

**IP\_Seismic Common**

**User Manual**

**IPLAB**

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# Menu

Menu File included:

**Open Project** – allow read project tree from saved project

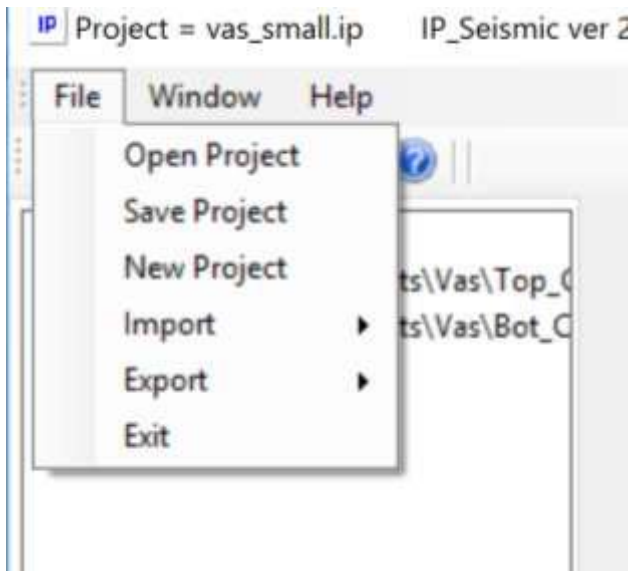
**Save Project** – allow save project tree like set of file: project tree file and project folder with set of files

**New Project** - allow create new project (No need to use if new start).

**Import** – allow define import data file for common formates: Excel files, CPS-3, SEGY, LAS,...

**Export** – allow export SEGY, surface, points sets

**Exit**



Window included:

**Map X,Y** – will open new map window in windows panel to visualization several data types: seismic cube slices, surface, surface attributes, points, inline (line position), xline (line position).

**CrossSection** – will open new cross plot window to show seismic inline or xline, also allow showing surfaces like footprint and well log projection. First selection will define Cross Section type – Inline or Xline.

**RGB Map** – allow to create RGB composite map with three surfaces or surface attributes (1-st red, 2-nd blue and 3-rd green). Also allow to create RGB composite

with three seismic cube slices - several (real or virtual) cubes with similar geometry, 1-st red, 2-nd blue and 3-rd green.

**RGB Section** - allow to create RGB composite cross section with three seismic inline or xline - several (real or virtual) cubes with similar geometry, 1-st red, 2-nd blue and 3-rd green.

**Well section** – allow to visualize well log in separate window

**Function** – allow visualize cross plot distribution for several points attributes

**Histogram** – allow visualize histogram distribution for several points attributes



**Graphics window scale and moving** (shifts on the screen) can be done by mouse.

Scale – by mouse wheel (up/down).

Window moving – by mouse left button push and move. After moving the window will be active.

Mouse Right button project **objects property view/edit**. Property tabs to view/edit are depended from object type.

Statistics

Visualization params
Description
Statistics
Operations

Name
0
Line color

Color table
RedBlue
Line Thickness
2

Color reverse
☒

Min color
-4355.00
Max color
-4210.63

Interpolat

4

4

4

4

4

4

4

4

4

4

5

5

5

5

5

5

5

5

6

6

6

0

1

2

3

4

5

6

7

8

9

0

1

2

3

4

5

6

7

8

9

0

1

2

Clear all

Delete
Export

Domain
Minimum
Maximum

Ok
Apply
Cancel

There are possible to edit min/max color values and color table for visualization. It is possible to clear color table and define several position with color and the interpolate.

Statistics

Visualization params Description Statistics Operations

Name  Line color

Color table  Line Thickness

Color reverse ☐

Min color  Max color

Interpolat

Clear all

0	8	16	24	32	40	48	56
1	9	17	25	33	41	49	57
2	10	18	26	34	42	50	58
3	11	19	27	35	43	51	59
4	12	20	28	36	44	52	60
5	13	21	29	37	45	53	61
6	14	22	30	38	46	54	62
7	15	23	31	39	47	55	63

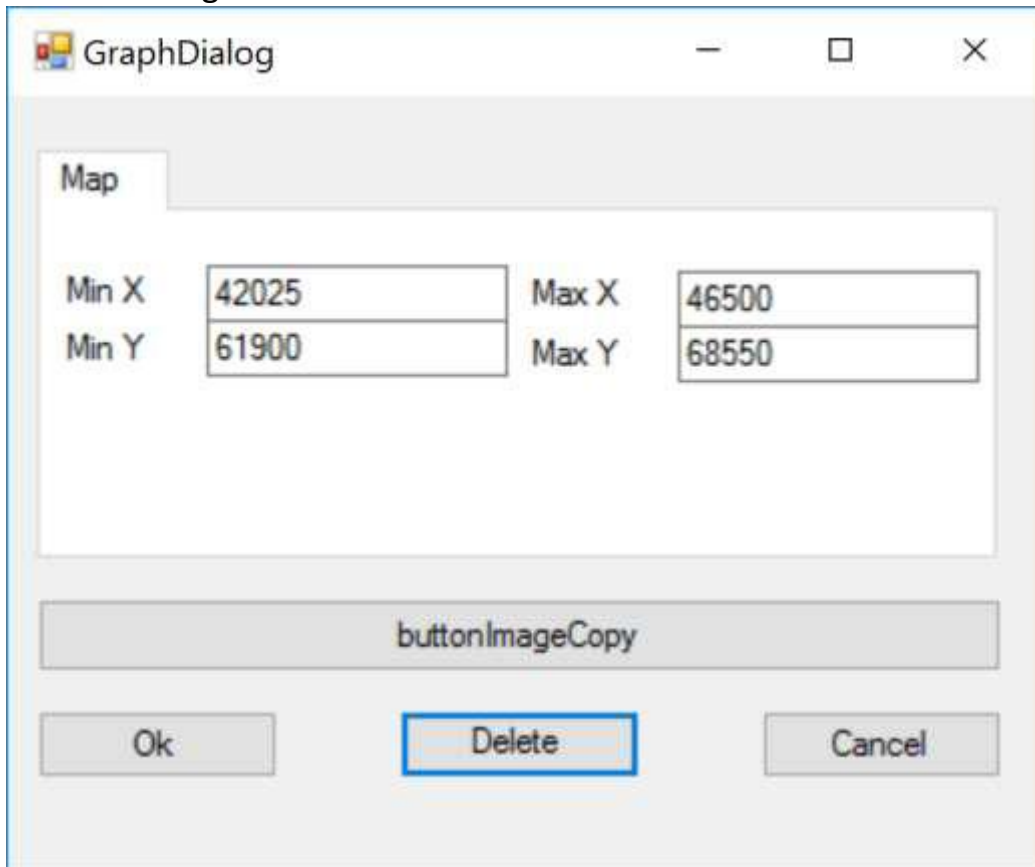
Domain Minimum Maximum

Ok Apply Cancel

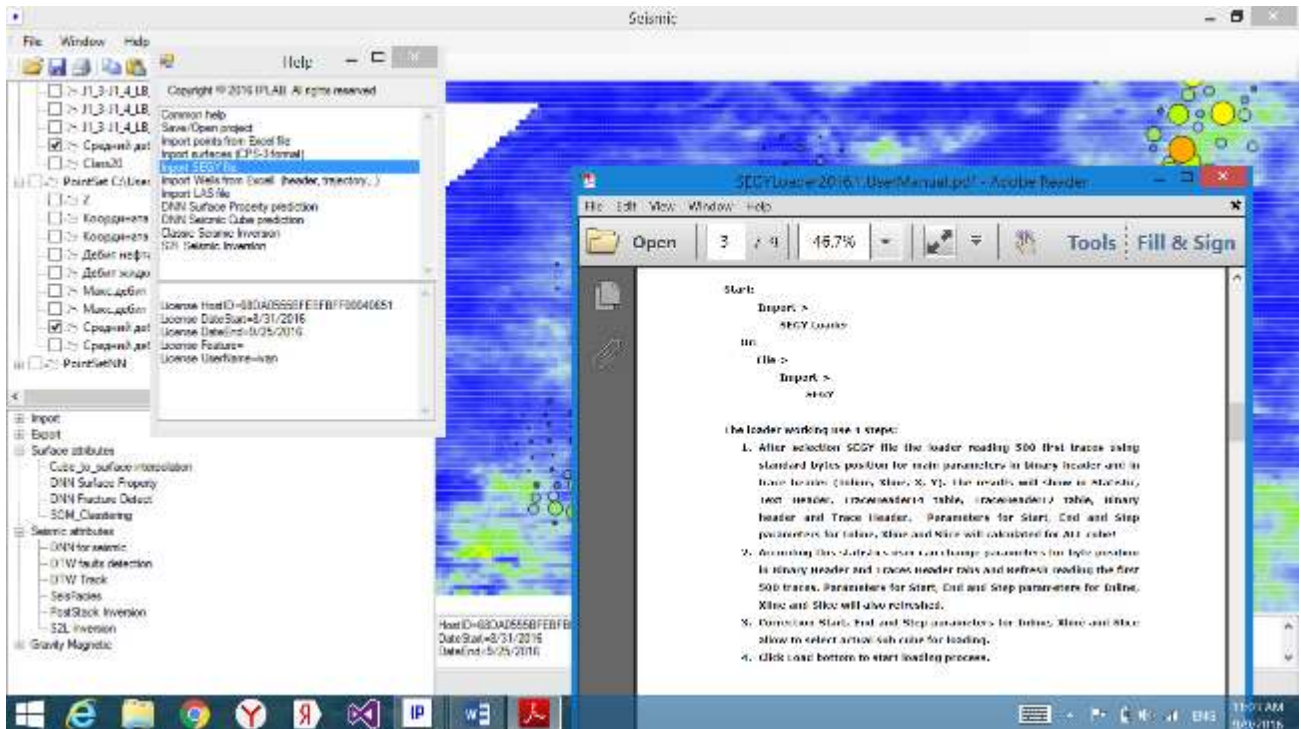
Also possible to use 2D color table (for 2D Kohonen neural network results) and define only several neuron with colors.

It is possible to edit line color and line thickness for graphics lines visualization.

If use mouse Right button for graphics window it is possible to delete the window or copy the image to clipboard. Also it is possible to zoom of map or cross section by manual change Min or Max coordinates.



Help menu included:  
**Help list and license information**

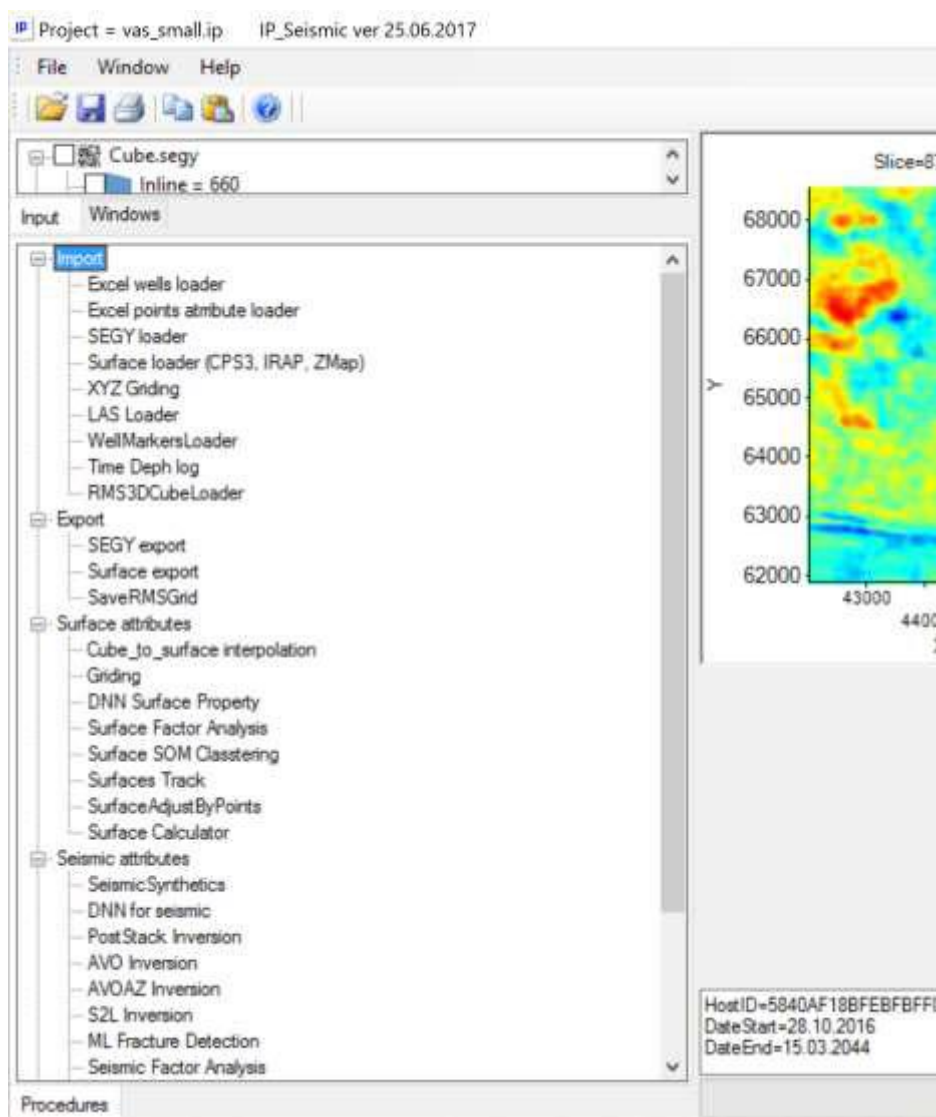


**IP\_Seis included several panels (sizable)**

**Project tree** – show all project elements created according import or created by procedures

**Procedures tree** – show all available procedures in several types:





## Imports

**Excel well loader** – allow load wells headers, trajectory and simple well logs from excel spreadsheets

**Excel points attribute loader** – allow load point attributes from excel spreadsheets

**SEGY loader** – allow load seismic data from SEGY files

**Surface and surface attribute loader** – allow load surfaces from CPS-3 formats

**LAS loader** – allow load well logs from LAS files

**XYZ gridding** – allow load xyz files with gridding.

**WellMarkers loader** - allow to load well markers in Petrel ASCII format (all wells have to be load before)

**TimeDepth log** - allow to load TD curve from ASCII file (all wells have to be load before)

# Exports

**SEGY export** – allow export seismic data to SEG-Y files

**Surface export** – allow export surfaces to CPS-3 formats

# Surface attributes

**Cube\_to\_Surface extrapolation** – allow extract seismic data to surface like additional attributes

**Gridding** – create surface from points dataset (all attributes also will be grided)

**DNN\_Surface Property** – allow predict points attributes to surface attribute using several surface attribute and based on Deep Neural network

**Surface Factor Analysis** – allow use several surface attributes inside moving windows to calculate orthogonal factors based on two techniques PCA or Encoder

**SOM Classification** – allow classify several surface attribute based on Kohonen Neural network - SOM algorithm. Allow to use 1D, 2D or 3D mapping.

**Surface calculator** – allow to use multi string calculations using c/c# constructions.

# Seismic attributes

**DNN\_Seismic** – allow predict points attributes or well logs to volume attribute using several seismic cubes attribute and based on Deep Neural network

**Poststack Inversion**– allow create virtual cubes based on classic poststack inversion and Color Inversion

**AVO Inversion**– allow create virtual cubes based on AVO seismic inversion using angle stacks and based on Aki-Richards equations.

**AVOAZ Inversion**– allow create virtual cubes based on AVOAZ seismic inversion using angle and azimuthal stacks and based on Ruger equations.

**S2L Inversion**– allow create virtual cubes based on well log prediction via several seismic volumes and based on hybrid (frequency domain convolution inversion and machine learning algorithm).

**ML Fracture Detection**– allow predict fracture and faults using seismic cube and based on machine learning algorithm

**Seis Facies**– allow classify seismic trace form in the layer based SOM algorithm

**Seismic calculator** – allow to use multi string calculations using c/c# constructions.

**Footprint removal**- allow to remove acquisition footprints from seismic cube.

## Gravity Magnetic

**Express ModelingInversion** – allow to do modeling for seismic cube density format and fast inversion from gravity/magnetic field to create density contrast cube without priory information.

**GravityMag ModelingInversion** – allow create multi layers model and do correction for layers position and density inside.

## Graphics examples

