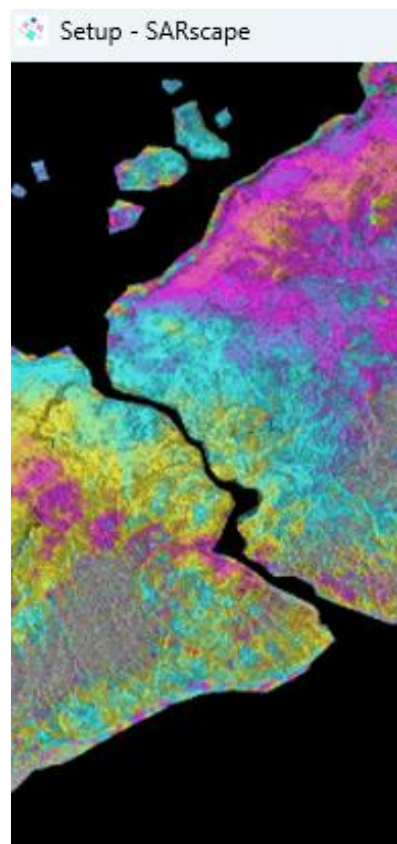


SARSCAPE TUTORIAL: GETTING STARTED WITH SARSCAPE FOR WINDOWS



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I. INTRODUCTION

The aim of this document is to provide quick look on SARscape and to guide the user through the most common SARscape functionalities.

The document describes how to install SARscape, the SARscape preferences and SARscape environment. Moreover, the most common functionalities are detailed providing notes and tips to let the user take advantage of the whole SARscape processing opportunities and interface. A dedicated chapter describes the processing in batch mode. The reporting files are described as well.

The functionalities and example are referred to **SARscape version 6.3.1**, running under **ENVI 6.3.0** with a standard (GIS-like) interface installed on Windows 10, 64bit.

For other software functionalities, such as interferometry or interferometric stacking, the Reader is referred to dedicated tutorials.

The tutorials can be downloaded from <https://www.sarmap.ch/index.php/software/sarscape/>.



Paragraphs like this one, showing a hand on the left side, indicate a practical step that the user should perform to proceed with the tutorial.

II. SARSCAPE QUICK START

1. INSTALL SARSCAPE

SARscape 6.3.1 requires ENVI version 6.1.0 or higher. ENVI must be installed prior to the SARscape installation.

Before installing SARscape, please make sure you are logged in as an Administrator, that you have enough free disk space on your C:\ drive (about 6 GB) and that all other applications are closed.



On Windows, right click on the exe file and select **Run as Administrator**. The SARscape Setup Wizard will guide you through the installation. Click **Next** to continue with installation (Figure 1).

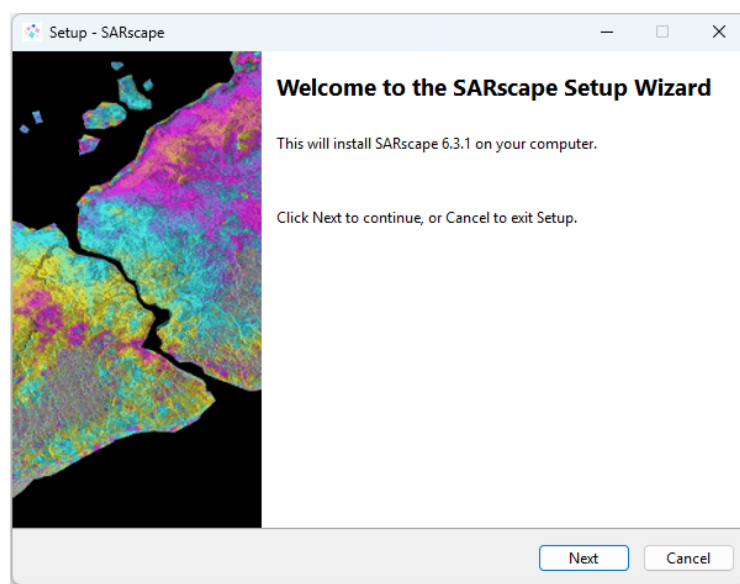


Figure 1. Welcome window of the SARscape installation wizard

Get familiar with the **End user license agreement** (Figure 2, left), accept it and go further to the selection of the **installation folder** (Figure 2, right) – keep the suggested location and click **Next**.

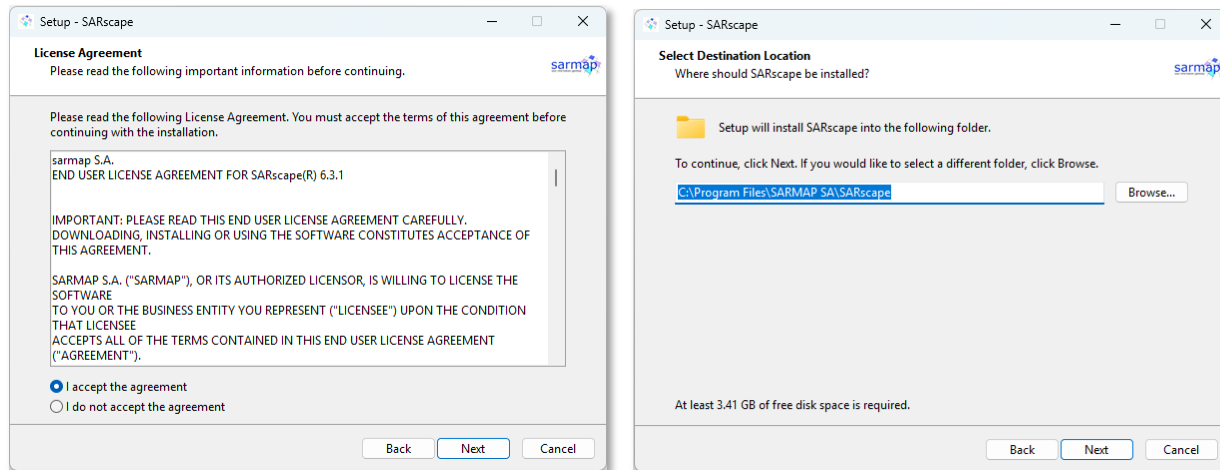


Figure 2. End user license agreement and Destination location

In the “**Select Additional Tasks**” tab (Figure 3, left), select **Install Intel OpenCL CPU-only runtime**¹ if you do not have the OpenCL CPU driver (to run OpenCL code on CPU). Keep this task unchecked if you already have installed Intel OpenCL CPU-only runtime on your machine. This driver is needed to run the SARscape tools.

The option **Install SARscape DeepL NVIDIA GPU Driver** is selected by default. Install this driver on systems equipped with an NVIDIA GPU². A CUDA-capable GPU is optional for running DeepL tools for better performance. Keep it checked and click **Next**.

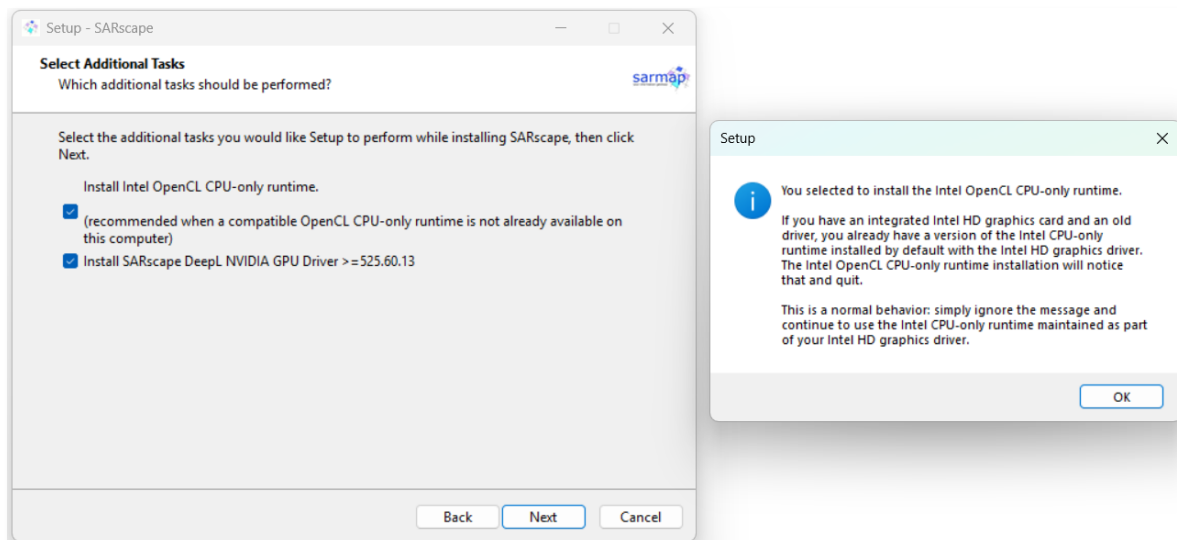


Figure 3. Selection of additional tasks during the installation

¹ The Intel OpenCL CPU-only runtime provides an environment for executing OpenCL (Open Computing Language) applications on Intel CPUs (central processing units).

² NVIDIA GPU is the graphic processing unit used in the SARscape Deep Learning algorithms.

In case you mark to install Intel OpenCL CPU-only runtime, a warning message will appear to inform that if it is already installed, the process will recognise it and will pass to the next step (Figure 3, right). Accept this warning and click **Install** on the next window.

In case installation of Intel OpenCL CPU-only runtime is chosen, another installation wizard appears (Figure 4).

 If you are installing the OpenCL follow the steps of this installation wizard until finish of its process and finish SARscape installation. Open ENVI, which will load the installed SARscape.

For further information, please refer to the [SARscape_OpenCL_CUDA_Installation_Guide630.pdf](#) document (located in the SARscape installation doc folder).

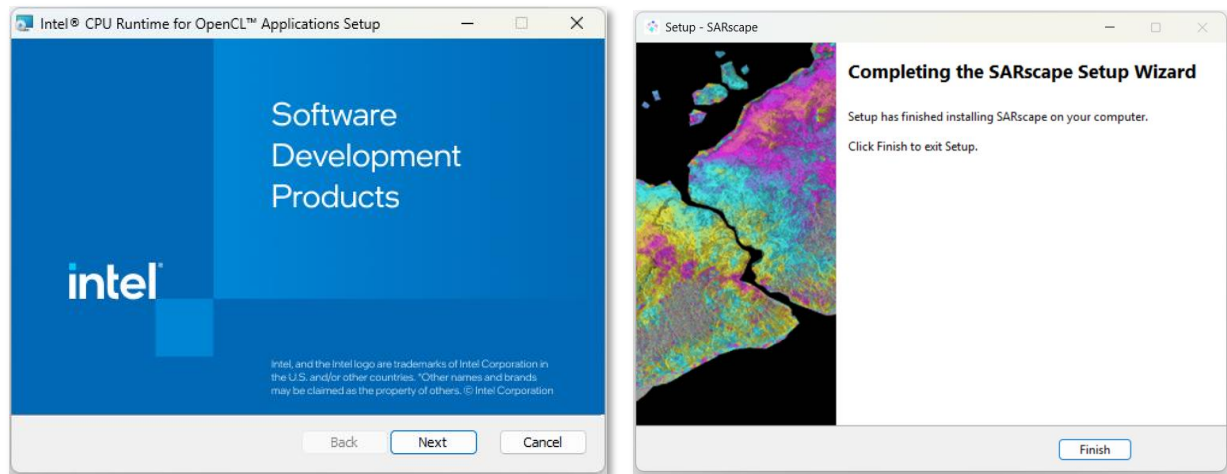


Figure 4. Installation of OpenCL runtime and finalising the SARscape installation

If SARscape is properly installed, it appears in the ENVI Toolboxes as a menu (Figure 5). The available SARscape modules will depend on the licence coverage. All types of licenses have access to the *Import Data*, *Basic* and *General Tools* modules, as well as to the *Administration*, *Task-IDL Scripting Modeler*.

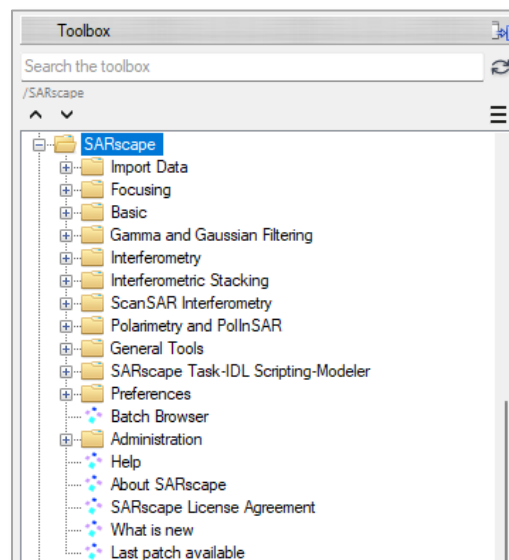


Figure 5. SARscape in ENVI toolboxes

2. ABOUT SARSCAPE

At any time, a check of the installed SARscape version and built patch (if any) can be done through the tool About SARscape (Figure 6, left). If selected, a pop-up appears showing the actual version and the date of the last built.

Important: Make sure that you are using the latest version with the latest available patch installed.

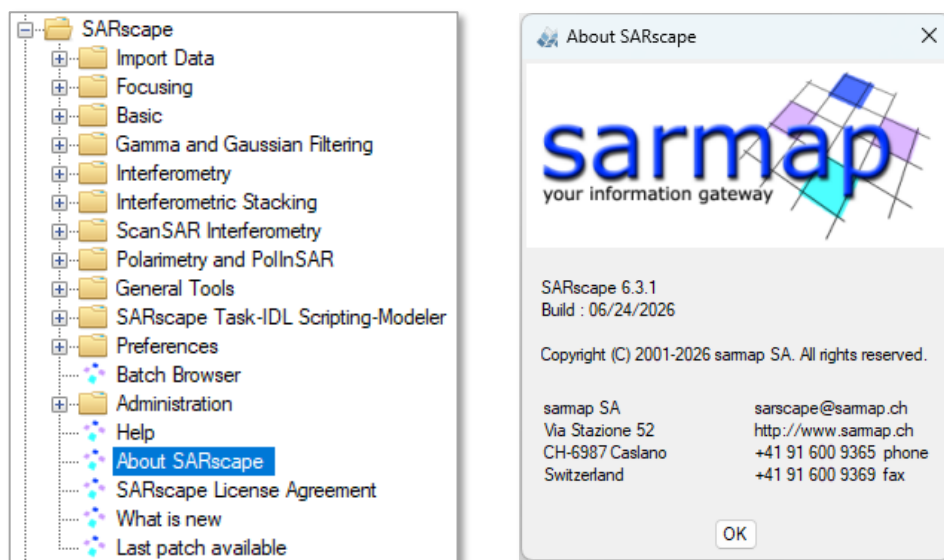


Figure 6. **About SARscape** in ENVI toolbox (left) and pop-up window with version and built information (right)

3. INSTALL SARSCAPE PATCH

An internet link gives an access for downloading the latest available patch for the current SARscape version. The link is accessible through the tool Last patch available at the bottom of the main SARscape menu (Figure 7).

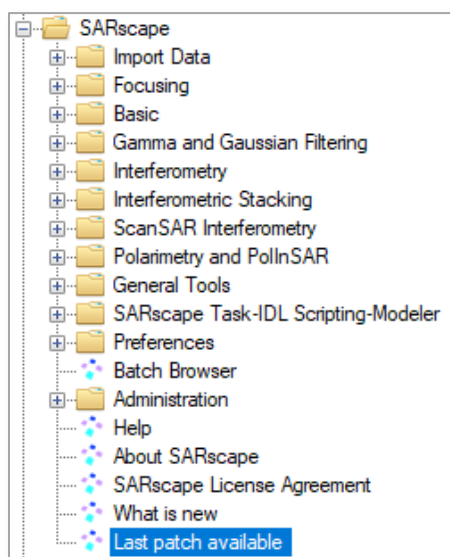


Figure 7. **Last patch available** link in SARscape toolbox

Before installing SARscape patch, please make sure you are logged in as an Administrator. The last available patch includes all the bug fixing and improvements created in the previous patches for the same SARscape version.

Important: Please do not uninstall the older patch version.

Open the link for the latest available patch – you should see message on the top of the page

✓ **Your software is up to date!**

In case the message is negative

✗ **Your software is out of date! Please install the latest patch.**

scroll down to section **1. Downloads**.

Click on the link **Patch 6.3.1 XXX for Windows** – it will download the patch installation file.

Unzip the file and right click on the installation file – choose **Run as administrator**.

Read and accept the license agreement. Proceed to installation.

4. UNINSTALL SARSCAPE

Before uninstalling SARscape, please make sure you are logged in as an Administrator and that all applications are closed. This procedure will uninstall SARscape from your computer. The steps to uninstall SARscape are the following:

To uninstall SARscape open *Windows Control Panel*. Click on *Uninstall a program* (Figure 8).

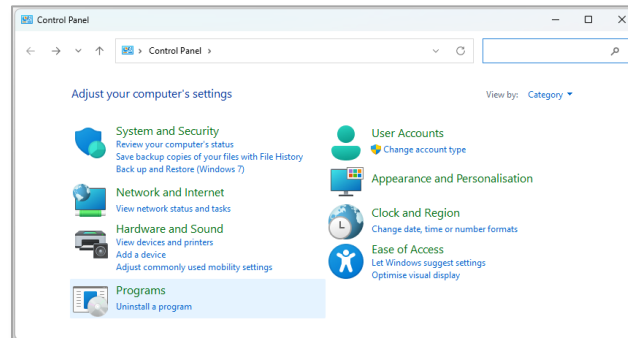


Figure 8. Uninstall a program in the Windows Control Panel

Right click on the SARscape version you want to remove and click on **Uninstall** (Figure 9). Uninstall any SARscape patch.

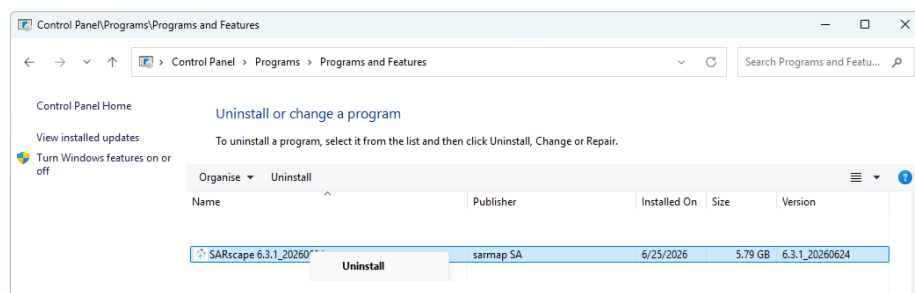


Figure 9. List of available programs (blurred). Right click on SARscape and click on **Uninstall**

5. ENVI ENVIRONMENT AND PREFERENCE

5.1. ENVI environment

The ENVI standard interface is divided into three parts (Figure 10):

- **Layer Manager (left):** It shows all the current loaded layers. It is possible to check/uncheck each layer to make it visible/hidden.
- **View (centre):** It shows the active layers in the *Layer Manager*. In the *View* panel it is possible to pan and zoom into/out from the shown layers.
Note: *View* can be split into several views using ENVI Views menu.
- **Toolbox (right):** It contains all ENVI tools divided in folders. Here also all SARscape tools and workflows are grouped into SARscape folder.

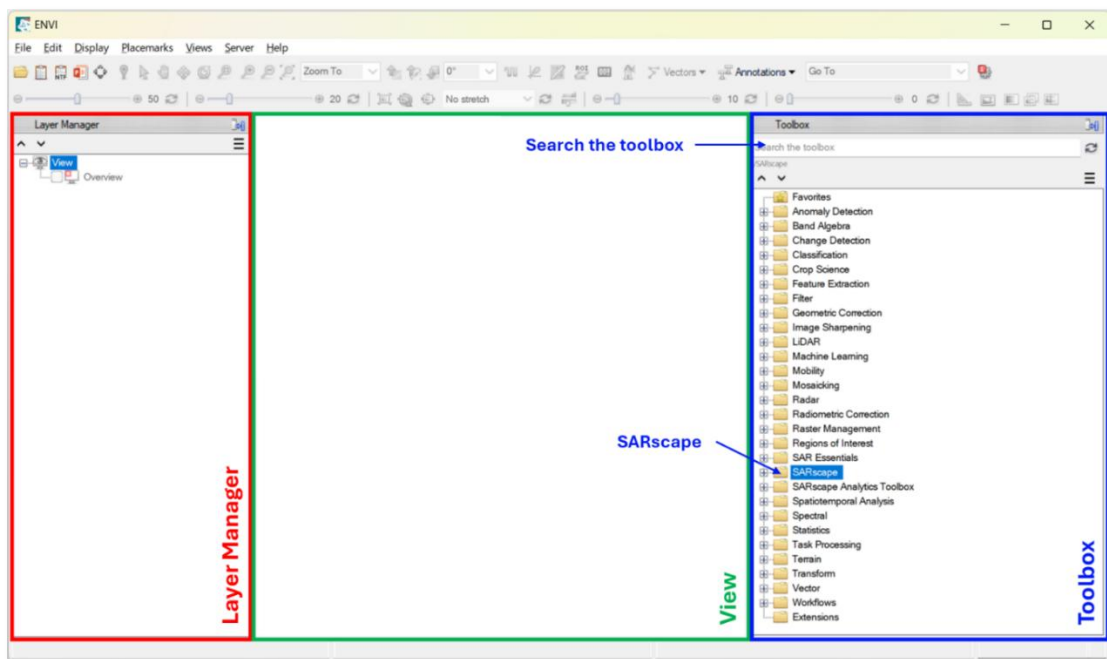


Figure 10. ENVI standard window, divided into Layer Manager (left), View (centre), and Toolbox (right) with Search toolbox field and SARscape toolbox folder

Tip: If the name of a module/tool/workflow is known (both SARscape or ENVI modules), it is possible to type the name (or part of it) in the *Search the toolbox* field at the top of the Toolbox panel. Thus, only the modules/tools/workflows containing the searched name are shown in the toolbox. To display all the modules again the text in the *Search the toolbox* must be deleted.

5.2. ENVI preferences

To have an immediate quick access to the path in the dialog boxes of the SARscape tools, the *ENVI Preferences* should be set. The preferences are accessible from *ENVI File -> Preferences* (Figure 11).

The paths must be set in *Directories* panel of *ENVI Preferences*:



Open the *ENVI Preferences* (Figure 11). Navigate to *Directories* panel. Set the **Input Directory**, the **Output Directory** and the **Temporary Directory** (Figure 12).

ENVI Temporary Directory is used to keep intermediary files during standard SARscape workflow processes (see section 10).

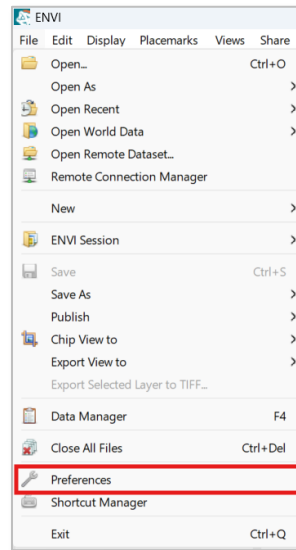


Figure 11. Access to ENVI preferences

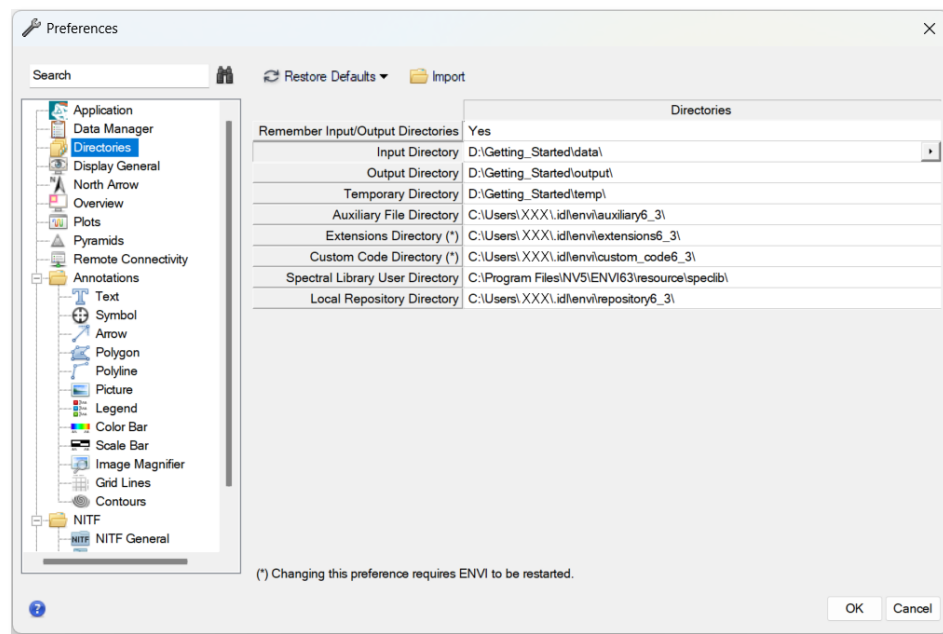


Figure 12. Setting up the *Input, Output and Temporary Directories* in ENVI preferences, *Directories* panel

- Tip:** Setting an easy reachable folder as *Temporary Directory* allows users to quickly access to the intermediary results of the standard SARscape workflows. Due to the size of the intermediate files, the *Temporary Directory* must be set accordingly.
- Tip:** Be aware that the ENVI Output Directory is automatically updated based on the most recently opened file. This behaviour is controlled by the "Remember Input/Output Folder" preference. If the output directory is not verified before a tool is run, the generated products may be written to an unintended location.

Tip: For better SAR image visualisation, set *ENVI Preferences -> Display General -> Zoom Interpolation Method* to **Nearest Neighbour**. This preserves the original pixel values and provides a sharper display of the SAR imagery.

Important: It is strongly recommended to do not choose USB or external drives as Input/Output or Temporary Directory, due to the large amount of data transfer.

6. SARSCAPE ENVIRONMENT AND MODULES

All the tools and modules of SARscape are located in an ENVI toolbox panel, which is usually in the right side of the ENVI window (see Figure 10). Clicking on the “plus” symbol near the SARscape folder all the subfolders containing different SARscape modules are expanded (Figure 13). The same procedure is applied for the folders, tools and workflows in each module. The available modules depend on the available licences.

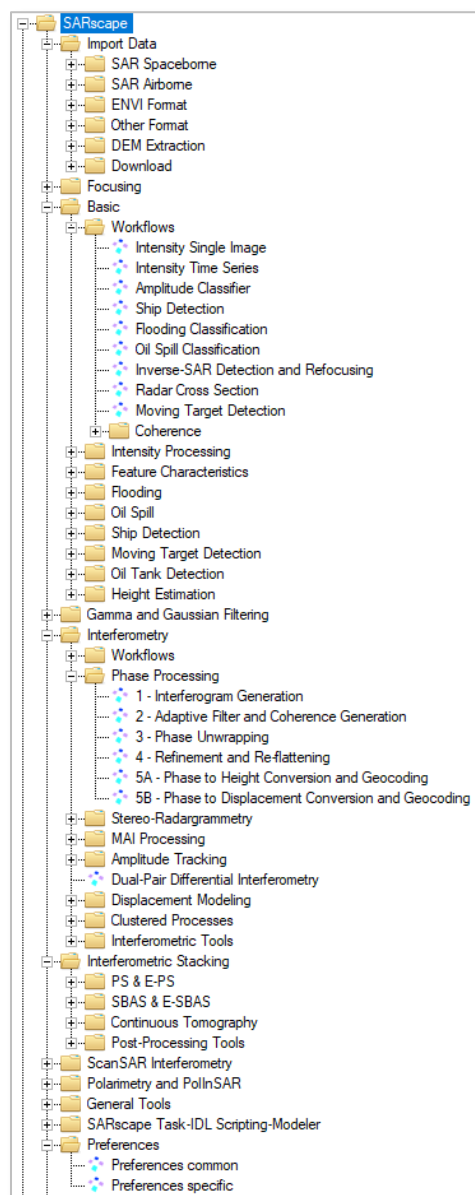


Figure 13. SARscape toolbox structure

7. SARSCAPE PREFERENCE

To correctly perform any processing, *SARscape Preferences* must be set accordingly before starting the processing. Preferences management is split into two modules *Preferences common* and *Preferences specific*. There located in *SARscape Preferences* folder (Figure 14).

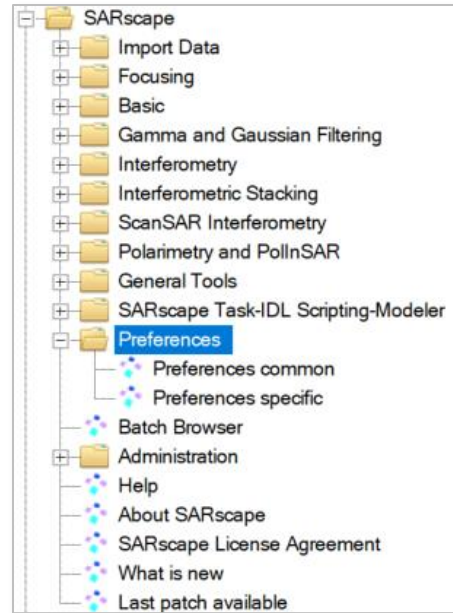


Figure 14. SARscape Preferences – common and specific

Both common and specific preferences can be modified, adapted, and saved as *.sml file for future use by loading them using the specific *Load* and *Save* top-left buttons (Figure 15 and Figure 18).

Note: If the preferences have been changed, these changes are not applied to the open tools. These tools must be closed and re-opened to let the changes take place.

7.1. Preferences common

The common preferences are used to specify general parameters in SARscape, such as *User accounts*, *Repositories*, *Annotations* and *Cluster* parameters, and others (Figure 15).

7.1.1. Working directory

In the panel *Directories and batch file name* the *Working directory* must be set to store the working files and the batch file on the computer.

Important: Please, make sure that you have read/write privileges for your selected directories.

The *Working directory* is also used to store some information about SARscape processes, such as **Log** and **Trace** files as described in section IV. .Log, .Trace and Error Report files. The use of the Batch file and the possibility to perform parallel processing using different working directories are explained later in this tutorial in section III. *Batch processing*.

The other directories in the panel must be set if you have created a local (or local network) copy of Orbit Files or Digital Elevation Model (DEM) tiles such as SRTM 1or STRM 3, TDM 90, etc (Figure 15). This option is useful in case of irregular access to internet. In such a case the tiles can be previously downloaded, and the location of the tiles is indicated in the corresponding field in the list of paths.

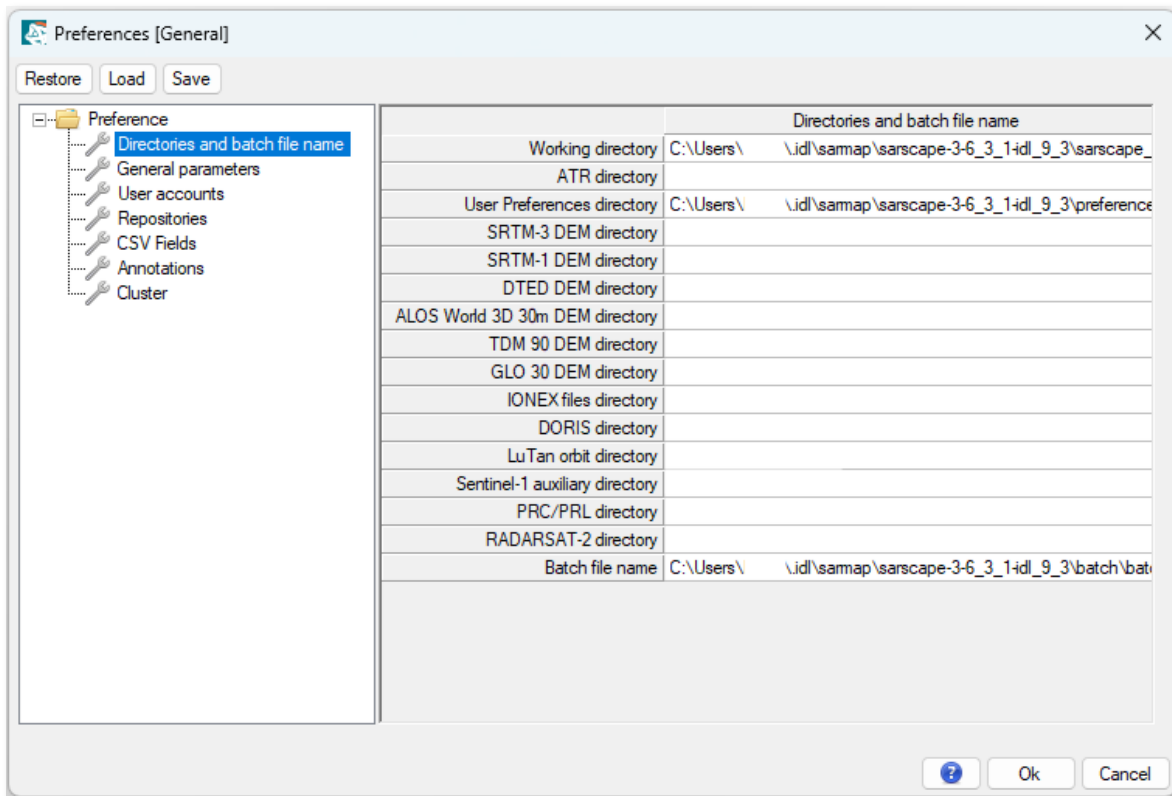


Figure 15. SARscape Preferences common – Directories and batch file name panel

7.1.2. OpenCL Platform and Devices

In the *Preference common* tool, at the top of the *General Parameters*, two fields called “*OpenCL Platform Name*” and “*OpenCL Device name*” are present (Figure 16).

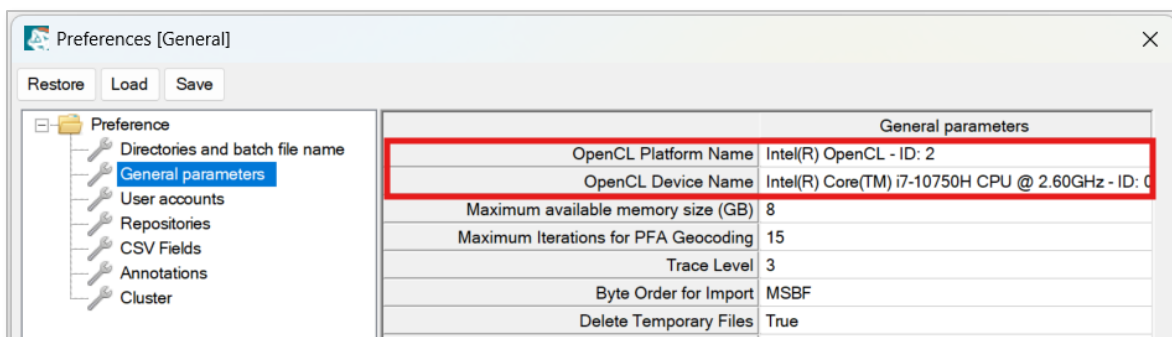


Figure 16. SARscape Preferences common – settings for **OpenCL** in General parameters panel

OpenCL platform is a (vendor specific) OpenCL implementation, and an OpenCL device is the actual processor performing the calculations. Each OpenCL platform can see one or more OpenCL Devices. For some SARscape tools, GPU support is provided. For further information, please refer to the *SARscape_OpenCL_Installation.pdf* document (located in the SARscape installation doc folder).



To carry out the processing using your GPU, choose it from the **OpenCL Device Name** list.

By selecting different devices in different working directories, it is possible to launch parallel processing on different devices at the same time (see section III. 5).

7.1.3. Repositories and User accounts

In the panel *User accounts* (Figure 17, left) personal credentials for access to data repositories must be entered. These credentials are then automatically loaded in the tools which need access platforms for downloading data. An example is the tool *Sentinel-1 MultiDownload* which requires credentials for access to the European Space Agency (ESA) *Data Scape* platform or to Alaska Satellite Facility (ASF) platform. The URL addresses to the repositories are loaded automatically in the panel *Repositories* (Figure 17, right). The same is valid for the other data repositories, e.g., ALOS World 3D, TDM90, etc.

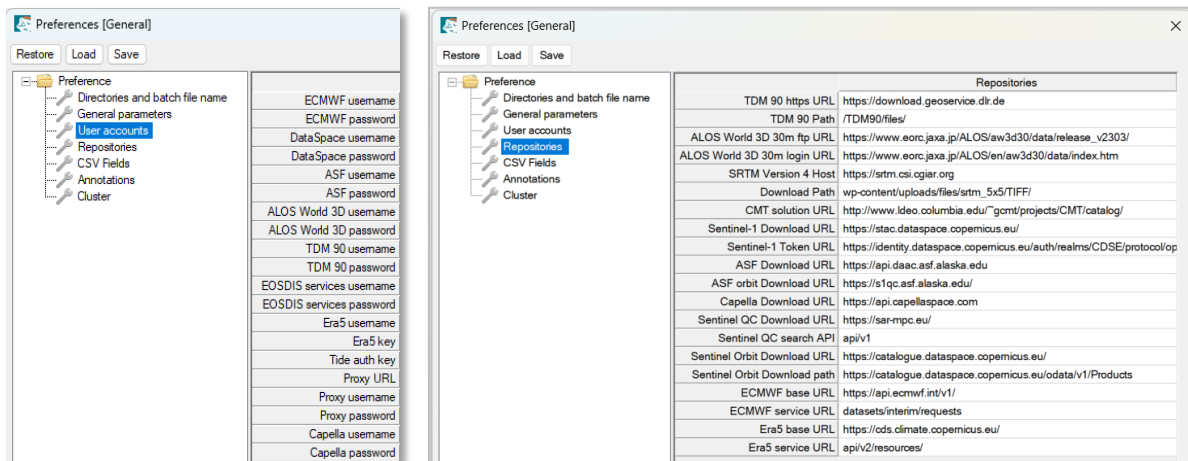


Figure 17. SARscape Preferences common – User accounts and Repositories panels

If you do not have already, create user accounts on <https://browser.dataspace.copernicus.eu/> and/or on <https://search.asf.alaska.edu/>. Set the credentials for these platforms in the corresponding fields in the panel **User accounts** of the SARscape Preferences [General] window (Figure 17, left). Add the credentials for the other needed repositories (e.g., TDM90, ALOS World 3D, EODIS, etc.).

Note: To take advantage of the ASF, users have to login at least once on the ASF web browser portal and set a Study Area and accept the *Terms Of Service* for that account before performing the tool. Moreover, to enable the download via API, username and password must not be composed of special characters (even though the web interface allows these characters).

7.2. Preferences specific

The tool with specific preferences allows loading a set of specific settings for different SAR data. These settings can be loaded in SARscape by using the top-left button **Load Preferences** in the window *Preferences specific*. These settings will be then automatically loaded in the tools and workflows which require this information. The default values of the parameters are recommended but also can be modified if needed for any of the processing in the list on the left side of the window. The changes can be Saved and Loaded from a *.sml file for reuse. Alternatively, the parameters can be changed for one-time processing directly in the corresponding SARscape tools. This change will not be saved. In the next usage of the tool, the parameters will be automatically reloaded from *Preferences specific*.

Important: Please note that if a SARscape tool or workflow is already open and then Specific preferences are loaded, the SARscape processing panel will not apply the newly loaded preferences. To apply them correctly, the user must close the processing panel and reopen it after saving the Preferences Specific.

The options for *Preferences specific* to be loaded are:

- General
- UHR (better than 1m) – ultra high resolution
- VHR (better than 3m) – very high resolution
- VHR (better than 6m) – very high resolution
- HR (better than 10 m) – high resolution
- MR (between 10m and 30m) - medium res.
- LR (coarser than 30m) – low resolution
- Interferometry Low Coherence
- Wrong Orbital Data
- TanDEM-X Bistatic Configuration
- CInSAR ERS-ASAR Interferometry
- Sentinel TOPSAR (IW-EW)
- PALSAR-2 ScanSAR
- TSX ScanSAR
- Umbra
- Squinted Data

Open the *SARscape Preferences specific* (Figure 14). Click the button **Load Preferences** and choose **Sentinel TOPSAR (IW-EW)³** from the drop-down list. The parameters specific for processing of Sentinel-1 data will be loaded in all panels of the tool (Figure 18).

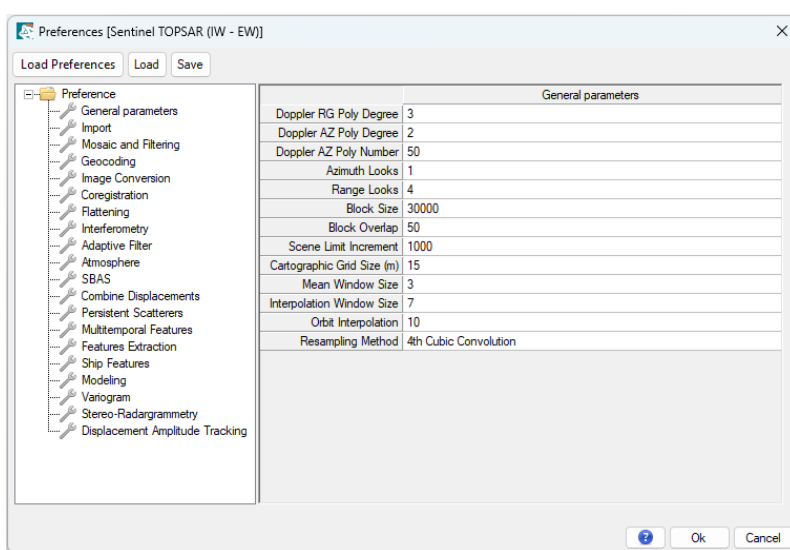


Figure 18. SARscape Preferences specific – loaded Sentinel TOPSAR (IW-EW) preferences

Keep in mind that the new workflows introduced with SARscape v6.3.0 (Section 11) the most suitable preferences can be selected automatically directly from the window of the workflow, depending on the sensor type of the input. For all other tools (Section 9) and old workflows (Section 10), the preferences must be selected manually in Preferences specific considering the real sensor resolution.

³ TOPSAR IW-EW stands for Terrain Observation with Progressive Scans Synthetic Aperture Radar (TOPSAR), Interferometric Wide (IW) and Extra Wide (EW) swath modes, main acquisition modes of Sentinel-1 SAR instrument. More information is available on <https://sentiwiki.copernicus.eu/web/s1-products>.

8. SARSCAPE EXTENSIONS AND FILE BROWSER FILTER

SARscape processing creates a set of the following three output files:

- **binary data** – raster data matrix (usually float, complex and byte)
- ***.sml** – SARscape ASCII header containing **all the mandatory information** for the data processing
- ***.hdr** – ENVI header file for **compatibility** within ENVI tools.

The binary data (raster matrix), with or without file extension, is classified by the operational system (OS) simply as “File” (Figure 19). The complete file description is contained in the *.sml file associated with the binary file. In addition to the main SARscape files some processes also create shapefiles (*.shp), together with their auxiliaries (*.dbf, *.prj, *.shx), as well as Google Earth *.kml files.

 For the examples below the files in the **DataSetsTutorial_631/Getting_started** folder are used.

Name	Type	Size
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr	File	872,978 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.dbf	DBF File	1 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.enp	ENP File	290,905 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.hdr	HDR File	1 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.kml	KML	2 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.prj	PRJ File	1 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.shp	SHP File	1 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.shx	SHX File	1 KB
sentinel1_48_20250812_000403287_IW_D_VV_slc_list_pwr.sml	SML File	50 KB

Figure 19. SARscape output files. The three main outputs are the marked in blue: *_slc, recognised by the OS as “File”, *.hdr is the ENVI header file, *.sml is the SARscape header file.

Once SARscape has processed data, it adds in the file name the underscore symbol and a suffix indicating the file content, e.g. _slc (single look complex), _pwr (power), _geo (geocoded). This nomenclature helps to quickly locate a file of a certain type when a filter in the file browser is active.

A list of file name suffixes can be found in *SARscape Help* content (Figure 20, left) under the page *General Information -> Data Format -> Nomenclature* (Figure 20, right).

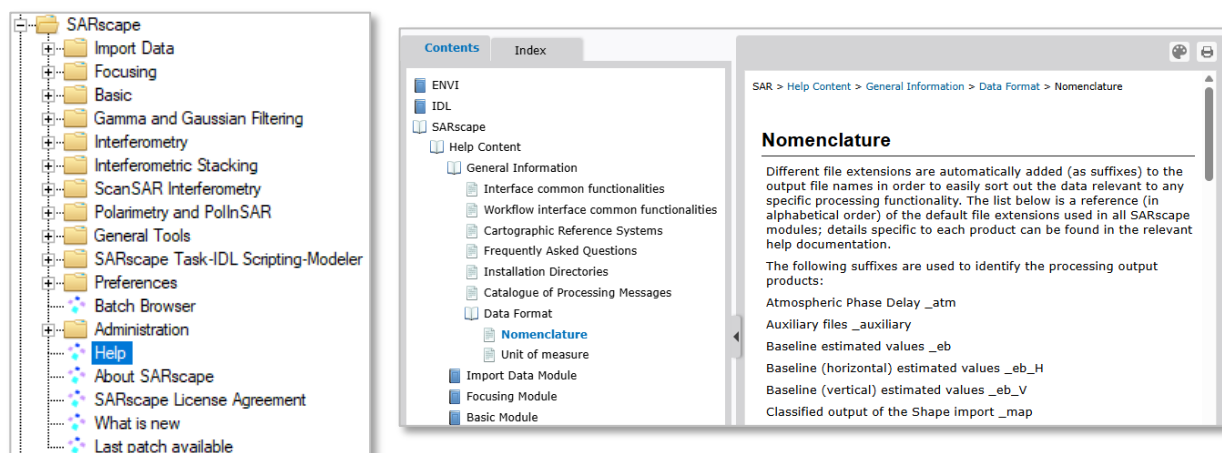


Figure 20. Access to SARscape Help pages (left), Help page for file name nomenclature (right)

SARscape uses **filters** in its file browser windows to help selecting the correct binary files (ancillary files cannot be selected) for the chosen process. In the general case the browsing window for file selection displayed as possible file input among a set of default extensions (Figure 21), depending on the requirements for the process. Only the files with the shown extensions will be shown in the list of files.

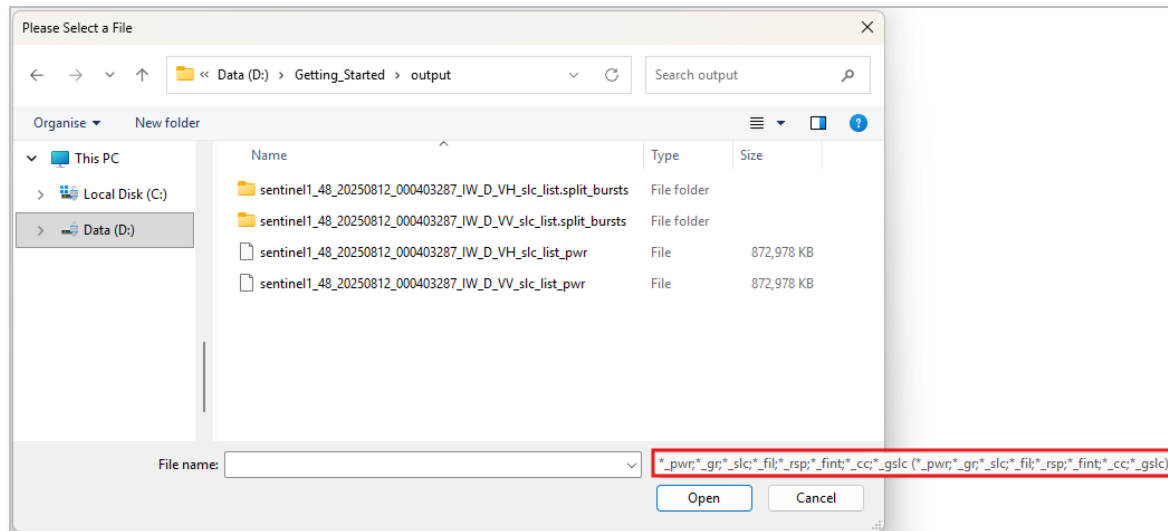


Figure 21. Filter with predefined file extensions in SARscape data selection browsing window (example with Geocoding and Radiometric Calibration tool)

The filter can be turned off by changing the file name extension indicator from the drop-down arrow to *.* (Figure 22). In this way all the files in the directory will be shown.



Figure 22. Turned off filter for data selection browsing window

The data selection filter can be customized by the User. In the latter case, the star symbol is used as a wildcard with the following interpretation:

- when the star is at the beginning of the filter text (*filtertext, Figure 23), only the files with the filename ending with the filter text are shown:

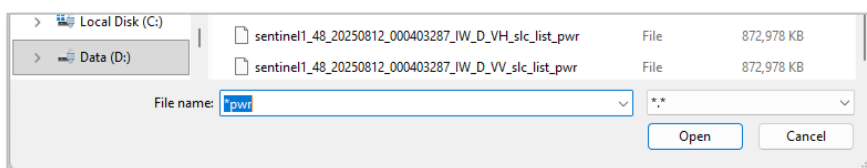


Figure 23. Filter with keeping end part of a file name (*filtertext)

- when the star is at the beginning and at the end of the filter text (*filtertext*, Figure 24), only the files with the filter text inside the filename are shown:
- when the star is at the beginning and at the end of the filter text (*filtertext*, Figure 24), only the files with the filter text inside the filename are shown:

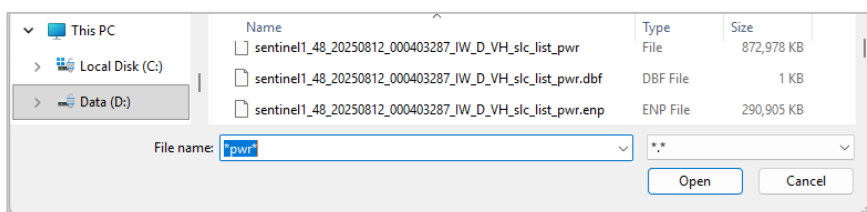


Figure 24. Filter with keeping middle part of a file name (*filtertext*)

- when the star is at the end of the filter text (filtertext*), only the files with the filename beginning with the filter text are shown.

9. SARSCAPE WINDOWS (TYPICAL)

A standard SARscape tool window is composed by several tabs. Not all of these are always present. The window of the *Geocoding and Radiometric Calibration* tool is used here as an example as it contains all the tabs of a standard window of a SARscape tool.

The Drag & Drop option allows selecting one or more files via the OS Explorer file system or the *ENVI Layer Manager*, and to drop them into a tab of the window.

9.1. Input Files

The files used for the chosen processing step must be inserted into the first tab of the tool (Figure 25, left). Unless otherwise specified, these files are mandatory. Valid entries include a list of one or more file names.

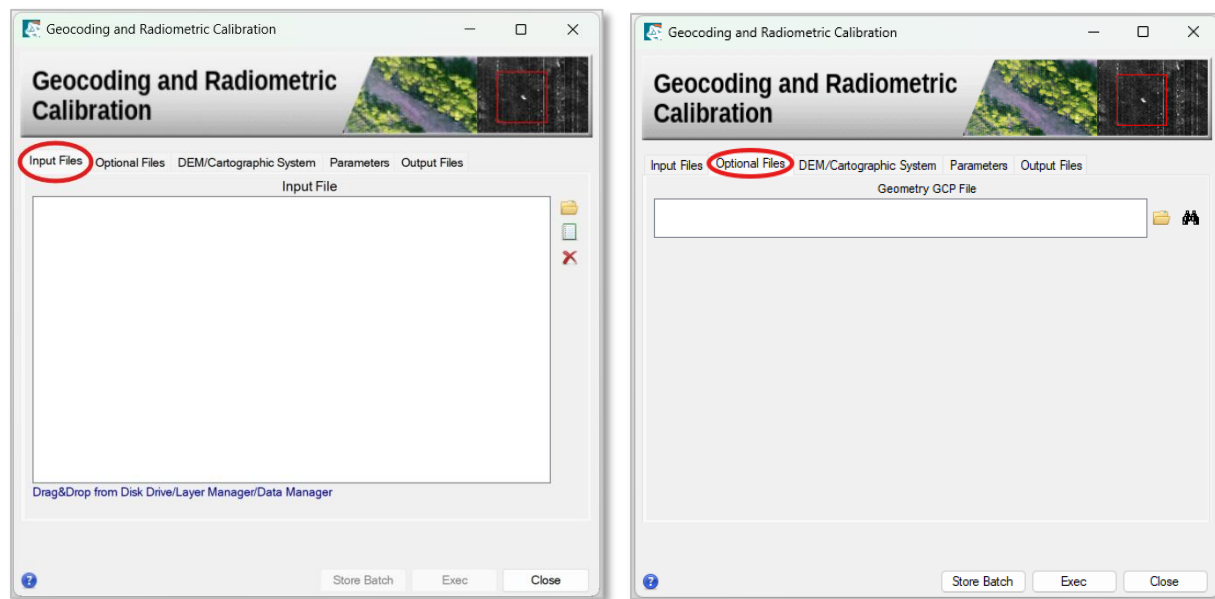


Figure 25. *Geocoding and Radiometric Calibration* tool as an example for typical SARscape window of a tool – tab *Input Files* (left) and *Optional Files* (right)

As mentioned above, the files can be loaded from the *ENVI Layer Manager* or the *Windows Explorer* by Drag & Drop. Alternatively, the buttons on the right side of the window of the tool can be used:



- **Browse Files:** Browse one or more files from the computer to add as an input
- **Select File List:** Select an input file list (*.txt format)
- **Open Folder (optional):** Allows adding all the files from a folder (and subfolders) that match the default file extension filter. This option is available only in some import tools.
- **Remove All:** Removes all files from the list. To remove selected files, the context menu from right button of the mouse click must be used (Figure 26).

✎ Open the tool **Geocoding and Radiometric Calibration**, located in SARscape Basic Module -> Intensity Processing -> Geocoding.

✎ In the **Input Files** tab click **Browse Files** button and navigate to the folder with the tutorial data.

✎ Select and load the two ***pwr** files (_VH_ and _VV_ polarizations) – Figure 26.

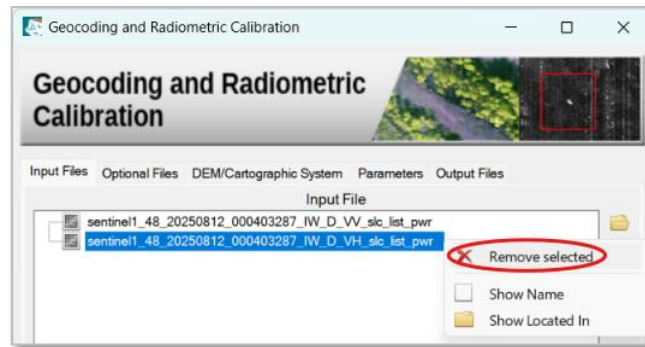


Figure 26. Input Files panel of a SARscape tool – option for removing selected files

Use the right click of the mouse on the file with _VH polarization in the list of Input Files and select Remove selected.

Note: In some tools with more fields in the *Input Files* tab, like interferometric refinement and re-flattening, when the first input is inserted, the following input files are automatically completed assuming that the filename was never changed and the files were not moved during the processing and that the default extensions were used.

9.2. Optional Files

Some processes can also use additional files, for example for refinement or other corrections, which are not mandatory (Figure 25, right).

In the example with geocoding the allowed *Optional file* is a *Geometry GCP File* – a file with Ground Control Points (GCP). In this case inside the panel, apart from *File Select* which gives possibility to load previously created *Geometry GCP File*, there is an option to create such a file on-the-fly by selecting the binocular icon:



- **Create GCP:** This button opens a new window (Figure 27) which allows creating GCP file (used for correct orbital information). After the creation of the file, the path is automatically inserted in the correct field on the left.

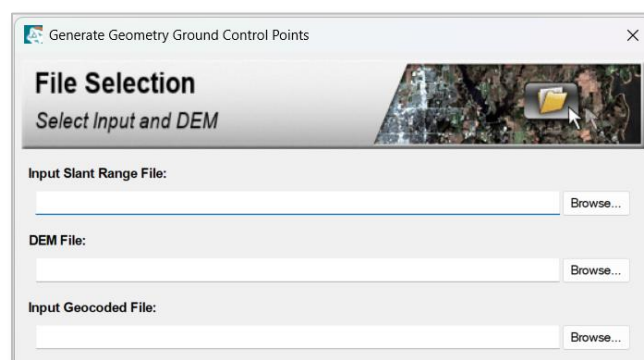


Figure 27. Window of Generate Geometry Ground Control Points tool

Refer to the GCP manual at https://www.sarmap.ch/tutorials/GCP_Manual_V_1_1.pdf for more details on the usage of *Geometry GCP File* tool.

On the **Optional Files** tab, leave the **Geometry GCP File** field empty.

9.3. DEM/Cartographic System

In this tab, a Digital Elevation Model (DEM) must be entered, or a cartographic system must be selected (Figure 28). If a DEM is provided, its cartographic system is automatically selected. The DEM file can be loaded locally from the computer (use *File Select* button). The loaded DEM file must be in *_dem format – previously imported in SARscape by the corresponding tools from *Import Data -> DEM Extraction* folder.

Important: The DEM used in SARscape must be ellipsoidal.

Alternatively, a DEM can be automatically downloaded from a selected set of sources by clicking on the binocular icon (Figure 29) and select among the options. This selection will automatically open additional tool for DEM extraction. Keep in mind that most of the DEM repositories require active user account – see section 7.1.3).

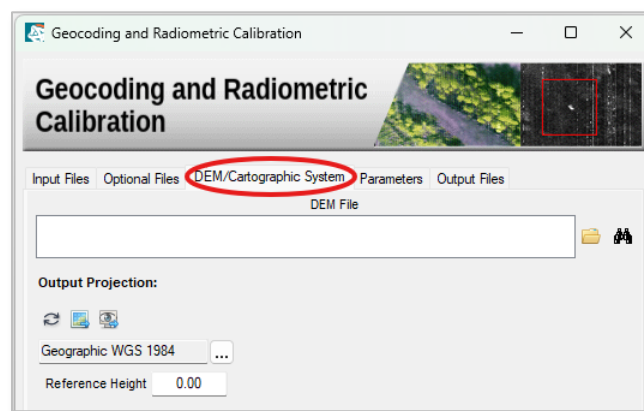


Figure 28. DEM/Cartographic System tab in a SARscape tool

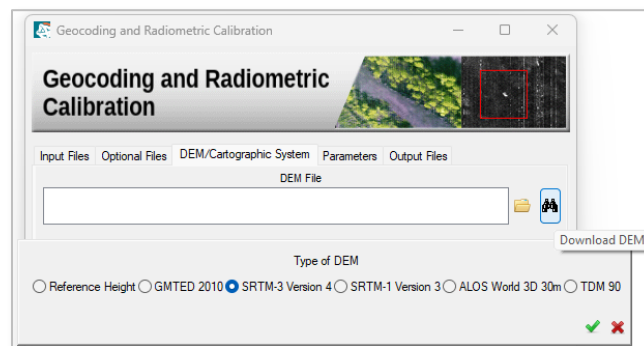


Figure 29. Selection of a DEM automatic download

In case that the Digital Elevation Model is not used, it is mandatory to define the Cartographic System. Additionally, there are the following options:



- The *Reset* icon allows to reset the coordinate system field.



- To use the same coordinate system as of another dataset, click the *From Dataset* button and select the source dataset.



- To apply the same Coordinate System of the current selected layer, click the *From Current View* button.

Note: Most of the tools require an external DEM which is used for geocoding (transformation) of the slant-range SAR image into chosen cartographic reference system. For best results, it is important to select a DEM, that takes into consideration the acquisition time of the SAR data and its resolution. The DEM generation date should be as close as possible to the acquisition date of the SAR data. Furthermore, the resolution should be as close as possible to the native ground resolution of the SAR image.

In any case the DEM used in SARscape processing must referred to an ellipsoid. In case a DEM is not used, a constant ellipsoidal height must be provided. The default reference height is 0.0m (Figure 28).

 Click **File Select** button in **DEM/Cartographic System** tab and load the **_dem** file from the folder with tutorial data.

9.4. Parameters

This tab contains the *Parameters* used for the processing. The *Principal Parameters* (Figure 30, left) are set according to the selected **Preferences specific** (see section 7.2).

Important: Before opening a SARscape tool, the specific preferences must be configured in *Preferences Specific* window so that they will automatically be populated with the correct processing parameters in the SARscape tools.

If the specific preferences are changed in Preferences window after a panel of a tool has already been opened, the software will not update the parameters in the tool and will use those that were previously set. In this case, the tool must be closed and reopened for the new preferences to be applied correctly.

Advanced parameters can be set from the *Other parameters* tab (Figure 30, right). On the other hand, the *Global parameters* reflect the *General Preferences common* settings (see section 7.1).

Depending on the SARscape tool or workflow additional set of recommended parameters can be available, like *Flattening*, *Interferogram*, *Geocoding*, *DataSpace Account*, etc. The default values are automatically loaded in accordance with the loaded *Preferences specific* or *common* – consult the corresponding SARscape help page for more details. All parameters can be changed if needed.

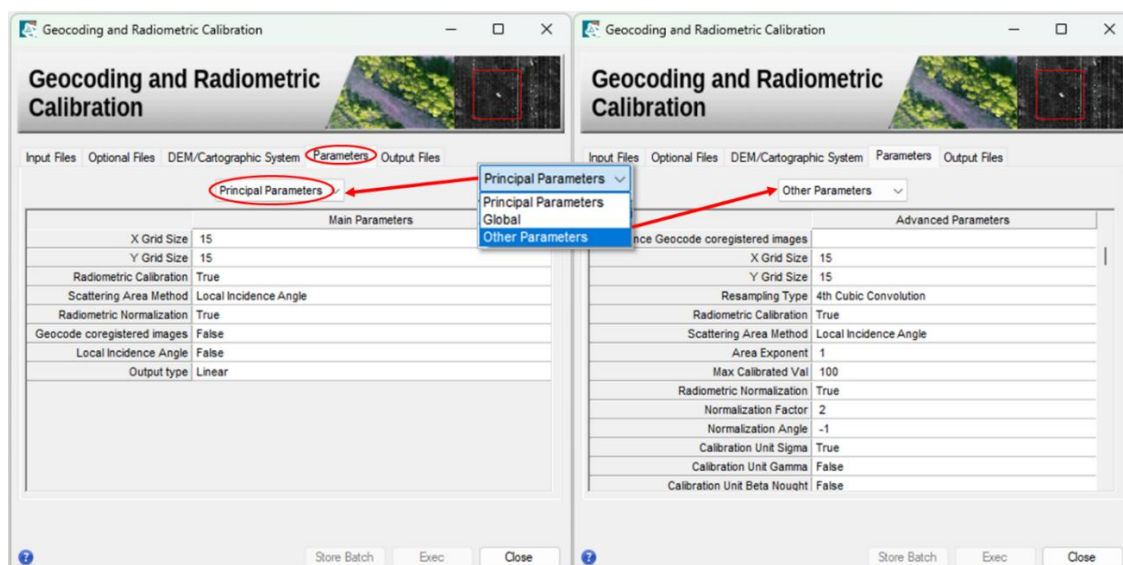


Figure 30. Processing Parameters tab with different sets of Parameters

 Keep all Parameters by default.

9.5. Output Files

This tab contains the *Output files* (Figure 31). In most of the cases, the output files appear automatically in the path string or in the list.

Important: It is strongly recommended to do not choose USB or external drives as *Input/Output* or *Temporary Directory*, due to the large amount of data transfer.

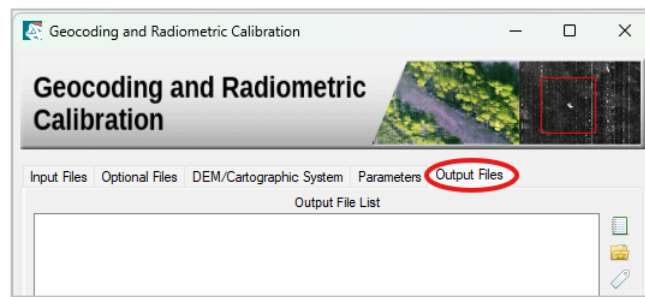
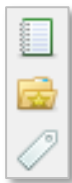


Figure 31. SARscape Output Files tab

Most of the SARscape tools automatically suggest a name for the output files. The Output Directories is the one set in the ENVI preferences (see section 5.2). Alternatively, changes can be made by:



- **Select File List:** Select an output file list
- **Change Output Directories:** This button opens a file browser window allowing the user to browse and select the folder for outputs. All the output files are stored in this selected folder.
- **Change File Extensions:** Change the filename extension.

 The tool automatically suggests name and location for the Output File (Figure 32). Make changes if you prefer different name and location.

Change of the output file name can be done through the context menu, appearing after right clicking on the suggested filename (Figure 32).

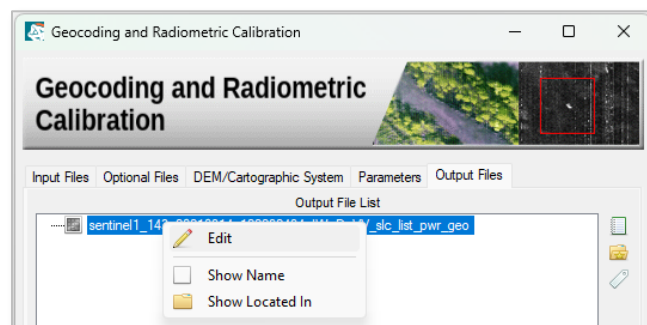


Figure 32. Output Files panel of a SARscape tool – option for renaming selected files

9.6. Actions

Most of the SARscape panels display the following four action buttons at the bottom of the window (Figure 33):



Figure 33. Action button of a typical SARscape tool

- **Help:** The question mark icon opens the corresponding for this tool help page in the default internet browser (Figure 34). On the left side of the page a full Help table of content can be found by expanding the folders.

Click on the question mark symbol (Figure 33) and explore the Help page of the tool.

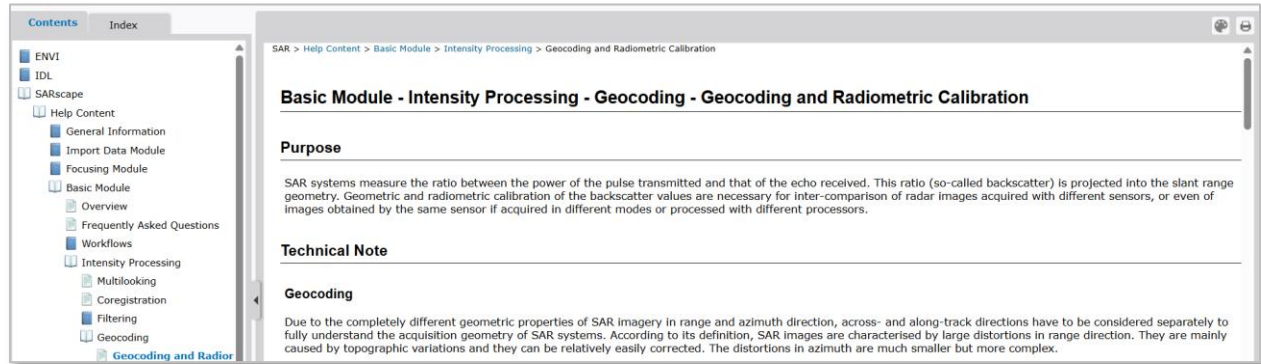


Figure 34. An example of SARscape Help page

- **Store Batch** (Figure 33): By clicking on this button, the processing step will be stored in the batch list (Figure 35, right). The loaded steps can be launched through the Batch browser (Figure 35, right). For further information, please consult *III. Batch processing* chapter.

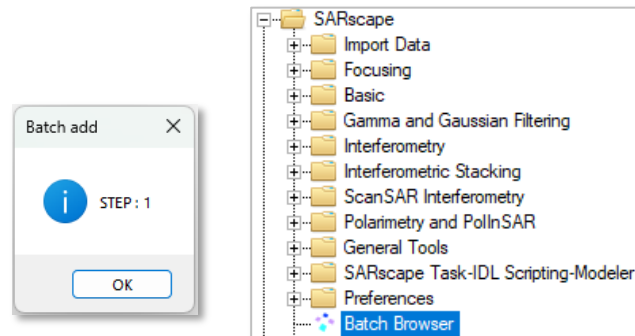


Figure 35. Store Batch step (left) and Batch browser (right)

- **Exec** (Figure 33): Selecting this button executes the processing step set with the current tool.

Select Exec button. The Processing starts. A status bar shows the progress (Figure 36, left), while a message for completion of the process is shown (Figure 36, right).

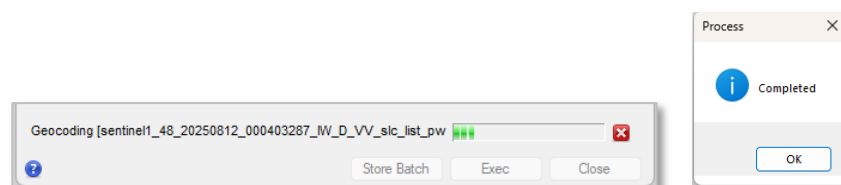


Figure 36. Progress of a processing shown with a progress bar within the window of the tool (left), and a new message window for completion of the process (right)

- **Close** (Figure 33): Closes the window without action (the changes made in any tab, including *Parameters*, will not be saved).

10. SARSCAPE WORKFLOW – STANDARD

SARscape workflows are intended to simplify the multi-step standard procedures of filling different processing panels with the appropriate information (i.e. files and parameters).

This chapter provides a description applicable to most of the standard workflow processing panels, although some interfaces may require more detailed information about specific files, parameters or settings, which are not considered here. With SARscape version 6.3 a new workflow interface is introduced – more information can be found in the next chapter (*11. SARscape workflow – NEW interface*). With SARscape version 6.4 the standard workflows will be fully substituted with the new interface.

Note: The *Store Batch* button (section 9.6) is not available for workflows.

A standard SARscape workflow is composed by 3 main parts:

- Input step,
- Parameter step(s),
- Output steps.

 Open the **Flooding Classification** workflow, located in **SARscape Basic Module -> Workflows**.

The name of the current step appears below the Workflow title, and it is highlighted in the step list on the left of the workflow window (Figure 37). In some workflows, it is necessary to insert GCPs during the workflow. *Flooding Classification* workflow, from of *SARscape Basic Module* is used as an example.

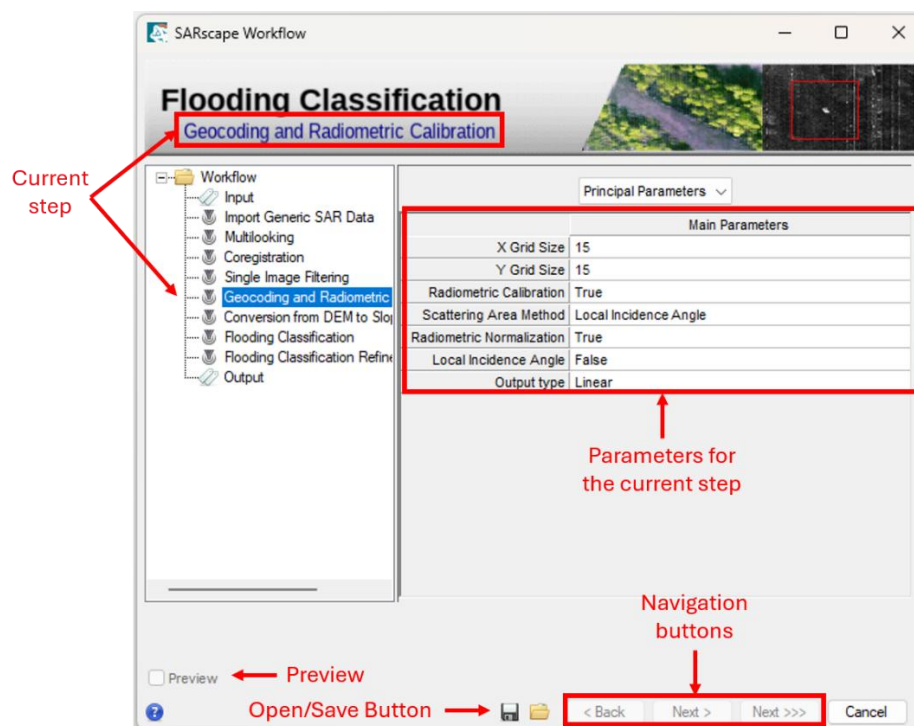


Figure 37. Structure of a standard SARscape workflow window

Forward (*Next >*) and backward (*< Back*) transitions between the processing steps can be done with the navigation buttons on the bottom of the window. With the button *Next >>*, the process is passed without a stop to the final processing step.

10.1. Input step of a workflow

This part of the processing chain is dedicated to the input files and principal parameters required by the workflow. In the different tabs it is possible to enter all mandatory inputs. The following three tabs are available in this section (Figure 38):

- **Input File:** The name and location of the input files are entered either as single files or as a file list.
- **DEM/Cartographic System:** This tab allows loading a reference DEM stored on the computer or to choose an external one to download through the *DEM extraction* tool. If *DEM download* is selected for *Reference DEM* more fields will be activated for setting up additional DEM parameters.
- **Parameters:** This tab visualises the principal parameters for the processing chain to be set.

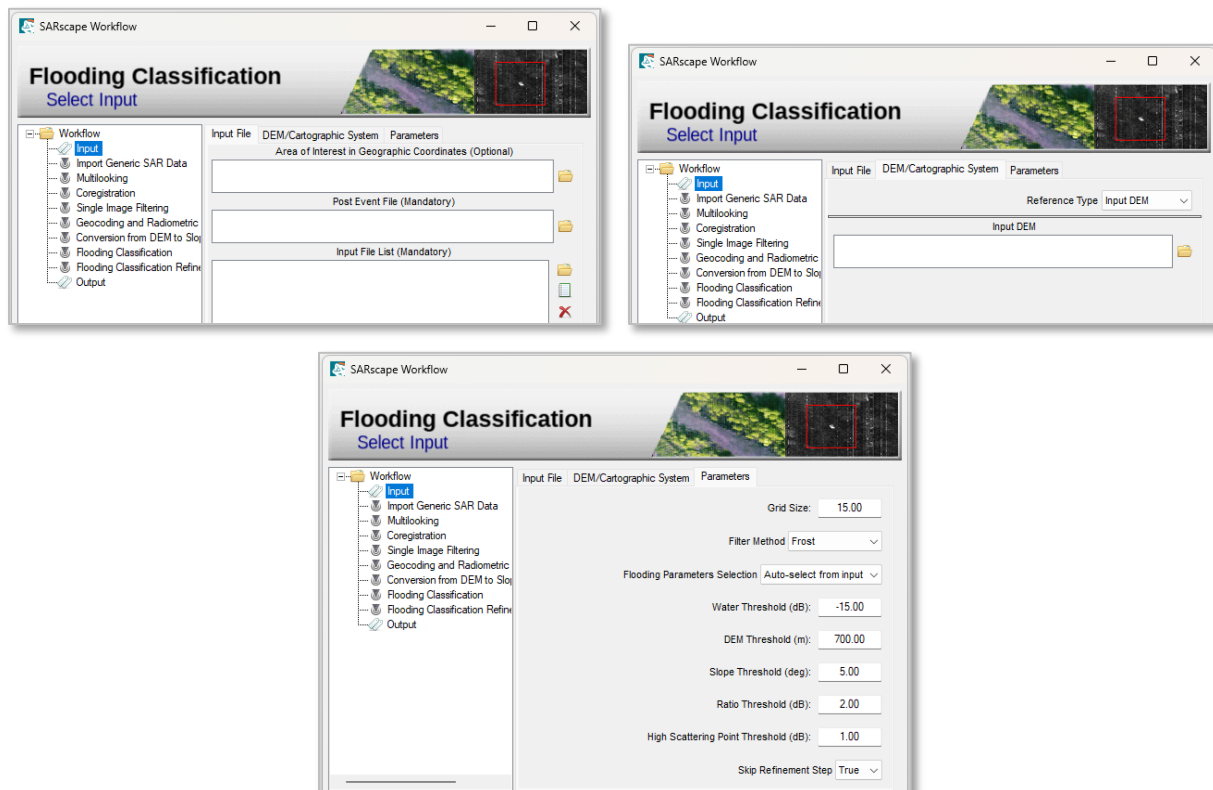


Figure 38. Input step and tabs of a standard SARscape workflow window

10.2. Parameters of a workflow

The standard workflow interface is structured in parts corresponding to processing steps which otherwise can be performed by separate tool or sequence of tools. These steps are shown on the left side of the window. By clicking on a step on the left, the *Principal processing parameters* for the currently selected step are visualised in the right side of the window (Figure 37).

Important: Before opening a SARscape workflow, the specific preferences must be configured in *Preferences Specific* window so that they will automatically be populated with the correct processing parameters in the SARscape workflows.

If the specific preferences are changed after a workflow has already been opened, the software will not update the parameters in the workflow and will use those that were previously set. In this case, the workflow must be closed and reopened for the new preferences to be applied correctly.

There is also a possibility to observe and change the advanced parameters for each process included in the current step by selecting the set of parameters from the drop-down menu (Figure 39). By selecting one of the sections (e.g. *Adaptive Non-Local parameters*, *Filter Parameters*, etc.), the appropriate for this data parameters show up in the dialog. The name of each group is based on the parameters, which it contains and the purpose of usage.

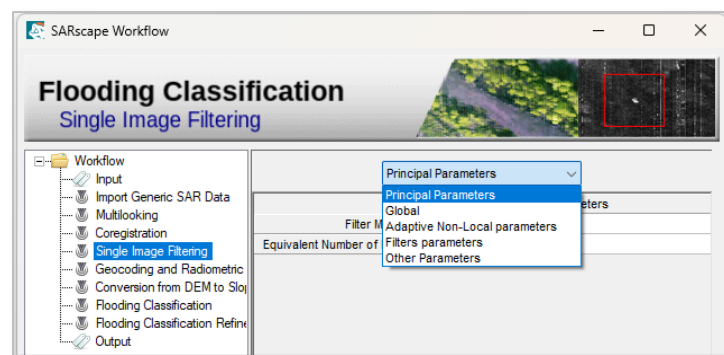


Figure 39. Steps and Parameters of a standard SARscape workflow window

It is worth to mention that the parameters by default, which are shown within each step and advanced processes when they are first opened, are the same as those written in the currently active specific Preferences (section 7.2). If one or more parameters, main or advanced, are modified in any processing step, these new values are adopted for the subsequent processing, while the values written in the currently active Preferences remain unchanged. In other words, the Preferences are not affected by changes applied to the processing interfaces.

The workflow can be used both by beginners and advanced users. The suggested approach for beginners is to set the Input in the workflow and to modify only the *Principal Parameters* if needed (the default *Principal Parameters* are set according to the loaded *Preferences specific*). The suggested approach for advanced users is to consider also the several groups of advanced parameters in the pull-down menu depending on the processing goal.

10.3. Output step of a workflow

This part of the processing chain is dedicated to the output files and options (Figure 40):

- **Output Root Name:** The name and location of the output files entered either as single files, as file list or output root name. This parameter must be specified at the end of the processing chain. More than one output option might be required. The context menu after right click on the output file gives possibility for changing the output filename and change output directory.
- **Delete Temporary Files:** If flagged, this option allows to erase all the intermediate temporary files generated during the processing steps. If *Temporary Files* are not deleted, they can be found in *ENVI Output Directory* or in the specified output folder.

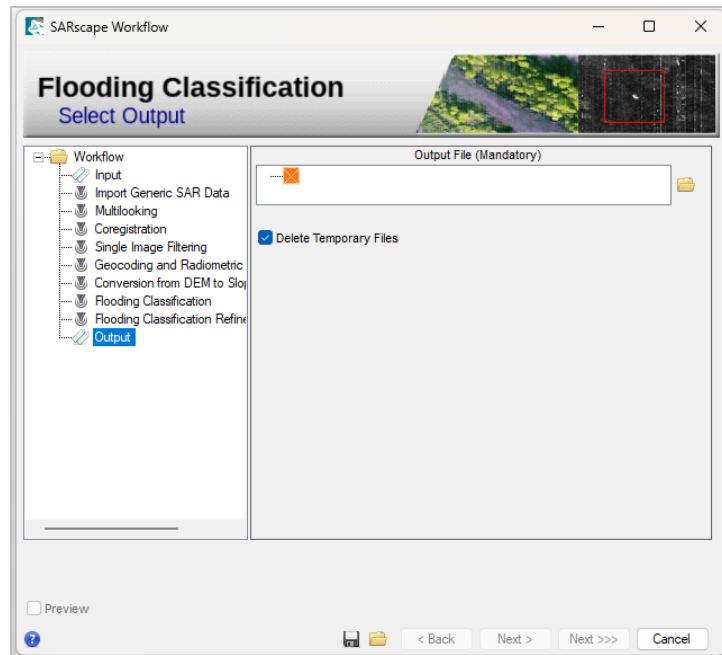


Figure 40. Output step of a standard SARscape workflow window

10.4. Workflow actions

The following buttons can be found at the bottom of each SARscape workflow (Figure 40):

- **Preview** By setting this flag, at the end of each processing step the intermediate outputs are visualised in the ENVI Layer Manager and View.
-  **Help** Opens the help page of the current panel in the default browser.
-  **Save** Clicking this button allows to save the workflow at the current step. After saving the workflow window will be closed.
-  **Open** This button allows to open a previously saved workflow.
- **< Back** The workflow is brought to the previous step in the chain. This action can also be performed by selecting the desired section in the processing window. If parameters are changed, all the temporary files generated by the subsequent steps will be erased and the process will be restarted from the selected section.
- **Next >** The workflow is running up to the following step in the chain.
- **Next >>>** By clicking this button all the steps are performed in sequence, and it is not necessary to use the "Next >" button. Make sure that all settings in all the steps are correctly set before starting with this processing. The preview option is not available in this case. If a GCP file is required, the workflow will stop at this step.
- **Cancel** Closes the workflow window.

More details are given in the tutorial dedicated to this topic.

11. SARSCAPE WORKFLOW – NEW INTERFACE

SARscape version 6.3 introduces a new type of workflow interface. The concept is similar to the standard workflow, namely setting initial input files and parameters to be loaded and run in a sequence of steps either at once or step-by-step throughout the processing chain. With the new interface the following improvements are presented:

- more user-friendly communication windows (Figure 41),
- direct access to the list of SARscape specific preferences,
- possibility to read the metadata from the input file and load the most appropriate specific preferences,
- steps accessible through a processing pipeline.



Open the **Intensity Single Image** workflow, located in **SARscape Basic Module -> Workflows**. Explore the panels of the workflow.

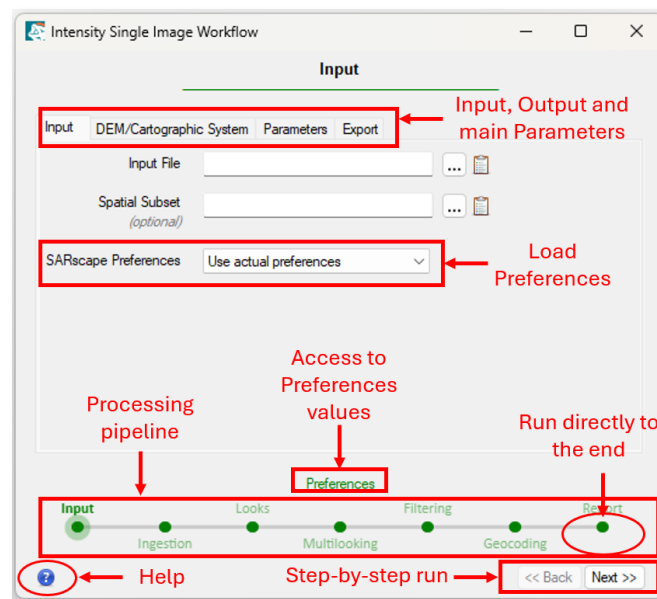


Figure 41. Structure of the new interface of the SARscape workflows (example with Intensity Single Image workflow)

The new SARscape workflow is composed by the following elements:

- Input panel for setting the input and output files and parameters, setting the Preferences,
- Processing pipeline with specific processing parameters,
- Report with compatibility check and processing summary.

The new interface is introduced for the workflows in the SARscape Basic module, including coherence estimation available in Interferometry module.

11.1. Input panel

The new workflow interface keeps the idea of an input panel which contains the main tabs from the standard workflow vision but also includes setting of the output file and export characteristics. The tabs in the Input panel are:

- Input files
- Preferences settings
- Optional files, depending on the processing goal
- DEM/Cartographic system (optional, depending on the processing goal)
- Parameters (optional, depending on the processing goal)
- Export

11.1.1. Input files

The input tab has three main parts – Input file/s, Spatial Subset, SARscape Preferences setting.

Depending on the purpose of the workflow it may need to ingest one file (Figure 42, up), several different files (Figure 42, middle) or a list of files (Figure 42, down).

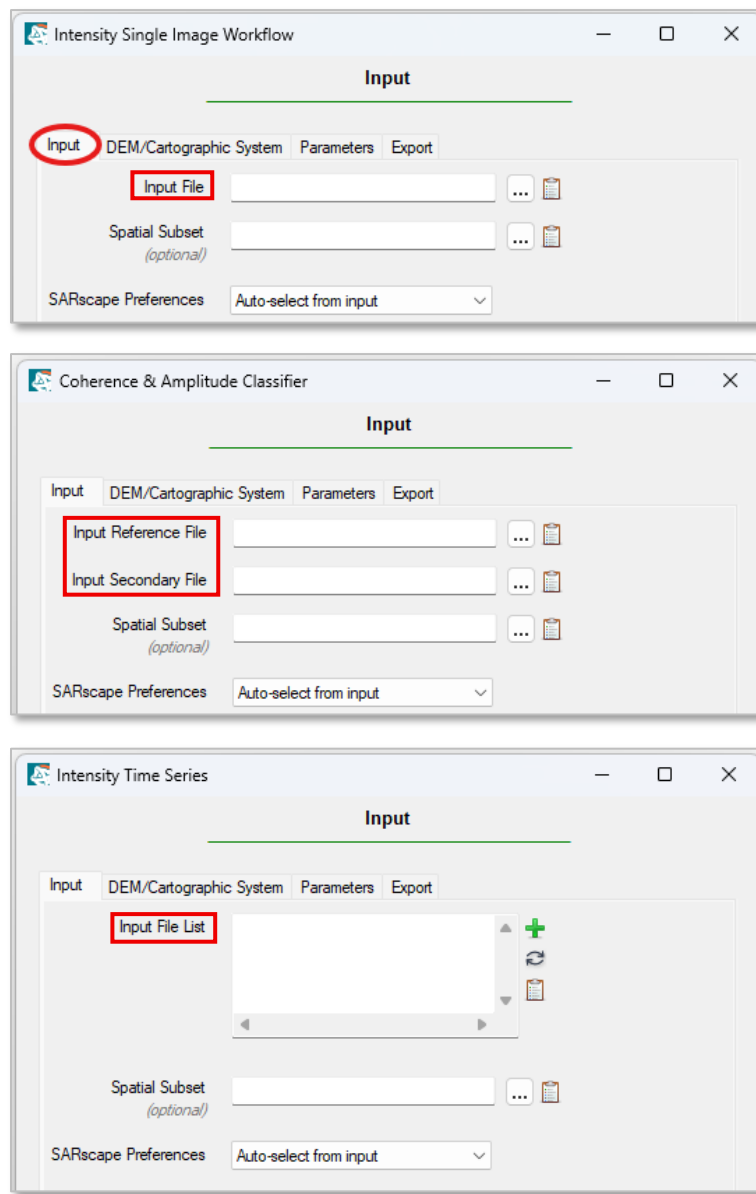


Figure 42. Different situations of input files for the workflow

The files can be loaded in one of the following ways:



- **Browse....**: Browse a file from the computer to add as an input,



- **Choose from Data Manager**: A file can be loaded from the *ENVI Data Manager*,



- **Add file(s)**: A group of files stored on the computer can be loaded at once,



- **Reset**: Clean loaded files.



In the **Input** tab of the **Intensity Single Image** workflow, use the **Browse...** button and load the ***_VV_slc_list** file from the tutorial dataset folder into **Input File** field.

Optionally, the input image(s) range can be cropped to exact dimensions. For this purpose, a polygon in geographic coordinates with the Area of Interest (AOI) in vector format (*.shp, *.kml or *.kmz) can be added in the *Special Subset* field.



In the **Input** tab of the **Intensity Single Image** workflow, use the **Browse...** button and load the **AOI_Getting_Started.kml** file from the tutorial dataset folder into **Spatial Subset** field.

11.1.2. Preferences settings

The **Input** tab contains a dedicated field that gives direct access to the list of predefined *SARscape preferences* (Figure 43) for specific type of data or it can **Auto-select preferences from the input** data. If the option *Auto-select preferences* is chosen, the software will consider the metadata of the SAR input image and will use the most suitable parameters for processing. The selection of **Use actual preferences** applies to those selected in *SARscape Preferences specific* panel.

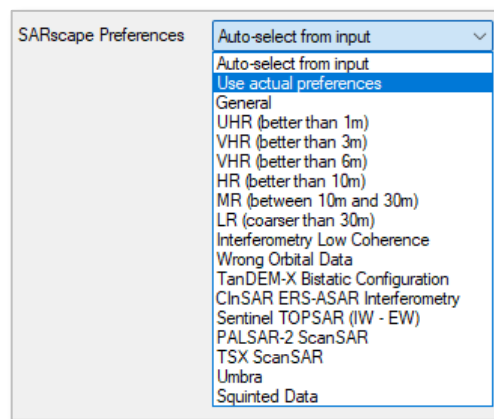


Figure 43. SARscape preferences access through *Input* panel of new style workflow

The user also has access to the main tool of *SARscape Preferences specific* by the *Preferences* button above the processing pipeline (Figure 41) so that the detailed processing parameters can be modified if needed.



Keep the selection by default – **Use actual preferences** for the **SARscape Preferences**.

11.1.3. Optional files

Some processes included the possibility to load optional files with Land Mask so that the algorithm will avoid the areas inside the polygon(s) of the provided shapefile containing land territories.

Particular processes may include specific additional files, like files from marine Automatic Identification System (AIS). For such files additional tab in the Input panel is defined.

11.1.4. DEM/Cartographic system

Most of the workflows require an external DEM which is used for geocoding (transformation) of the slant-range SAR image into chosen cartographic reference system. For best results, it is important to select a DEM, that takes into consideration the acquisition time of the SAR data and its resolution (Figure 44, left). The DEM generation date should be as close as possible to the acquisition date of the SAR data. Furthermore, the resolution should be as close as possible to the native ground resolution of the SAR image.

Different predefined downloads of DEM are optional. Internet connection is needed for the download, as well as user credentials for some of them (must be set in panel *User accounts of SARscape Preferences common*).

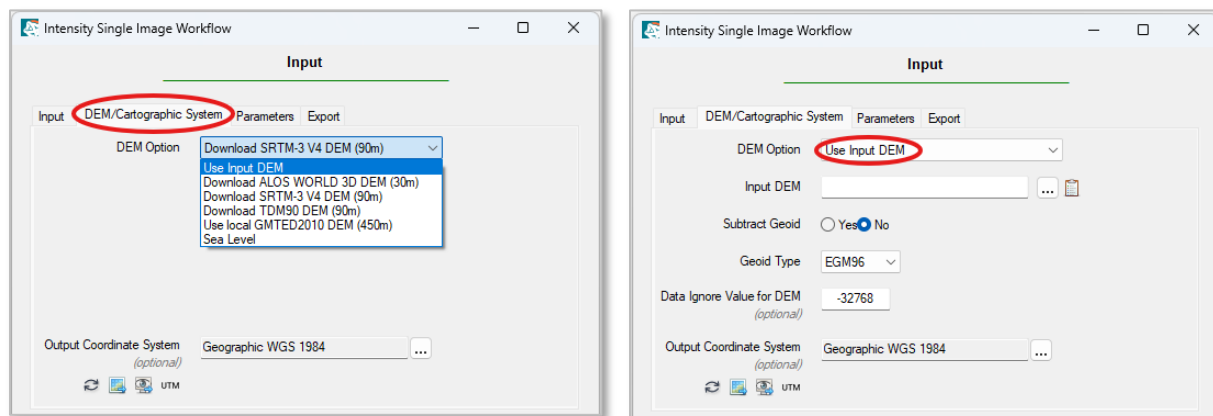


Figure 44. DEM settings through Input panel of Ship Detection workflow

If *Input DEM* is selected (Figure 44, left) the input can be a DEM, previously imported in SARscape. In this case the fields relevant to the geoid and to the Data Ignore Value for DEM (Figure 44, right) do not need to be filled (the software will use the parameters read from the meta file .sml).

The input can also be in TIFF format. In this situation the system will import the DEM in SARscape format, and the values for the selected geoid in the field *Geoid Type* will be subtracted from the DEM. The value set in *Data Ignore Value for DEM* will assign NaN values to invalid areas.

Note: The input DEM must be ellipsoidal for correct processing. If the DEM is referred to the geoid, make sure to subtract the geoid component or check the corresponding "Subtract Geoid" option.

 Select **Use Input DEM** for DEM Option and load **_dem** file from the tutorial dataset folder into the **Input DEM** field.

11.1.5. Main processing parameters

In tab *Parameters* of the Input panel main parameters as *Grid Size*, *Filtering method*, and others, can be set (Figure 45). The available parameters depend on the workflow goal.

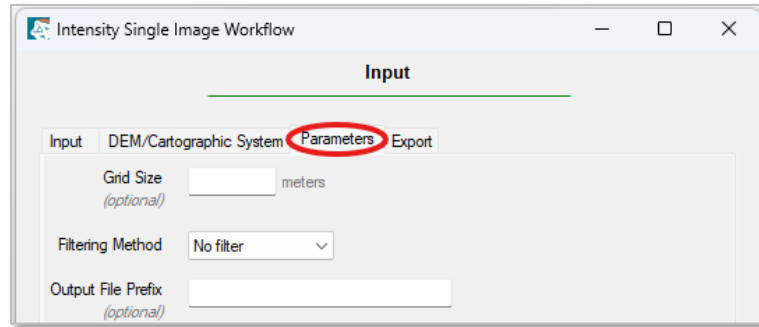


Figure 45. Example for Processing parameters tab of Input panel

Defining a **Grid Size** value implies the application of a certain multilooking factor during the processing. Multiple looks Intensity images are generated by averaging over range and/or azimuth resolution cells. The grid size value can be inserted manually or will be calculated automatically.

In case the box is left empty, the value is automatically assigned during the processing according to the loaded image preferences. When the grid size is automatically calculated, the output grid size of geocoded products is approximately determined by the spatial resolution of the nominal SAR spatial resolution and the applied multilooking factor. The multilooking factor is estimated from the nominal resolutions in the range and azimuth directions to achieve squared pixels, where the precise ground range is calculated from the slant range resolution divided to the sinus of the incidence angle. The aim is also to preserve the maximum spatial resolution of the multilooked product.

The **Filtering method** function allows reducing noise in an image by applying a SAR-specific filter. It emphasizes edge and lines, or other significant details, and remove non-significant parts of the image leading to a noiseless interpretation of the image. The available options depend on the workflow goal.

Optionally a different **prefix** for the output files can be given. Otherwise the prefix will be taken from the file name of the input image.

Some of these parameters can be modified later during a step-by-step processing.



Keep all the parameters set by default.

11.1.6. Export settings

In the new interface of the SARscape workflows, setting the output folder and behaviour can be set at the very beginning in the Input panel. Optionally a chosen folder can be assigned to store the results from the workflow via the  **Browse...** button (Figure 46). Otherwise, the output files will be saved in the *Output Directory* set in the *ENVI Preferences*.

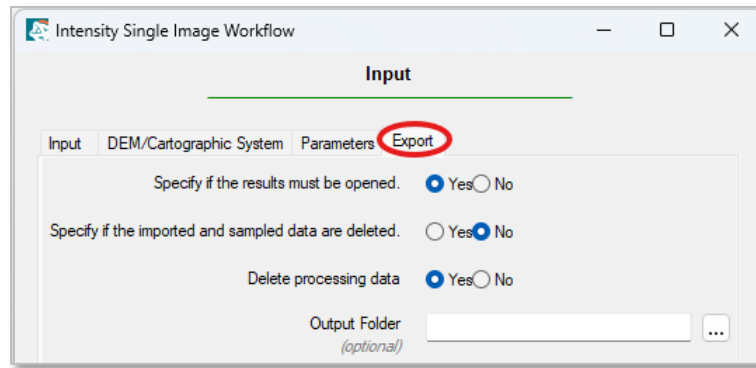


Figure 46. Export settings of Input panel

The export settings are as follows:

- **Specify if the results must be opened** – if set to Yes, the results will be loaded in the *Layer Manager* and *ENVI View*.
- **Specify if the imported and sampled data are deleted** – if set to Yes, the imported and sampled data will be deleted from the drive. Alternatively, the imported and sampled data will be stored in a subfolder of the output folder called “_IMPORT”.
- **Delete processing data** – if set to Yes, intermediate processing files will be deleted from the subfolder of the output folder named “_PROCESSING”.

 Keep all the Export parameters set by default.

11.2. Processing actions

The intermediate steps of the SARscape workflow can be skipped, and the processing can be passed to the final step by selecting **Report** from the processing pipeline (Figure 47). The parameters for these intermediate steps will be taken by default, according to the selected image specific preferences or by predefined values in the *Input* panels. Otherwise, the process can be done step-by-step by the button **Next>>**. There is a possibility to go back one step by clicking << **Back** button.

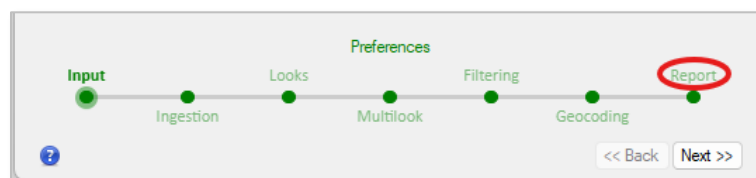


Figure 47. Processing pipeline of a workflow with new interface

Alternatively, the process can be passed to a selected step, without stopping on all the steps in between by clicking on the step name. The same can be done backwards selecting any processing step from the pipeline.

11.2.1. Intermediate processing parameters

Each processing chain is composed of different set of steps with specific parameters. By setting the *Preferences specific* at the beginning of the processing (section 11.1.2), the recommended values for the chosen input SAR image(s) are automatically loaded for the required steps of the workflow. The

User may change any of them during the step-by-step process. Examples from the *Intensity Single Image Workflow* are given in Figure 48.

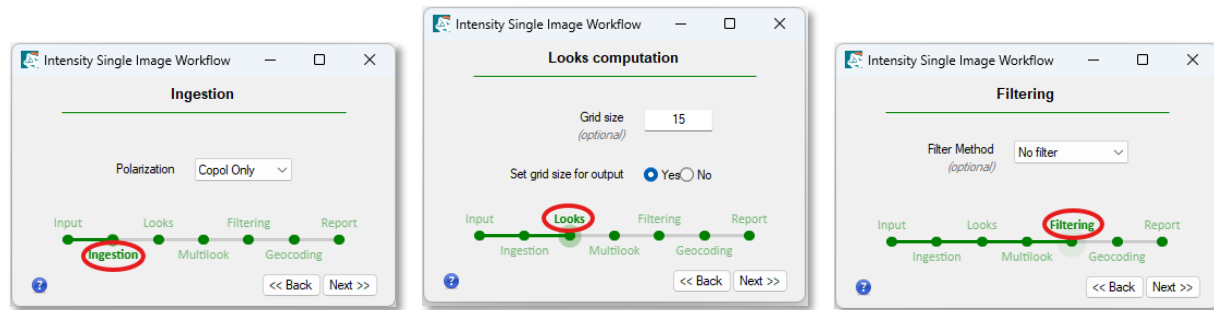


Figure 48. Example for intermediate processing steps in a workflow with new interface

Consult the Help pages of the workflows for more details on the parameters for the intermediate steps.

Click **Next >>** button for executing the workflow processing step-by-step. Explore the steps and the parameters (without changing them).

11.3. Processing report

The final stage of the workflow contains the Report (Figure 49) from the Compatibility check for the imported image(s). During the input ingestion procedure, a compatibility check for the input image(s) is performed. The results of the check are saved in the *Output folder*, in a newly created folder named *WF_XX_output_folder_XXX*. The text file **processing_report.txt** contains information about the image properties and a verification report indicating whether the data meet the criteria required for this workflow processing. The same information is presented on the window at the final stage **Report – Summary of parameter values used** (Figure 49).

Explore the Report of the processing and the results.

The report shows details about the image used in the processing, compatibility for the chosen processing, as well as the optional files – AOI and DEM. At the end of the processing the ingested Sentinel-1 amplitude image is cropped along the borders of the AOI and is geocoded considering the coordinate system of the used DEM. The result is loaded in the ENVI Layer manager (on left side of the screen by default) and is visualised in the View field together with annotations about the image – see Figure 49.

If the results generated from the processing are acceptable, the process can be finalised by the button **Finish**. Otherwise, corrections in the parameters can be done by going **<< Back** by clicking at the needed step from the processing pipeline diagram.

Finish the processing.

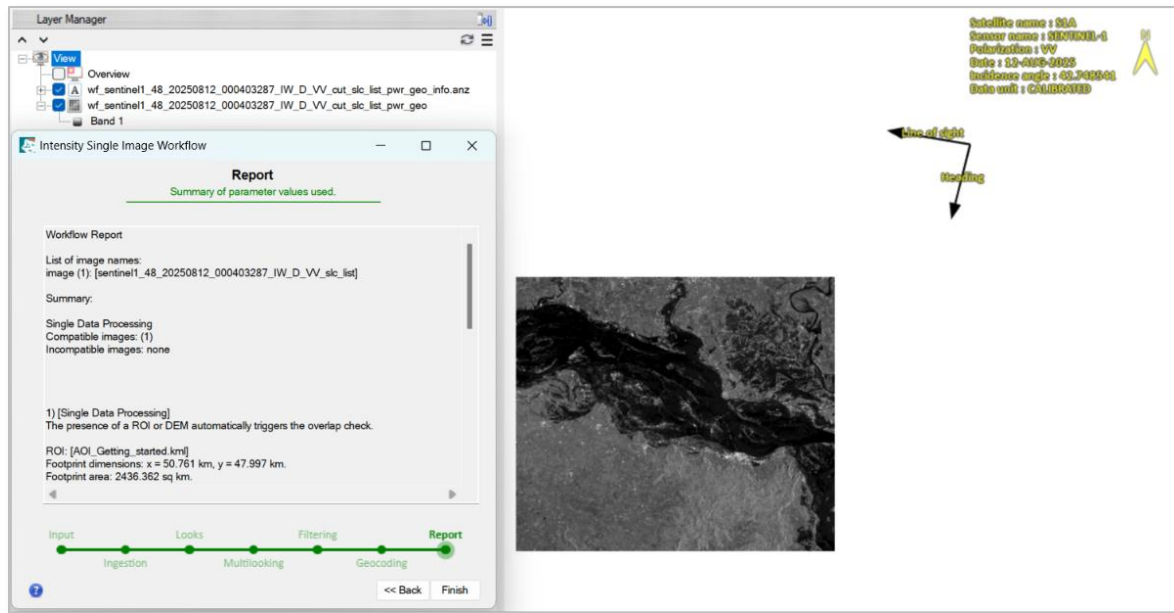


Figure 49. Final step of a workflow – workflow **Report** and visualisation of the results

The loaded in Layer Manager files can be turned on and off with the tick next to their name. This hides them from the visualisation in the ENVI view. To remove the files from the list of loaded in the current ENVI session open ENVI Data Manager – from File menu or from the bar with quick access tools (Figure 50, left). In Data Manager window (Figure 50, right) the data can be removed from the current session.

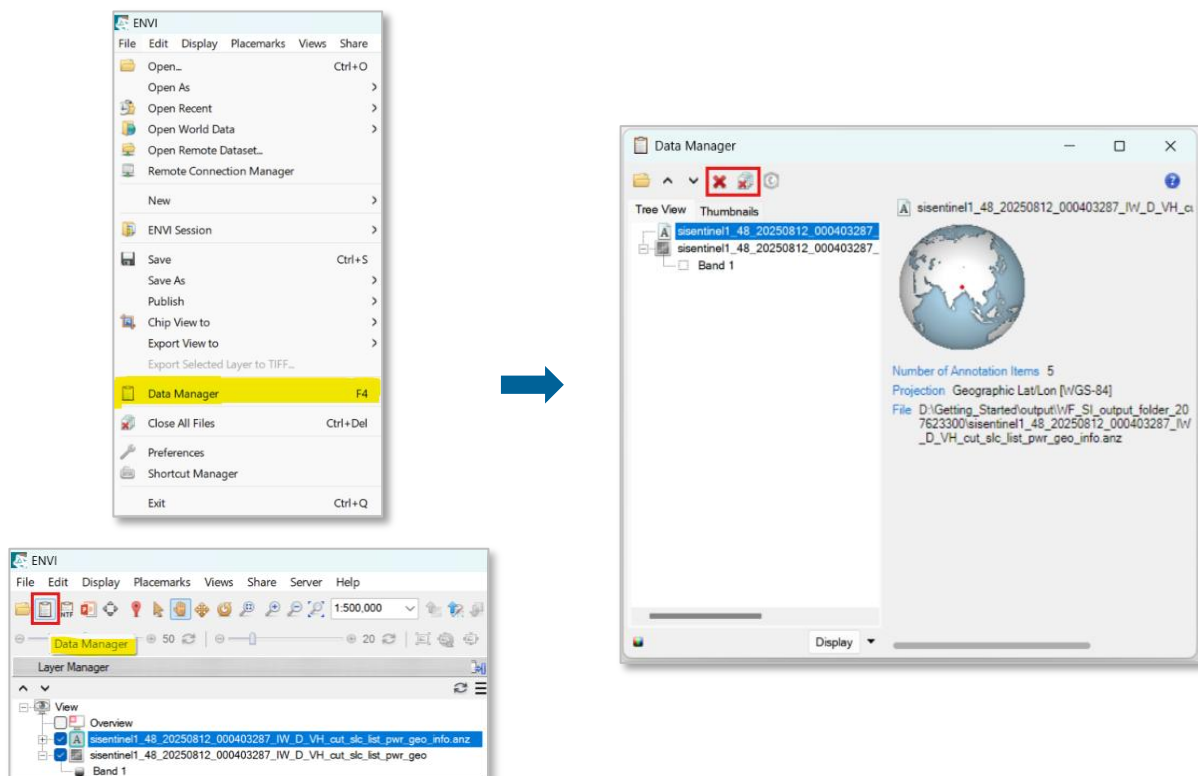


Figure 50. Data Manager – for managing the data in the current ENVI session

12. SARSCAPE INTERACTIVE TOOLS

SARscape also provides several interactive tools. These tools contain *Open*, *Annotations* and *Help* menus. Some include additional menu options such as *Mode* and *Units* (Figure 51).

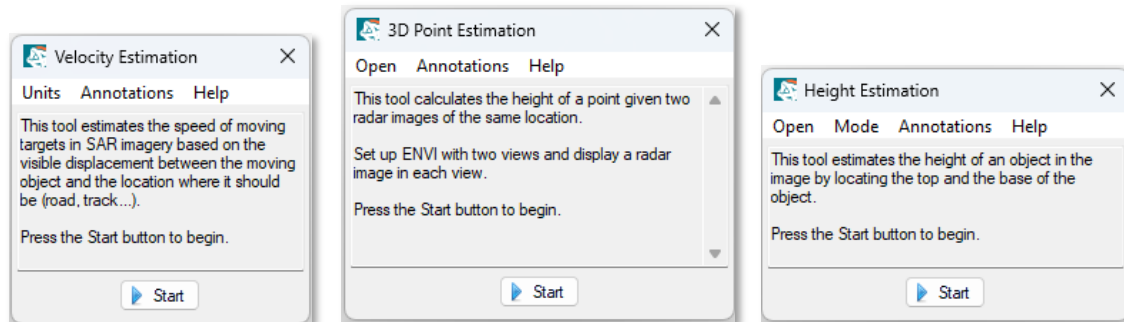


Figure 51. Examples of SARscape interactive tools

These types of tools include active interaction from the User. The tool is activated with **Start** button, while instructions are given at every step of its usage – example with *Velocity Estimation* tool is given in Figure 52.

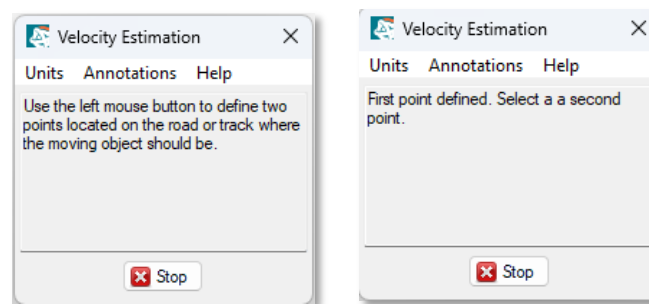


Figure 52. Example for Interaction with the User during usage of the tools

The action will be finalised with **Stop** button. Some of the tools gives the opportunity to repeat the operations multiple times until the window is closed.

More details are given in the tutorials dedicated to these topics.

III. BATCH PROCESSING

A *Store Batch* function is available in each standard processing panel (see section II. 9.6). The Batch processing allows performing a sequence of steps but also editing actions in a previously stored processing sequence. In addition, if the User has more than 1 licenses available, this function allows two or more processing runs to be carried out at the same time as each run creates a different *working directory*.

1. CREATE BATCH FILE

The *Batch File Name* and location must be set in the *SARscape Preferences common*, in the panel *Directories and batch file name* (see section II. 7.1, Figure 15). The Batch File contains sequence of processing steps with their parameters.

2. STORE BATCH

All the standard SARscape processing panels show a *Store Batch* button (see section II. 9.6, Figure 33). By pressing it, SARscape stores all the input/output files, variables and panel parameters to a Batch Step. A popup will display the step numbers (see section II. 9.6, Figure 35).

Note: It is not possible to store a batch step while the batch browser window is open. It is also not possible to open more than one batch browser window at time.

To demonstrate the batch processing the *Intensity Single Image* workflow is reconstructed step-by-step in batch processing mode. Keep in mind this mode is useful for different custom processing lines.

-  Open SARscape General tool -> Sample Selection -> Sample Selection SAR Geometry Data tool.
-  Load in Input File List the `_VV_slc_list` file from the tutorial dataset folder. In tab **Optional Files** load `AOI_Getting_started.kml` file in **Area of Interest**. Load `_dem` file in **DEM File** field. In **Parameters** tab change the **Geographical Region** to **True**. Give a name for the output file.
-  Click **Store Batch** button. Add (click **OK**) the 1st step to the Batch processing. **Close** the window.

3. BATCH BROWSER

-  Open SARscape -> Batch Browser. Explore the window (Figure 53).

Once the Batch Processing is started, the steps are performed top to bottom following the sequence on the left side of the window. To modify a step, click on the “plus” symbol near the step name – all the stages of this step will be shown under. Clicking on a processing stage the related parameter set will be shown on the right side, and the parameters can be modified.

Note: Press “Enter” on the keyboard after each change of batch parameters to ensure that the changes take place.

The *Ignore Errors and Continue Batch* flag (Figure 53) allows the process to skip possible errors and continue with the execution of subsequent steps. In case of an error, no error message is shown. If this flag is not selected, the process stops at the first error, and an error message is shown.

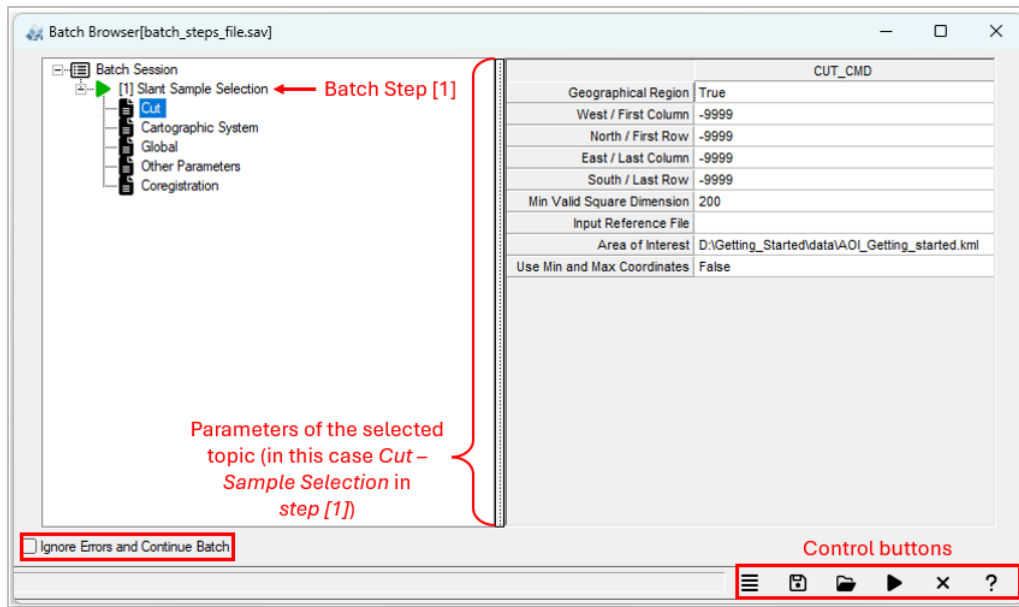


Figure 53. Example of a batch file loaded in the Batch Browser

Control buttons for the Batch Browser are in the bottom right corner of the batch browser window:

-  • Generates a SARscapeBatch script
-  • Saves the current batch processing chain
-  • Opens a batch file (.sav)
-  • Runs the current batch processing chain
-  • Resets the current Batch Session
-  • Opens the batch processing Help

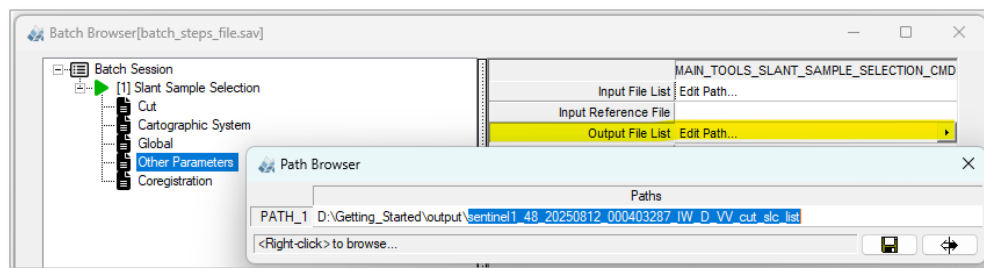
4. BATCH CHAIN

If the filename of each output is known, it is possible to provide these as inputs to subsequent steps. This allows creating a chain where each output is the input of the following step. In this way, it is possible to build a long processing chain and let it run over night or weekends. This is useful in case of very large datasets or heavy processing, as well as when the same needs to be rerun using different parameters. It is helpful in case of incremental processes, e.g., stacking, so the user can preserve the chosen settings for a certain AOI and processing conditions.

Note: It is important that the filename of the output is correctly known. If not, the subsequent step will not find the input files and the whole chain will crash. Please also note that if the Sentinel Import (or any other import) has the “Rename The File Using Parameters” parameter set to true, the input file of the subsequent step must be exactly the name that SARscape will give when automatically renaming the output. If this cannot be foreseen, the import step can be separated from the other steps.

Tip: For a processing chain containing several steps, it is possible to create a batch file where simply must change the input of the first step and the output of the last step. The filenames of the internal steps can be always the same and used only to connect the different process (such as “output_1” and so on). An improved version, using IDL scripting, can be found in “SARscape Task-IDL Scripting-Modeler -> Examples -> Interferometry” where an example is shown.

 Copy the output filename from step 1 in the Batch Browser: [1] Slant Sample Selection -> Other Parameters -> Output File List:



-  Close the Batch Browser.
-  Open SARscape Basic module -> Intensity Processing -> Multilooking tool.
-  In the **Input Files** tab paste the **output filename** from the previous step. Do not change the parameters. Give an output filename in the **Output** tab. Copy the name.
-  Click **Store Batch** button. **Accept** the 2nd step of the Batch processing. **Close** the window.
-  Open SARscape Basic module -> Intensity Processing -> Geocoding -> Geocoding and Radiometric Calibration tool.
-  Add the **output** filename from the previous step as **Input File** name here. Load the **_dem** file in tab **DEM/Cartographic System**. Keep the parameters by default.
-  Click **Store Batch** button. **Accept** the 3rd step the Batch processing. **Close** the window.
-  Open SARscape -> Batch Browser. Explore the window (Figure 54).

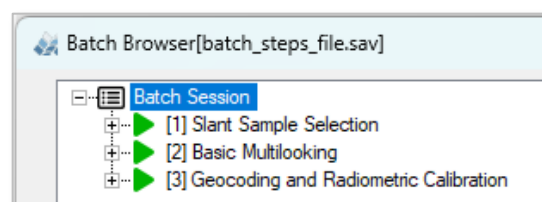


Figure 54. Batch processing chain

5. RUN BATCH

Before running a batch processing, check that only the steps that are intended to be processed are activated. The steps of the Batch file can be activated (turned on) or deactivated (turned off) through the context menu opened with right click on the name of the step (Figure 55). The turned-on steps, marked with green triangle will be executed when the batch is run, while the inactive steps, marked with red rectangle, will be omitted. Steps can be removed from this menu. The changes will be stored

in the Batch file by **Save** from the Control buttons. Next time when the batch browser is open the batch file will be loaded with the last saved changes. By selecting *Copy Command* the step can be copied and modified for additional steps. It is also possible to modify the sequence of the processing steps. By holding down the left mouse button on a step, it can be dragged and moved to a different position.

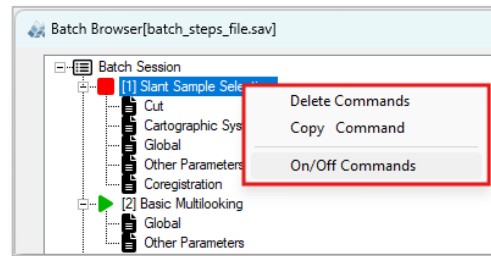


Figure 55. Context menu for batch processing steps

Once all the needed steps are selected, click the **Run** button to execute the batch process. This will create a new working directory inside the actual working directory.

If the different steps are dependent one to another, then it is suggested to uncheck the *Ignore Errors and Continue Batch* flag. If, instead, the steps are independent, then it is suggested to check this flag, so that if an error occurs, the other steps can be executed anyway.

Note: When a batch processing chain is started, a folder in the SARscape working directory is created. This folder contains the *Process.log* and *Process.trace* files (see section IV.).



Do not turn off any command. Run the batch processing. The results are not automatically loaded in the Layer Manager. Navigate to the folder with results and drag-and-drop the *_geo* output file into the ENVI View. Compare the result with the one from the Intensity Single Image workflow.

6. PARALLEL BATCH PROCESSING

Depending on the number of available licenses, the Batch option allows parallel processing. After a batch processing is started, it is possible to create another batch processing chain and run it in parallel. It is also possible to set a different OpenCL device for each working directory by selecting it in the *SARscape Preferences common -> General Parameters* and thus run different processes on different OpenCL devices at the same time.

Tip: This functionality is useful to prepare several parallel processes that can be run for instance without the need of operator action.

Note: Before starting a new batch processing, the User must verify that the batch browser window is closed.

Note: It is not recommended to launch several parallel batch processing on low performance computers, since parallel processes anyhow use shared resources (CPUs, GPUs and RAM).

IV. .LOG, .TRACE AND ERROR REPORT FILES

In the *SARscape Administration* menu it is possible to view a Log (*Process.log*) and a Trace (*Process.trace*) file (Figure 56).

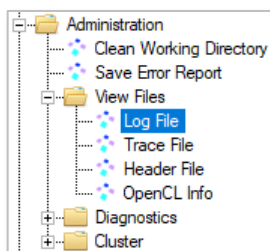


Figure 56. SARscape Administration menu

The **Log file** shows **all the processing related information**. Since the information is continuously appended to the Log file, and not deleted after every processing run, this file can become very large unless its content is removed from time to time using the delete button.

The **Trace file** instead shows detailed information about the **latest process executed**. This file is overwritten any time a new process is launched.

The *Process.log* file and the *Process.trace* file are saved in the **working directory** set in Preferences common.

It is also possible to save an **Error Report file** by clicking on *Save error report*. The output *ErrorReport.txt* file stores all **the error relevant information**. Once an error is reported, the program automatically initiates a procedure to save the *Error Report*.

This functionality can also be used to store the processing information (Log + Trace files), which are relevant to the last step executed.

Note: When saving the *Error Report* file be sure that other SARscape processes have not been executed. The problem giving the error must be the last process run before creating the error report. The *Error Report* must be sent to the distributor for a further investigation of the problem.

Note: If the process is launched from the Batch Browser, the *Process.log* file and the *Process.trace* files are stored inside a folder created in the working directory. The name of the folder contains the date and the time when the batch process was launched. When a new batch is launched, a new folder is created and the *Process.log* and the *Process.trace* files are not overwritten.

V. CLEAN WORKING DIRECTORY

The *Clean Working Directory* tool, found in the Administrator folder (Figure 56), deletes the current working directory. A pop-up will appear asking if the User wants to delete the working directory at the given path. In case folders were stored in the working directory (e.g. SRTM_DEM_DIR, GTOPO30_DIR, etc.), they are not removed.

Note: This action is irreversible.

It is recommended to periodically clean the ENVI temporary folder. If a workflow is interrupted, temporary files may not be deleted automatically, causing unused data to accumulate over time and consume disk space.