

**Cubes\_SOM\_Classtering**

**Seismic cubes classification using Kohonen SOM**

**User Manual**

**IPLAB**

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## 1. Introduction

The **Cubes\_SOM\_Classtering** IP\_Seismic plug-in (version: 2017.1.0.0, release date: June 2017) can be used for unsupervising classification via set of seismic cube (similar geometry) and based on Kohonen SOM (1D, 2D or 3D mapping).

To do the classification there are two main calculation studies:

1. Training stage – to define centers of classes.
2. Calculation stage – to define class number for every node in cubes according distance to nearest class center.

## 2. Start

**Start:** Surface Attributes->

**SOM\_Classting**

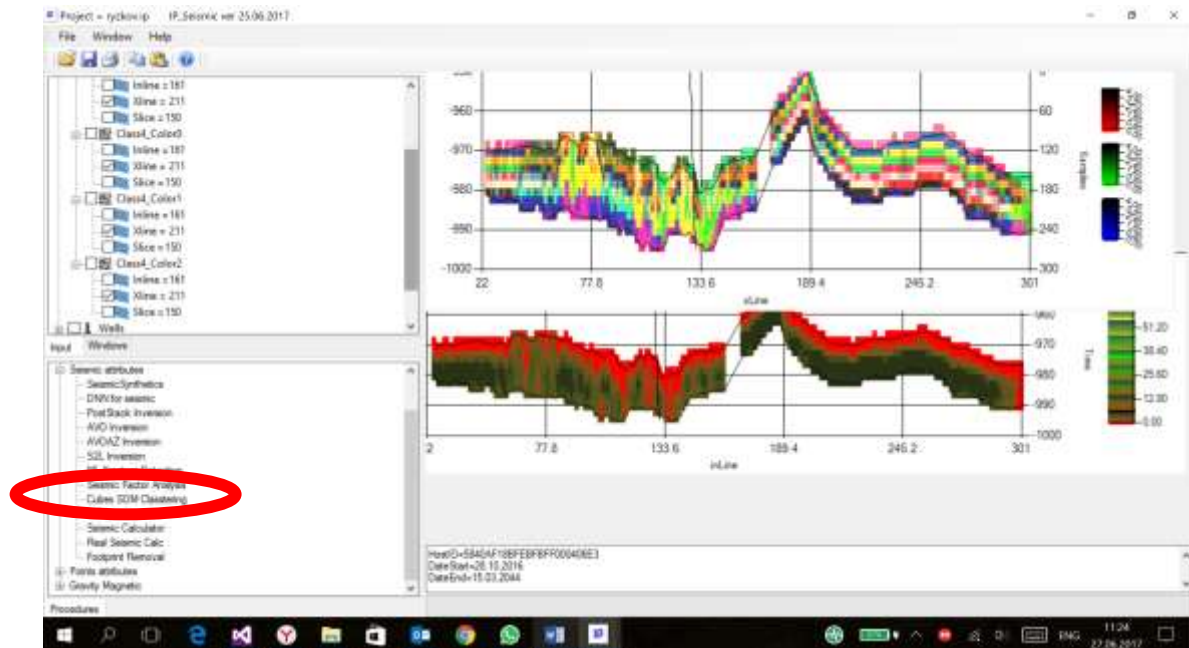


Figure 1: Project tree and programs tree to start **SOM\_ Clustering**

### 3. Input parameters

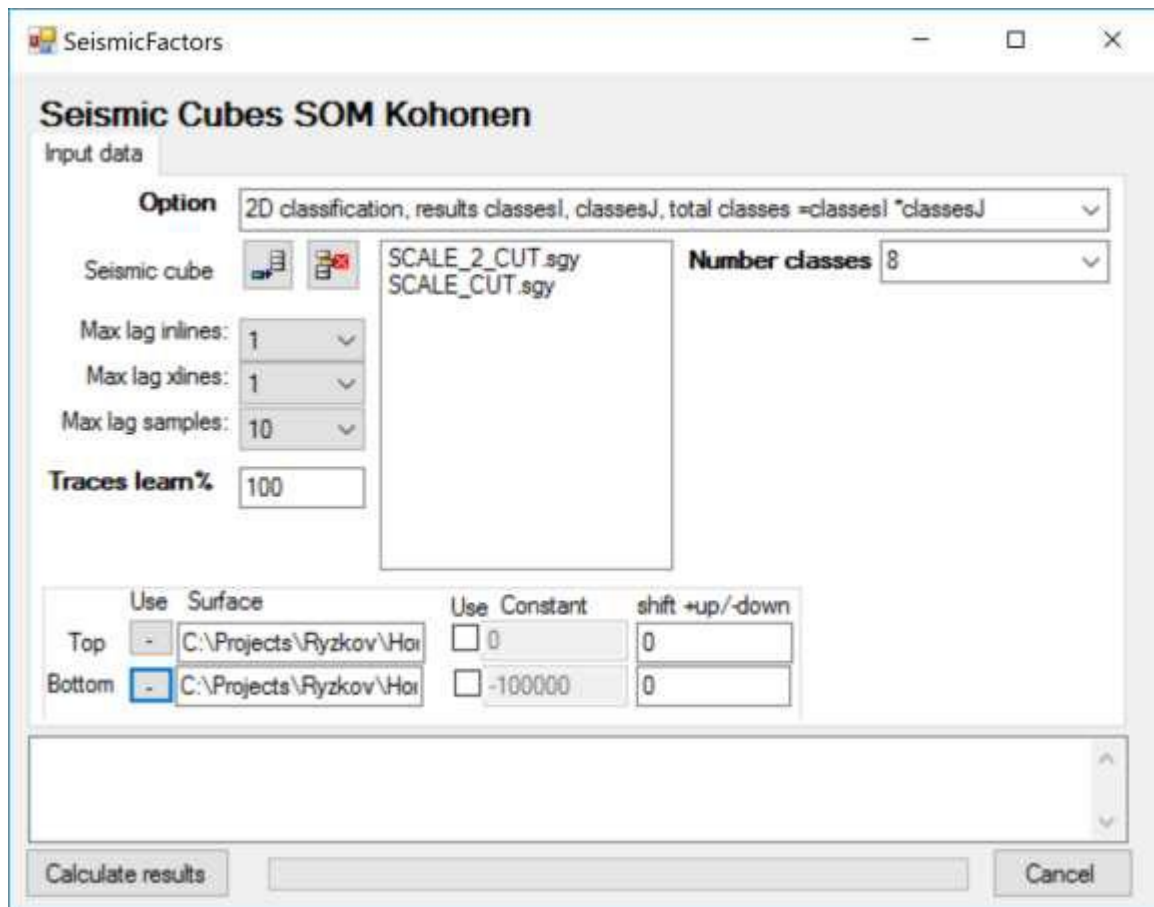


Figure 2: Input surface attributes data tab dialog view **Cubes\_SOM\_Clustering**

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.

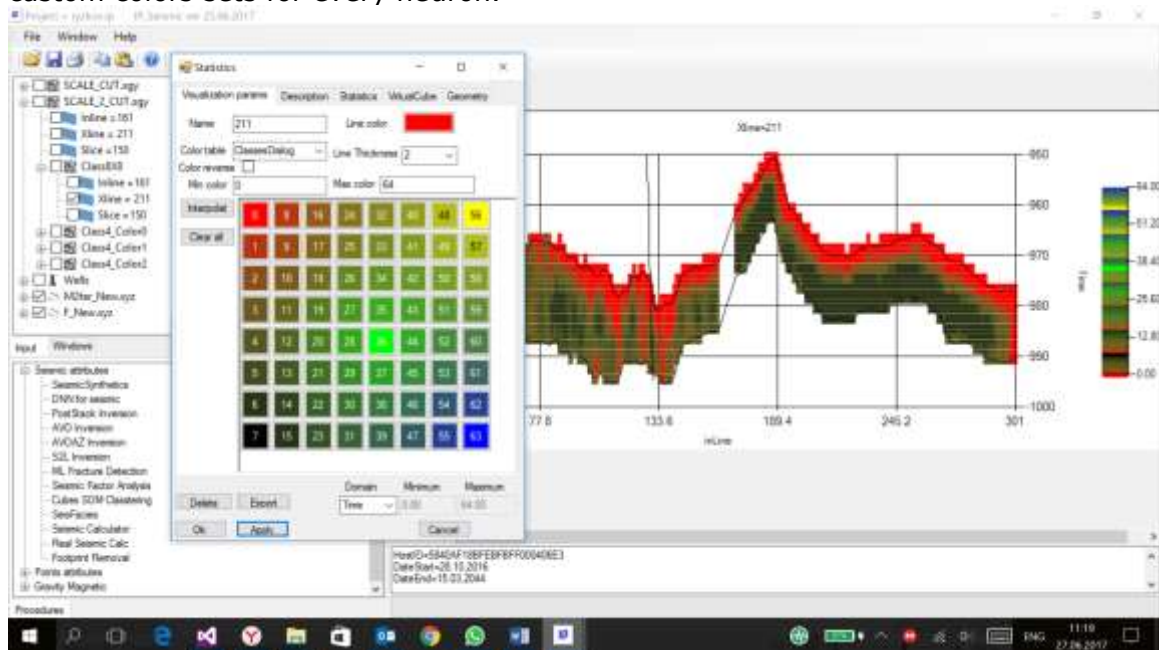
Calculation can be limited by

**Top** surface or constant, both with shifts

**Bottom** surface or constant, both with shiftsResults

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.

