

Seismic Loader 4.4



User Guide

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Introduction

Purpose

SeismicLoader application is designed for working with seismic, navigation and topographic data.

It allows extracting from input material:

- Survey geometry - coordinates in a projection or geographic coordinate system.
- Attribute information - the name of the survey/profile, the contractor, the coordinate system, the edge values of the curves, the date of creation / processing, etc. The set of retrieved attributes is user defined.

With the help of the application you can control the quality of the input material:

- visual quality control using the “Map” module;
- automatic quality control of the geometry retrieved.

There is also an opportunity of converting input data to other formats and loading the material received into the *PetroVision* Databank.

Document format

The application works with data stored in documents of the following types:

1. *SEG-Y* files (can be written as *.sgy*, *.segy*, case insensitive) - a format for storing completely or partially processed seismic data with sequential traces.
 - 1.1. ***seg-y rev 0*** [¹]
 - 1.2. ***seg-y rev 1*** [²]
 - 1.3. ***seg-y rev 2*** [³]
2. Navigation *SPS* - Shell Processing Support and *UKOOA* files (can be written as *.sps* and *.ukooa*, case insensitive) - a format initially developed for describing conditions of marine seismic surveys, it is universal for describing the geometry of all kinds of surveys including land.
 - 2.1. ***sps rev 0*** [⁴]
 - 2.2. ***sps rev 2.1*** [⁵]

¹ https://www.seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_y_rev0.pdf

² https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_y_rev1.pdf

³ https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_y_rev2_0-mar2017.pdf

⁴ https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_sps_rev0.pdf

⁵ https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_sps_rev2.1.pdf

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- 2.3. **ukooa ver 1.0** [⁶]
 - 2.4. **ukooa ver 1.01** [⁷]
-
- 3. *SHAPE* files (can be written as *.shp*, *.shape*, case insensitive) - a popular vector format for geography files. It is developed and supported by *ESRI* company with the purpose of compatibility between *Esri* products and other applications. Additional data are read from accompanying files.

 - 4. Display of tabular data *CSV Comma-Separated Values* (can be written as *.csv*, case insensitive).

⁶ https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_ukooa_ads_trace_edit_ver1.pdf

⁷ https://seg.org/Portals/0/SEG/News%20and%20Resources/Technical%20Standards/seg_ukooa_ads_trace_attribute_ver1.pdf

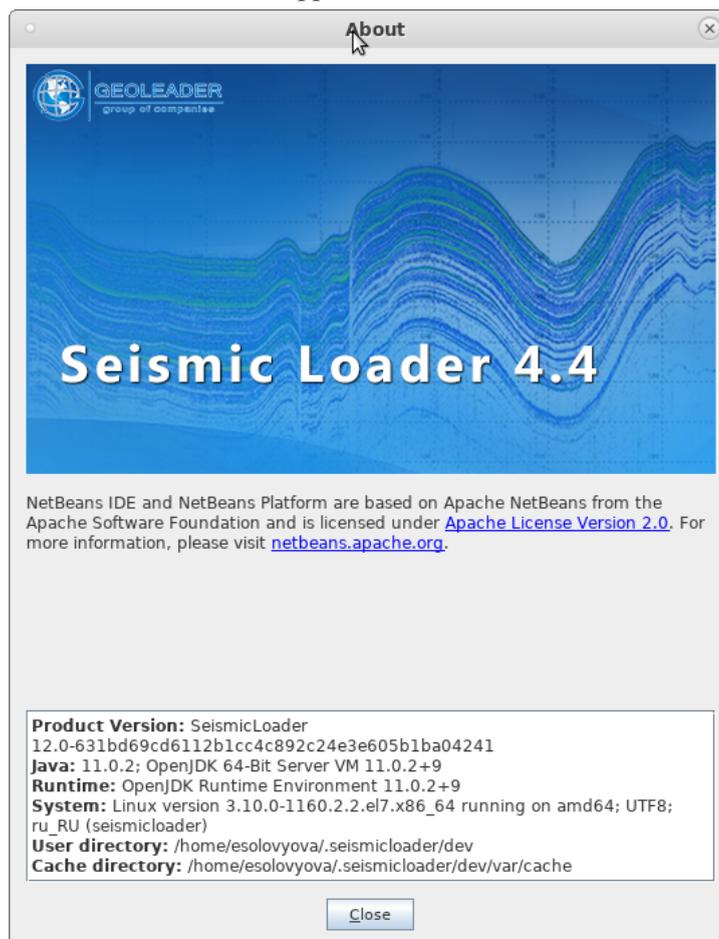
Functionality

Upper panel

File **T**ools **W**indow **H**elp

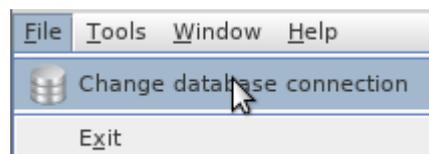
The upper panel is represented by standard buttons: File, Window, Help.

Help button provides information about the application:



Change database connection

At almost any stage of working with the application, it is possible to change the database to which we connected when starting the application, or change the user.

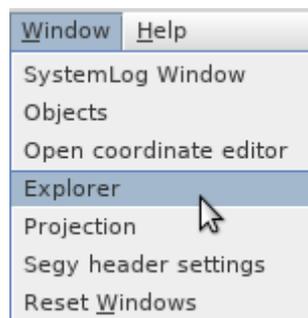


When you click on this button, the application will re-display the authorization window and will restart, if necessary.

This is also where the Exit button is located.

Secondary windows

When clicking on the Window button, there appears a list of all secondary windows related to the application shell.



Here you will see the windows that can be minimized or closed while working with the application.

Clicking on any menu item will move the focus to the specified element of the application. "Reset windows" means bringing the program's shell back to its default view.

Buttons for switching between tabs



- The ▼ symbol allows you to open and select a tab you wish to go to. The arrow symbol indicates the current tab.
- The ◀ ▶ symbols allow you to move the line with the tabs when there are too many of them to be displayed at once.
- The □ symbol collapses and expands the auxiliary tabs in the main windows: Explorer, Segy header settings, SystemLog Window.

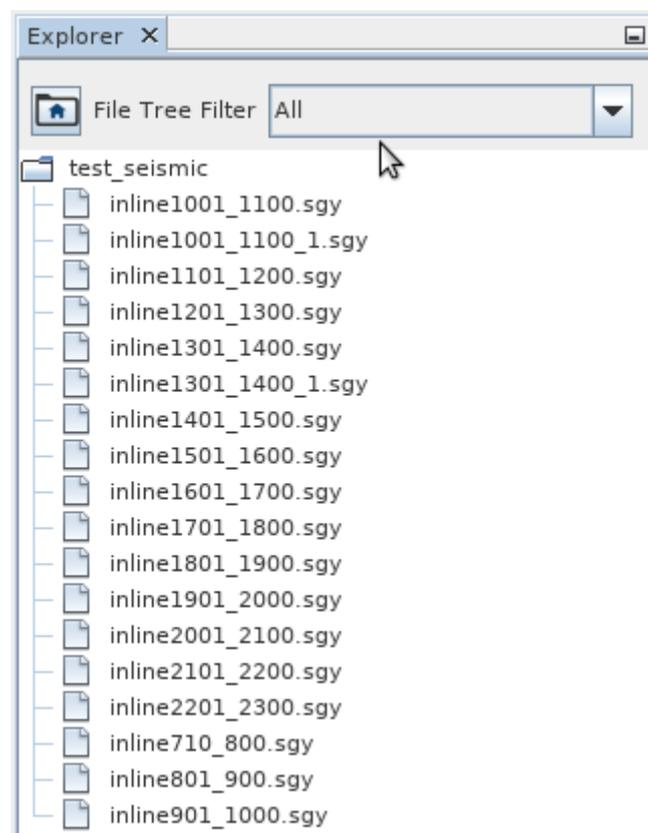
Some of the windows are auxiliary and can be minimized inside the program shell. The list of such windows can be found in the "Secondary windows" section.

Document

This tab allows you to add files with data to the file table in the application for subsequent interaction with them.

Explorer

This component is responsible for access to the file system. It is organized as a file tree.



When clicking on the  button, a window for selecting the working directory displayed in the explorer will open. Each of the nested directories can be collapsed and expanded by clicking on the key next to the directory name.

The file tree filter allows you to show only files of a certain type in the explorer:

- All
- *Segy*
- *Ukooa/SPS*
- *Shape*

In order to display files in the file table for subsequent interaction with them you need only to drag and drop the necessary files to this tab with the help of the *Drag&Drop* function. Similarly, you can drag the entire directory or several selected directories/files. You can also add directories/files by double-clicking the left mouse button on a file or directory. Moreover, this action does not open the directory in Explorer, but immediately adds files from the directory to the table of documents on the Document tab.

If necessary, you can open the directory directly on your computer and drag and drop the necessary files, having previously selected them. You can work with the entire directory only through the application.

File Control Panel

The File control panel is represented by the following controls:



Add row - This button opens a window for selecting a directory/directories or file/files



Remove selected row(s) - Deletes all the selected lines



Select all documents - Selects all files in a file table

File table

Table structure

The table displays the following data:

- **File path** - full path to the file
- **Data format** - the format in which the document is stored. Determined automatically.
- **Size** - the amount of space the document takes up (B, Kb, Mb, Gb)
- **Geometry type** - a variable value for the survey geometry type. To work with a document, you must select one of the three values: polyline, polygon or point.

Path	Format	Size	Geometry ...
/local/TESTDATA/shape/country.dbf	DBF	71.91 Kb	
/local/TESTDATA/shape/country.shp	SHAPE	537.62 Kb	polygon
/local/TESTDATA/shape/EPSSG_Polygons.cpg	CPG	9.00 B	
/local/TESTDATA/shape/EPSSG_Polygons.dbf	DBF	1.78 Mb	
/local/TESTDATA/shape/EPSSG_Polygons.prj	PRJ	145.00 B	
/local/TESTDATA/shape/EPSSG_Polygons.sbn	SBN	32.67 Kb	
/local/TESTDATA/shape/EPSSG_Polygons.sbx	SBX	1.65 Kb	
/local/TESTDATA/shape/EPSSG_Polygons.shp	SHAPE	68.61 Mb	polygon
/local/TESTDATA/shape/EPSSG_Polygons.shp.xml	XML	826.29 Kb	
/local/TESTDATA/shape/EPSSG_Polygons.shx	SHX	27.34 Kb	
/local/TESTDATA/test_seismic/inline710_800.sgy	SEGY	1.42 Gb	polygon
/local/TESTDATA/test_seismic/inline801_900.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline901_1000.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1001_1100.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1101_1200.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1201_1300.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1301_1400.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1401_1500.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1501_1600.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1601_1700.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1701_1800.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1801_1900.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1901_2000.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline2001_2100.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline2101_2200.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline2201_2300.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1301_1400_1.sgy	SEGY	1.56 Gb	polygon
/local/TESTDATA/test_seismic/inline1001_1100_1.sgy	SEGY	1.56 Gb	polygon

Context menu

By right-clicking in any of the cells in the "Geometry type" column, you can do the following:

SHAPE	68.61 Mb	polygon
XML	826.29 Kb	
SHX	27.34 Kb	
SEGY	1.42 Gb	polygon
SEGY	1.56 Gb	polygon

- ☰ Propagate to the entire column
- ⬇ Copy to all cells below

- **Propagate to the entire column**
The function allows you to apply the selected value to the entire "Geometry type" column.
- **Copy to all cells below**
The function allows you to apply the selected value to all cells below the selected one.

Restrictions when working with multiple files

The data selected must be of the same format (all the files selected must be of the same data format, for instance, *SEG-Y*).

The data selected must be of the same geometry type (all the data selected must have one geometry type, for instance, polygon).

Observing these conditions will make batch processing of the data possible for *seg-y* file setting as well as working with the data in the Coordinates tab.

If you have to work with data of different types of geometry and/or different data formats, you need to process the disparate pieces of data one by one and add them to those already processed in the Objects tab. Further, they can be shown on one map or loaded item-by-item with one data set.

Seg-y settings

This tab becomes available only when you select *seg-y* files for correct configuration and subsequent work with data.

Data display window

List of available files



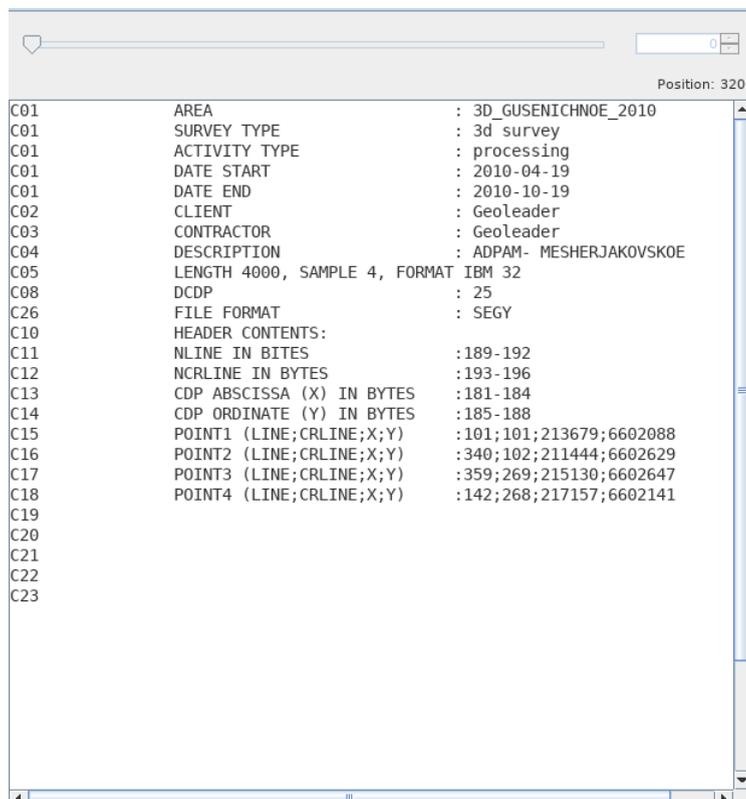
The component is represented by a list of files available for display, selected on the Document tab. With a single selection, the ability to change the selected file is locked.

If the restrictions are met, and batch processing is possible (for more details, see the section "Restrictions when working with multiple files"), it becomes possible to select the file that is currently being configured.

EBCDIC

The tab displays the text header of the *seg-y* file, and also allows you to select, create and edit the attributes required for filling.

Description



The slider and the counter window are responsible for viewing additional text headers and become available only when viewing *seg-y rev2*.

The position number indicates the position of the text cursor. *EBCDIC*-header is 40 lines of 80 characters.

On the right there is an attribute table. All attributes of this table are automatically included in the resulting selection.

Table structure

Attribute	Pos	Length	Value
SEISMIC ACQUI...	48	16	3D_SEVERNOE_2...
SURVEY TYPE	128	9	3d survey
ACQUISITION TYPE	208	10	processing
COMPANY	448	9	Geoleader
DATE START	288	10	2009-02-13
DATE END	368	10	2009-06-13

+ - ■ - Header string

1. **Attribute** - drop-down list with attribute names.
2. **Position** - byte from which the attribute will be set. Can be set manually or by the counter.
3. **Length** - number of bytes read. Can be set manually or by the counter.
4. **Value** - final value that will be extracted from the text header of the file. Cannot be changed.

Controls located at the bottom of the tab:

 - Add row

 - Delete selected row(s)

You can also add or remove lines by right-clicking in any cell of the table:

SURVEY T...	195	10	
ACQUISITI...	2		
COMPANY	5		

+ Add row
- Delete selected rows

Working with text header

Attributes can be filled either manually or in the following way:

1. Select with the mouse the required value from the text header;
2. Right-click to bring up the context menu;
3. Create a new attribute or edit an existing one.

C01	AREA	: 3D_GUSENICHNOE_2010
C01	SURVEY TYPE	: 3d survey
C01	ACTIVITY TYPE	: processing
C01	DATE START	: 2010-04-19
C01	DATE END	: 2010-10-19
C02	CLIENT	: Geoleader
C03	CONTRACTOR	: Geoleader
C04	DESCRIPTION	: ADPAM
C05	LENGTH 4000, SAMPLE 4, FORMAT IBM 32	
C08	DCDP	: 25
C26	FILE FORMAT	: SEGY
C10	HEADER CONTENTS:	
C11	NLINE IN BITES	:189-192
C12	NCRLINE IN BYTES	:193-196
C13	CDP ABSCISSA (X) IN BYTES	:181-184
C14	CDP ORDINATE (Y) IN BYTES	:185-188
C15	POINT1 (LINE;CRLINE;X;Y)	:101;101;213679;6602088

Create attribute

Edit attribute ▶

SEISMIC ACQUISITION

SURVEY TYPE

ACQUISITION TYPE

COMPANY

DATE START

DATE END

AZIMUTH

Binary header

The tab contains a table displaying the binary header of a *seg-y* file.

N ^o	Type	Bytes	Name	Value	Attribute
1	INT4	6	Job identification number	25856	
2	INT4	5	Line number	101	
3	INT4	9	Reel number	29	
4	INT2	13	Number of data traces per record	0	TRACES PER SP
5	INT2	13	Traces Num	0	
6	INT2	15	Number of axiliary traces per record	0	
7	INT2	17	Sample interval in msec (for this reel of data)	4000	SAMPLE INTERVAL
8	INT2	19	Sample interval in msec (for original field recording)	4000	
9	INT2	21	Number of samples per data trace (for this reel of data)	713	NUMBER OF SAMPLES
10	INT2	23	Number of samples per data trace (for original field recording)	713	
11	INT2	25	Data sample format code	3	
12	INT2	27	CDP fold (expected number of data traces per CDP ensemble)	0	
13	INT2	29	Trace sorting code	0	
14	INT2	31	Vertical sun code	0	
15	INT2	33	Sweep frequency at start	0	
16	INT2	35	Sweep frequency at end	0	
17	INT2	37	Sweep length (msec)	0	
18	INT2	39	Sweep type code	0	
19	INT2	41	Trace number of sweep channel	0	
20	INT2	43	Sweep trace taper length in msec at start if tapered	0	
21	INT2	45	Sweep trace taper length in msec at end	0	
22	INT2	47	Taper type	0	
23	INT2	49	Correlated data traces	0	
24	INT2	51	Binary gain recovered	0	
25	INT2	53	Amplitude recovery method	0	
26	INT2	55	Measurement system	1	
27	INT2	57	Impulse signal	0	
28	INT2	59	Vibratory polarity code	0	
29	INT2	61	RSR	0	
30	INT2	63	Manufacturer code	0	
31	INT2	65	VERSION	0	
32	INT2	67	Reel	0	
33	INT2	69	Big	0	
34	INT2	71	Line spacing	0	
35	INT2	73	Station spacing	0	
36	INT2	75	Bytes 3275-3276	0	

Table structure

1. **N^o** - the ordinal number of the line in the table (the field cannot be changed);
2. **Type** - drop-down list with different types⁸ of the attribute being extracted. The selected type determines the number of bytes that will be extracted for the attribute, as well as the conversion to the final value;
3. **Bytes** - byte from which attribute extraction will start. Can be modified manually or by the counter.
4. **Name** - textual representation of the attribute being extracted. Can be modified manually.
5. **Value** - final value corresponding to the attribute. Read from the document, cannot be modified.
6. **Attribute** - drop-down list with names of attributes for selection. The final selection includes only those attributes for which the "Attribute" field is filled.

⁸ Supported data types:
 Integer-valued: *int1, int2, int4, int8*;
 Integer-valued unsigned: *uint1, uint2, uint4*;
 Real-valued: *ieee4, ieee8, ibm4, ibm8*.

Trace headers

This tab carries the function of trace-by-trace display of trace header attributive information.

Description

Extended Trace Header number

0

Nr	Type	Bytes	Name	Value	Attribute	Formula	Scale	Offset
35	INT2	95	Uphole time at source 0 if not known o...	0.0			1.0	0
36	INT2	97	Uphole time at group 0	0.0			1.0	0
37	INT2	99	Source static correction 0	0.0			1.0	0
38	INT2	101	Group static correction 0	0.0			1.0	0
39	INT2	103	Total static applied 0	0.0			1.0	0
40	INT2	105	Lag time A. Time in msec between	0.0			1.0	0
41	INT2	107	Lag time B. Time in msec between tim...	0.0			1.0	0
42	INT2	109	Delay recording time. Time in msec b...	0.0			1.0	0
43	INT2	111	Mute time - start 0	148.0			1.0	0
44	INT2	113	Mute time - end 0	148.0			1.0	0
45	INT4	13	Inline number	0.0	FIRST INLINE	MIN	1.0	0
46	INT4	13	Inline number	0.0	LAST INLINE	MAX	1.0	0
47	INT4	189	INLINE	171.0			1.0	0
48	INT4	193	XLINE	263.0			1.0	0
49	INT4	181	X	277667.0			1.0	0
50	INT4	185	Y	6628238.0			1.0	0

Trace Header number

9.801

At the top there is a slider for the number of an additional header (trace number) and a value window with a counter. This functionality becomes available when working with *seg-y rev2* files

Below there is a table displaying one of the headers of the *seg-y* file traces.

Below the table there is a similar slider and counter for the header number (trace number). With their help it is possible to choose the trace header that will be shown in the table. The value can be entered manually.

When selecting a line from the table, a graph of the values of the selected attribute for several successive trace headers appears at the bottom of the tab. Trace selection is also performed using a slider or counter.

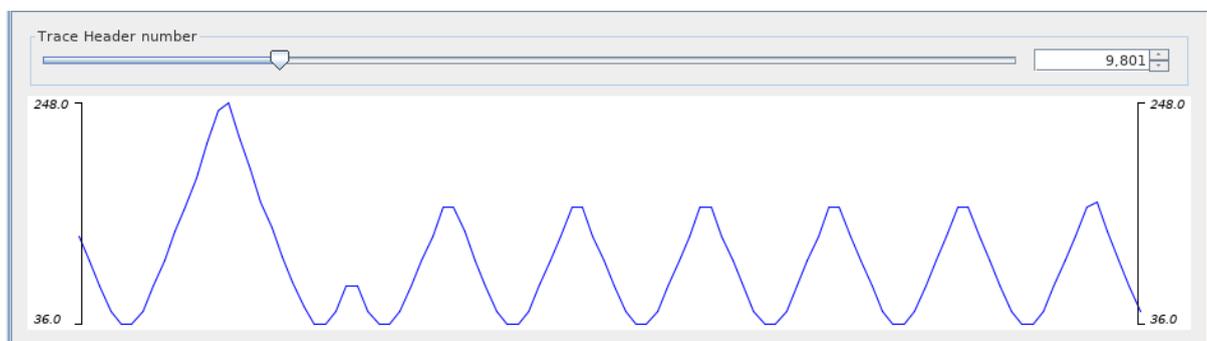


Table structure

1. **No** - the ordinal number of the line in the table (the field cannot be changed);
2. **Type** - drop-down list with different types⁹ of the attribute being extracted. The selected type determines the number of bytes that will be extracted for the attribute, as well as the conversion to the final value;
3. **Bytes** - byte from which attribute extraction will start. Can be modified manually or by the counter.
4. **Name** - textual representation of the attribute being extracted. Can be modified manually.
5. **Value** - final value corresponding to the attribute. It is read from the document, and cannot be modified.
6. **Attribute** - drop-down list with names of attributes for selection. The final selection includes only those attributes for which the "Attribute" field is filled.
7. **Formula** - drop-down list that sets the rule for extracting the final value from all headers. The following options are available:
 - BYTE - byte starting from which the attribute was read;
 - BYTELENGTH - length of the attribute in bytes;
 - MIN - minimum attribute value of all trace headers;
 - MAX - maximum attribute value of all trace headers;
 - FIRST - attribute value from the first trace header;
 - LAST - attribute value from the last trace header;
 - AVERAGE - average attribute value over all trace headers;
 - COUNT - number of unique attributes.
8. **Scale** - the amount by which the final value is multiplied or divided;
9. **Offset** - the amount that is added to the final value.

Object-named attributes — *X*, *Y*, *XLINE*, *INLINE*, or *SP* — have special uses. They are highlighted in blue for clarity.

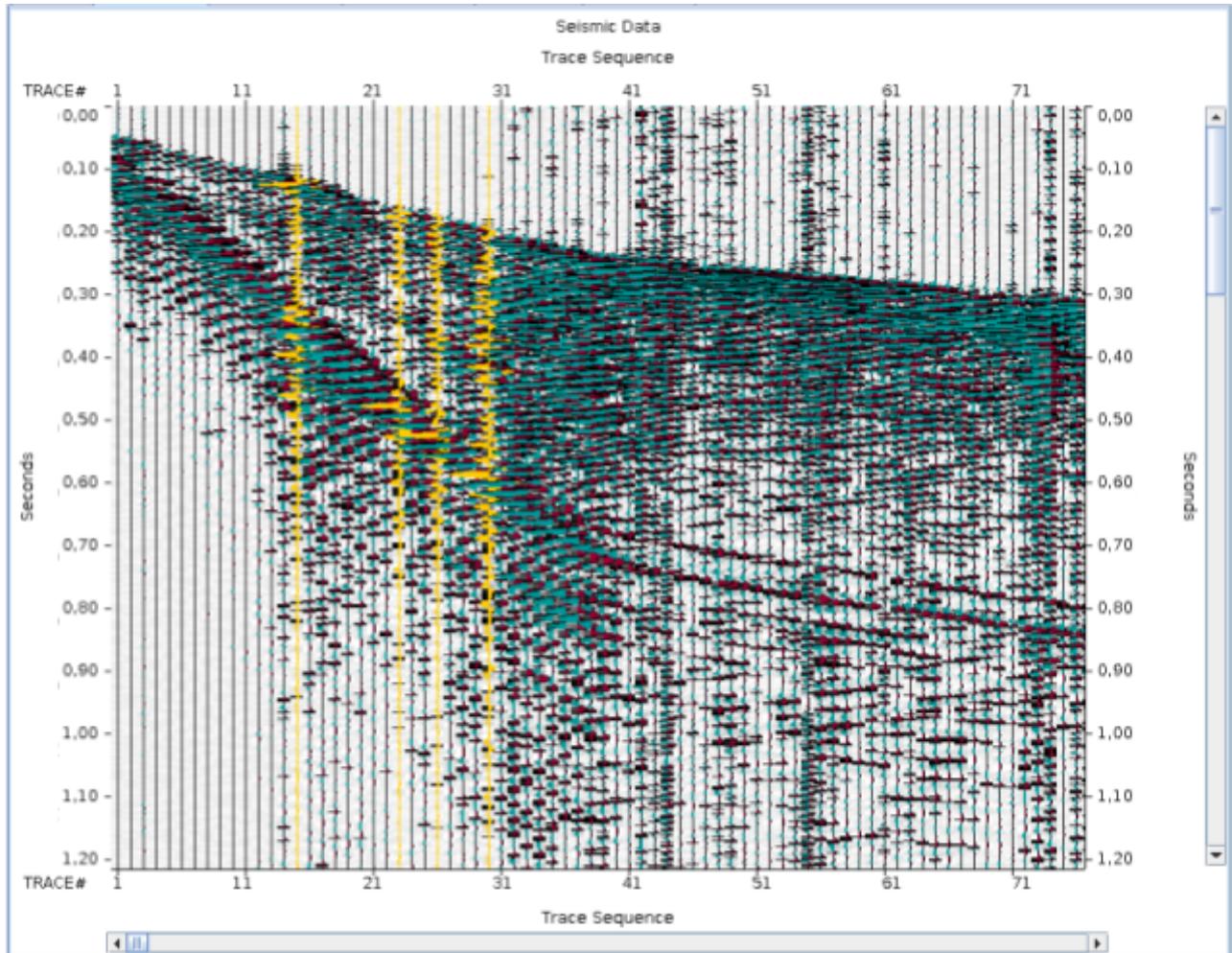
In the case of a 2d profile, the *X*, *Y* and *SP* attributes are responsible for extracting the survey geometry from a *seg-y* file. *X* and *Y* attributes are required.

In the case of a 3d survey, the *X*, *Y*, *XLINE* and *INLINE* attributes are responsible for extracting the survey geometry from a *seg-y* file. The *X*, *Y*, *XLINE* and *INLINE* attributes are required.

⁹ Supported data types:
Integer-valued: *int1*, *int2*, *int4*, *int8*;
Integer-valued unsigned: *uint1*, *uint2*, *uint4*;
Real-valued: *ieee4*, *ieee8*, *ibm4*, *ibm8*.

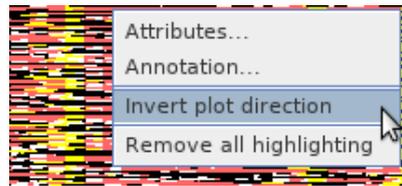
Traces view

A clear visual interpretation of the values for the first traces recorded is shown in the trace/seconds graph with default intervals.



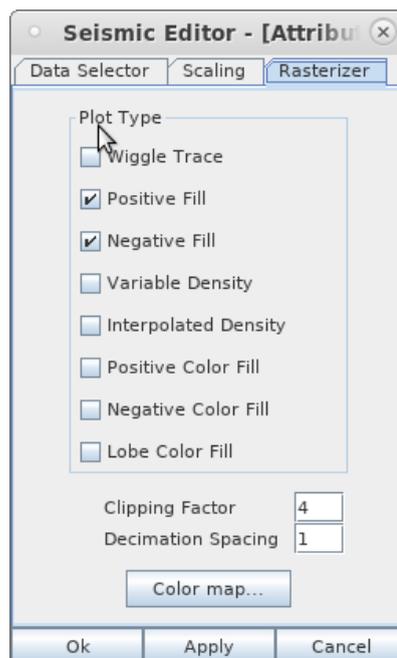
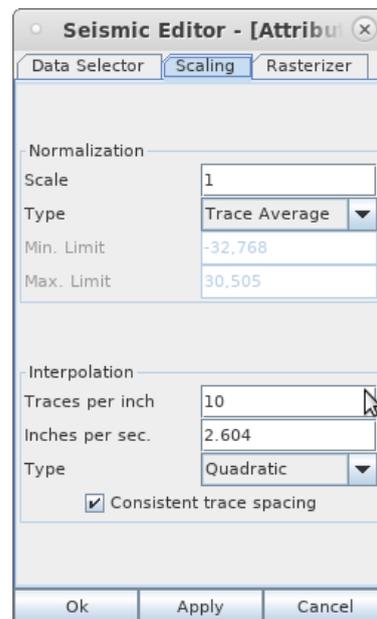
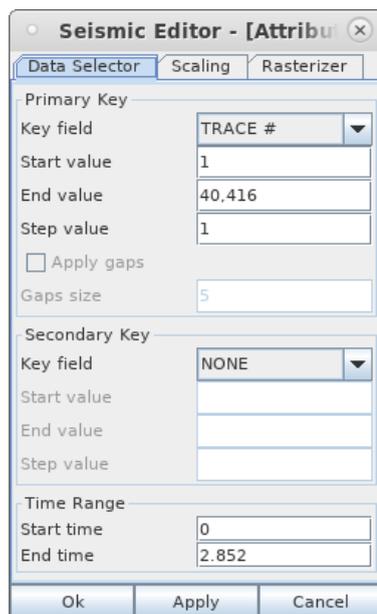
Any of the traces can be selected by double clicking. Its header will be shown on the “Trace headers” tab. You can remove the selection by double-clicking on the already selected trace again.

Working with display



A right-click will open a context menu with the following values:

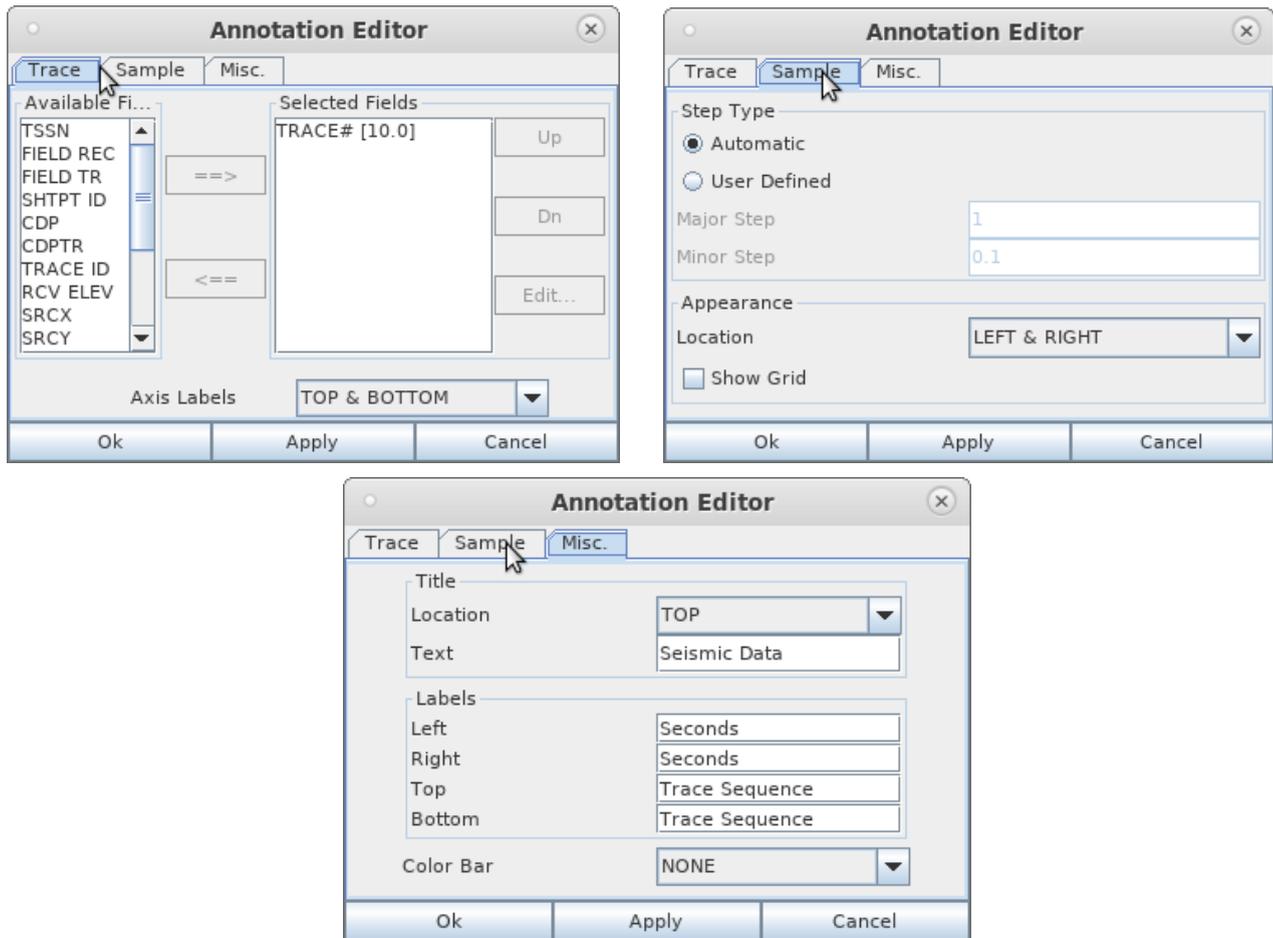
1. **Attributes** - opens Seismic Editor [Attributes]



Seismic Editor allows you to customize display parameters in the following categories:

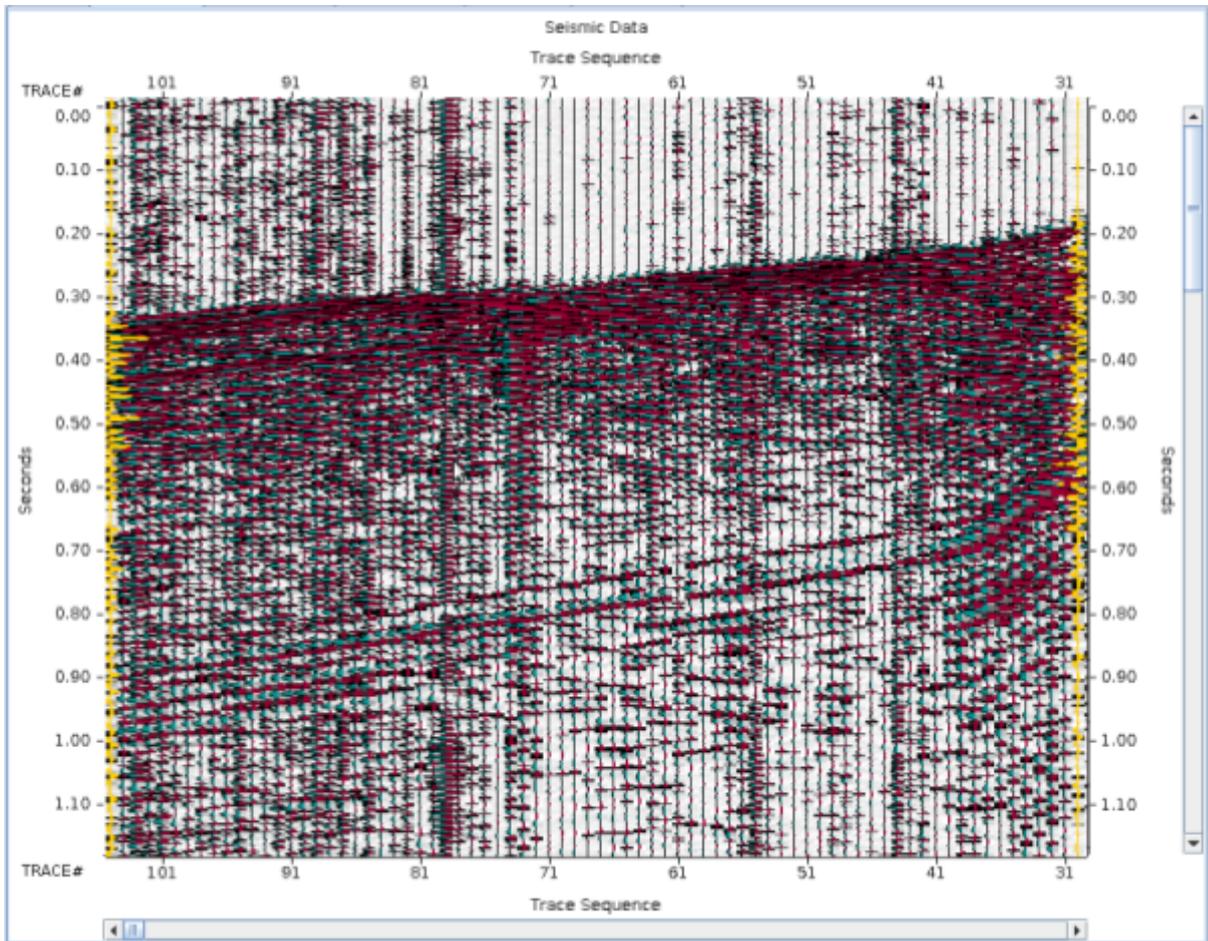
- Data selection by key fields;
- Data scaling;
- Variable density/interpolated density selection;
- Color fill;

2. **Annotation** - opens Annotation Editor.



Annotation Editor allows you to customize the display of data annotations, edit content, and add/remove additional annotations.

3. **Invert plot direction/Normal plot direction** - Traces are displayed either in reverse or in forward order.



4. **Remove all highlighting** - Removes all previously highlighted traces. If no trace is highlighted, this item is unavailable.

Tape Label

Description

The *seg-y rev1* standard specifies that a *Tape label* can be included in the file. It is represented by 128 bytes of *ASCII* text. If there is a mark on the tape label, the application automatically recognizes and displays the content on the Tape Label tab

EBCDIC				Traces view				Trace headers				Binary header				Tape Label				Data Trailer			
Attribute		Name		Value																			
		Storage Unit Sequence N...		1																			
		SEG Y Revision		SY1.0																			
		Storage Unit Structure (fi...		RECORD																			
		Binding Edition		B1																			
		Maximum Block Size		247200																			
		Producer Organization C...		463																			
		Creation Date		5-MAR-2016																			
		Serial Number		S14025																			
		Reserved																					
		Storage Set Identifier		250tc13		1																	

Table structure

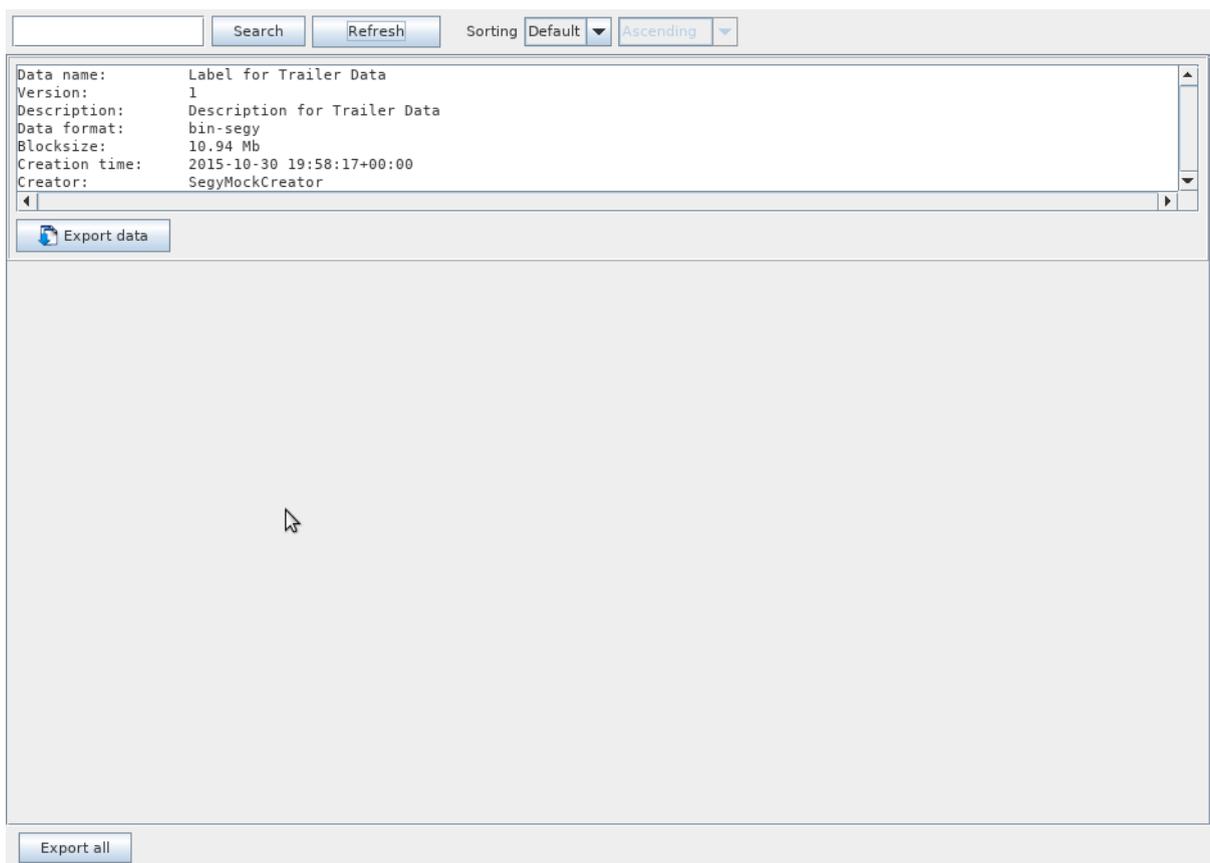
1. **Attribute** - drop-down list with names of attributes for selection. The final selection includes only those attributes for which the "Attribute" field is filled.
2. **Name** - textual representation of the attribute being extracted. Can be modified manually.
3. **Value** - final value corresponding to the attribute. It is read from the document, cannot be modified.

Additional data

Window required to work with additional *seg-y rev2* data. Allows you to work with files written in *seg-y* in addition to the main data.

Search by attached files (case sensitive) is possible.

Files are also sorted by Name, Size and Creation Date (Ascending and Descending, respectively).



Export data - allows you to save a specific file to a selected directory.

Export all files - allows you to save all files simultaneously to a new subdirectory with a user-specified name. File names are automatically taken from Data names.

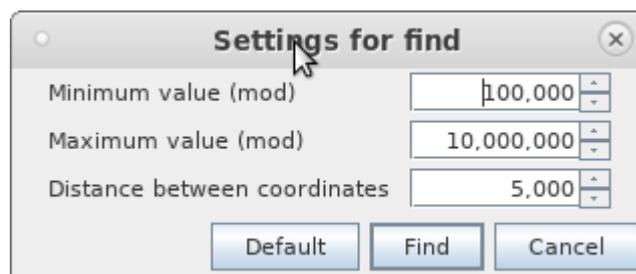
Segy header settings

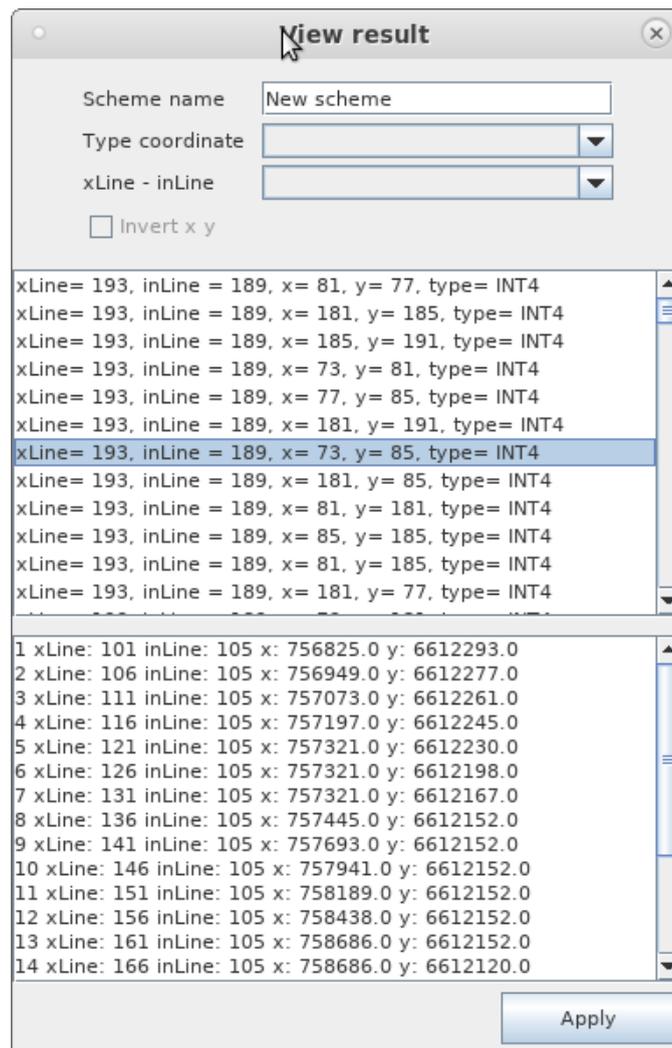
“Segy-file header scheme” block

Variable data is written to the scheme for each of the tabs listed in the data display window.

-  **Copy current scheme**
Allows you to copy the data being modified into a new scheme, when clicked, a window opens for the name of the new scheme.
-  **Save schemes**
Saves changes in the existing schemes list. Unless this button is clicked, no changes will come into effect for the subsequent work - neither removal, nor creation, nor editing.
-  **Delete current scheme**
Delete a scheme from the scheme list. Without saving this change, the deleted scheme will reappear the next time the program is started.
-  **Revert schemes changes**
Allows you to return custom data and parameters to the state at the time of the last save.
-  **Defining coordinate positions**
This function only works for the “Trace headers” tab.

The minimum and maximum assumed values of coordinates and the distance between them are set.





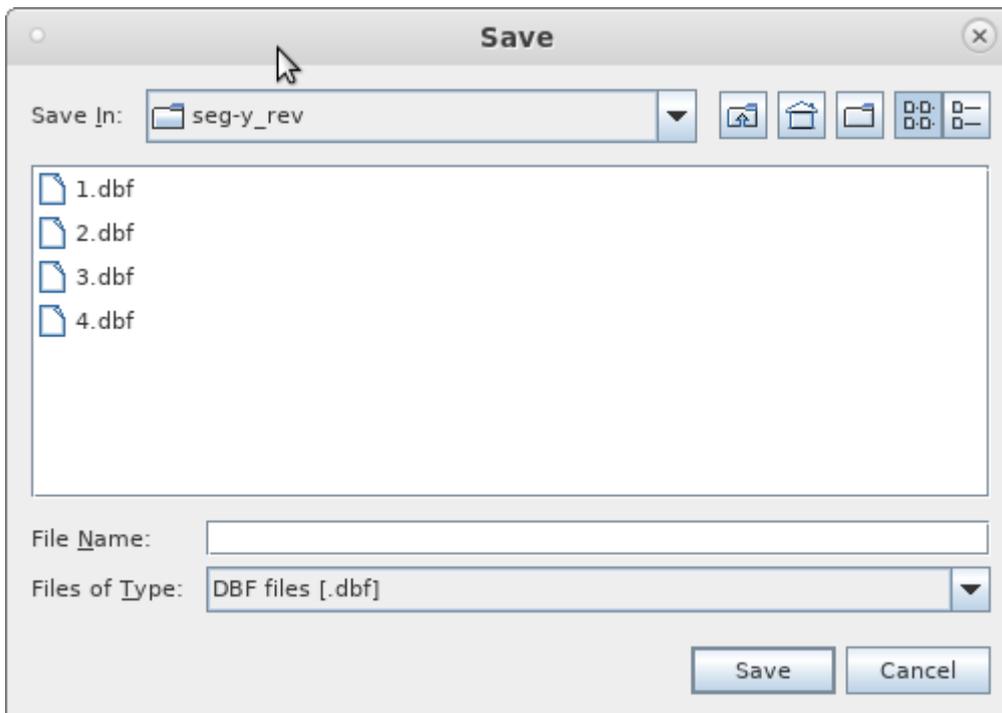
It allows you to clearly see the line-by-line values of the parameters and, accordingly, select the appropriate set of bytes by assigning the selected set to a new scheme (other changeable values will be taken from the scheme that was applied before the function “Defining coordinate positions”).

The name of the scheme is entered by the user. For greater clarity, the results can be filtered by the type of coordinates and a possible pair of numbers - *xLine* - *inLine* bytes (for polygon geometry type). It is also possible to change the name of the new scheme and invert bytes for some *x* and *y* pairs.

Below is a list of possible bytes for the *X*, *Y*, *XLINE-INLINE* or *SP* attributes and their type. When you click on any value from the list, below you will see a list of the first twenty values obtained from the specified bytes.

“Create file” block

This block allows you to create new files based on existing ones. Before setting up the saved data, the program suggests where and in what format to save the created file:



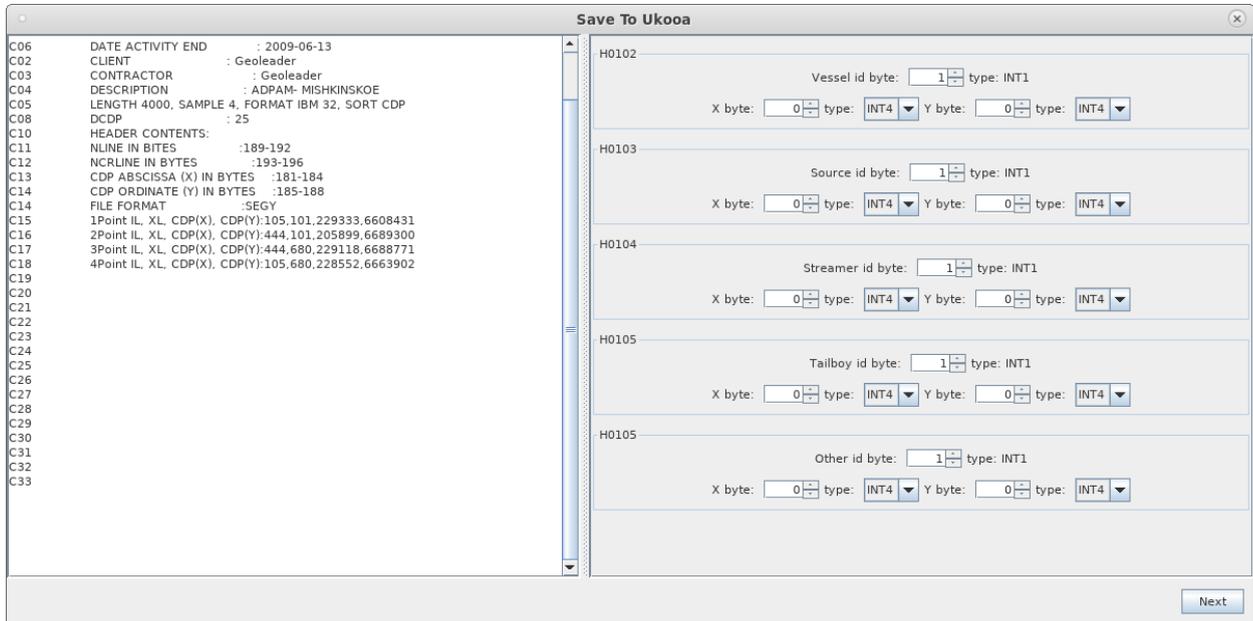
At the end of the work on creating a file, the program will signal with a pop-up message in the lower right corner of the window:



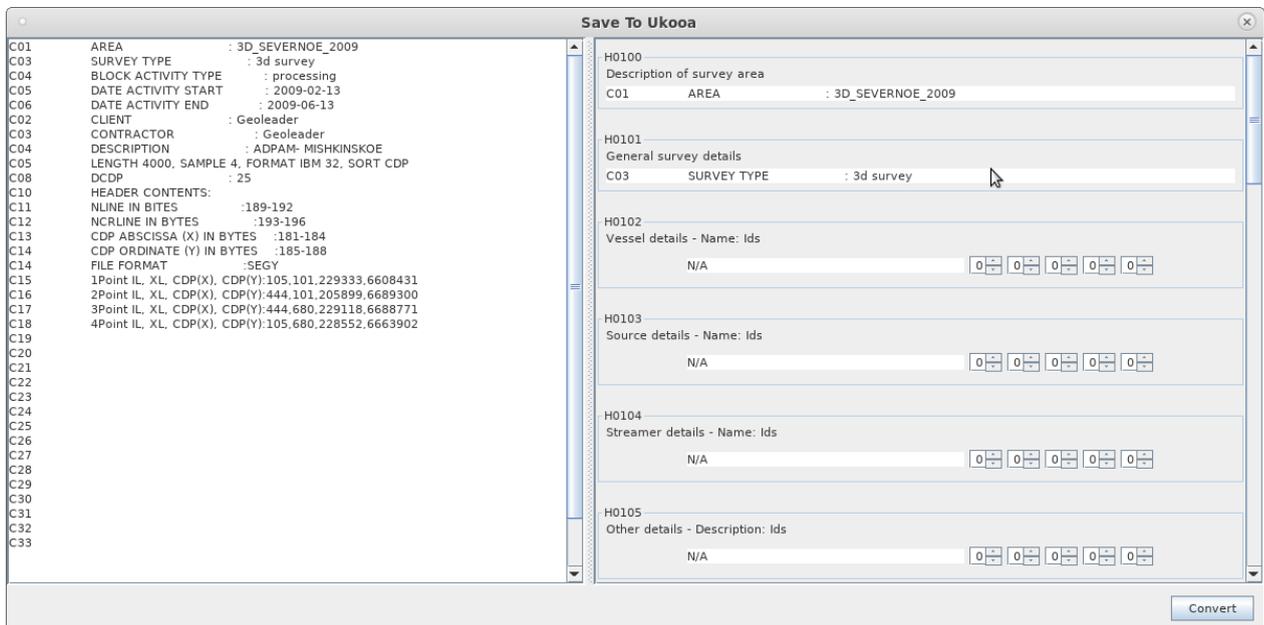
It is possible to create the following files based on the current one:

- Create *DBF* file 
Creates a *.dbf* format file with attribute values.
- Create *IN* file 
Creates an *.in* format file with attribute values.

- Create *UKOOA* file 
Creates a configurable *.uko* file with attribute values.



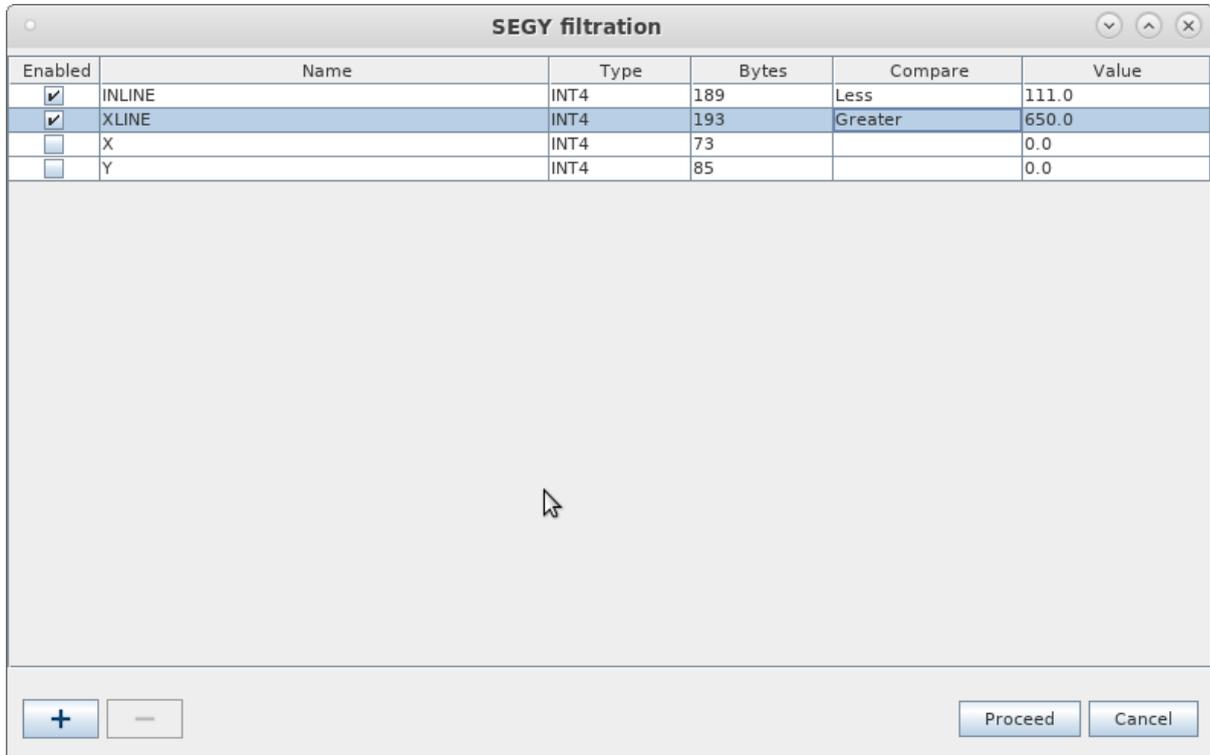
The 'Save To Ukooa' dialog box shows a list of attributes on the left and configuration fields on the right. The right side is divided into sections for H0102, H0103, H0104, H0105, and H0105. Each section has a 'Vessel id byte', 'Source id byte', 'Streamer id byte', or 'Tailboy id byte' field, and 'X byte' and 'Y byte' fields. All 'id byte' fields are set to 1 and 'type' is INT1. All 'X byte' and 'Y byte' fields are set to 0 and 'type' is INT4. A 'Next' button is at the bottom right.

The 'Save To Ukooa' dialog box shows a list of attributes on the left and detailed configuration fields on the right. The right side is divided into sections for H0100, H0101, H0102, H0103, H0104, and H0105. H0100 is 'Description of survey area' with value '3D_SEVERNOE_2009'. H0101 is 'General survey details' with value '3d survey'. H0102 is 'Vessel details - Name: Ids' with value 'N/A'. H0103 is 'Source details - Name: Ids' with value 'N/A'. H0104 is 'Streamer details - Name: Ids' with value 'N/A'. H0105 is 'Other details - Description: Ids' with value 'N/A'. Each 'N/A' field has five small input boxes. A 'Convert' button is at the bottom right.

Location of bytes for coordinates of the ship, source, receiver, etc. is user-defined.

- 
SEG Y filtration
 Creates a new *seg-y* file with the specified value constraints based on the selected file.



Restrictions can be as follows: Equal, Greater than, Less, Not Equal.

According to the selected scheme, "Type" and "Bytes" are set automatically. You can change them if necessary. The values are indicated manually or using a counter.

It is imperative to check the "Enabled" box, otherwise the set value limit will not be taken into account.

Control elements:

 Add row

 Remove selected row(s).

 Cancel new *seg-y* file creation.

Trace headers format

Drop-down menu with a reference containing the common values of the *X*, *Y*, *INLINE*, *XLINE* attributes for *seg-y* files.

Byte order

Drop-down list with values that affect the reading order of byte values:

- *Big endian* - forward byte reading order: from most-significant to least-significant
- *Little endian* - reverse byte reading order: from least-significant to most-significant
- *Pair swapping* - bytes are swapped in pairs.

Encoding of *EBCDIC* header

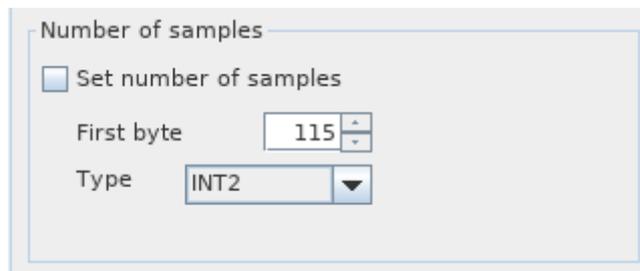
Drop-down menu for choosing the encoding for the EBCDIC header. The available options are *Ascii* and *Cp1047*.

Encoding of Tape Label header

Drop-down menu for choosing the encoding. It is responsible for the encoding of the Tape Label tab. The available options are *Ascii* and *Cp1047*.

“Number of samples” block

It is used for documents with variable trace length - *seg-y rev1*. When the value “Set number of samples” is selected, the input of the First byte (manually or using a counter) and the drop-down menu “Type” become available.



Number of samples

Set number of samples

First byte

Type

Coordinates

Preprocessing

When you switch to the Coordinates tab, processing of the material begins immediately. For some types of documents, preprocessing and custom selection of display settings are implied.

UKOOA

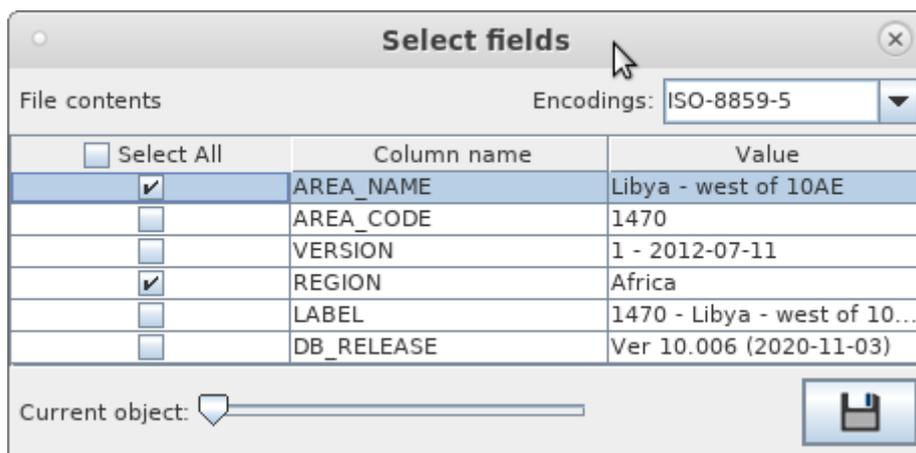
For *ukooa/sp*s files there are no peculiar features of preprocessing.

SHAPE

To process information, in addition to the *shape*-file, which contains survey geometry, it is necessary to have accompanying files in the same directory:

1. *dbf* file - contains all the attribute information that was specified in the headers of *seg-y* files;
2. *prj* file - contains information about the projection in *WKT* format;
3. *gtf* file - contains information about the datum shift in *WKT* format.

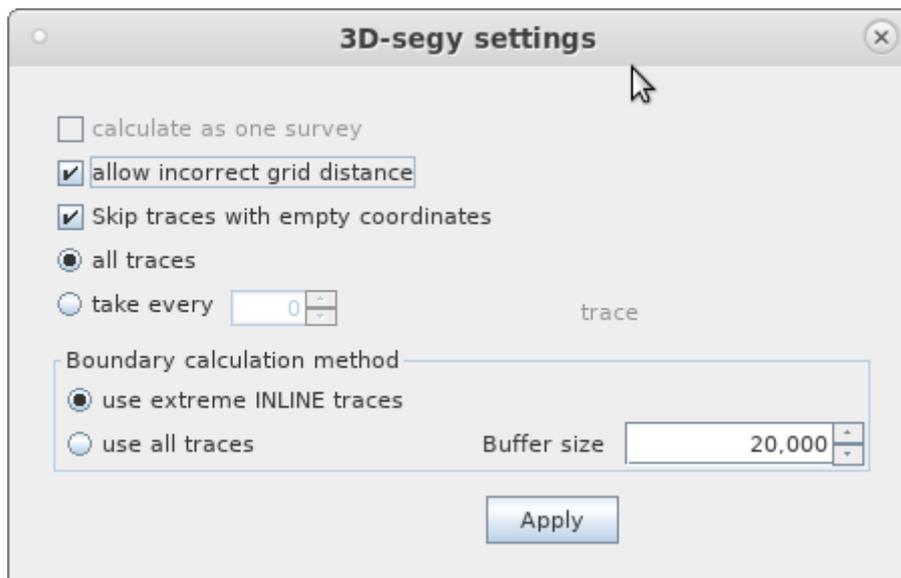
When switching to the "Coordinates" tab, a window appears for selecting fields to display:



In this window you can change the encoding of data reading, use the "Current object" slider to view the data for different objects and select the fields to display.

SEGY

For *seg-y* documents of polygon type, when you switch to the "Coordinates" tab a window for setting reading for *3D-segy* will appear:



- **Calculate as one survey**
 This option is only available when processing several *3d seg-y* files. It allows you to combine disparate data related to one area into one object and work with this entire object at each of the subsequent stages.
- **Allow incorrect grid distance**
 It is assumed that the distance between the *inline/xline* grid nodes must fall within the specified spacing. If this item is not selected and the distance is outside the interval, a corresponding error will be issued;
- **Skip traces with empty coordinates**
 Skips traces with zero coordinates.
- **All traces or Take every *n* trace**
 The application allows you to either process all traces, or sequentially take every *n* trace

This can be useful if no stacking has been performed in the input material, as well as for faster file processing at the expense of the calculation accuracy.

“Boundary calculation method” block

- **Use extreme INLINE traces or use all traces**
 There are two modes to choose from. If you use the "Use extreme *inline*-traces" mode (default), only the first and the last coordinate for each *inline* will be added to the resulting polygon.

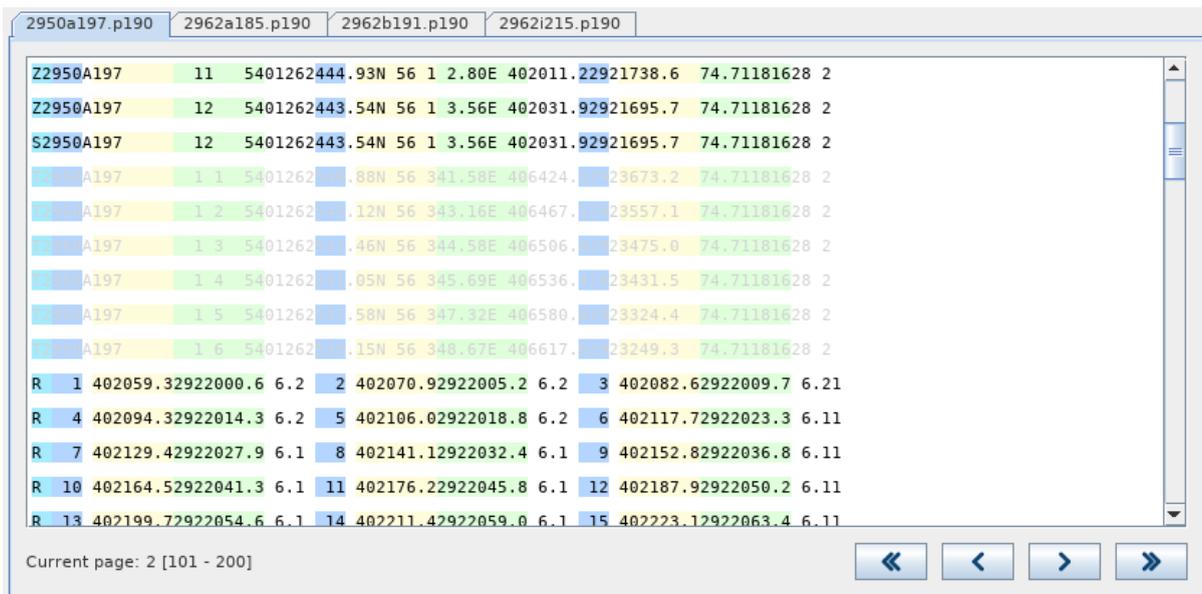
In the case of using the "All traces" mode, the resulting polygon will be built based on all the extracted coordinates. Processing all traces takes significantly longer, but this is the only way to build a polygon without the specified *inline* and *xline* values.

- **Buffer size**

Dedicated resource for processing data using the "All traces" boundary calculation method. The larger the value, the faster is data processing and the greater the load on the database.

Data window

The data window shows data for each of the selected files. At the top of the window there is a possibility to switch between documents. The data of one page is scrolled by the slider.



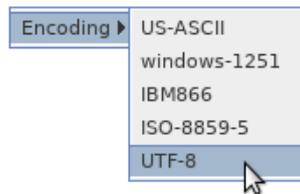
Switch buttons

The data window displays the first hundred lines of the file - they are the first page in this window - and provides access to the rest with the help of the following buttons:

-  First page
-  Previous page
-  Next page
-  Last page

Functionality

In the data window it is possible to switch the encoding for the displayed data. To do this, just open the context menu anywhere in the data window:



For files of *ukooa/sps* format there is an opportunity to choose the display of record IDs:

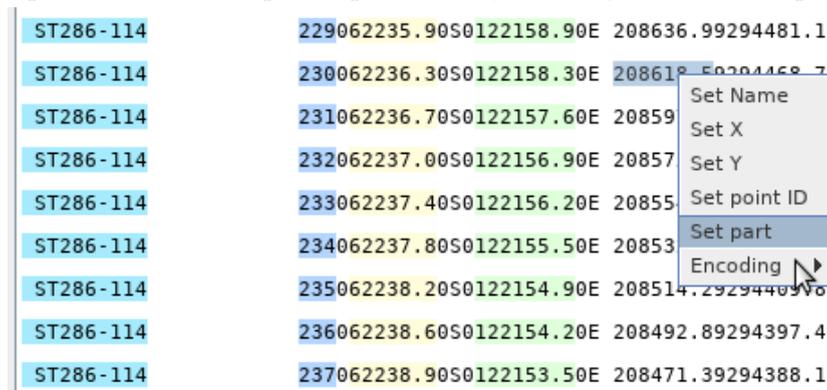


If you uncheck record identifiers, data with such identifiers will not be taken into account, and in the data window it will be shown in a pale gray color as unavailable (see the figure at the beginning of the “Data window” section).

Any data positions are marked only line by line!

In order to mark the desired coordinate positions directly in the data window, you need to:

1. Select the desired segment with the mouse, right in the Data window
2. Right-click
3. Assign a position value to a specific parameter by selecting it from the drop-down list



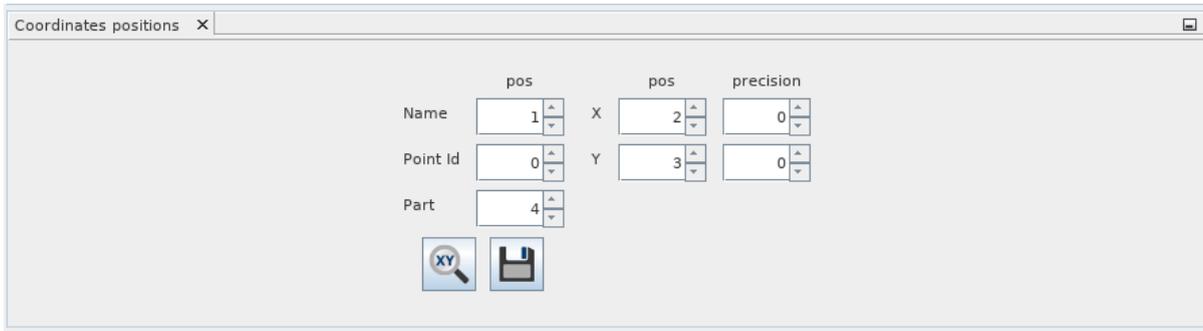
Colours related to marking:



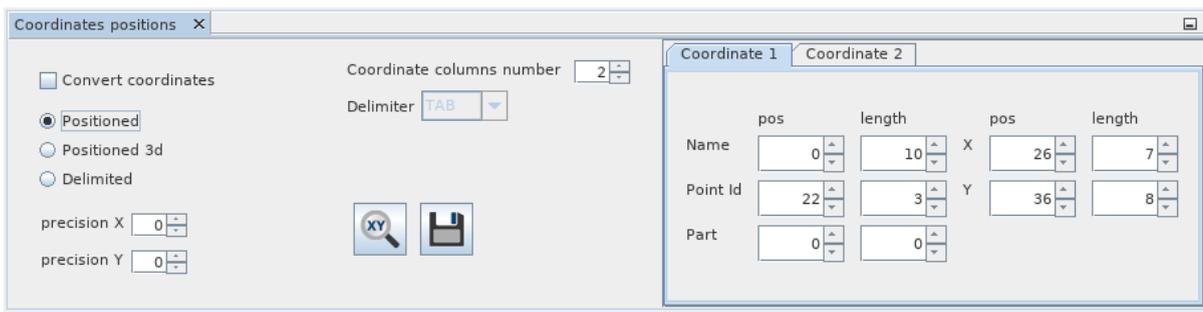
Coordinates positions

This tab allows you to specify or edit the marking of coordinate positions for loaded documents. For files of any type, you can manually set all coordinate positions for parameters.

For documents of *shape* and *seg-y* format predefined coordinate positions are used:



For text files (*ukooa*, *sps*, *p190* etc.) coordinate positions must be defined manually.



There are two ways of interacting with data:

- To change, manually or using a counter, the values of positions in the row in the tab “Coordinates positions” for each of the parameters
- Mark the data manually directly in the Data window (see the "Data window" section).

In case of several coordinates it is necessary to switch to the tab with the coordinate being marked and continue marking only after that.

Regardless of the method of marking the parameters, when one value is superimposed on another, the overlap area is highlighted in red for clarity.

Functionality

Let's take a closer look at the possibilities of the Coordinates positions tab in the row:

-
- **Positioned** - allows you to mark positions and their length for the following parameters: *Name, Point ID, Part, X* and *Y*.
 - **Positioned 3d** - is similar to **Positioned** and allows you to mark positions and their length for the following parameters: *Name, Inline, Xline, X* and *Y*.
 - **Delimited** with *TAB, SPACE* or “,” - allows you to mark positions of the parameters *Name, Point ID, Part, X* and *Y*, based on the selected delimiter.

For coordinates, you can additionally select **precision**. It is responsible for scaling the extracted value - shift of the decimal point in the range from -3 to 3.

Convert coordinates - transforms the extracted values in accordance with the specified projection.

Control elements



- this button allows you to open a document with customized coordinate positions and apply the data. Loading is possible only from a specialized file of the *.mapping* format.



- this button allows you to save the selected coordinate positions to a special document. They are saved to a specialized file of the *.mapping* format.

Control panel



- **Save as.** Allows you to save all or selected objects from the object tree as:
 -  *shape* file - saves the survey geometry to a *shape* file, the main attributes go to a *dbf* file
 -  *csv* file
 -  *csv* file with parameters
 -  *sdo* file - *Spatial Data Object* file with data of geometry type - internal *PetroVision* format used to load geometry

-  **Preview 2D map**
 Switching to an independent Map window with visual interpretation of all or selected objects from the Objects tab (for more details on the functionality, see the "Visual quality control" section)

-  **Refresh**
 Processes the file/files again. All previous settings are reset. If the document type implies user customization at the preprocessing stage, it will be done again.

-  **Convert data**
 Transfers data about objects from the processed file/files to the Objects tab, taking into account the settings of coordinates positions set by the user.

 If there are already previously processed objects on the Objects tab, this button will refresh the Objects tab and add only data about the currently processed objects.

-  **Add data to Objects**
 Adds objects from the processed file/files to existing ones in the Objects tab.

Projection

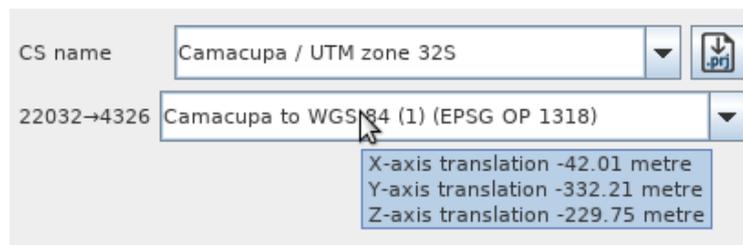
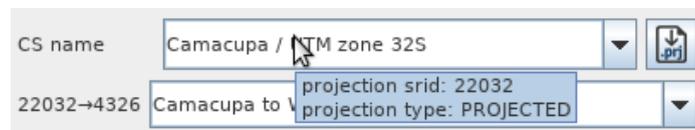
To go to the map, you must select a coordinate system and datum.

Any *WGS* projection is geographic coordinates. The list of coordinate systems depends on the base to which we connected when starting the program.



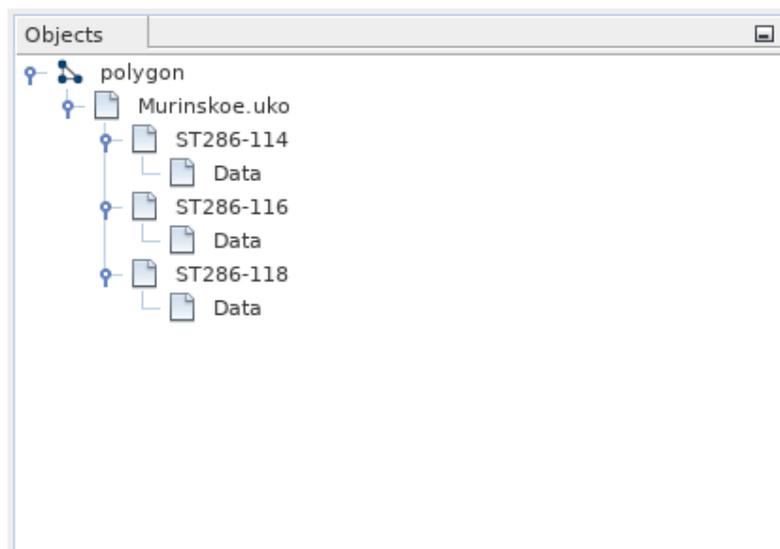
By clicking on this button, it is possible to import a coordinate system from a *.prj* file and datum shift from a *.gjf* file.

When hovering over the list of coordinate systems and datum shifts, additional information about them appears. This information is available even if there is only one default datum for the coordinate system.



Objects

This tab contains an object tree with the following structure:

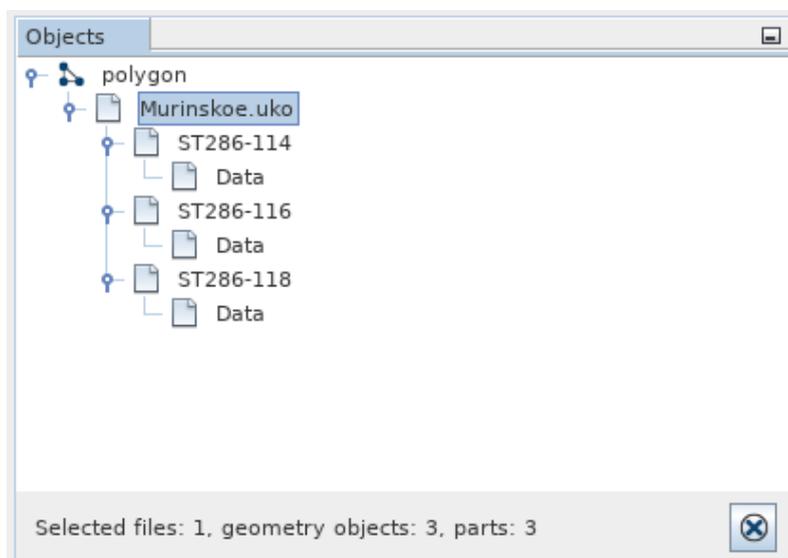


Structure description

- Geometry type.
 - Name of the document from which data for processing was taken.
 - Object name. In the example there are several objects.
 - Data - coordinates.

The last level can be further divided into Parts, which in turn will contain coordinates.

When structural objects are selected, an information line about the selected data appear at the bottom of the tab. If there are selected elements on the Objects tab, then all further operations with the data will only be performed on them. If there are no selected elements, all objects will be processed.

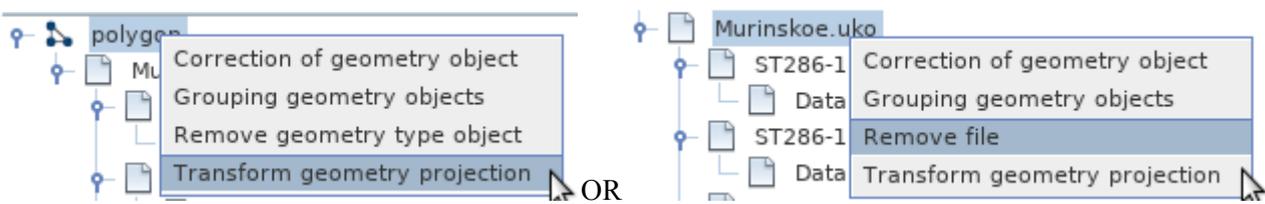


Clicking the  button will remove all selection.

Object tree context menu

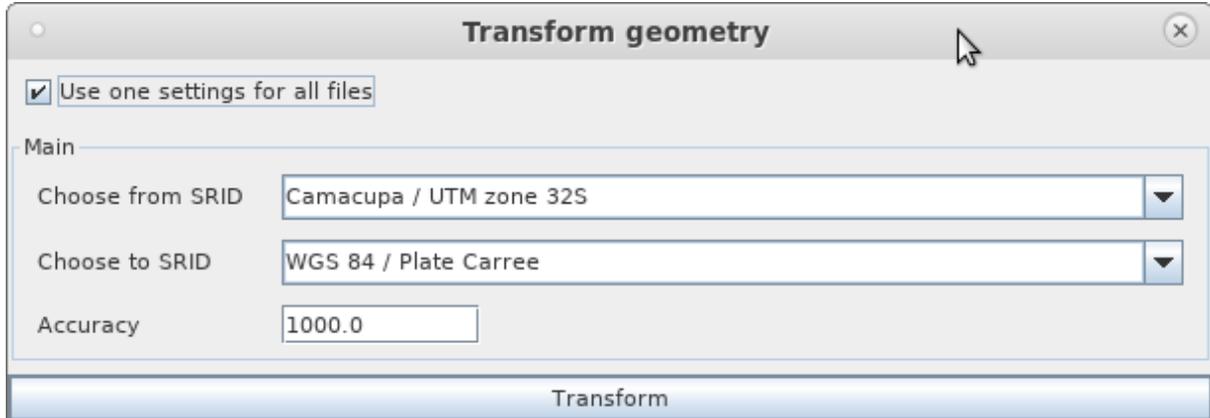
By clicking the right mouse button, a menu with a list of options appears. The set of options may differ depending on the level of the object tree.

For the first and second levels of the object tree (geometry type and files), the functionality is identical. Only the names differ:



- **Correct geometry object**
Removes incorrect coordinates and allows you to keep the closed contour of an object with the Polygon geometry type.

The option goes through all nested levels of the selected levels of the object tree.
- **Group geometry objects**
Groups data by names of objects within one file for all nested levels of the selected levels of the object tree
- **Remove geometry type object/Remove file**
Removes the “geometry type” object/file, including all nested levels.
- **Transform geometry projection**
Clicking this will open the projection transformation window:

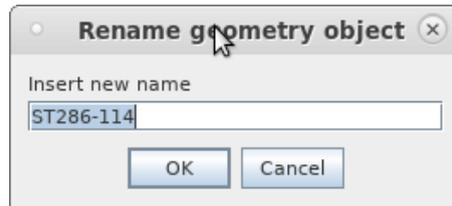
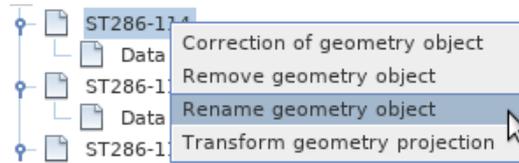


It includes two drop-down lists:

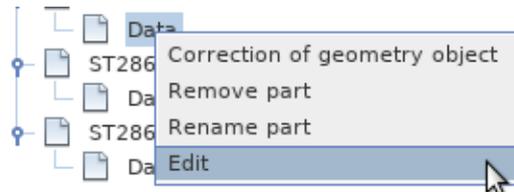
- Source *SRID* - the coordinate system defined for the data
- Destination *SRID* - the coordinate system to which the data will be converted

It also provides the ability to specify the error of fitting into the coordinate system and clarify whether it is necessary to use the same settings for all files.

For the third level (objects) the **Rename geometry object** option is added. The rest of the available options are described above.



For the fourth level (data/parts) it is also possible to change the name of the part. And there has been added a new option - **Edit**. The rest of the available options are described above.



This option refers to coordinates and opens the selected part in the coordinate editor. This action is similar to double-clicking the left mouse button on the name of a part.

Coordinate editor

Allows you to view and edit the coordinates of the part selected on the "Objects" tab. The tab is represented by a data table:

ID	X	Y	Status
211	62228.7	122211.5	✓
212	62229.1	122210.7	✓
213	62229.5	122210.0	✓
214	62229.9	122209.3	✓
215	62230.3	122208.6	✓
216	62230.7	122207.9	✓
217	62231.1	122207.2	✓
218	62231.5	122206.5	✓
219	62231.9	122205.8	✓
220	62232.3	122205.1	✓

For each coordinate, its abscissa, ordinate and status are indicated, allowing you to track invalid data. Identifiers can also be specified.

Control elements

The Coordinate editor tab allows you to view a list of coordinates by one hundred lines. If there are more data, access to the rest of it is possible using the following buttons:

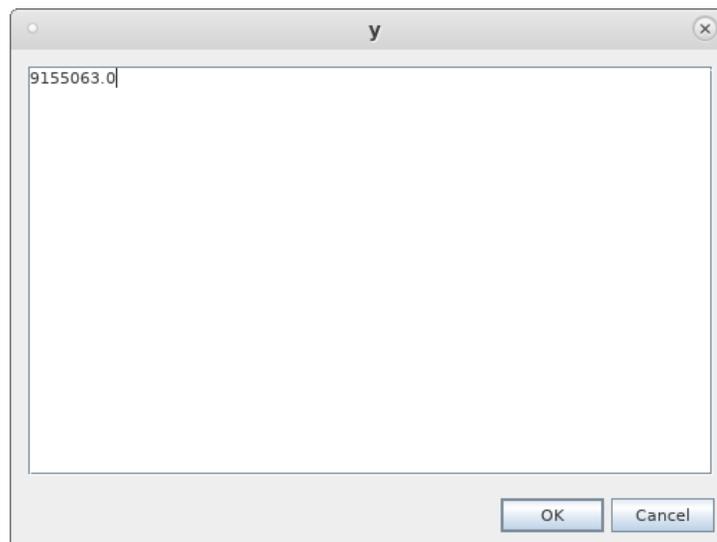
-  First page
-  Previous page
-  Next page
-  Last page

It is also possible to filter the display of coordinates by status:

- Data are valid
- Data are not standardized (for example, the point identifier is missing or contains a non-numeric expression)
- Invalid coordinate found

When you click on these buttons, only the coordinates with the corresponding status will be shown in the table. By default, the program shows all coordinates, i.e. all buttons are pressed.

Next to each cell of values (except for the “Status” column) there is an edit button [...]. When you click on it, the value editing window will open:



Functionality

A right-click will open a context menu. Its content depends on the cell in which it was called.

201	...	398860.8	...	2920034.1
202				2920029.5
203				
204	...	398807.0	...	
205	...	398789.9	...	
206	...	398773.0	...	
207	...	398756.0	...	
208	...	398738.9	...	
209	...	398721.8	...	

Identifier initialization

Remove coordinate

Show only rows where ▶

- ID == 201
- ID <> 201
- ID > 201
- ID < 201
- ID >= 201
- ID <= 201
- No Filter

- **Identifier initialization**

Sequentially fills in the *ID* values, starting from the row in which the list was called.

The count starts at zero. If any value is already present in the line, the count will start from it.

Here's what you get if you fill in the identifiers from the line with *ID* = 139101:

ID	X	Y	Status
138549	101061241.9	114404.1	✓
138639	105061240.6	114407.0	✓
138756	110061239.2	114410.8	✓
138872	115061237.7	114414.6	✓
138987	120061236.1	114418.3	✓
139101	125061234.5	114422.1	✓
139218	130061233.1	114425.9	✓
139335	135061231.6	114429.7	✓
139454	140061230.3	114433.6	✓
139571	145061228.7	114437.4	✓

ID	X	Y	Status
138549	101061241.9	114404.1	✓
138639	105061240.6	114407.0	✓
138756	110061239.2	114410.8	✓
138872	115061237.7	114414.6	✓
138987	120061236.1	114418.3	✓
139101	125061234.5	114422.1	✓
139102	130061233.1	114425.9	✓
139103	135061231.6	114429.7	✓
139104	140061230.3	114433.6	✓
139105	145061228.7	114437.4	✓

- **Remove coordinate**
Removes the selected coordinates.
- **Show only rows where**

79	402921.3	2922325.3	✓
82	402956.5	2922338.5	✓
85	402991.7		✓
86	403026.8		✓
87	403061.9		✓
88	403097.1		✓
89	403132.2		✓
90	403167.3		✓

Condition
Y == 2922325.3
Y <> 2922325.3
Y > 2922325.3
Y < 2922325.3
Y >= 2922325.3
Y <= 2922325.3
No Filter

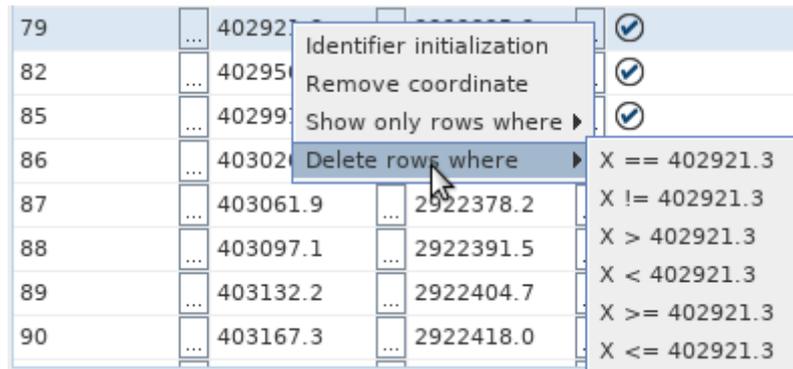
Depending on the cell in which the list is called, the function takes a value and offers to show rows that satisfy the following conditions:

- “==” - only specified value;
- “<>” - only NOT specified value;
- “>” - strictly greater than the specified value;
- “<” - strictly less than the specified value;

- “>=” - greater than or equal to the specified value;
- “<=” - less than or equal to the specified value;
- “No Filter” - rows with no filter.

- **Delete rows where**

Depending on the cell in which the list is called, the function takes a value and offers to delete rows that meet the conditions.



This function is only available for coordinate columns.

Loading data

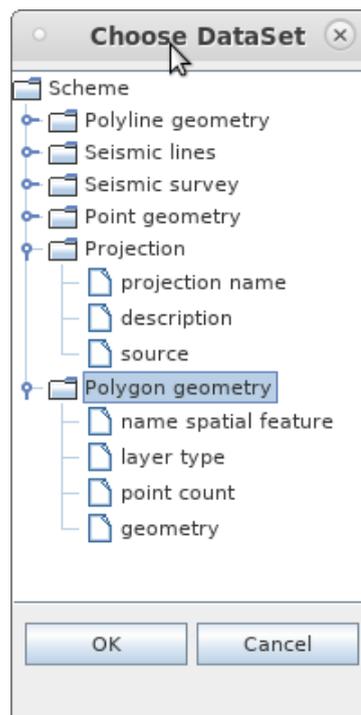
Working with this tab becomes possible only if the mapping file is configured.

The right side shows the location of the scheme and the name of the dataset from the scheme with which the application will work.



Control panel

- 
Change default scheme
 Allows you to find and open the desired scheme with which the application will work. And then select a specific dataset.



- 
Fill data by scheme
 Fills in the data table for the selected dataset from the scheme.

- 

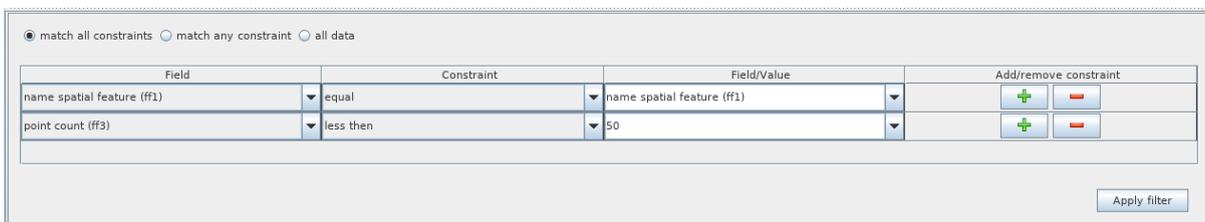
Check data quality
Checks the quality of all loaded data. Verified data are marked with special icons in the "Status" column
- 

Load data
Loads/updates/deletes data from a table to a database. The operation (load/update/delete) is determined based on the status of the row.
- 

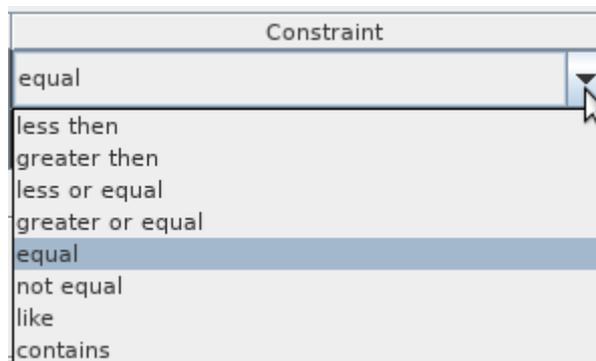
Transform data
Allows you to view the list of available transformations for datasets, as well as apply them.
- 

Find duplicates
Starts searching for duplicates in the table. Found duplicates are deleted. Before that, the program offers to save them to a file.
- 

Data filtering



Allows you to configure data filtering. The list of conditions includes the following:



-  **Load selected data**
Sends only the selected data to the database and processes each row of the input table according to the mark associated with each row, loading, updating or deleting a row.

-  **Save selected data to disk**
User-selected rows are saved to a specified file. Supported formats are *CSV*, *IN*, *DBF*, *DB*. Next, select the encoding for the file, which will determine the working encoding for the input files, and click "OK".

-  **Remove selected rows**
Removes selected rows from the table.

-  **Mark the selected rows by the special "New row" marker**
These rows will be loaded on the next processing of the input data by the loader.

-  **Mark the selected rows by the special "Waiting for update" marker**
These rows will be updated the next time the input is processed by the loader.

-  **Mark the selected rows by the special "Delete" marker**
These rows will be deleted the next time the input is processed by the loader.

Data display

After choosing the desired scheme and filling in the data according to this scheme, we can see the following table (for example):

Status	object na...	layer type...	point coun...	geometry (ff4)
	235		804	22032,-16132,4220,1318,4326LINE2D1 2 1404809.02923003.5404791....
	237		804	22032,-16132,4220,1318,4326LINE2D1 2 1403732.62922301.7403714....
	238		804	22032,-16132,4220,1318,4326LINE2D1 2 1404844.22923016.0404826....
	240		804	22032,-16132,4220,1318,4326LINE2D1 2 1403767.92922314.3403750....
	241		804	22032,-16132,4220,1318,4326LINE2D1 2 1404879.52923028.6404861....
	243		804	22032,-16132,4220,1318,4326LINE2D1 2 1403803.32922326.9403785....
	244		804	22032,-16132,4220,1318,4326LINE2D1 2 1404914.82923041.2404896....
	246		804	22032,-16132,4220,1318,4326LINE2D1 2 1403838.72922339.6403820....
	247		804	22032,-16132,4220,1318,4326LINE2D1 2 1404950.02923053.7404932....
	249		804	22032,-16132,4220,1318,4326LINE2D1 2 1403874.02922352.2403856....
	250		804	22032,-16132,4220,1318,4326LINE2D1 2 1404985.22923066.3404967....
	252		804	22032,-16132,4220,1318,4326LINE2D1 2 1403909.32922365.0403891....
	253		804	22032,-16132,4220,1318,4326LINE2D1 2 1405020.52923078.8405002....
	255		804	22032,-16132,4220,1318,4326LINE2D1 2 1403944.62922377.7403926....
	256		804	22032,-16132,4220,1318,4326LINE2D1 2 1405055.82923091.4405037....
	258		804	22032,-16132,4220,1318,4326LINE2D1 2 1403979.92922390.5403961....
	259		804	22032,-16132,4220,1318,4326LINE2D1 2 1405091.02923104.0405073....
	261		804	22032,-16132,4220,1318,4326LINE2D1 2 1404015.12922403.4403997....
	262		804	22032,-16132,4220,1318,4326LINE2D1 2 1405126.32923116.6405108....
	264		804	22032,-16132,4220,1318,4326LINE2D1 2 1404050.42922416.3404032....
	265		804	22032,-16132,4220,1318,4326LINE2D1 2 1405161.52923129.2405143....
	267		804	22032,-16132,4220,1318,4326LINE2D1 2 1404085.62922429.2404067....
	268		804	22032,-16132,4220,1318,4326LINE2D1 2 1405196.72923141.9405178....
	270		804	22032,-16132,4220,1318,4326LINE2D1 2 1404120.82922442.1404102....
	271		804	22032,-16132,4220,1318,4326LINE2D1 2 1405231.82923154.7405214....
	273		804	22032,-16132,4220,1318,4326LINE2D1 2 1404156.12922455.0404138....
	274		804	22032,-16132,4220,1318,4326LINE2D1 2 1405266.92923167.5405249....

In the upper right corner above the table it is indicated which row the focus is on, how many rows are selected and the number of rows in the table

Quality control icons

The "Status" column after applying the following command displays the icons for quality control of the rows:

 – Check data quality.

Each row is assigned a status to determine if the content of the row matches the format of the fields. Only valid rows are allowed to be loaded into the database.

The row status is determined by the second icon - the quality control mark.

Detailed information about the cause of the error in the rows that did not pass the QC check can be obtained in the error window by double-clicking on the status icon.

Quality control icon designations:

-  **Valid row.** The row has been checked and meets the quality criteria;
-  **Invalid row.** The row has been checked but does not meet the quality criteria. Change the invalid data and try loading again;
-  **Row not checked.** The row has not been checked.

Each row in the table has a status. The first status icon defines the status of the row in the table. It appears and changes after some manipulations have been performed with the row.

General view of status icons

Possible statuses when loading data:

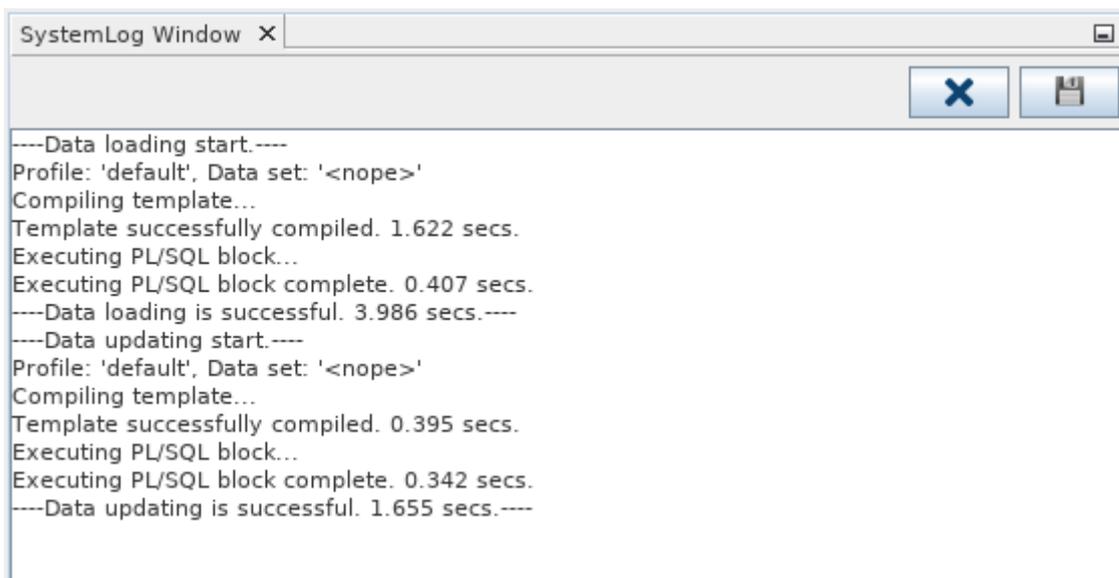
-  **Import error.** There occurred an error while importing a row. The row is skipped at loading. Rows cannot be loaded until the cause of the calculation failure has been resolved;
-  **Ready for loading.** The row will be loaded when loading starts;
-  **Row loading failed.** An attempt to load a row failed, resolve the cause of the failure;
-  **Row loaded.** The row has been loaded successfully;
-  **Row requires an update.** The row has been changed after loading successfully and needs to be updated;
-  **Row marked “Delete”.** When the loader starts, it will remove the selected rows;
-  **Row removed successfully.** The row has been removed successfully from the database;
-  **Row removal failed.** A failure has occurred; the row has not been deleted from the database;
-  **Data updated.** Means that there have been changes in some values when updating data;
-  **Duplicate rows.** When loading, the status means that such a row is already stored in the database. When updating rows, it means that no changes in the values have occurred.

Detailed information about the errors of rows with the statuses “Import error”, “Row loading failed”, “Update failed” and “Row removal failed” can be obtained in the error window that appears when you double-click the status icon.

System log window

In this tab you can get additional information about the operations performed by the loader:

1. Operation time;
2. Operation status (completed successfully/completed with an error);
3. Dataset and profile used for loading/updating/deleting data.



Control elements:



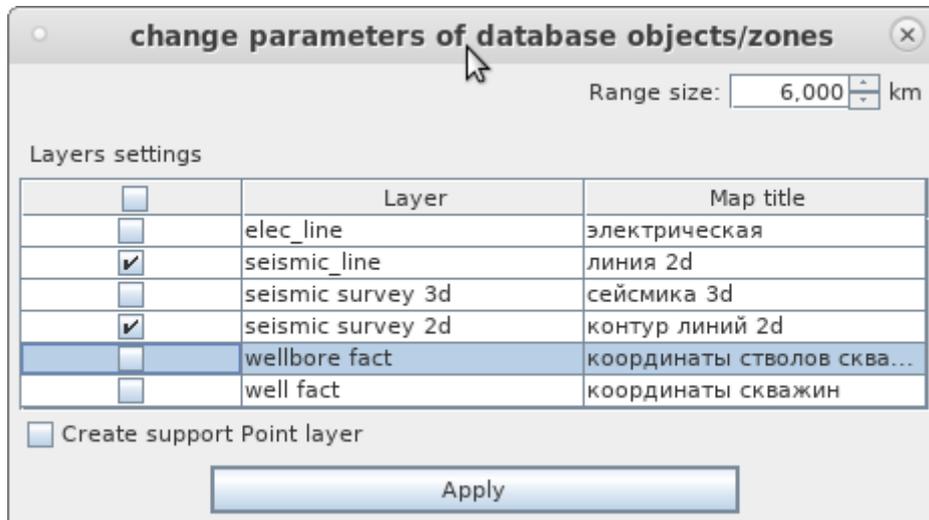
Clear system log. Clears the system log window.



Save system log to file. Allows you to save data from the system log window to a file.

Visual quality control

When going to the Map window, you will be able to select the following parameters:



Here you can change the range, falling into which objects of additional layers selected by the user will be displayed. The permissible maximum is 6 thousand km.

It is also possible to create an auxiliary point layer - if the data contains selected and/or specified object point *IDs*. When the map window is opened, this layer will be inactive, to view it you need to “enable” (see the “Layers” section).

Control panel



- 
Plain cursor (selected by default)

Allows you to reset any selection on the map

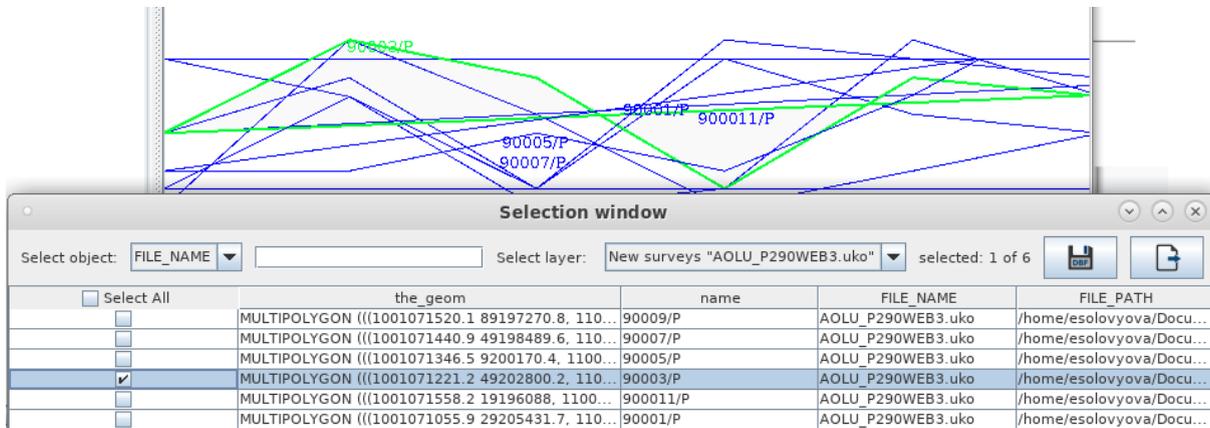
- 
Zoom in/define zoom area

Zooms in on the map locating the center of the image in the cursor position. It is also possible to select the area for zooming in, to which the focus will be moved.

-  **Zoom out (centering in cursor position)**
Zooms out on the map, locating the center of the image in the cursor position.
-  **Move view area**
Allows you to move the image using the *Drag & Drop* function.
-  **General view**
Zooms out/zooms in and defines the center of the image so that it becomes possible to view all layers of the map.
-  **Measure distance**
Measures the distance of the line that the user marks. The result is shown in m or km. Line color can be changed.
-  **Multiple selection**
Allows to select objects (their parts) as a separate layer - Wireframe *n* - for subsequent interaction with this layer as with an object. Highlight color can be changed.
-  **Identify features in selected layers**
Opens a window with the coordinates of the point specified by the user and information about the objects to which this point belongs.
-  **Change parameters of database objects/zones**
Allows you to open the map in another window, if necessary, you can specify other parameters before opening (see the first figure from the "Visual quality control" section).

- 
Working with a selection of objects

Opens an object selection window.



For each of the layers, a table with objects belonging to this layer is available. When you select objects, in the upper right corner you can see how many objects from the available number of objects are selected. Column search is also available here (it is case-sensitive).

When you select objects, they are highlighted on the map along with the name.

Control elements:



Create DBF file - saves the object table to a *.dbf* file.

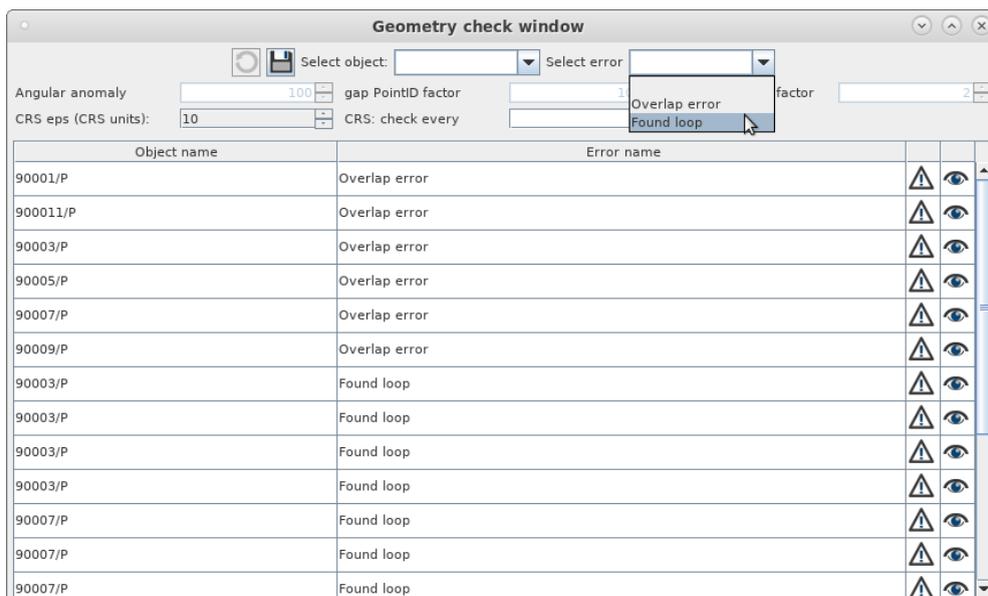


Move to "Objects" tab - moves the selected objects to the "Objects" tab with the appropriate geometry type

- 
Quality check

Geometry quality checks depend on the type of geometry of the objects being checked. The following checks correspond to different types of geometry:

- For polygonal lines:
 - Checking for points with the same coordinates
 - Checking for points with the same *ID*
 - Checking for breaks between points' *IDs*
 - Break in coordinates - check for a break between coordinates
 - Angle anomaly - checks if the degrees of the angles are valid. All angles less than the specified value in degrees will be considered invalid.
 - Loop found - self-intersection check
 - CRS* fitting error - when converting each specified coordinate to the *WGS84* coordinate system, the result fits the frame of the coordinate system without exceeding the specified error.
 - For polygons:
 - Loop found - self-intersection check
 - CRS* fitting error - when converting each specified coordinate to the *WGS84* coordinate system, the result fits the frame of the coordinate system without exceeding the specified error.
 - For points:
 - CRS* fitting error - when converting each specified coordinate to the *WGS84* coordinate system, the result fits the frame of the coordinate system without exceeding the specified error.



The screenshot shows the 'Geometry check window' interface. At the top, there are controls for 'Select object' and 'Select error'. Below these are input fields for 'Angular anomaly' (set to 100), 'gap PointID factor' (set to 1), 'CRS eps (CRS units):' (set to 10), and 'CRS: check every' (set to 2). A dropdown menu for 'Select error' is open, showing 'Overlap error' and 'Found loop'. The main part of the window is a table with the following data:

Object name	Error name		
90001/P	Overlap error	⚠	👁
900011/P	Overlap error	⚠	👁
90003/P	Overlap error	⚠	👁
90005/P	Overlap error	⚠	👁
90007/P	Overlap error	⚠	👁
90009/P	Overlap error	⚠	👁
90003/P	Found loop	⚠	👁
90003/P	Found loop	⚠	👁
90003/P	Found loop	⚠	👁
90003/P	Found loop	⚠	👁
90003/P	Found loop	⚠	👁
90007/P	Found loop	⚠	👁
90007/P	Found loop	⚠	👁
90007/P	Found loop	⚠	👁

The Geometry check table includes the Object name and Error name columns. It also includes:



Error description - a detailed description of the error. Available on clicking.



Zoom in on the object - the ability to focus the map on the object to which the error belongs.

Using the drop-down lists “Object” and “Error”, you can filter the table by specific objects and errors, respectively. The empty line means that all items in the dropdown list will be shown.

Available parameters:

- Angular anomaly
- CRS error
- Point ID break parameter
- CRS: check every n-th point
- Coordinate break parameter

This window also contains the following controls:



- Update table. Available after any change to one or more parameters.



- Save QC result to file. On clicking, a dialog box for saving to *xls/xlsx* or *ASCII* file will open. The set parameters and data from the table, including a detailed description of errors, will be written to the file.

-  **Draw area**

Allows you to point-by-point draw a new layer - a closed polygon - on the map.

Click on  to finish drawing.

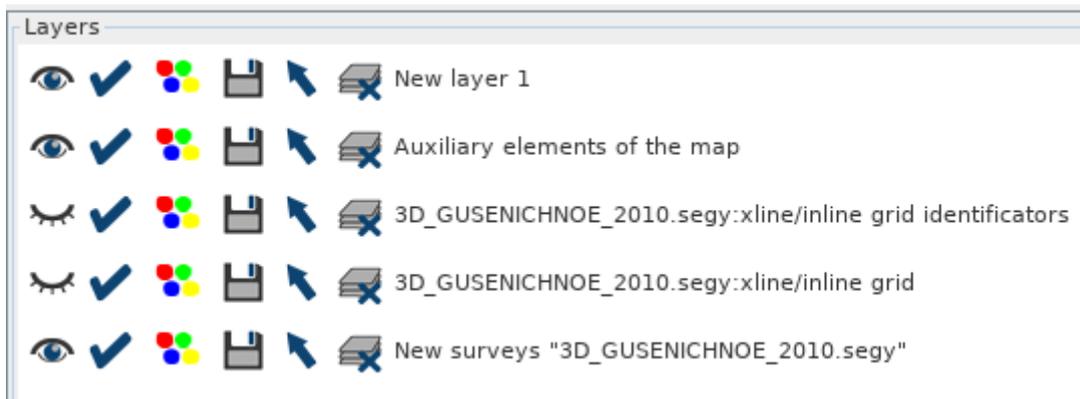
-  **Export map screenshot**

Allows you to save the map image. When exporting, you must specify any of the possible file types: *jpg*, *tiff*, *bmp*, *gif*, *png*, *jpeg*, *tif*, *pdf*.

- 
Take area for SEG-Y-file

Allows you to point by point highlight the area which will be saved as a new *seg-y* file. Only available for *seg-y* files. Click on  to finish drawing. After that, a window for creating a *seg-y* file will appear.

Layers



On the Layers tab, there is always a standard layer - Auxiliary elements of the map. You can delete it if you want.

Control elements:

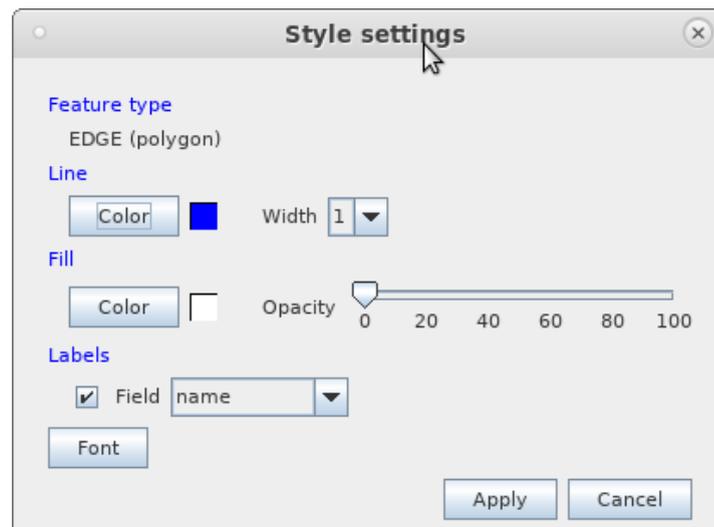
 /  **Toggle layer visibility.**

Allows to hide/show the layer on the map.

 /  **Select or deselect layer.**

The function is needed to select layers that will be taken into account when identifying objects (see the “Identify features in selected layers” section).

 **Set layer style.**



The type of objects belonging to the selected layer is indicated here. It is possible to customize the color and thickness of the lines. For polygonal objects, the fill color and its transparency can be adjusted. Also you can customize the label field and its font.

**Save layer.**

Allows you to save the layer to a file in *sdo* or *csv* format.

**Zoom layer.**

Shifts the focus of the map to a specific layer so that the entire layer is shown.

**Remove layer.**

Removes a certain layer.

Below the buttons “Toggle layer visibility” and “Select or deselect layer” are duplicated for the convenience of applying these options to all existing layers at once.

Information panel

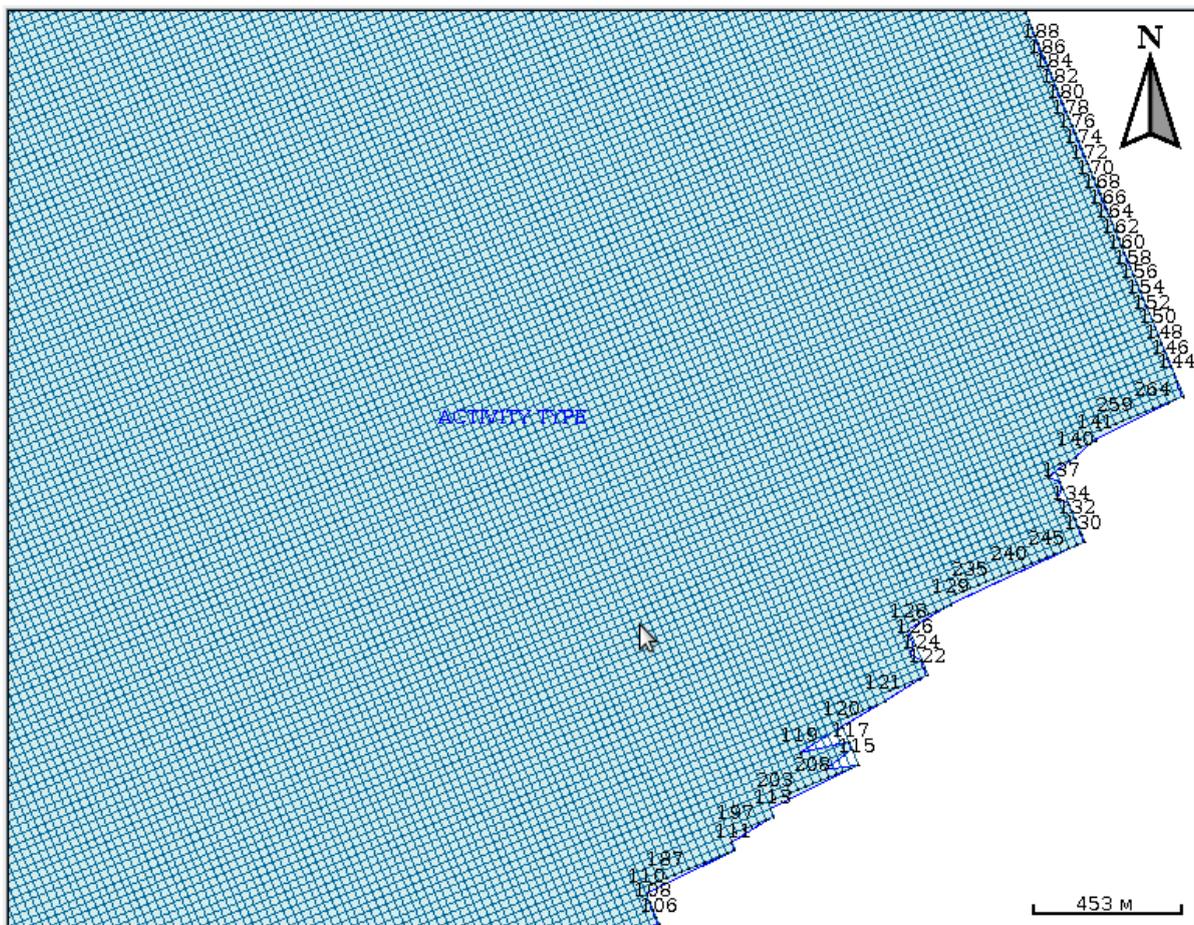
 275372.59, 6625636.12	CS projection : Camacupa / UTM zone 32S Datum Shift : Camacupa to WGS 84 (1) (EPSG OP 1318)
---	---

First goes a rendering indicator that is active while objects are being rendered on the map.

Next are the coordinates of the cursor on the map. If the cursor is not on the map, “No cursor” appears.

Following are the names of the coordinate system and datum shift, respectively.

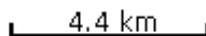
Layer rendering area



Object rendering window. It contains auxiliary elements of the map:



North arrow



Scale bar