Coherence Change Detection (CCD Timeline) SARscape Modeler

Version 1.0

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General Information

Examples of SARscape Modeler workflows can be find in the installation folder of SARscape (C:\Program Files\SARMAP SA\SARscape\examples\modeler_examples). We suggest keeping the already set parameters to obtain the results shown in this tutorial.

The main steps of this tutorial are described by a number. Steps that are not characterized by a number are not mandatory.

This symbol  specify a practical step that the user should perform in order to proceed with the tutorial.

Steps that are not identified by this symbol must not be modified. If parameters will be modified results obtained in this tutorial are not guarantee.

Coherence Change Detection Time line (CCD Timeline)

Data used in this tutorial are available in our FTP site, please, contact us at support@sarmap.ch to get login credentials.

This model allows creating geocoded coherence map among several acquisitions (using the time line method: the first acquisition with the second, the second with the thirds, ...) to temporal changes. An RGB of the first three coherence will be created as well.

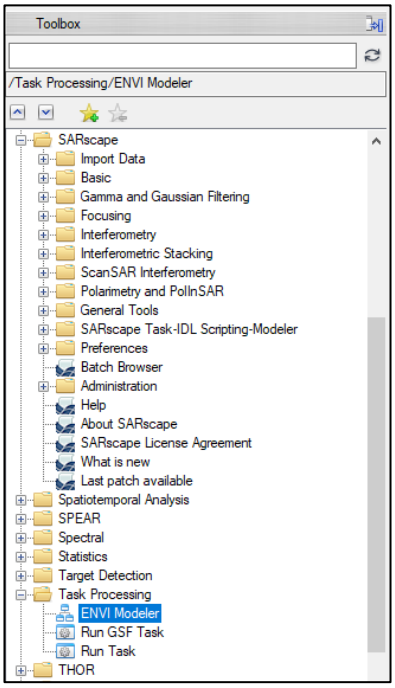

Figure 1 ENVI Modeler in ENVI Toolbox.

Start ENVI Modeler (see the Tool in Figure 1). Click the Open button in the ENVI menu bar, navigate to the examples folder in your SARscape installation path (C:\Program Files\SARMAP SA\SARscape\examples\modeler_examples) and select the "CcdTimeline.model". The sample model opens in an ENVI Modeler window, the model will appear as in Figure 2.

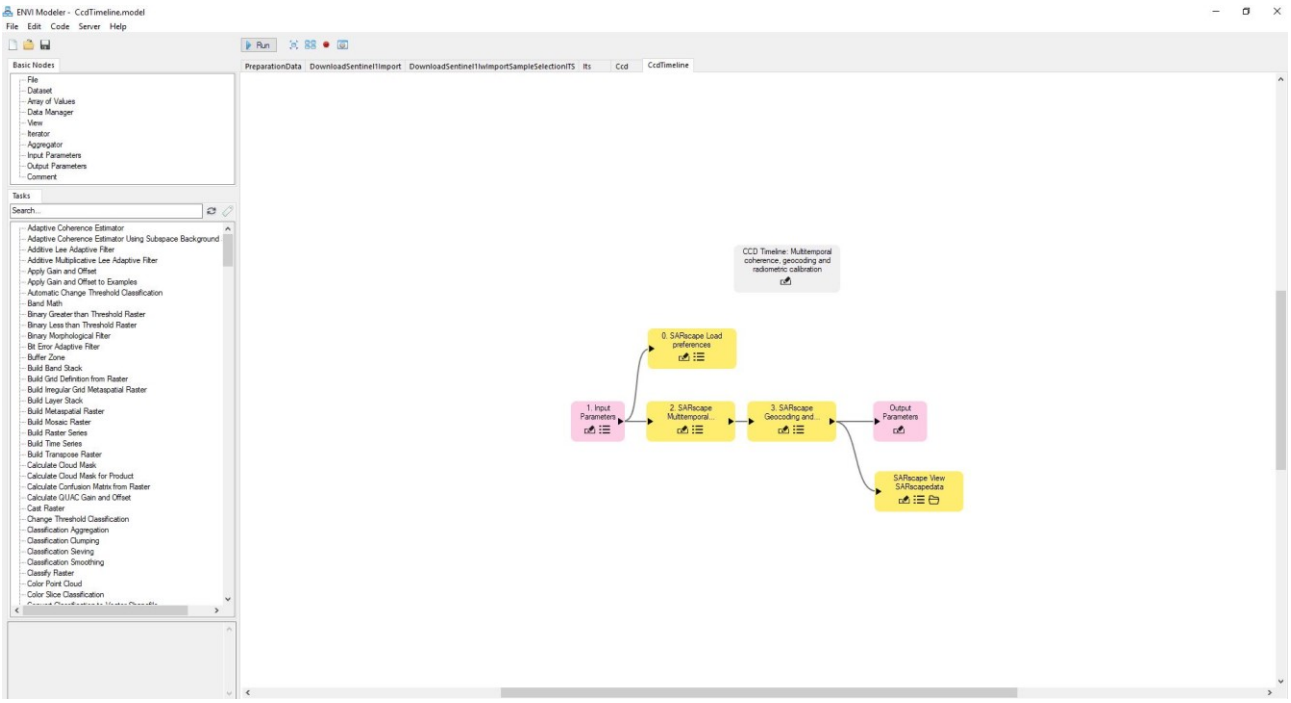

Figure 2 The example model in ENVI Modeler.

This model can be run as it is, each parameter is set to properly work.

✍ Click the Run button in ENVI Modeler window to run the model.

Step 0: SARscape Preferences

It loads SARscape Preferences. SARscape Preferences are connected the Input Parameters, they will be loaded as soon as the Input Parameters will be completed.

The processing will stop since any data has been added. It will open the Input Parameter task that requires data (Step 1).

Step 1 Input Parameters

✍ Fill out the fields including:

- SARscape Preferences: set Sentinel TOPSAR.
- Input File(s): add the file name of the images for coherence generation.
- DEM: add the DEM.
- Common URI for output: set the filename to create the output, which is not mandatory. In this case it means that output files will be saved in the ENVI temporary folder.

Once the model is set the completed task will appear in green color and a progress bar will describe the running processing step and view the progression of that step.

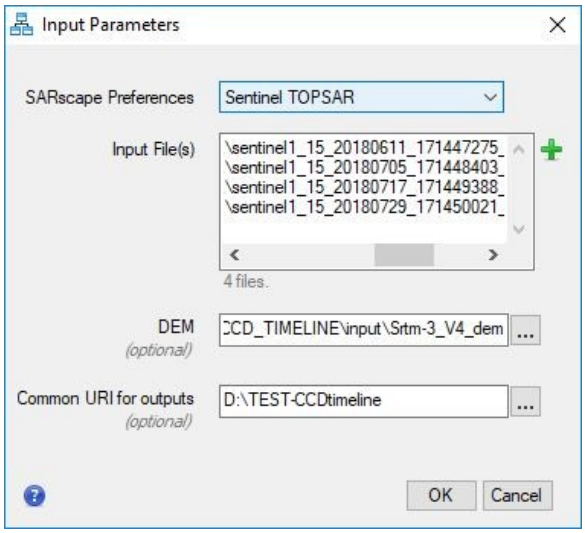

Figure 3 Input Parameters task Panel to be completed to start the processing.

Step 1 SARscape Multitemporal Coherence Generation

The coherence generation task computes the multitemporal interferometric coherence (γ) among the input images included in the Input Parameters task (see Basic - Feature Extraction - Coherence tool Help).

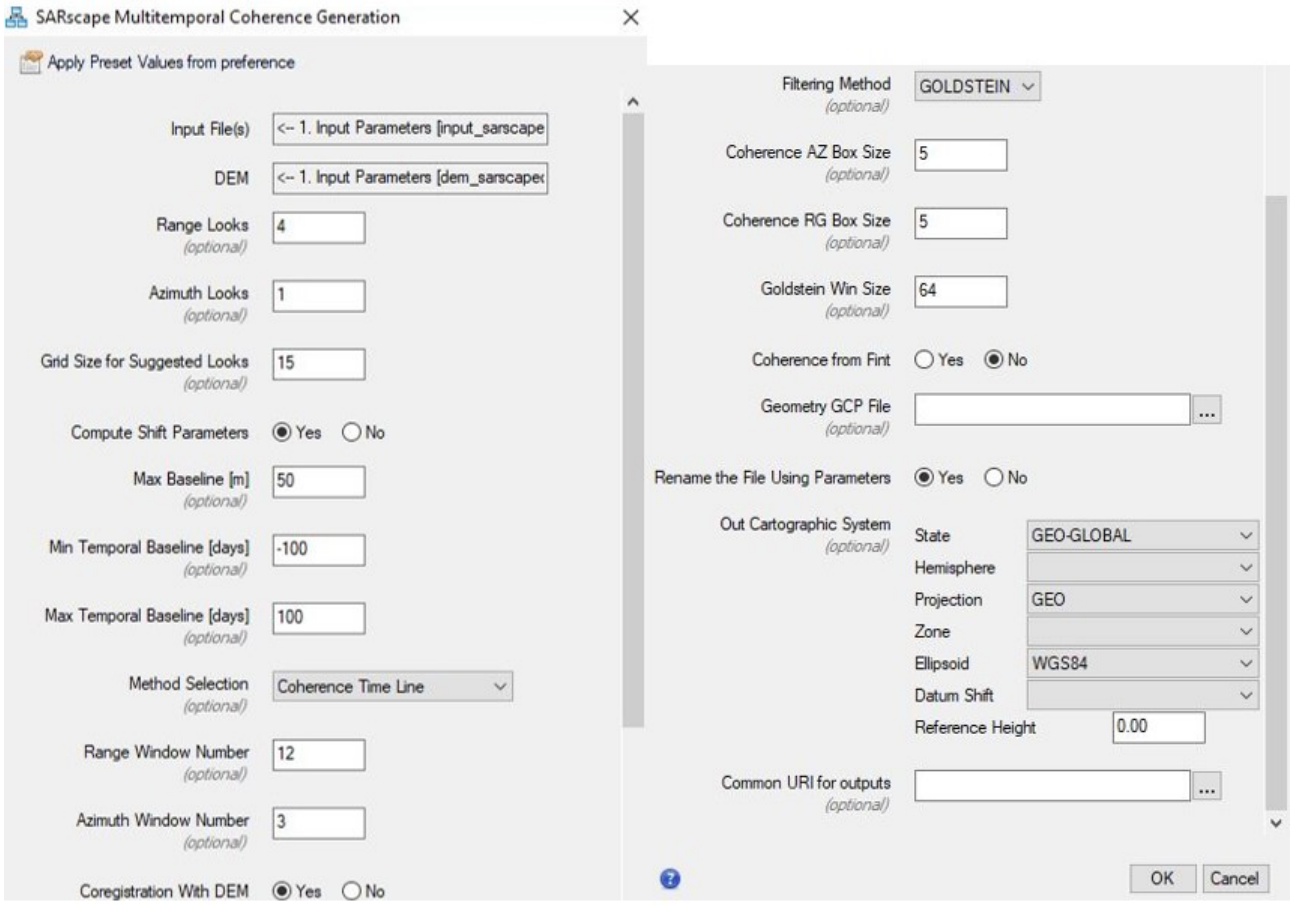

Figure 4 Multitemporal Coherence Generation task panel.

Step 3 SARscape Geocoding and Radiometric Calibration

The filtered data and the DEM allow producing the Geocoded and Calibrated image (see the Geocoding and Radiometric Calibration tool Help). The output is autocompleted since it is one of the outputs defined in the Common URI for outputs.

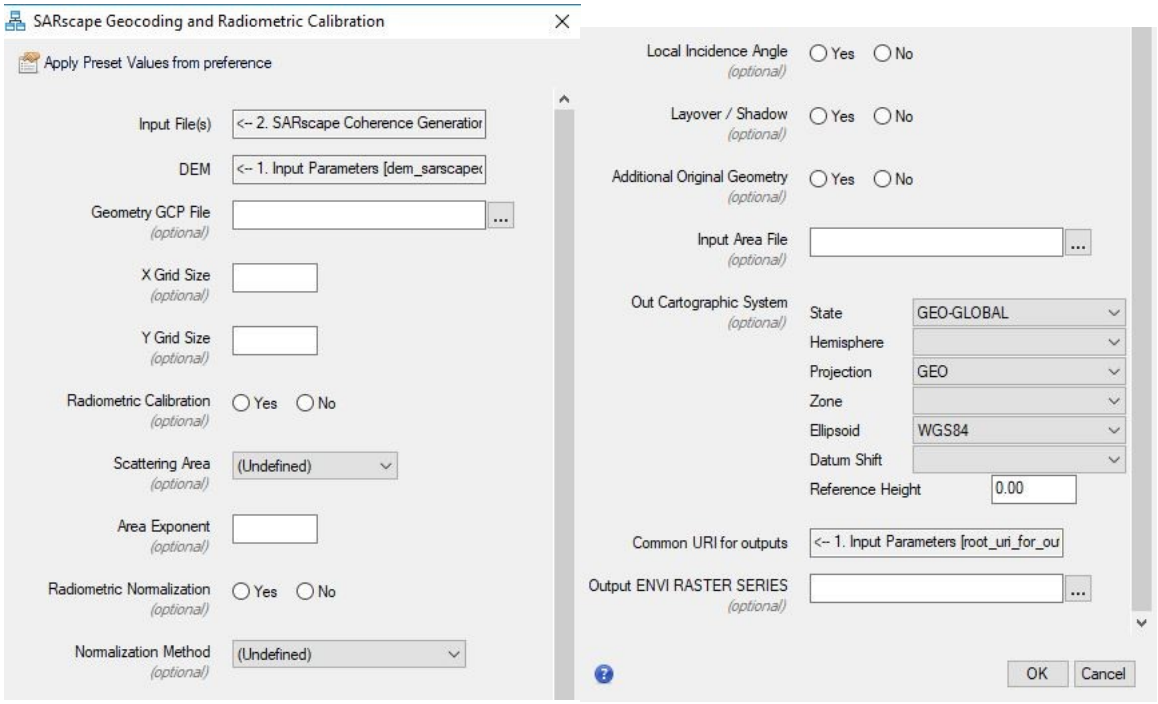

Figure 5 SARscape Geocoding and Radiometric Calibration task panel.

SARscape View SARscapedata

The geocoded data are connected to SARscape View SARscapedata metatask for visualization purposes (see the General Modeler Tutorial for further details).

SARscape Output Parameters

The SARscape Output Parameters allows defining the outputs in order to collect them for a potential Metatask.

Once the process is created the model can be saved and used as a function for further processing using Edit> Create task from model.

The model can be used also as MetaTask and saved on disk to be recall in the future from the Task Panel every time users will need it in ENVI Modeler. To save it use Code> Genarate Metatask. It has be saved in ENVI installation folder as .task.

Both the model and task can be shared with other users. Metatasks have to be saved in the disk.

Models can be saved as IDL script in Code > Generate IDL Program.