

How to import SkyTEM data

In this document we will show how to create a new workspace and import SkyTEM data in preparation for SkyTEM data quality control and data processing.

With SkyTEM data the import files will usually already have been prepared, so aside from a brief introduction to the different files, we will focus on the actual import.

Import files introduction

Start by organizing your data.

There should be a geometry file. This is a text format (.gex) file that describes the system parameters of the used SkyTEM system. It includes the geometry of the frame, the placement of the instruments, the transmitter waveform, time gate specifications, and so on. Everything needed to allow accurate modelling of the system in the inversion. For more details see the gex format description on the Aarhus Workbench wiki page (http://www.ags-cloud.dk/Wiki/W_GeometryFileFormat).

Then there should be raw data for each flight. These are stored in two types of files. A binary SKB file with voltage data from the receiver along with information about the receiver and transmitter setup. A few different text format SPS files with everything else, so GPS-positions, laser-based altitudes, pitch and roll, transmitter currents and so on. Each flight of raw data should be placed in a separate subfolder within the same folder.

Lastly there should be a line number file or production file (.lin), that holds the line numbers and production intervals for the survey.

Create a new workspace and import the SkyTEM data

Now we can open the Aarhus Workbench and select New to create a new workspace. Select a folder for the workspace, add names and select the map coordinate system (EPSG).

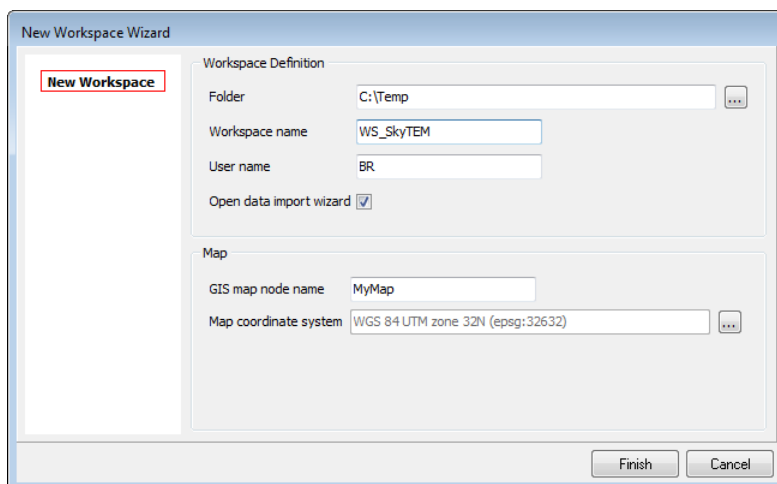


Figure 1. Create the Workspace.

When the workspace has been created, go to the Database Explorer and select Import on the Database ribbon to start the import. If the open data import wizard checkbox was checked before, this wizard will

open automatically. Now set the importer to import to a New Database and fill out a name. Then go to the Airborne Data tab and select SkyTEM raw and navigation data.

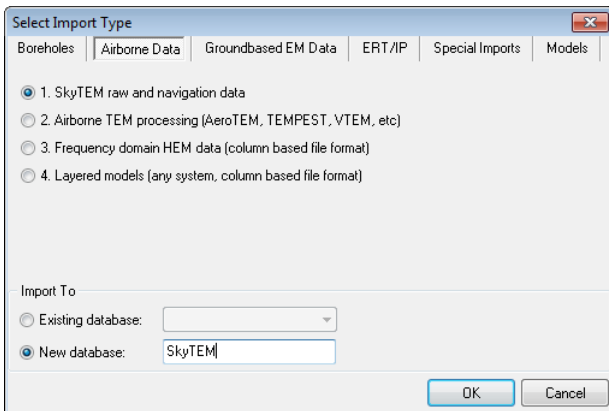


Figure 2. Select the SkyTEM raw and navigation data.

This launches the SkyTEM Data Importer which consists of two steps.

The first step is to create a new dataset and import the system setup of the used SkyTEM system. Fill out a name for the new dataset and set the dataset coordinate system with the map projection that will be used for the data in the database. This dataset coordinates system should in general be set identical to the map coordinates system, but it does not have to be.

It is possible to set several labels behind the labels button. These are only relevant for users in Denmark where all data is uploaded to a central database. For everyone else these database labels can safely be ignored, they have no effect on how the data.

For the system setup we need to point to the used geometry file under system setup file. The other fields here are only relevant when using the .ge2 version of the geometry file that doesn't specify the part of the system setup that also can be read from the data files. Select import to go to the second step of the import.

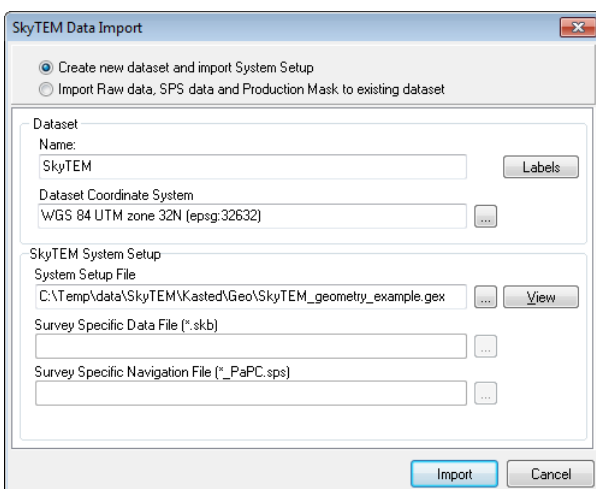


Figure 3. Create the dataset and import the geometry file.

Next we need to add the raw data, SPS data and production mask. Confirm that the right dataset has been selected. The datatype will always binary unless working with very old data. The stack division options are for expert users only and should not normally be changed.

Point to the raw data files. Here we don't need to point to each flight folder, but can instead point to a folder that contains the raw data in subfolders. Aarhus Workbench will then ask if it should select the corresponding SPS files from the same subfolders. Finally point to the production file and select import.

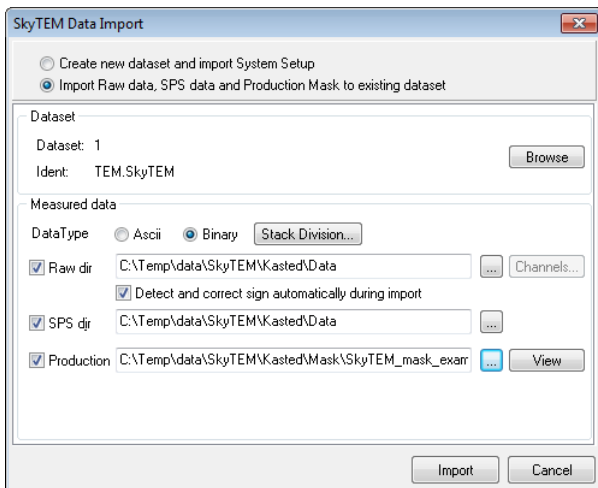


Figure 4. Import raw data, SPS data and production mask.

When asked, select the channels we need, and import. There is also a sign check where one can confirm that the data channels mostly contain positive data. Any noise channels will be roughly half positive and half negative and should be left alone. This check is mainly there for historic reasons, and it is highly unusual for there to be a reason to flip the signs.

When everything has been imported check the log. It is in the Workspace Manager under Log. If everything looks fine, it is time to create the data node. For that go to Data Processing and select Data (create new processing) and then select the database in the dropdown and processing type Airborne TEM. Then there is a dataset selector where we just need to say ok and a name for the processing node that needs to be filled out, before the data node will be created.

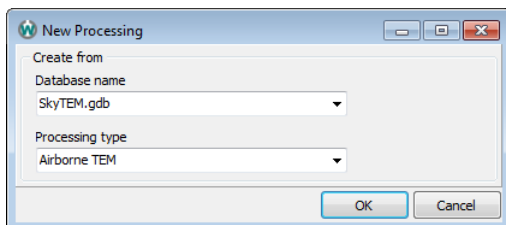


Figure 5. Create new data processing.

We will then be asked to also create a processing node. Here just click ones on each side of the data we want to include. If needed, click the button in the upper right corner of the form to reset. Larger nodes will be slower to work with in the processing, so it is suggested to limit the size of the processing nodes. For SkyTEM a processing node is normally made for 1 flight or in the case of larger datasets, for 1 day consisting

of 1-3 flights. When doing so it can be advantageous to enter the from and to times manually to get more exactly defined processing nodes that doesn't leave out any data.

If a lot of data has been imported this approach becomes impractical, but one can then instead use the gap option in the bottom of this form that allows us to create automatic intervals after for instance each 8 hours gap.

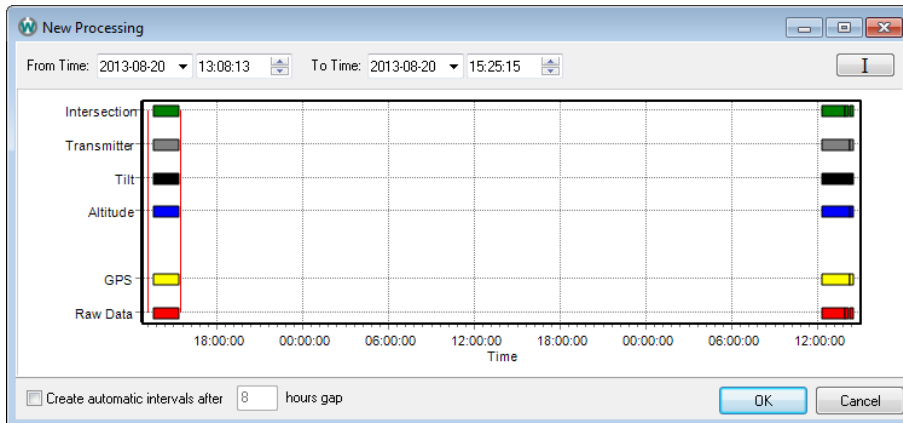


Figure 6. SkyTEM processing node creation. Selecting one flight of data.

Lastly, we need to give that node a name (this name must include a letter) and then we get to the processing filters. This will be covered in greater details later, for now just use default values. This was the last part of the import.

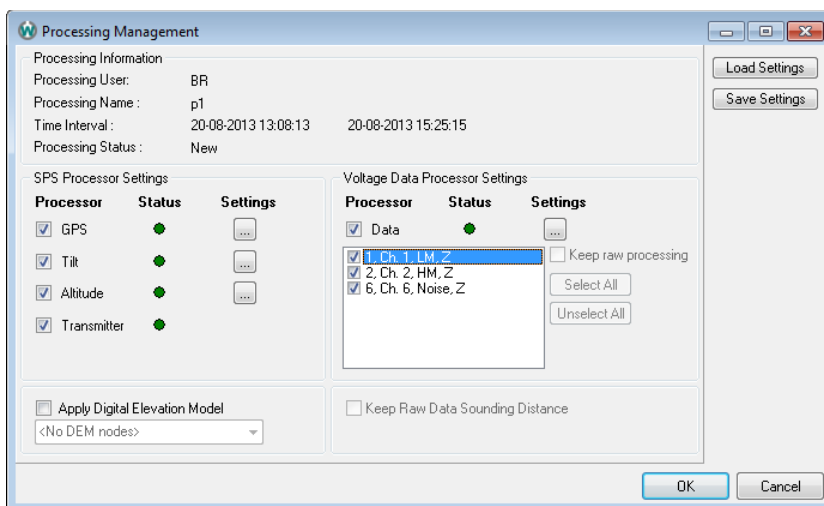


Figure 7. Processing filters with default settings.

If it was necessary to cut the processing into multiple node, additional processing nodes should be made by selecting the data node and then selecting Process Data. This opens a window where we can select Create new processing node(s) which will return us to the Processing node creation. This is important as this allows us to create multiple processing nodes under the same data node rather than under a new data node.

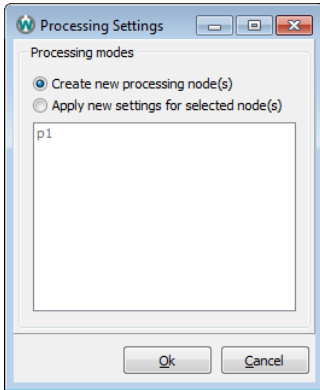


Figure 8. Creating additional processing nodes from the same data node.

If additional data from the same survey need to be imported later, it should be imported into the same dataset. The only exception would be if parts of the survey was flown using a different geometry file, then import it into a new database. To import additional data of a different type, simply import it into a new database.

It is preferred to import everything at ones, but often that is not practical. When importing to the same dataset, go into import as before. Since the database already exist we can adjust the Import To setting to points to the existing database.

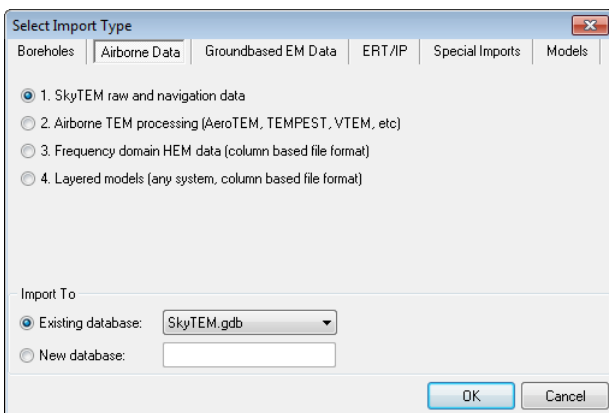


Figure 9. Importing to an existing database.

The dataset has also already been created, so we go right to the import of raw data, SPS data and production mask. Here we need to select the dataset using the browse button and then point to the folder with the additional data etc. before importing. The line number file should describe the full survey. When everything has imported, simply make further processing nodes as described above.

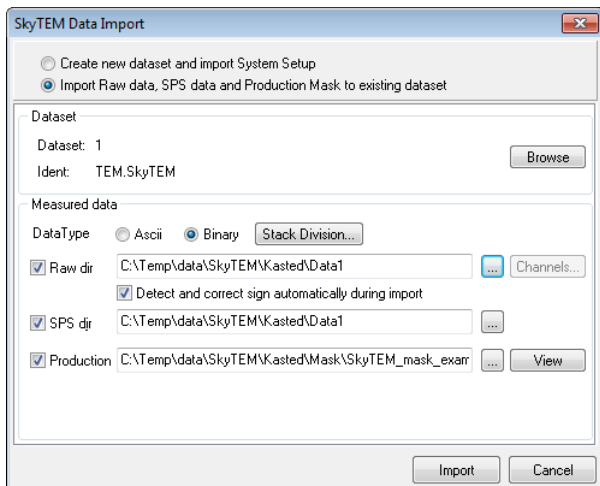


Figure 10. Import additional raw data, SPS data and production mask.