

IP_Classification3D

Seismic cubes classification using Kohonen SOM

User Manual

IPLAB LLC

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Introduction

Classification result will be added to new virtual cubes with the first symbols of name **CI_1D** for 1D option, **CI_2D** for 2D option and **CI_3D** for 3D option.

If option 1D only one cube output.

If option 2D three output cubes

- 1-st output cube with $N_{\text{classes}} \times N_{\text{classes}}$ number of total classes according 2D Kohonen NN.

- 2-nd output cube with N_{classes} number of classes first index of 2D Kohonen NN for Red Color Mix.

- 3-rd output cube with N_{classes} number of classes second index of 2D Kohonen NN for Green Color Mix.

If option 3D four output cubes

- 1-st output cube with $N_{\text{classes}} \times N_{\text{classes}} \times N_{\text{classes}}$ number of total classes according 3D Kohonen NN.

- 2-nd output cube with N_{classes} number of classes first index of 3D Kohonen NN for Red Color Mix.

- 3-rd output cube with N_{classes} number of classes second index of 3D Kohonen NN for Green Color Mix.

- 4-th output cube with N_{classes} number of classes third index of 3D Kohonen NN for Blue Color Mix.

Start

Start: Surface Attributes->

Cubes classification

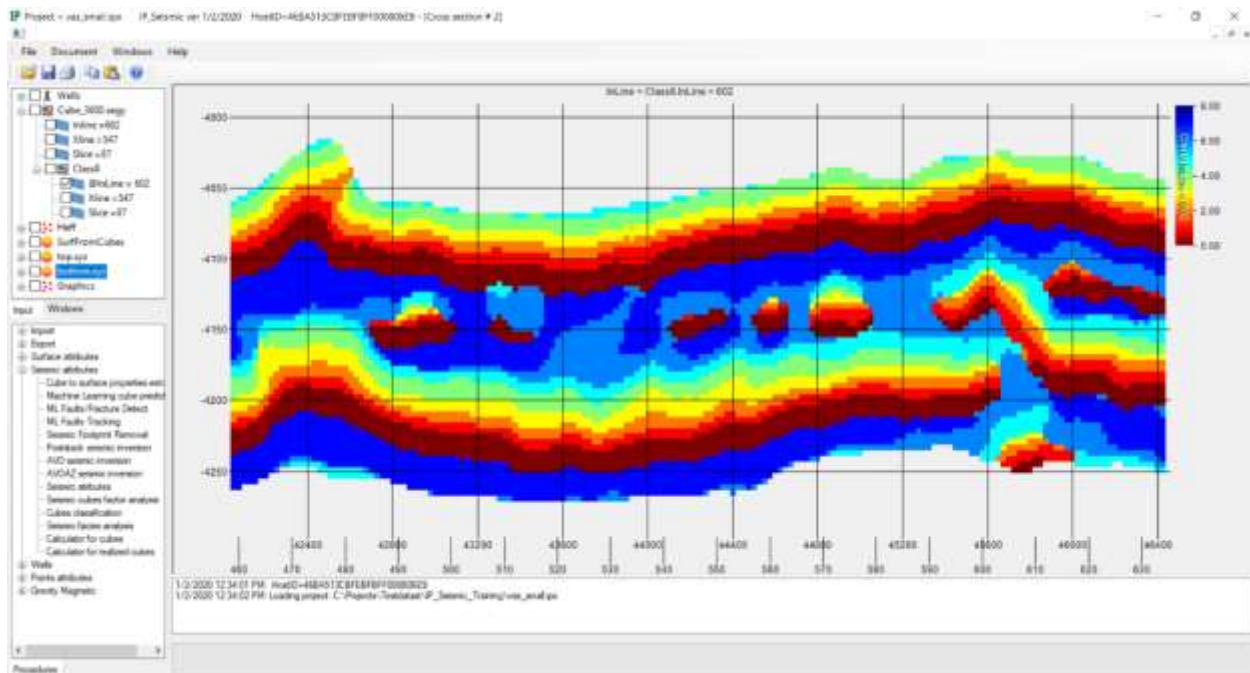


Figure 1: Project tree and programs tree to start **Cubes classification**

Input parameters

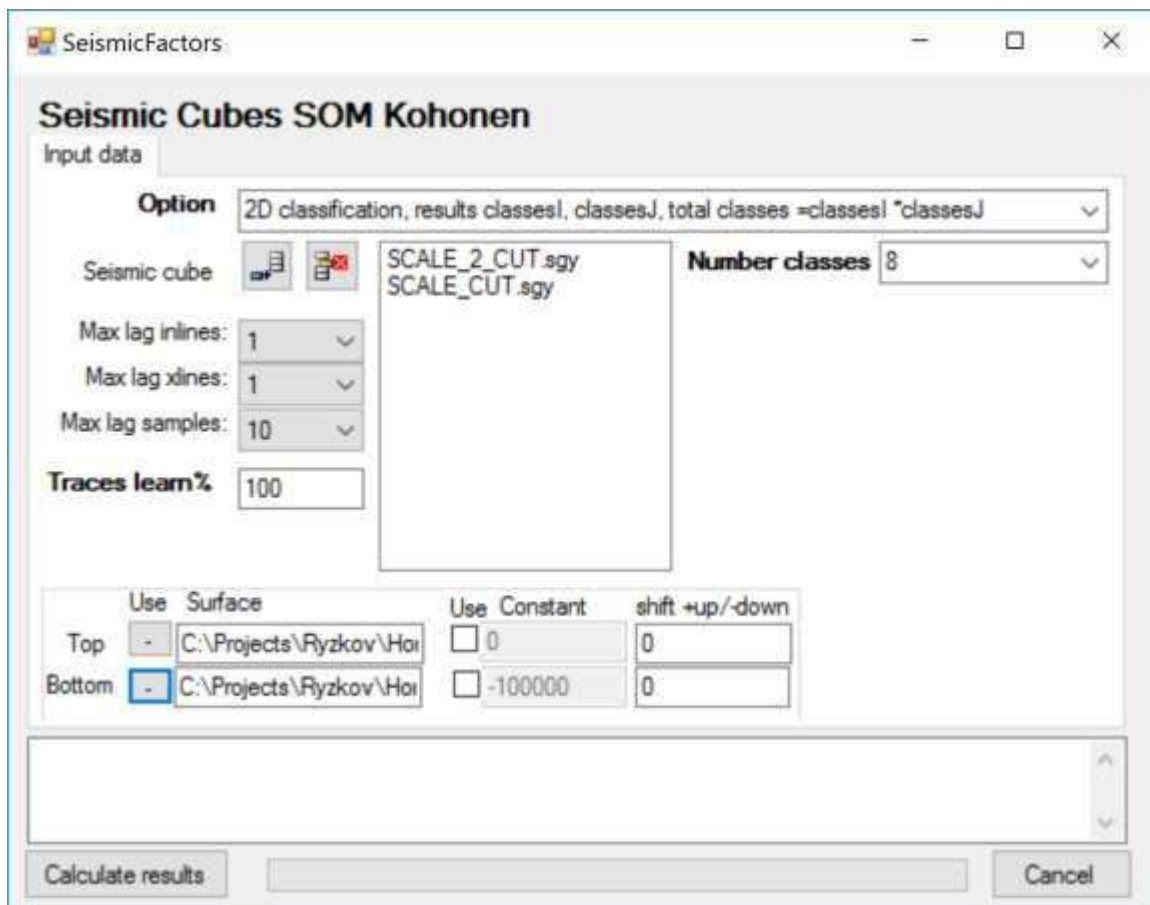


Figure 2: Input surface attributes data tab dialog view **Cubes classification**

Parameters have to be defined before calculation:

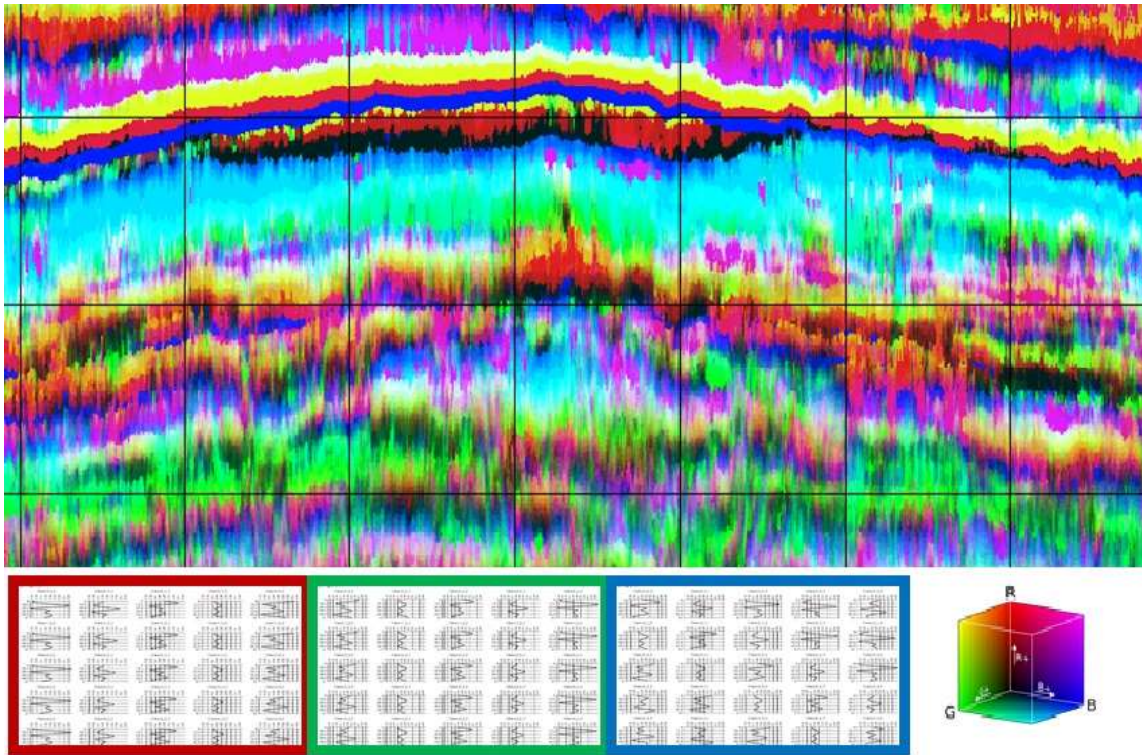
Option: 1D or 2D or 3D Kohonen mapping option. Number classes for 2D will be $N_{classes} * N_{classes}$ and for 3D will be three results attributes with $N_{classes}$, $N_{classes}$, $N_{classes}$ correspondently. Last option need to visualize with RGB map.

Cubes: allow select seismic cubes with similar geometry from the project tree.

Max lag inlines, Max lag xlines, Max lag samples: allow define moving window size around node during training stage and for calculation during calculation stage.

Number of classes: defined number classes ($N_{classes}$).

Traces for training: define % traces to randomly use for training.



Calculation can be limited by
Top surface or constant, both with shifts
Bottom surface or constant, both with shiftsResults

Figure 3: RGB section output example of the results cubes **Cubes classification**

Classification result will be added like additional virtual cubes with name **Class#**, where Number of classes. It can be visualized in Map window or in Cross Section windows.

For option with 2D Kohonen mapping need to use ClassesDialog color table with custom colors sets for every neuron.

For option with 3D Kohonen mapping need to use RGM map or RGB Section to mix by colors 3 classes.

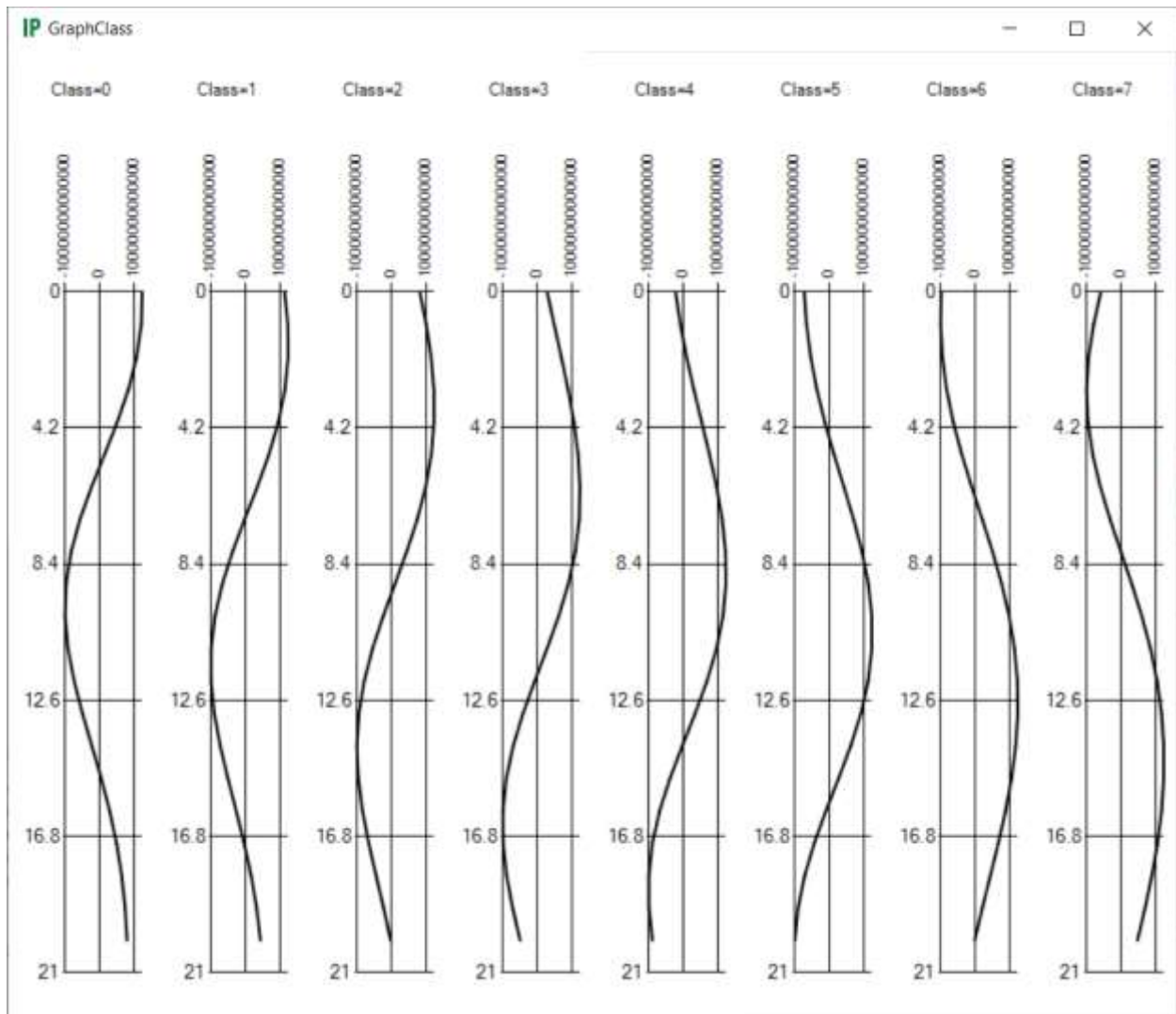


Figure 4: Class wavelet output example of the results **Cubes classification**