1200 m) imagery. A minimum of 6 GCPs should be collected to achieve high accuracy. This brief tutorial will guide you through the steps to orthorectify MERIS imagery in 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 1B data to orthorectify your data with Geomatica OrthoEngine. At the time of writing (Jan, 2004) Level 1B data is distributed in *.N1 format.

To import your MERIS 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 MERIS (ENVISAT FORMAT) as the CD Format and select the *.N1 file for the CD Image Filename. Select the channels you would like to import, supply an output file name, a scene description and a report file name. Once this panel is complete, click the Read button.

Read CD-ROM

Data Source

CD Format: MERIS (ENVISAT FORMAT)

Select CD image filename: C:\Geomatica\MER_RR_1PNPDK20020815.N1

Requested channels: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

SAR Type: ERS RADARSAT

Data Output

PCIDSK filename: C:\Geomatica\meris.pix

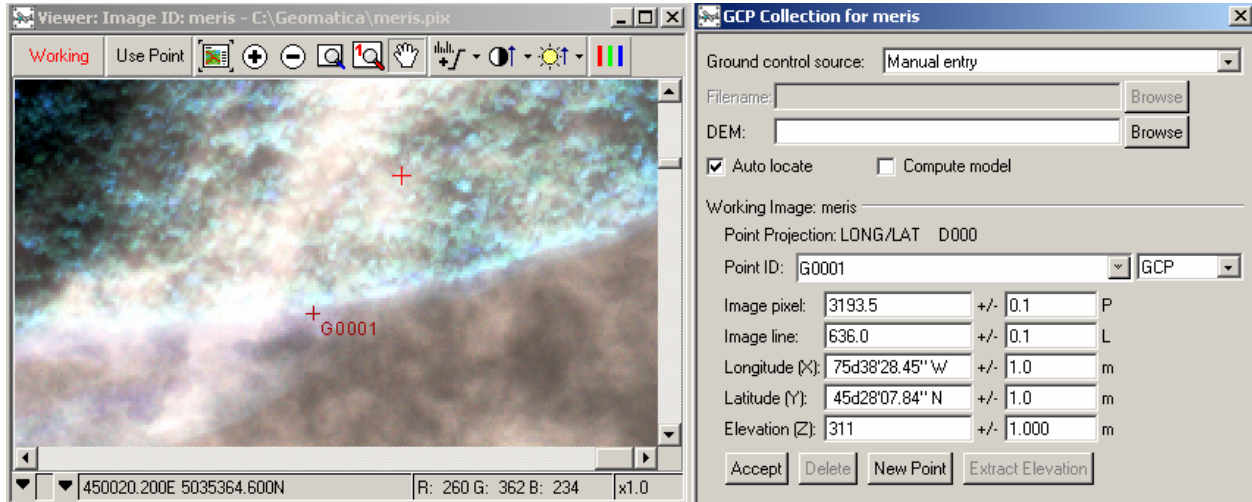
Create linked file: Yes No

Report filename: meris.rpt

Scene description:

3. Collect GCPs and Tie Points

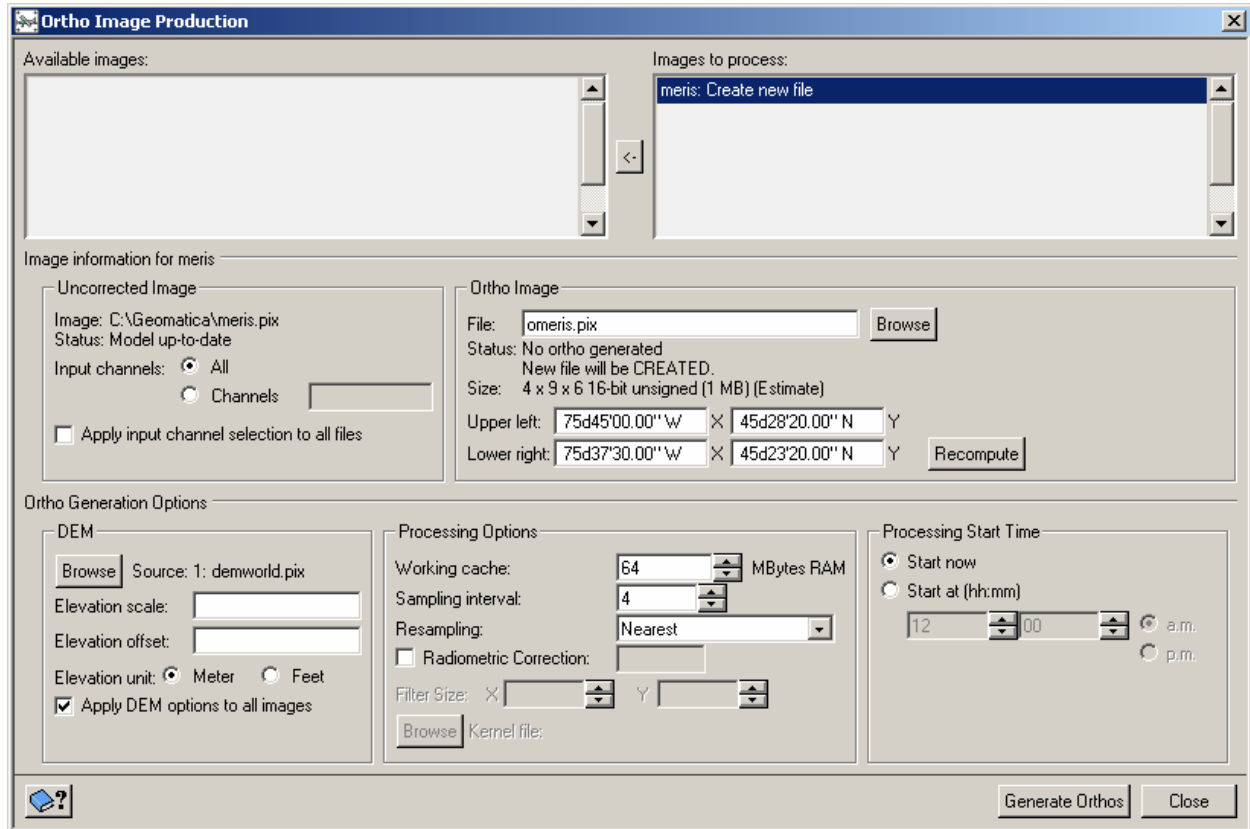
Select the GCP/TP Collection processing step. Collect GCPs for the project using manual entry, from geocoded images, vectors, chip databases, or a text file. If you have multiple scenes in one project, you can also collect tie points to pull the scenes together.



For the MERIS rigorous model, you will need a minimum of 6 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.



With accurate, uniformly distributed GCPs, the rigorous model has an RMS of 1 to 2 pixels.