Intensity Time Series SARscape Modeler

Version 1.0

October 2018

Index

General Information

Examples of SARscape Modeler workflows can be find in in the installation folder (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.

ITS

This model allows users to multilook data; to coregistrate the images; to apply the De Grandi Spatio-Temporal filtering; to geocode the filtered images; to view the filtered images, to extract multitemporal features from the geocoded images, to view to the computed multitemporal features, to collect the results as outputs.

Sentinel-1 data has to be used to perform this task.

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

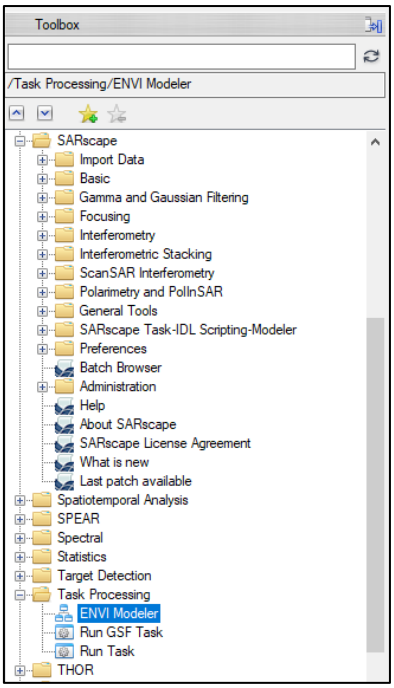

Figure 1 ENVI Modeler in ENVI Toolbox.

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

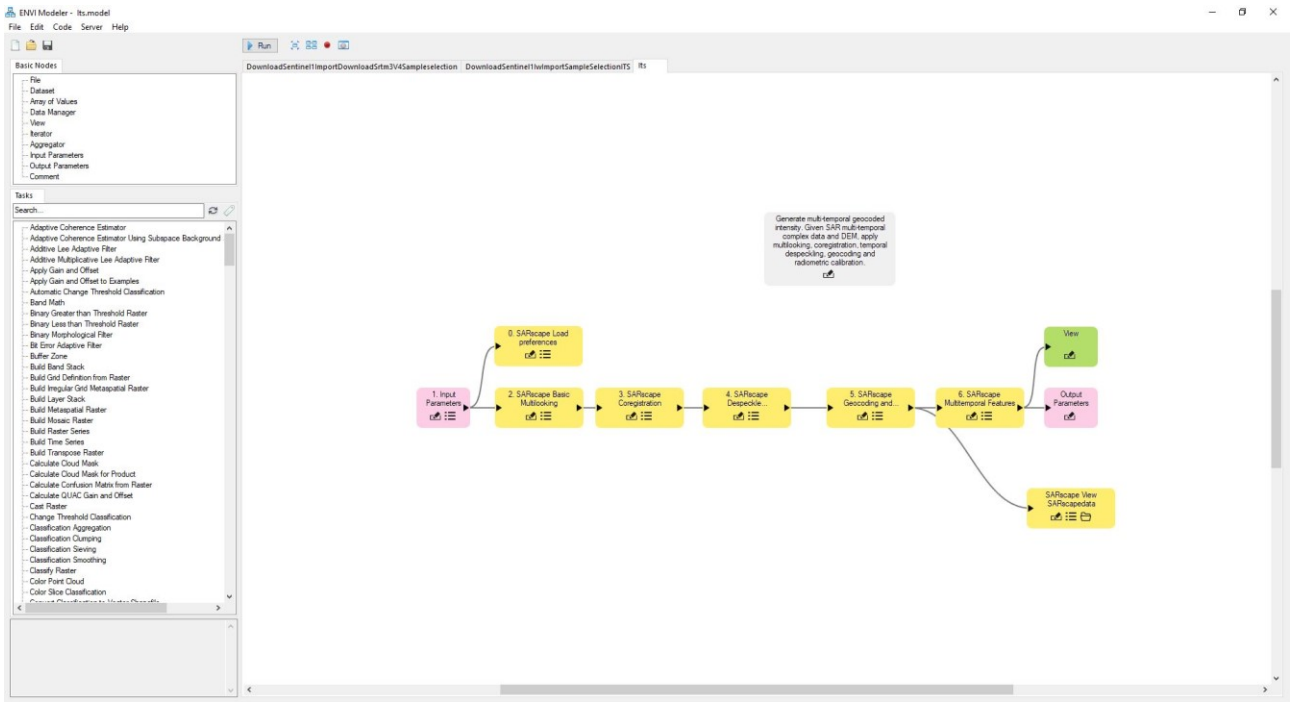

Figure 2 The example model in ENVI Modeler.

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.

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

Step 0: SARscape Load 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.

Step 1 Input Parameters

✍ Fill out the fields in the dialog box as in Error! Reference source not found. including:

- SARscape Preferences: set Sentinel TOPSAR.
- Input Files(s): add the _slc_list files included in the folder ITS/input.
- DEM: set the Srtm-3_V4_dem file in the folder ITS/input.
- Common URI for output: set the filename to create the output. 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.

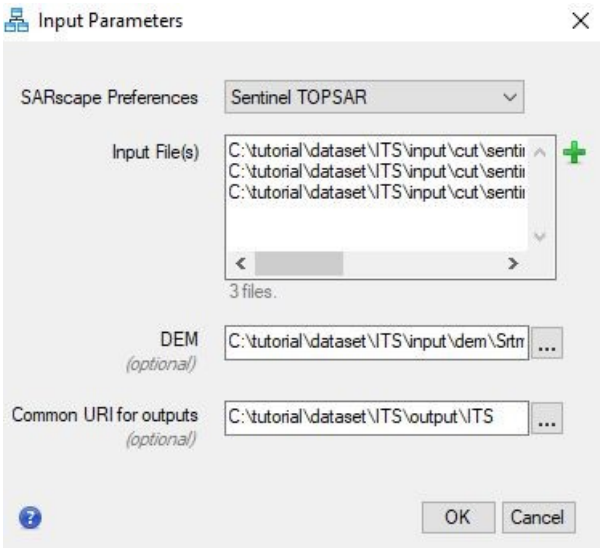

Figure 3 Input parameters task.

Step 2 SARscape Basic Multilooking

This task multilooks data that have been included in the Input Parameters.

Note: Multilooked data will be saved in the output folder since the common URI for outputs is set (see Coregistration tool Help).

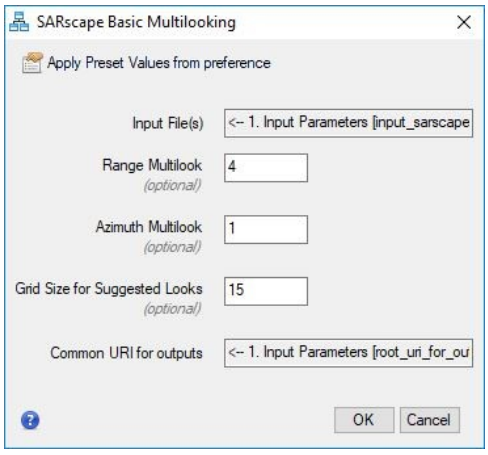

Figure 4 SARscape Basic Multilooking task panel.

Step 3 SARscape Coregistration

Mooltilooked data are used as input for the Coregistration process, default parameters will be considered (see Coregistration tool Help).

Note: Coregistered data will not be saved in the output folder since the common URI for outputs is not set.

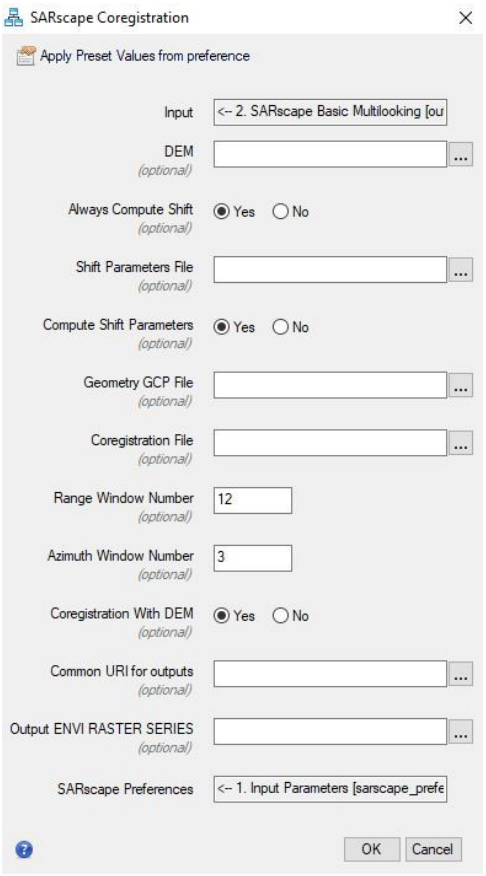

Figure 5 Coregistration task panel.

Step 4 SARscape Despeckle Multi-temporal DeGrandi

The coregistered images are used as input to filter the data (see De Grandi Spatio-Temporal Filtering tool Help) applying the DeGrandi filtering method (see De Grandi Spatio-Temporal Filtering tool Help).

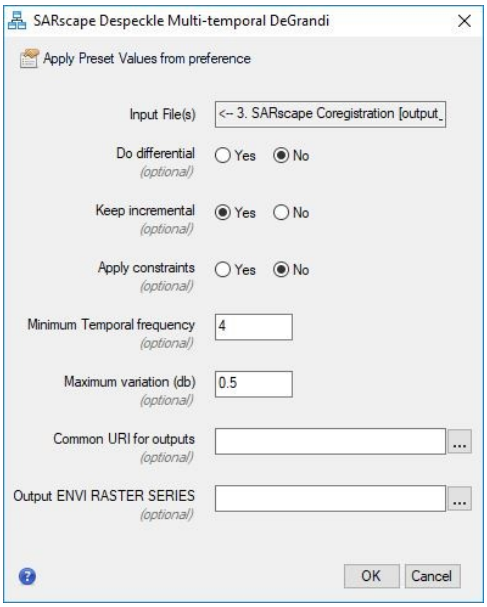

Figure 6 SARscape Despeckle Multi-temporal DeGrandi task panel.

Step 5 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.

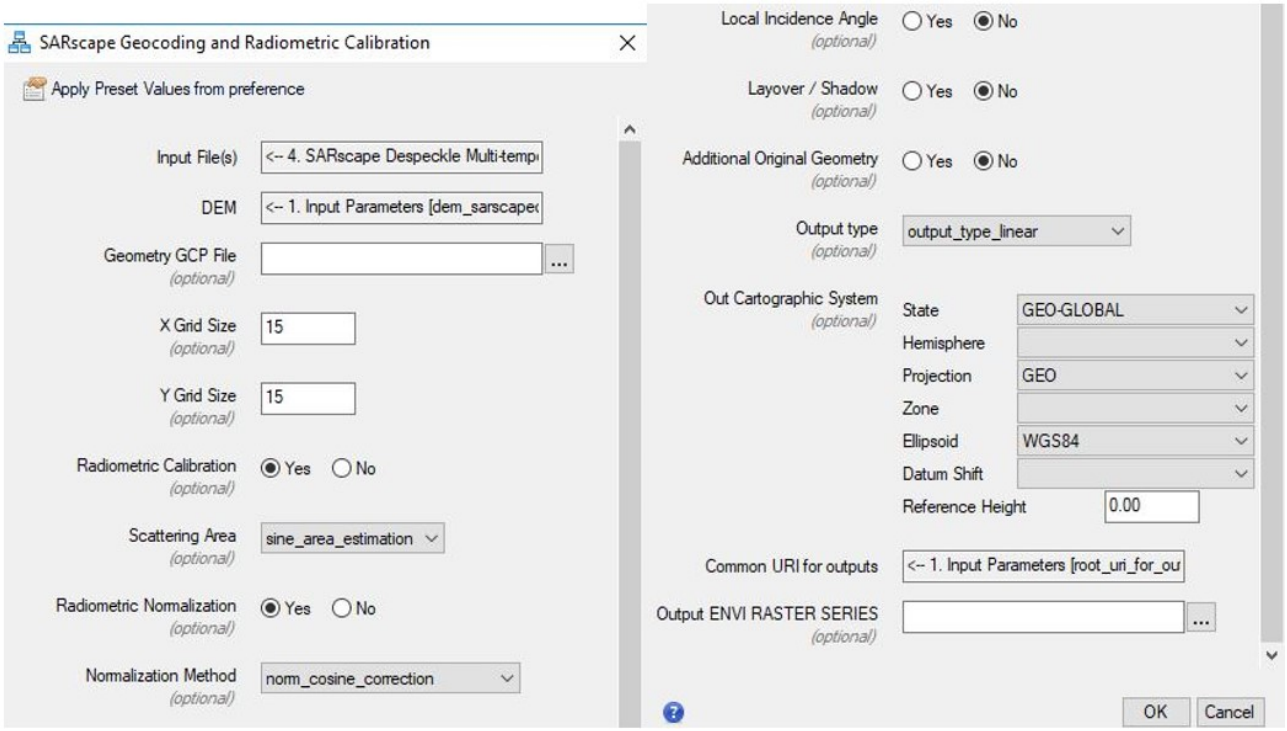

Figure 7 SARscape Geocoding and Radiometric Calibration task panel.

SARscape View SARscapedata

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

Step 6 SARscape Multitemporal Features

The geocoded images are used as input to compute the Multi-temporal features (see Multi Temporal Features tool Help). The output has been set in the Common URI for outputs. Features selected for the computation will be created as output. In this example only, the multi-temporal features that are set in preferences will be computed.

View

A View task is connected to the multitemporal features task to show the computed results in ENVI. In this example Covariance Min Gradient RGB is set to be displayed.

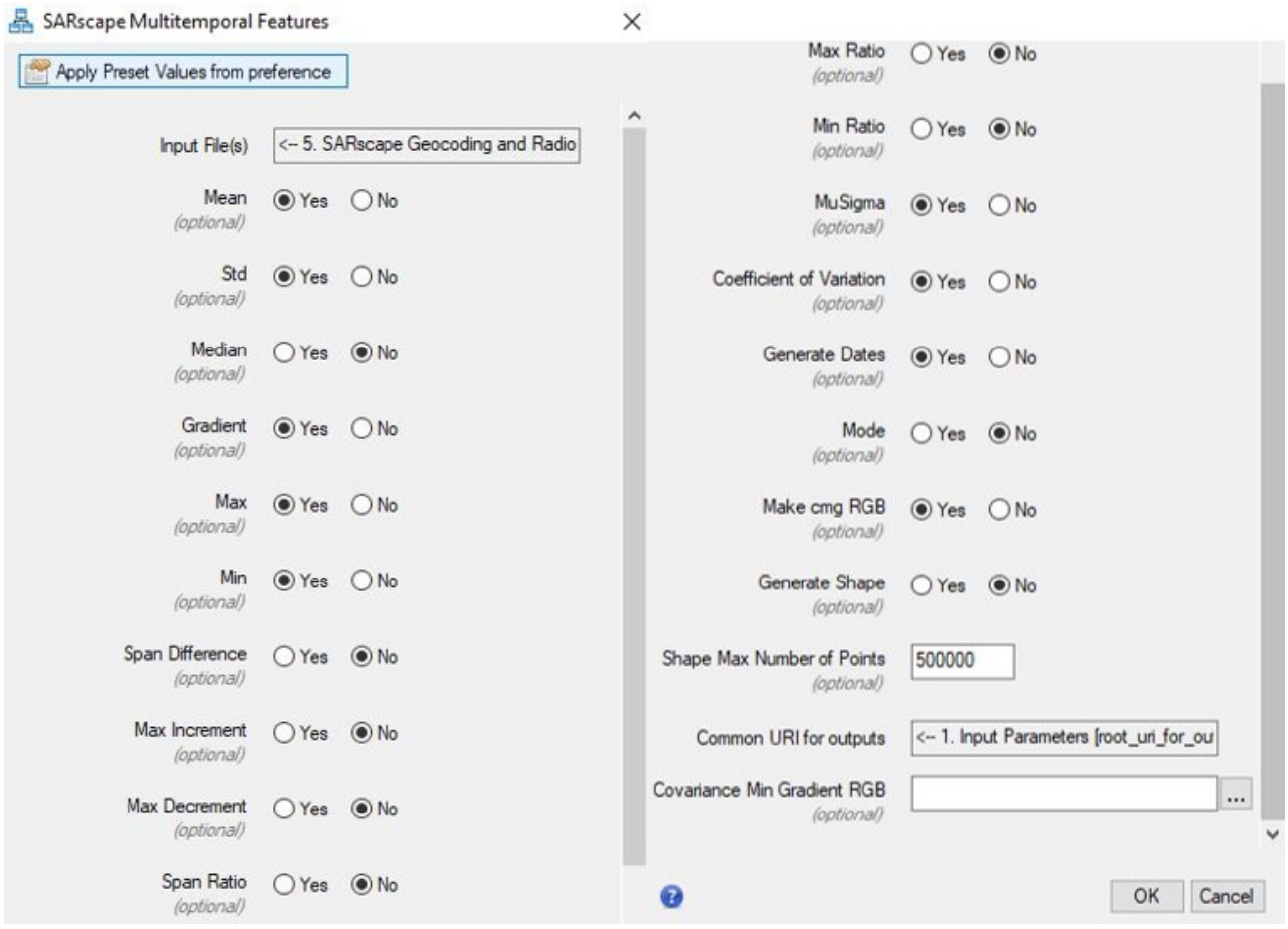

Figure 8 SARscape Multitemporal Features task panel.

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.