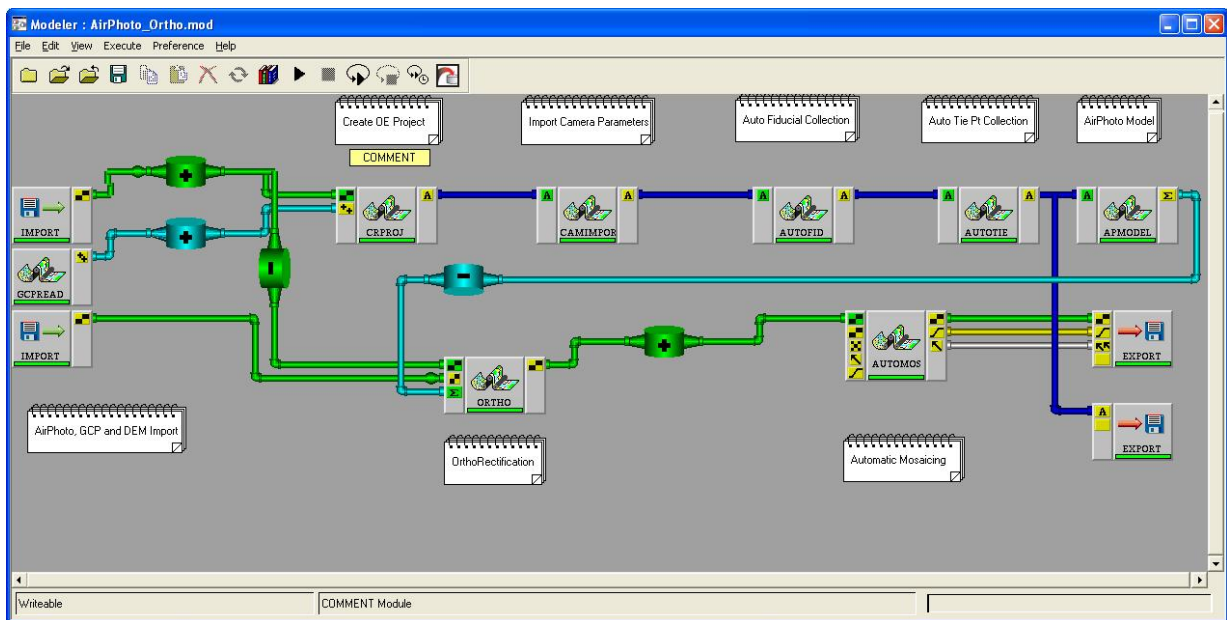


Geomatica Modeler v10.3 Tutorial

Automated Airphoto Orthorectification and Mosaicing Model

Geomatica 10.3 introduces new algorithms in the Visual Modeler interface to facilitate fully automated AirPhoto Orthorectification and Mosaicing workflow. New algorithms include CAMIMPORT, CAMEXPORT, AUTOFID, EOIMPORT, EOEXPORT, GCPIMPORT, CHIPEXT, RAW2CHIP and APMODEL.

Below is a visual modeler example for automated Airphoto Orthorectification and Mosaicing workflow.



A sample dataset required to run this AirPhoto Model is available at:
http://ftp.pcigeomatics.com/pub/support/v103/tutorial_data/AirPhoto_Modelling.zip

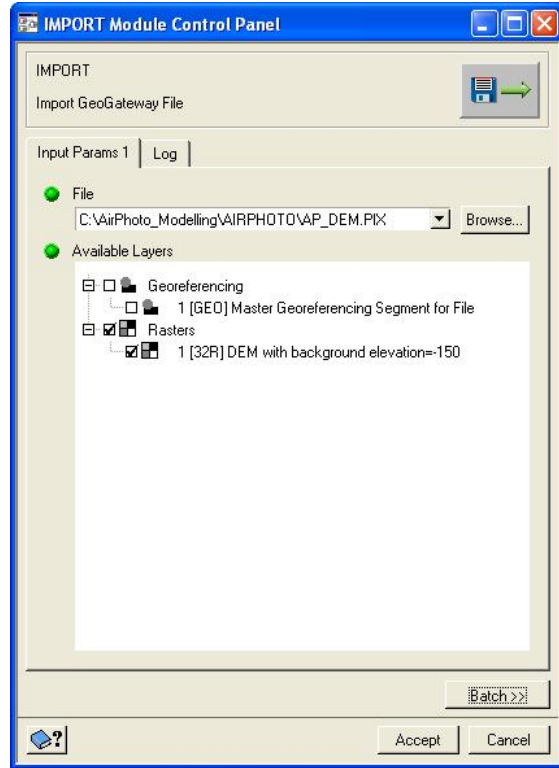
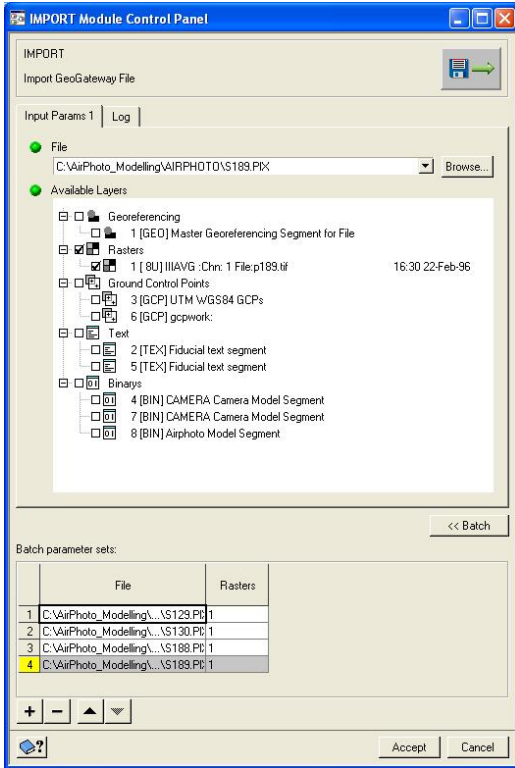
The dataset should be extracted to your C:\ drive. A new "Airphoto_Modelling" directory will be created. You can also extract the data to any other location and modify the paths of input and output files in the model.

1.0 Geomatica Modeler

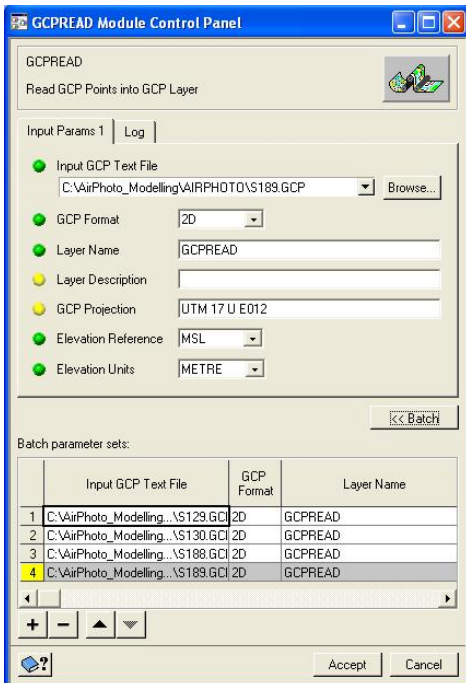
1.1 Data Import

Start Geomatica Modeler and create a new project using File | New Model. Use View | Module Librarian – Algorithm Library– PCI-Predefined – All Programs – IMPORT and drag two IMPORT modules on the canvas to import both a series of 4 AirPhotos (in batch mode) and a corresponding DEM file which is required to run

orthorectification in a later step. Note that you can also access commonly used algorithms using your mouse: simply right click on the grey canvas area and choose “Common Modules”.

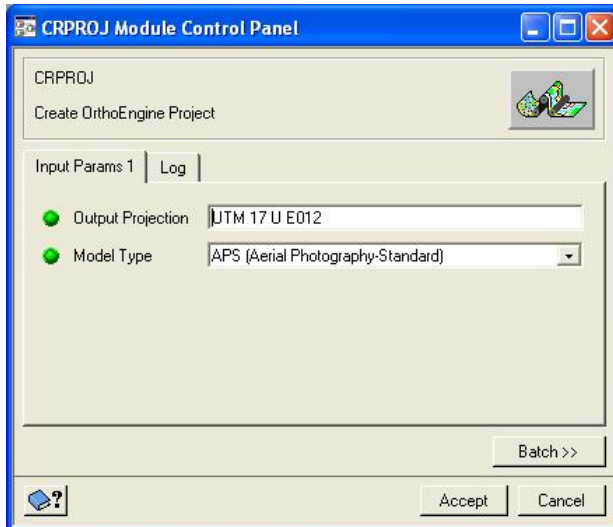


The **GCPREAD** algorithm is used to import existing GCPs. Set the Batch parameters to read GCP of all four images. 4 Airphoto and GCPs are ‘Accumulated’ individually before passing to next step.



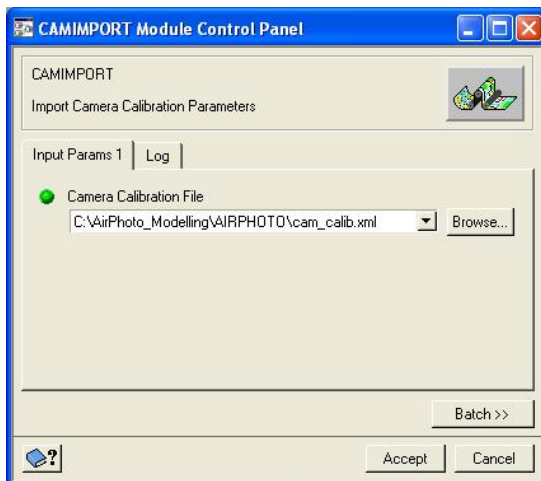
1.2 Create OrthoEngine Project – CRPROJ

CRPROJ is used to create an OrthoEngine Project for the 4 Airphoto images and corresponding GCPs. Define an appropriate 'Output Projection' and 'Model Type' in the CRPROJ input parameters.



1.3 Import Camera Calibration Parameters - CAMIMPORT

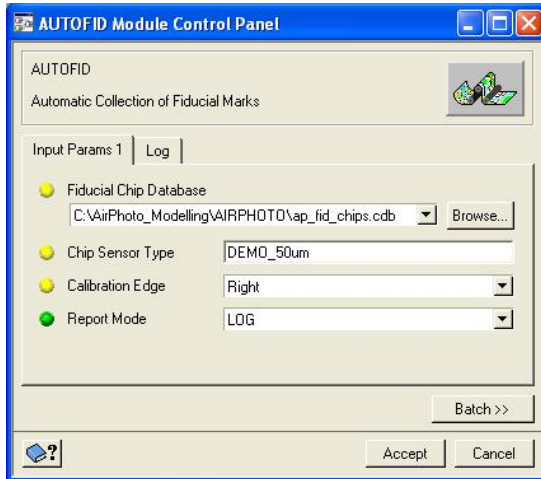
CAMIMPORT is a new addition in Modeler. Once OrthoEngine project file is created, user can import camera calibration parameters from an XML file into the project.



With Geomatica 10.3 **CAMEXPORT** module is also available in Modeler to export the camera calibration parameters from an existing OrthoEngine project file to an XML file.

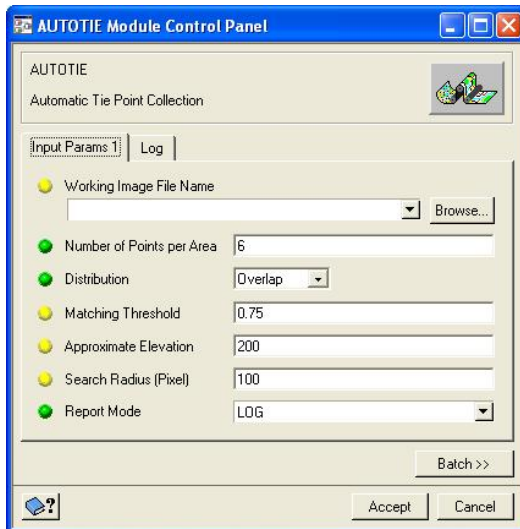
1.4 Automatic Collection of Fiducial Marks - AUTOFID

AUTOFID is also a new module in Geomatica 10.3. It automatically collects image co-ordinates of fiducial marks in multiple images using supplied templates. The templates can be extracted from a fiducial chip database or from an image in the project for which fiducial measurements have already been collected. The results are stored in the OrthoEngine project file.



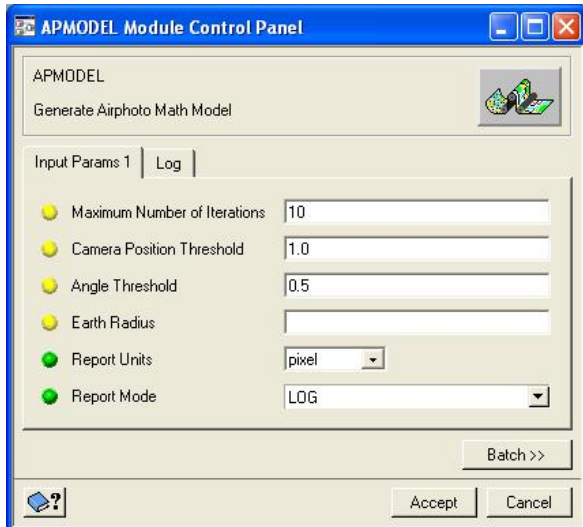
1.5 Automatic Tie Point Collection - AUTOTIE

AUTOTIE automatically collects tie points from an AirPhoto stereo-pair.

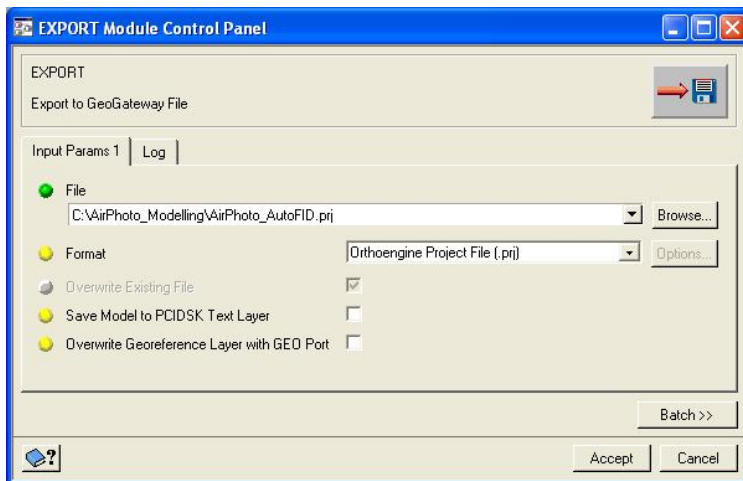


1.6 Airphoto Model - APMODEL

APMODEL is a new addition in Geomatica 10.3 Visual Modeler. It performs a bundle adjustment on a set of aerial photos with ground control points (GCPs) and tie points (TPs) in an OrthoEngine project.

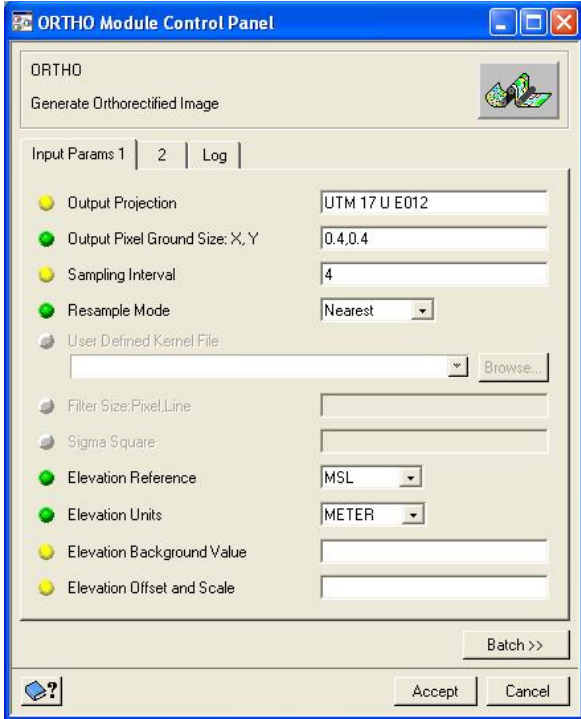


After running APMODEL, OrthoEngine project file is exported as .prj file. User can open this project in OrthoEngine and check for all imported airphotos and other parameters.



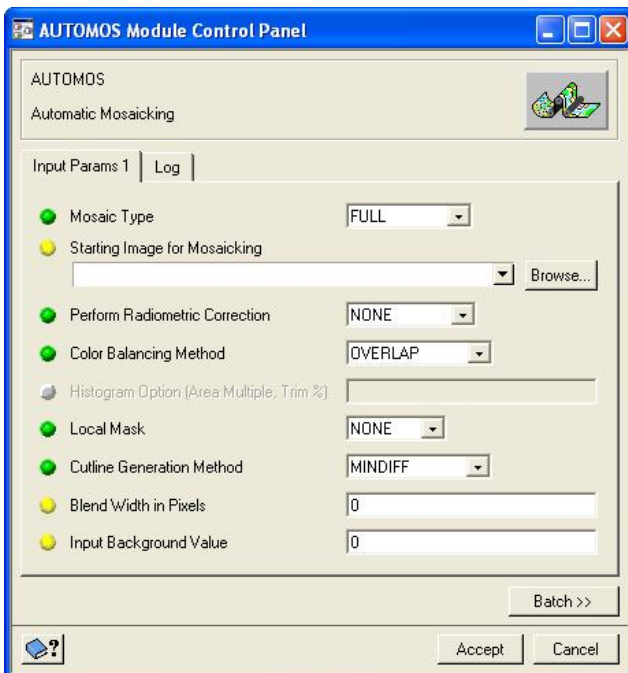
1.7 OrthoRectification - ORTHO

ORTHO module performs orthorectification on the airphoto project. A DEM is directly imported into ORTHO module at this step.



1.8 Automatic Mosaicking - AUTOMOS

AUTOMOS composes a set of georeferenced images (created by ORTHO) into an image mosaic, or into a series of mosaic tiles.



Finally the mosaiced Airphotos along with vector cutlines and a look-up table are exported into a single PIX file.

