

DredgerNaut

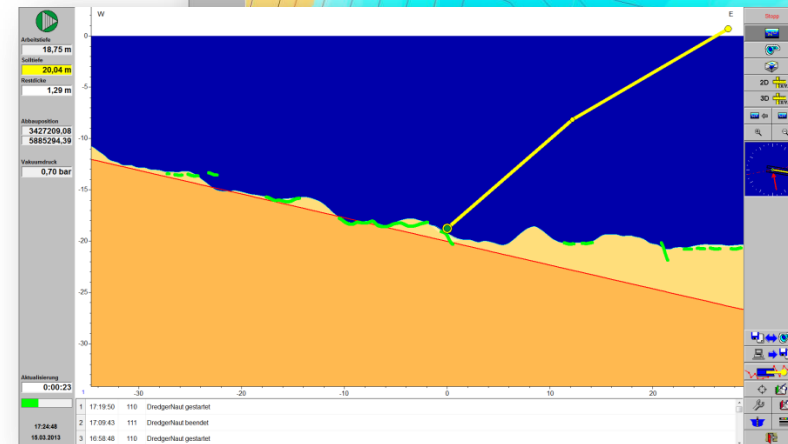
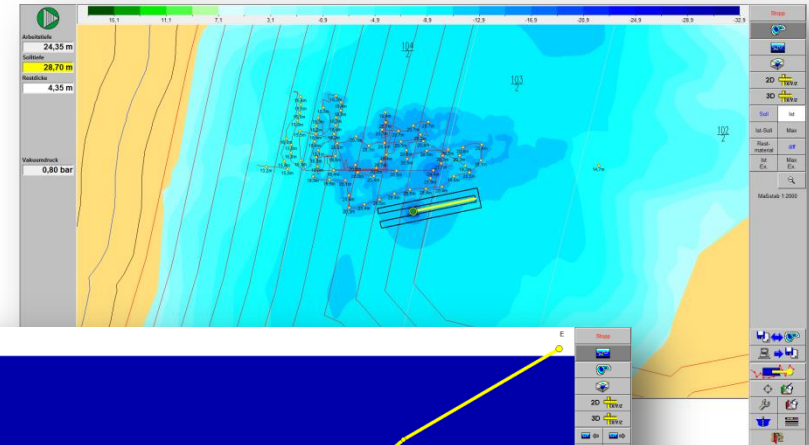


Data Transfer

Technical brief

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1 Introduction

DredgerNaut is a measuring and visualization system for the positioning of dredgers and the continuous documentation of mining operations in sand and gravel mines.

This technical brief contains explanations concerning the *Data Transfer functions*.

The *Data Transfer functions* comprise exporting and importing depth values from and to map coordinates.

The export part is called *ASCII export*, the import part *Import scan*.

The data for one point on the map consists of at least 3 values:

X and Y	geo position coordinates (longitude and latitude)
Z	depth

A data file containing a number of such coordinate-triples, one per line, is called *scan file* in the nomenclature of **DredgerNaut**, not regarding if the data comes from an actual *scan* (i.e. a survey of the excavation site, or part of it, by boat) or from a map export or similar.

Several file formats are possible for scan files, distinguished by their file extension as usual in Windows. Most of these files formats are basically text files and contain data compatible with the CSV standard (comma separated values).

This means that the 3 values mentioned above are put on one line, each separated by a comma: X, Y, Z

Instead of actual commas several other separators can be used, including tabulator, semicolon and so on. The preferred separator in **DredgerNaut** is the tabulator, as it will be handled the same by Windows no matter, which regional settings are used.

2 Go to ,Data Transfer functions‘

To go to Data Transfer functions you have to select the marked icon on the main screen first.

The screenshot displays the DredgerNaut software interface. On the left, there are input fields for 'Water line' (151,30 m), 'working depth', 'Target depth' (0,30 m), 'Remaining thickness', 'Position', 'working level', and 'Target height' (151,00 m). The top center features a color-coded depth scale from 159 m ü.A. to 115 m ü.A. The right side contains a vertical toolbar with icons for 2D and 3D views, and a red arrow points to a specific icon representing data transfer. At the bottom, a log table shows the following entries:

1	16:05:38	110	DredgerNaut started
2	16:04:30	111	DredgerNaut ended
3	16:04:18	110	DredgerNaut started

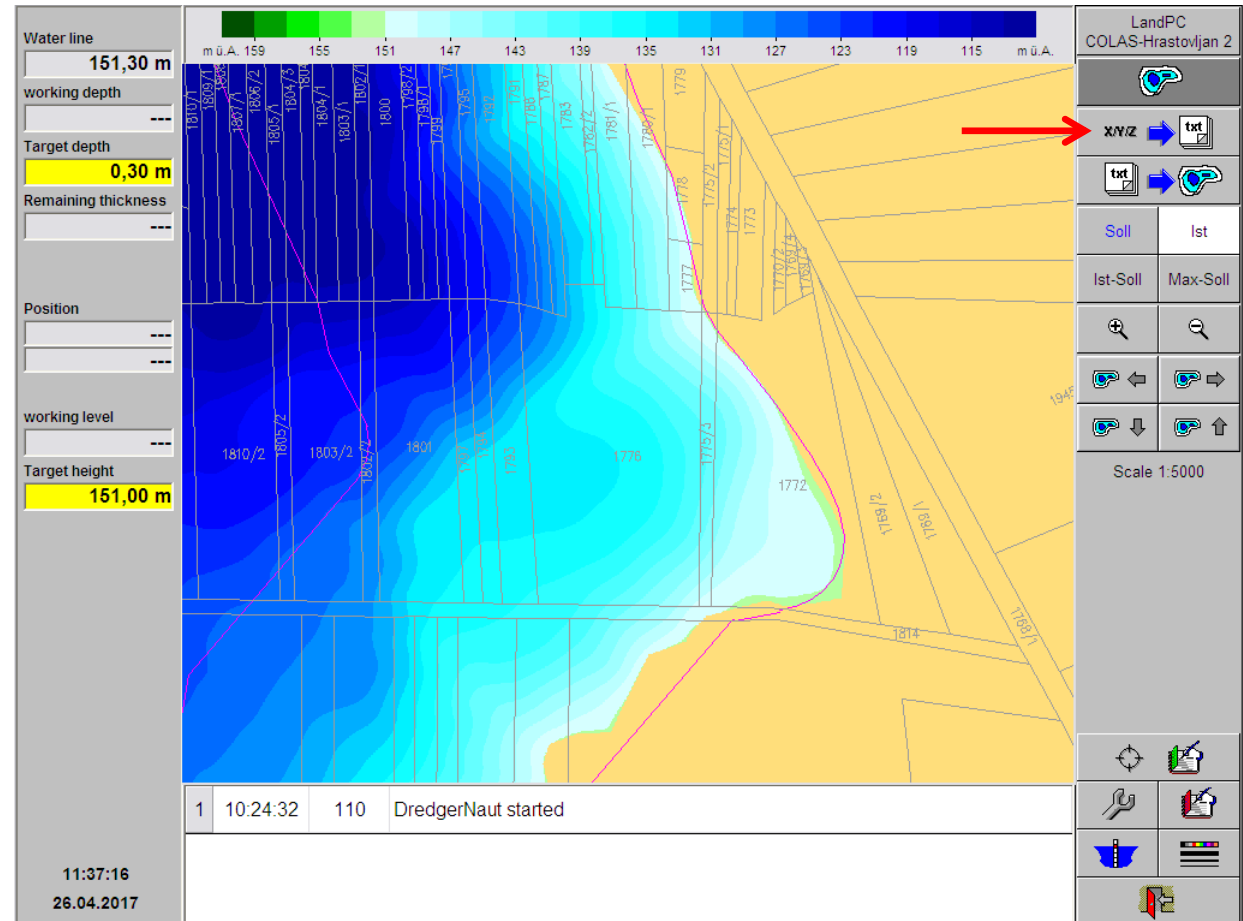
The date and time '16:07:13 25.04.2017' are displayed in the bottom left corner of the interface.

3 Menu ,Data Transfer functions', start ASCII export

The buttons in the upper right hand corner change to present the following Data Transfer functions:
(from top to bottom)

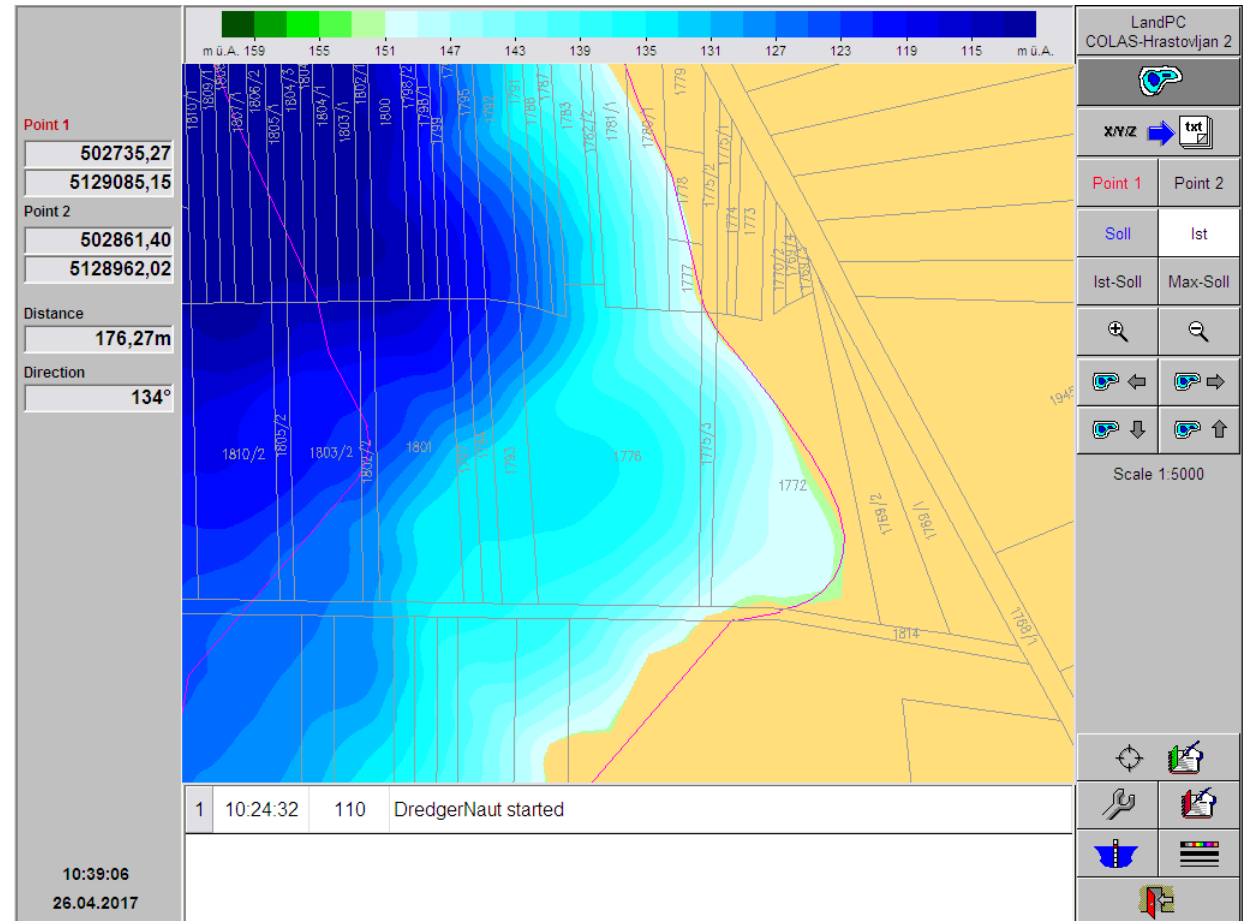
- **ASCII export**
- **Import scan**

We will explain **ASCII export** first, so please select it by pressing the marked button.



4 ASCII export

The buttons in the upper right hand corner change again, you are presented with two buttons named **Point 1** and **Point 2**, used to select the area (rectangle) to export.



5 Selecting an area, Point 1

Select button **Point 1** and the last used rectangle will be redrawn on the map. Click anywhere onto the map to set the **red** upper left corner of the rectangle to that position.

The screenshot displays the DredgerNaut software interface. The central map shows a bathymetric chart with depth contours and a black rectangle highlighting a specific area. The top of the map features a color scale from 159 m ü.A. (dark green) to 115 m ü.A. (dark blue). The left panel contains data for two points:

Point 1	Point 2
502735,27	502861,40
5129085,15	5128962,02

Below this, the Distance is 176,27m and the Direction is 134°. The right panel includes a toolbar with navigation and analysis tools, and a status bar at the bottom showing the time 10:25:34 on 26.04.2017 and a log entry: 1 10:24:32 110 DredgerNaut started.

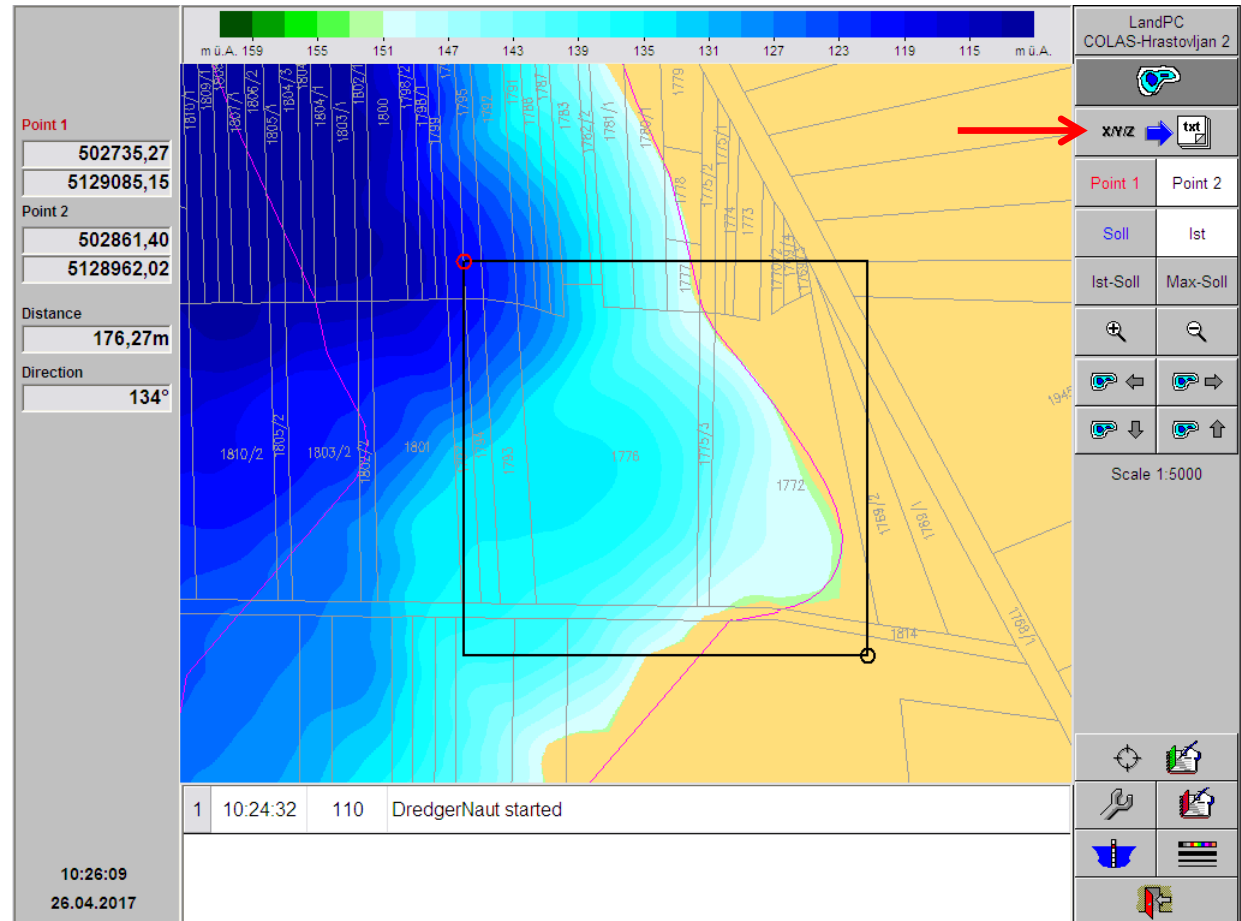
6 Selecting an area, Point 2

Next, select button **Point 2** and click onto the map where you want to position the **black** lower right corner of the rectangle.

Every new click will move the currently selected point to that position. Using **Point 1** and **Point 2** you can reposition the rectangle corners as often as you like.

Note: the data that is exported from the area chosen here will be used as example **scan file** when explaining the import function below.

When finished positioning the rectangle click the **ASCII export** button again.



7 Export parameters

In the window presented several parameters for the export can be set or changed.

The screenshot displays the DredgerNaut software interface. A central dialog box titled "ASCII export" is open, allowing users to configure export parameters. The dialog box includes the following settings:

- map type:** Working depth (checked), Maximum depth, Target, and Difference.
- Partition sign:** tab (selected in dropdown).
- decimal:** point (selected in dropdown).
- source:** Rectangle (2 points) (selected), Polygon (Data loading).
- Point 1:** R: 502735,27; H: 5129085,15
- Point 2:** R: 502861,40; H: 5128962,02
- Width of steps:** 1,00 m

Buttons at the bottom of the dialog box are "Save", "Show", and "Back".

The background interface shows a bathymetric map with a color scale from 159 m ü.A. (green) to 115 m ü.A. (blue). The left sidebar displays the coordinates for Point 1 (R: 502735,27; H: 5129085,15) and Point 2 (R: 502861,40; H: 5128962,02), along with a distance of 176,27m and a direction of 134°. The right sidebar shows navigation controls and a scale of 1:5000. The bottom status bar indicates the time 10:26:28 on 26.04.2017.

8 Export parameters (example)

First, select at least one of the 4 standard maps to export depth data from (multiple maps are possible). As said above, “tab” is our preferred separator (or ‘Partition sign’).

Another important parameter is “Width of steps” at the bottom. The default value of 1 m is suitable when exporting parts of the map but may lead to quite a big file when applied to the complete excavation site.

When all parameters are set click the **Save** button (left bottom corner)

The screenshot shows the 'ASCII export' dialog box with the following settings:

- map type:** Working depth (checked), Maximum depth (unchecked), Target (unchecked), Difference (unchecked)
- Partition sign:** tab
- decimal:** point
- source:** Rectangle (2 points) (selected), Polygon (Data loading) (unchecked)
- Point 1:** R: 502735,27, H: 5129085,15
- Point 2:** R: 502861,40, H: 5128962,02
- Width of steps:** 1,00 m

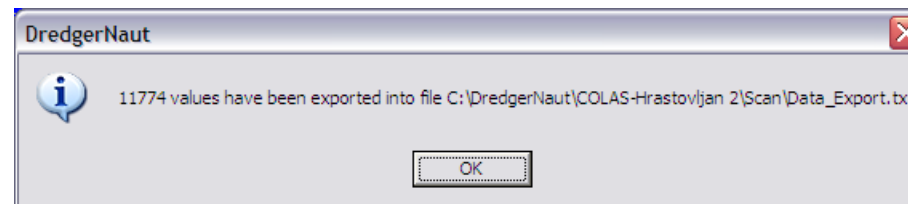
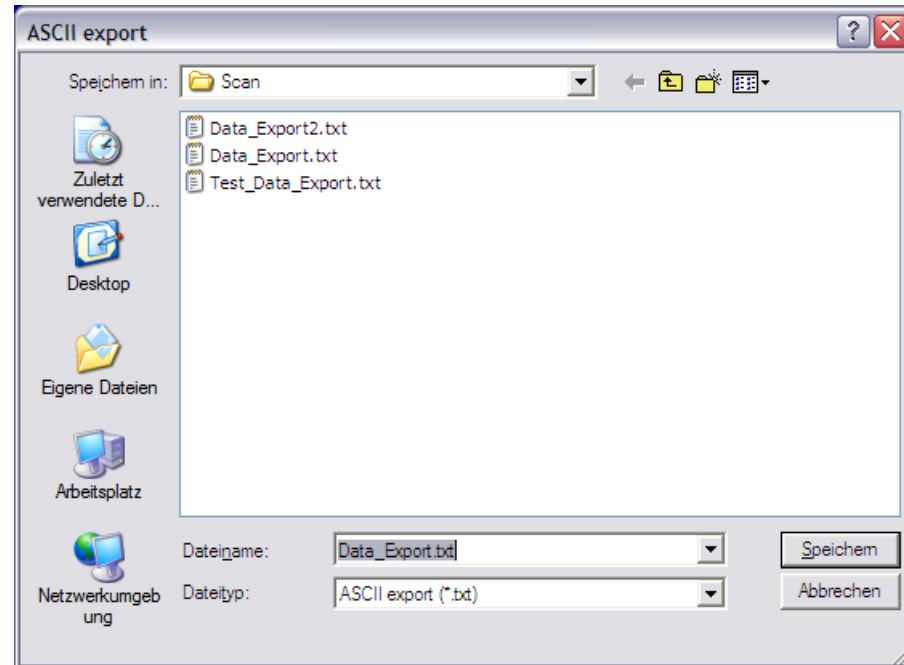
Buttons at the bottom: Save, Show, Back

9 Saving to a file

After clicking the **Save** button a standard dialogue from Windows will appear to select the location and name the file will be saved to. By default the directory **Scan** in the DredgerNaut data directory will be suggested. On your system that is:

C:\DredgerNaut\COLAS-Hrastovljan\Scan

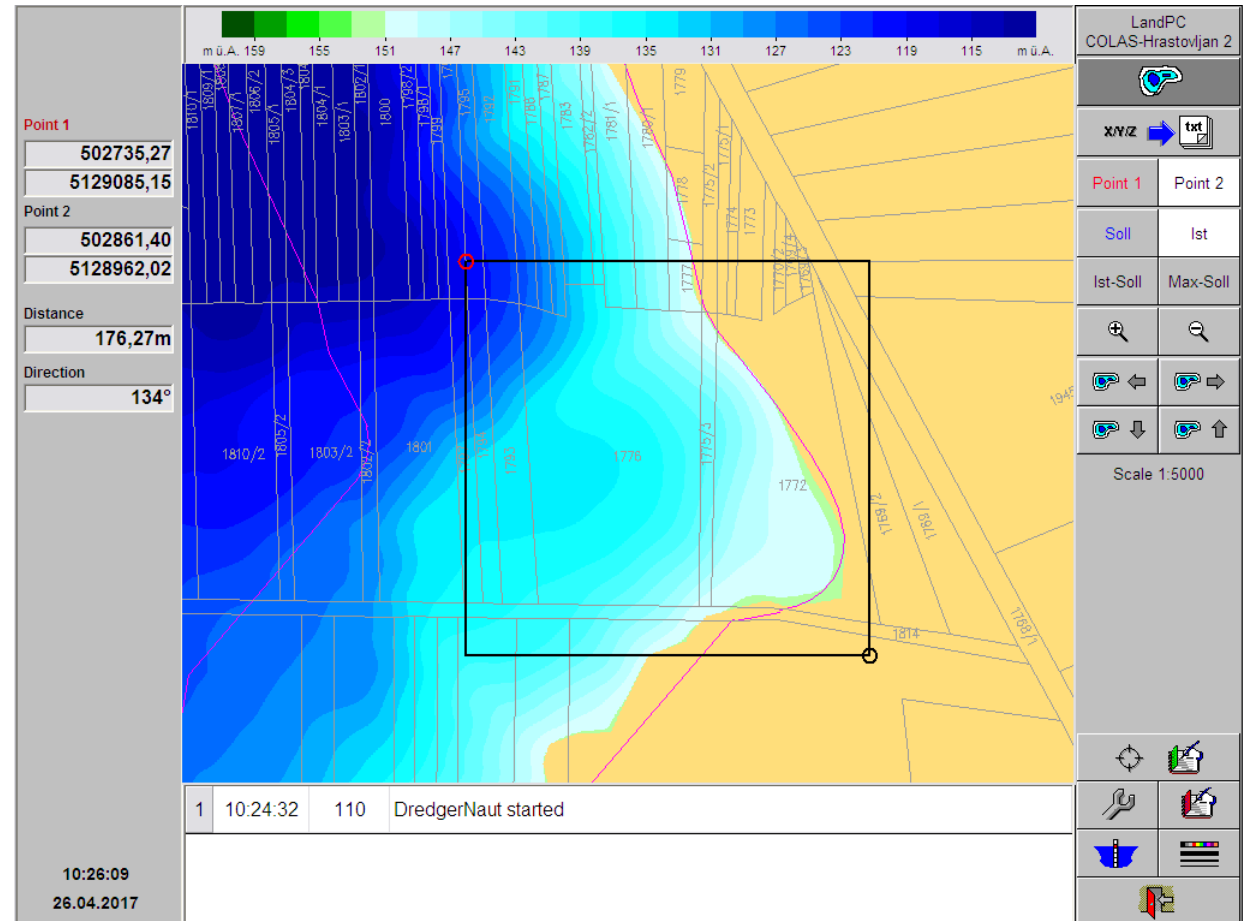
A second dialogue window will confirm that the file was saved successfully.



10 ASCII export finished

After you have acknowledged the above 'success' dialogue you are back to the map display.

As usual use the button with the '**red door**' in the lower right hand corner repeatedly to return to the desired level in **DredgerNaut**.

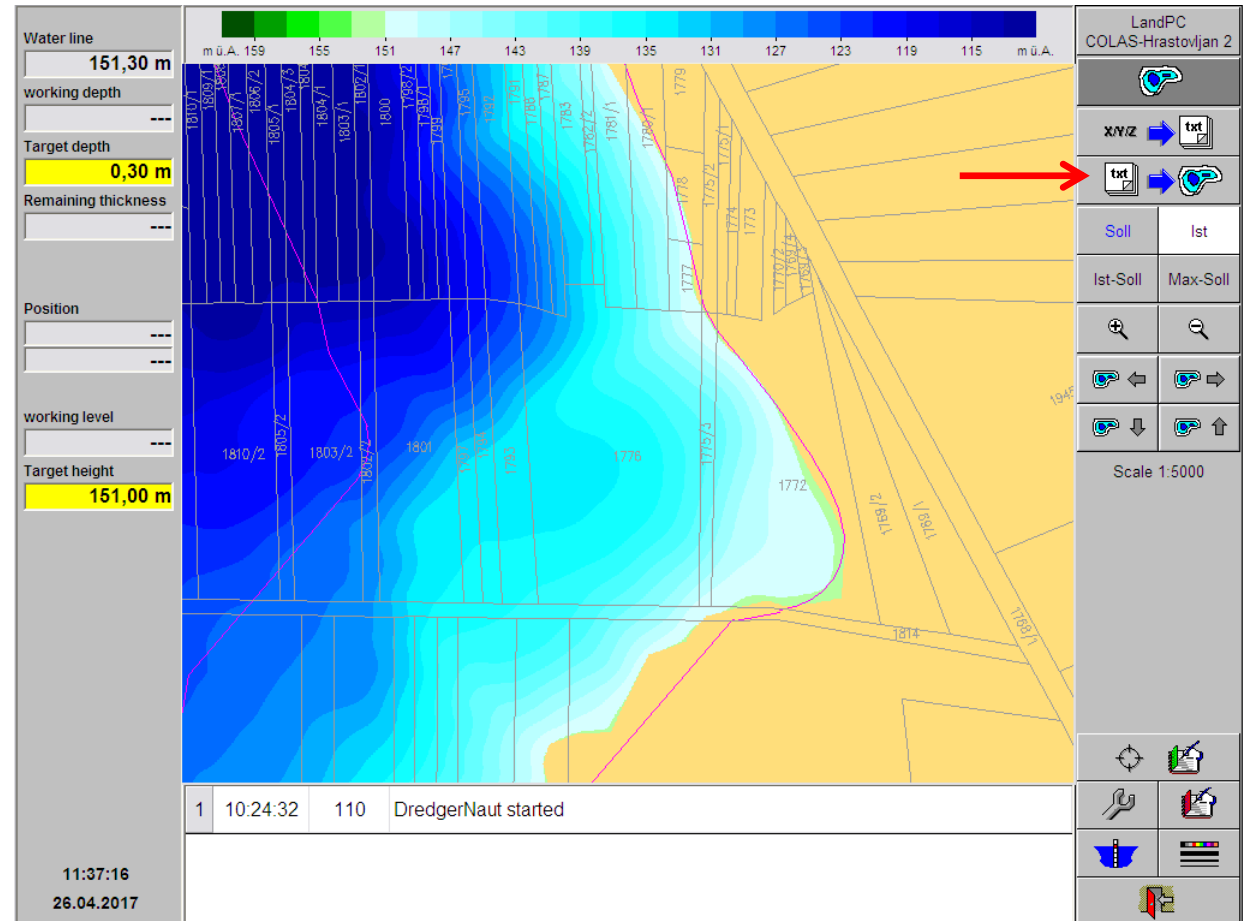


11 Menu ,Data Transfer functions‘, start Import scan‘

To select *Import scan* from the *Data Transfer* screen press the marked button.

1 ASCII export

The buttons in the upper right hand corner change again, you are presented with two buttons named *Point 1* and *Point 2*, used to select the area (rectangle) to export.



12 Import scan

Here, we are directly presented with the window to choose the **scan file** to import and set the parameters for the action.

The screenshot shows the 'Importing external scan data' dialog box with the following settings:

- XY-coordinates system: Geographic WGS 84, HTRS-89
- Scan file: [Empty field with browse button]
- Water level gauge: [Selected]
- method: [Selected]
- Contours: [Selected]
- Preparation: [Selected]
- test parameters: [Selected]
- absolute depth refred to normal level (ü.A.): (Note: typo 'refred')
- referred to level:
- use the specified level values from the scan:
- using variable level values from an external file:
- level correction:

Buttons at the bottom of the dialog: Start, display, Adjustments, Cancel.

Log table at the bottom:

1	16:40:17	110	DredgerNaut started
2	16:40:05	111	DredgerNaut ended

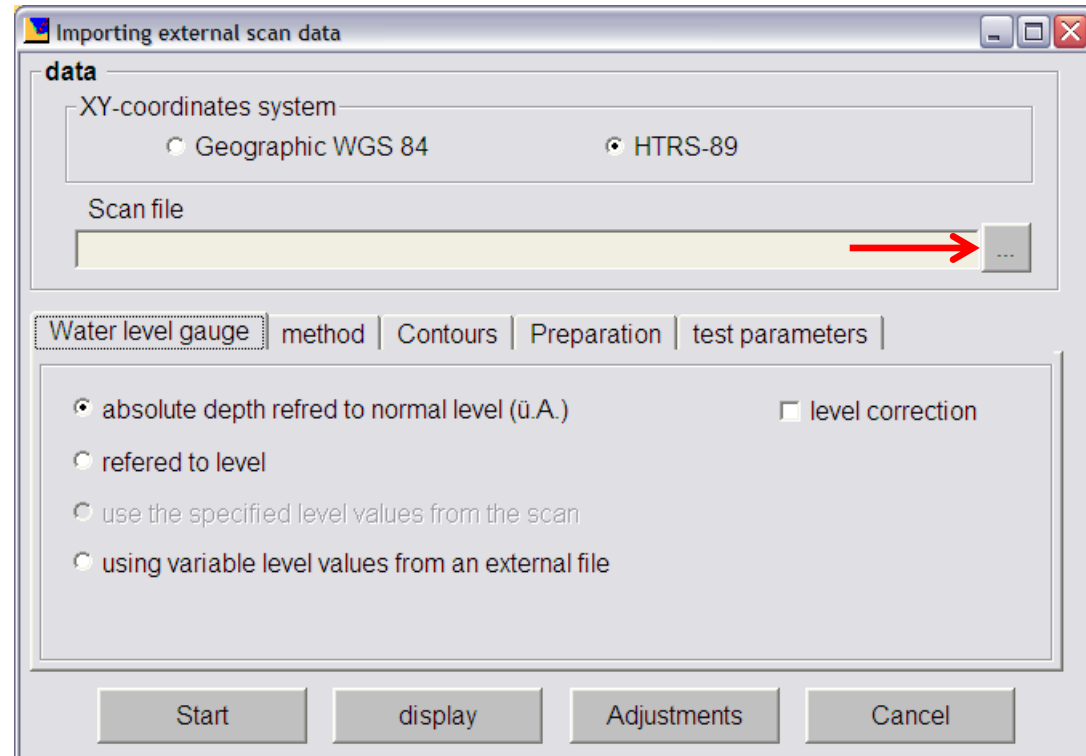
Timestamp: 16:41:53, 25.04.2017

13 Import parameters

Press the marked button '...' to open the file selection Dialogue. By default the directory **Scan** in the DredgerNaut data directory will be opened.

On your dredger-PC system that is:

C:\DredgerNaut\COLAS-Hrastovljan\Scan



14 Select Scan file

The directory **Scan** is shown (default, see above)

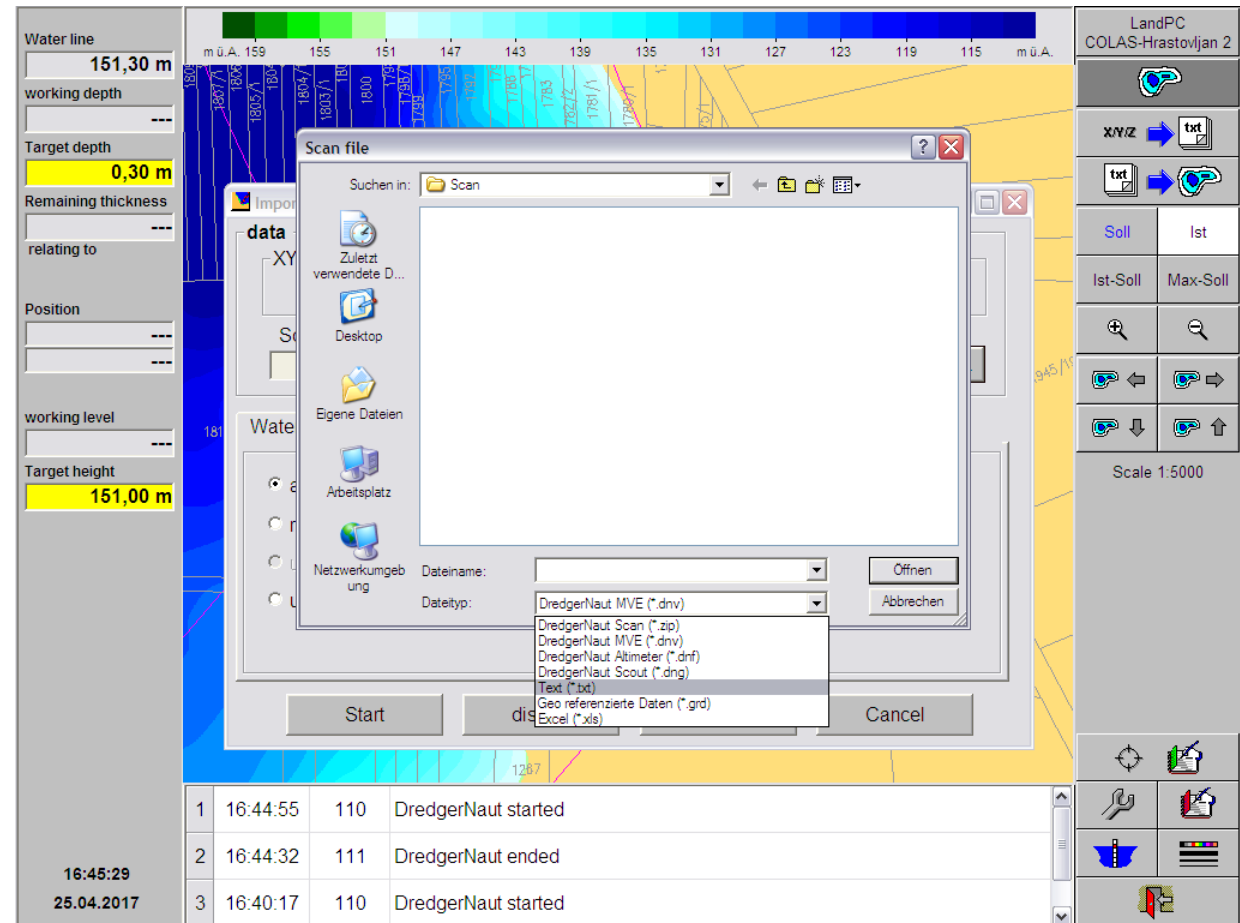
but there are no files visible in it in this picture.

At the bottom of the dialogue window there is a field

showing the selected file *extension* (= file format).

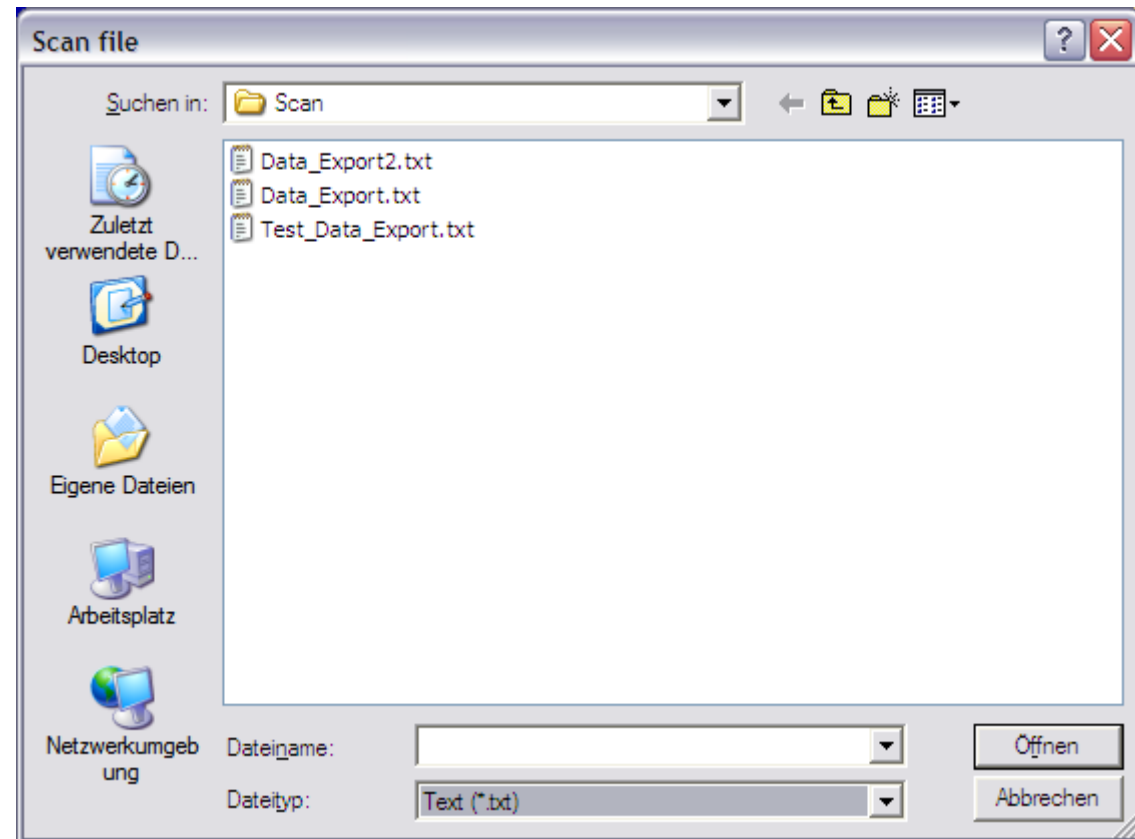
In DredgerNaut this is *.DNV for scan files generated by the DredgerNaut mobile survey unit or MVE (German abbreviation) and there are no *.dvn files present.

To see the text file we generated above by ASCII export as an example we first have to change the selected extension to *.TXT by choosing that from the drop-down list of usable extensions.



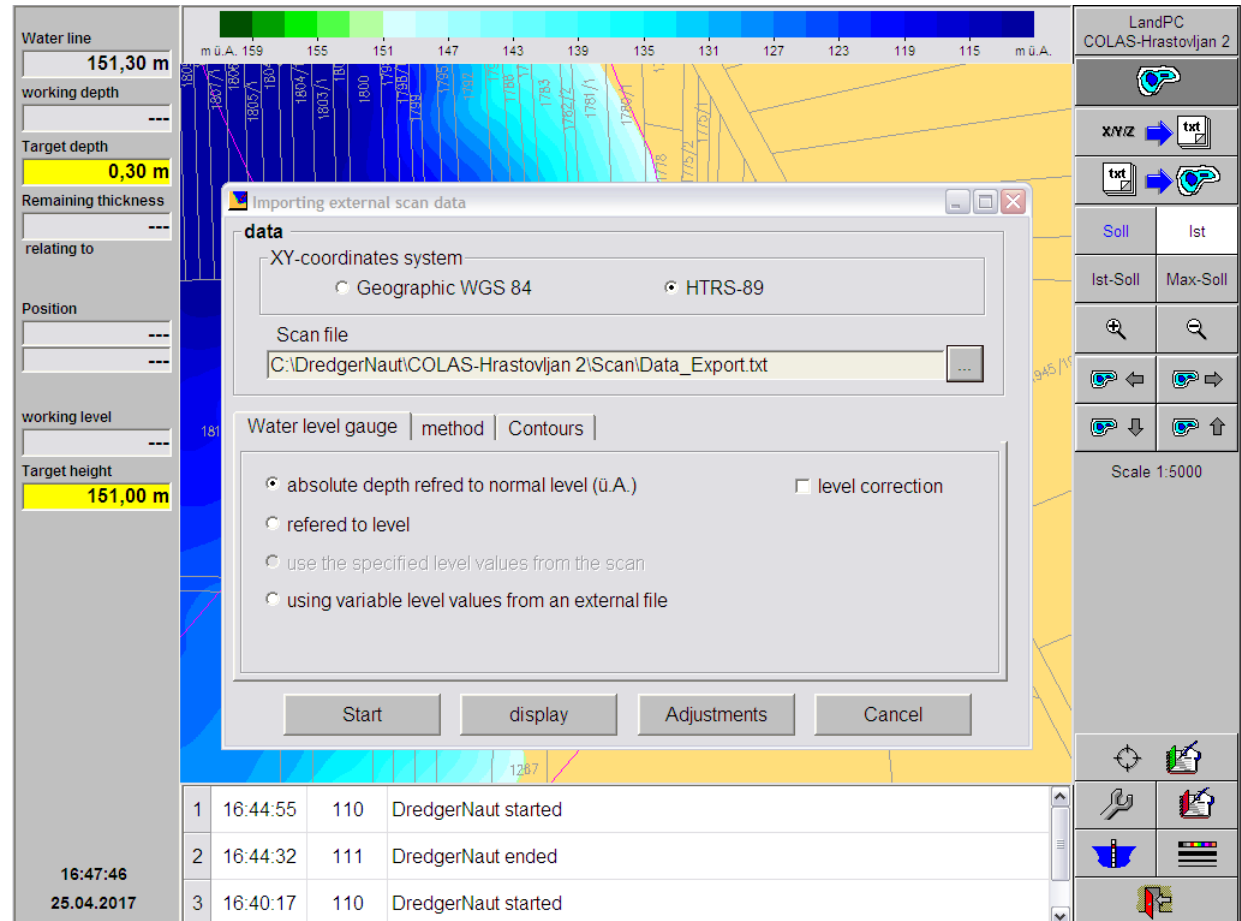
15 Select Scan file dialogue

Now that we have selected the extension *.TXT we can choose 'Data_Export.txt' and click the 'open' button.



16 Start Import scan

By clicking the 'Start' button in the lower left corner of the parameter window the import of the scan file shown is started.



17 Precautionary Data archiving

Errors in the scan file (water level or coordinate problems) or the import settings (coordinate system, water level) may cause false and unwanted changes to the map. Therefore the system suggests to make a precautionary archive of the map data first.

Should something go wrong it is always possible to return to the map status before the import.

If you are sure that you need no archive (e.g. because you already have generated one) click onto 'Cancel' to go on without archiving.

The screenshot displays the DredgerNaut software interface. On the left, there are input fields for 'Water line' (151,30 m), 'working depth', 'Target depth' (0,30 m), and 'Remaining thickness'. Below these are 'Position' fields, 'working level', and 'Target height' (151,00 m). The main area shows a bathymetric map with a color scale at the top ranging from 159 to 115 m ü.A. A dialog box titled 'Data archiving' is centered over the map, with the following content:

Data archiving

Select target for backup

Local backup

Type

standard Complete

Archiving will be started automatically after 30 seconds.

Continue Cancel

At the bottom of the interface, a log table shows the following entries:

1	16:48:06	375	Data archiving started
2	16:44:55	110	DredgerNaut started
3	16:44:32	111	DredgerNaut ended

The bottom left corner of the interface shows the time '16:48:08' and the date '25.04.2017'. The right side of the interface contains various map navigation and tool icons, including a scale of 1:5000.

18 Import scan data starts

After the archiving is either canceled or completed the actual import of the scan data from the file begins.

A window containing two progress bars keeps you informed about the ongoing work.

The screenshot displays the DredgerNaut software interface. On the left, a control panel shows parameters for the scan: Water line at 151,30 m, working depth at ---, Target depth at 0,30 m, Remaining thickness at ---, Position at ---, working level at ---, and Target height at 151,00 m. The main area features a bathymetric map with a color scale from 159 m ü.A. (green) to 115 m ü.A. (blue). A dialog box titled "Scandatei Data_Export.txt wird verarbeitet!" is overlaid on the map, indicating "Bearbeite Kartensegment 1 von 1" with a progress bar and a "Cancel" button. The bottom right corner shows a log window with the following entries:

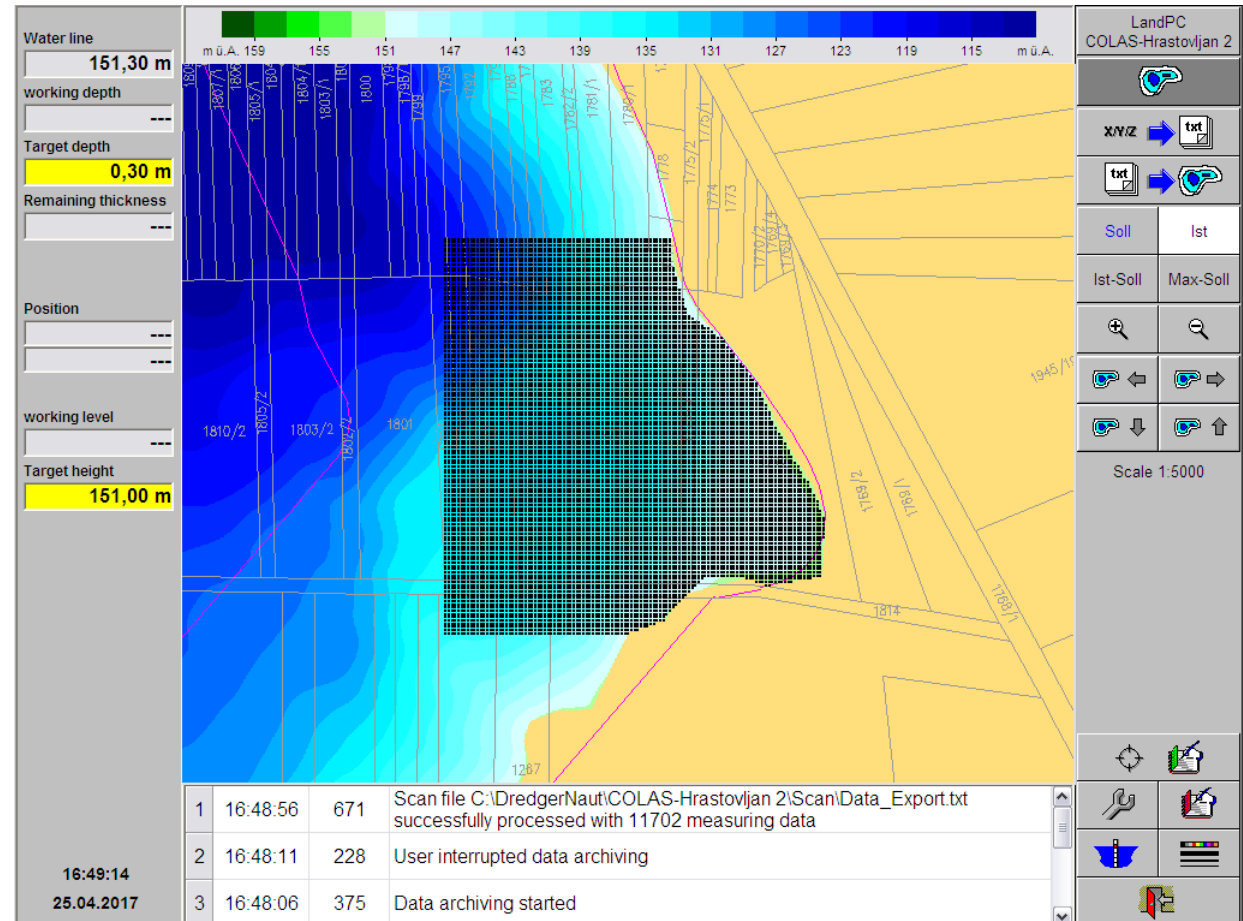
Time	Count	Event
16:48:11	228	User interrupted data archiving
16:48:06	375	Data archiving started
16:44:55	110	DredgerNaut started

The interface also includes a right-hand toolbar with navigation and tool icons, and a status bar at the bottom left showing the time 16:48:31 and date 25.04.2017.

19 Import scan finished

When the import is finished successfully you will see an according message in the message area at the bottom under the map, including the number of imported coordinate triples.

A black dot is shown at each processed position to indicate the area influenced by the import.



20 Import scan finished (details)

In this picture the largest scale 1:3000 is chosen, Better showing the black indicators at the processed Positions.

The indicators will remain visible until DredgerNaut is re-started next time.

As usual use the button with the '*red door*' in the lower right hand corner repeatedly to return to the desired level in **DredgerNaut**.

