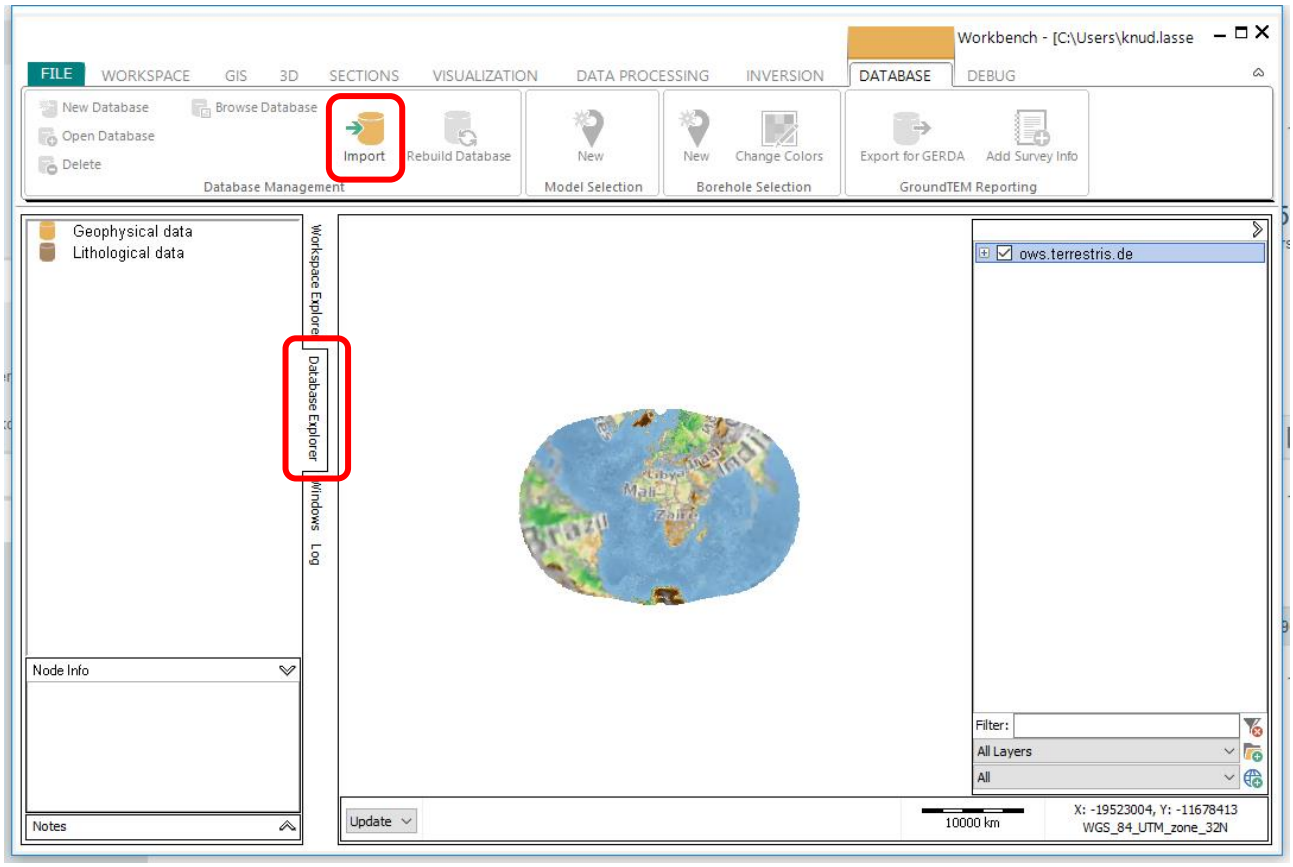
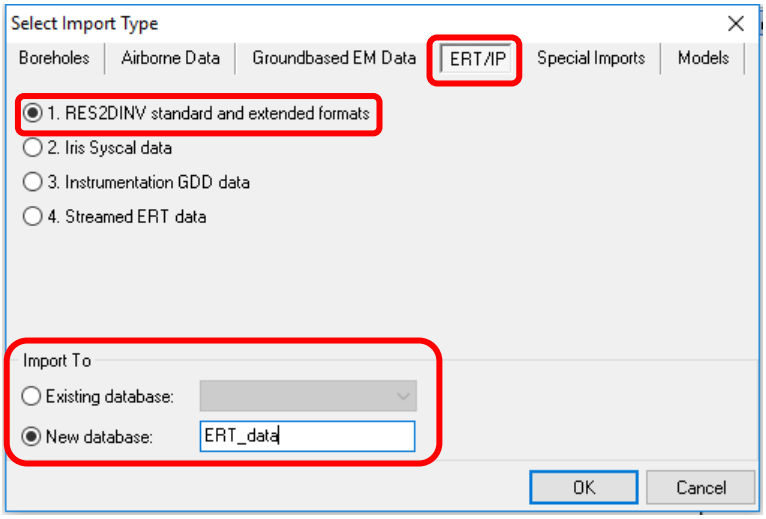
Data import

Data import is initialized by selecting the “database explorer” ribbon and pressing “import”:

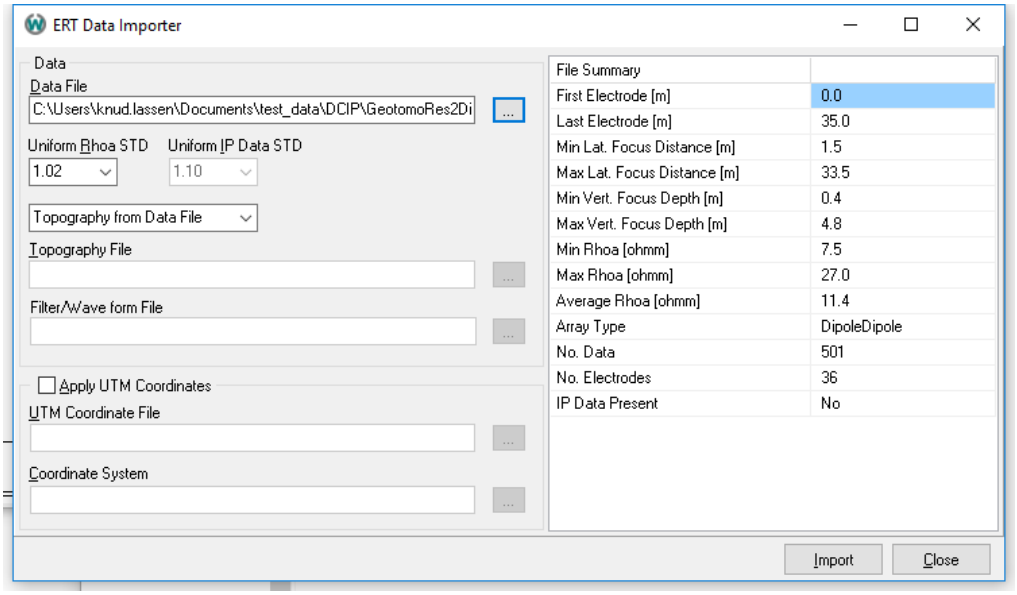


This opens the import window in which “ERT/IP” data is selected followed by “RES2DINV standard and extended formats”. If importing in another format that the extended .dat format please see http://www.ags-cloud.dk/Wiki/W_GuidesERTIP for import guides.

If this is the first dataset in the workspace “New database” is selected and a name for the database is entered, if this is not the first import in the workspace an existing database can be selected.



When pressing OK the “ERT data importer” window is shown, in this window the different files for the import can be selected. The .dat file is the main data file containing the measured DC and IP data, the format specification for all import files can be seen below. If the lines are to be correctly positioned on the GIS it is necessary to supply an .ewp file containing the coordinates and to specify a coordinate system. It is also possible to supply a file specifying the topography if this is not saved in the .dat file. The filter/waveform file contains information about the data acquisition system, duty cycle, filters, stacking etc. After selecting the appropriate files press “import” and select the name for the data line and to which map node it is added when prompted. Your data file is now imported in the workspace and you can continue by importing additional files or go on to processing and inversion.



Format of the .dat file

The .dat file is the data file, following the RES2DINV format but extended to accommodate the full waveform IP decay. For e.g. the ABEM Terrameter LS and IRIS Syscal, this .dat file can be exported directly from the instrument. An example of a .dat file is listed below including comments for each line. The format exists in two versions identified by the number of values in line 13. For further specification of array types etc. please refer to the RES2DINV manual (https://www.aarhusgeosoftware.dk/res2dinv-res3dinv).

Line no.	Line text	Comments
1	box1_1_1	Header (anything can be put here)
2	5	Electrode spacing in m
3	11	Array type
4	15	Sub-array type
5	Type of measurement (0=app.resistivity,1=resistance)	Explanation for line 6
6	1	Resistance (line 5)
7	763	No. of data points
8	2	Type of x-location. 2 for surface distance. 1 for true horizontal distance.
9	11	Flag for IP data
10	Chargeability	Explanation for line 11
11	mV/V	IP unit
12	12 0.02 0.02 0.04 0.06 0.08 0.1 0.14 0.18 0.26 0.4 0.6 0.88 1.2 4 4	Number of windows, delay time, width of each window, current ontime, current offtime.

13 normal	4 190 0 280 0 230 0 240 0 0.066730629 17.03322055 14.92100834 12.81968784 11.15426881 9.887454957 8.780022266 7.745503221 6.904440409 5.477856057 4.262388796 3.325589266 2.770956927	Number of electrodes used, x and z location of C1, C2, P1, P2, apparent resistivity or resistivity value, IP value for each window.
13 extended	4 190 0 280 0 230 0 240 0 0.066730629 17.03322055 14.92100834 12.81968784 11.15426881 9.887454957 8.780022266 7.745503221 6.904440409 5.477856057 4.262388796 3.325589266 2.770956927 0.02 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 1 0 0 0 1 1 1 1 1 1 1 1 1	Number of electrodes used, x and z location of C1, C2, P1, P2, apparent resistivity or resistivity value, IP value for each window, std of apparent resistivity or resistivity, std value for each IP window, flag for DC, flag for each IP window.

Format of the .eZ topography file

Line no.	**Line text**	**Comments**
1	Topographical data	Header
2	2	Type of x-location. 1 = true horizontal distance, 2 = distance along the ground surface.
3	156	Number of coordinates
4	100 -1.65	First X and Z coordinates of topography point along the profile
5	200 -0.49	Second X and Z coordinates of topography point along the profile
6	…	Remaining X and Z coordinates of topography point along the profile
7	10000 4.94	Last X and Z coordinates of topography point along the profile
8	1	The topography data point where the first electrode is written. Here the first electrode is positioned in horizontal coordinate of 100.

Format of the .ini filter waveform file

The .ini file contains the filters and waveform of the instrument and has to be created manually. Below is an example of a .ini file with settings from the ABEM Terrameter LS. Most of these settings are the same for each measurement, only line 4 – 8 needs to be changed if settings on the instrument are changed.

Line no.	Line text	Comments
1	[Waveforms]	Waveform section
2	NWaveForms=1	No. of waveforms. For now, always 1.
3	WaveTypes=1	Wavetype. For 50% duty cycle the WaveTypes=1, for 100% duty cycle it has to be WaveTypes=4.
4	NPulses=4	No. of pulses. Equal to no. of stacks *2. The number of stacks is set on the instrument.
5	StartDCInt=3.5	Acquisition delay. This is set on the instrument.
6	EndDCInt=4.00	Acquisition time + StartDCInt (line 5). Acquisition time is set on the instrument.
7	Ton=4, 4, 4, 4	Acquisition delay + acquisition time. One digit for each pulse (line 4).
8	Toff=4, 4, 4, 4	IP off time. This is set on the instrument. One digit for each pulse (line 4). For 100% duty cycle it has to be set to Toff= 0, 0, 0, 0
9	Amp=1, -1, 1, -1	Amplifier for each pulse. Sign reversal (positive, negative pulse)
10	[Filters]	Filter section. With these low pass and high pass filters you can model filters you know are present in the instrument and effect the data, it is best to leave this alone unless you are quite sure about what you are doing.
11	NFilters=0	
12	LPCutOffs=0	
13	LPOrders=0	
14	LPFreqs=0	
15	HPCutOffs=0	
16	HPOrders=0	
17	HPFreqs=0	

Format of the .ewp coordinate file

The .ewp file contains coordinates for the ERT profile made and must be made manually. The file needs to contain at least two coordinates. It does not have to be coordinates for the first and last electrode in the profile, it can be for any two electrodes. The importer in Aarhus Workbench will automatically make a linear interpolation for the remaining electrodes in the profile. The more coordinates that are described in the .ewp file the more precise the interpolation will be.

If the profile is not a straight line but makes a turn, this can be accounted for by setting Angcon to 1 at the electrode where the turn starts. An example of a .ewp file is listed below including comments for each line.

Line no.	Electrode no.	utm x coordinate	utm y coordinate	Standard deviation (m) for x coordinate (GPS precision)	Standard deviation (m) for y coordinate (GPS precision)	Electrode distance (m)	Standard deviation (m) for electrode distance	Flag if profile makes turns	Elevation. Interpolates between z coordinates for remaining electrodes.
1	No	utmx	utmy	stdx	stdy	edist	Stde	Angcon	utmz
2	1	494940.17	6177505.91	3	3	5	0.1	0	3
3	83	494775.71	6177129.36	3	3	5	0.1	0	30