

SOM_Surface Classtering

**Surface property classification using Kohonen
SOM**

User Manual

IPLAB

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1. Introduction

The **SOM_Classtering** IP_Seis plug-in (version: 2016.1.0.0, release date: August 2016) can be used for unsupervising classification via set of surface attributes and based on Kohonen SOM.

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 on surface according distance to nearest class center.

2. Start

Start: Surface Attributes->

SOM_Classtering

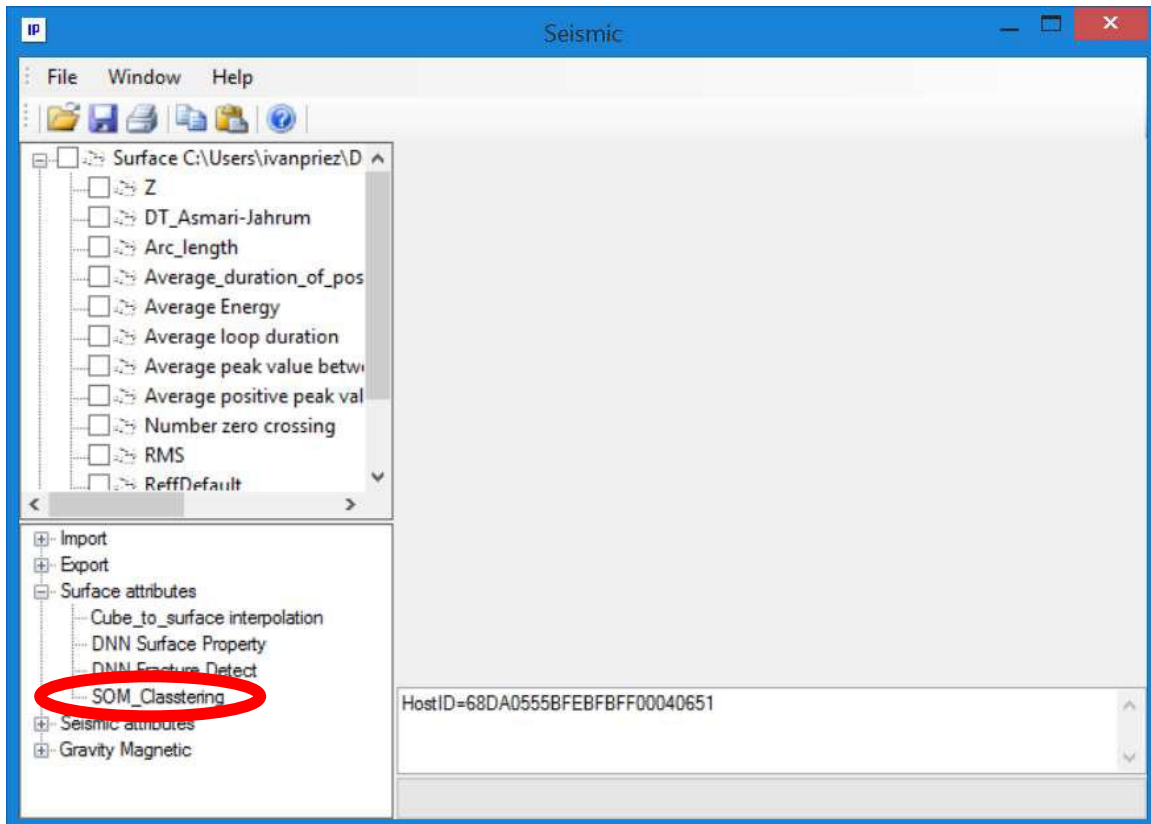


Figure 1: Project tree and programs tree to start **SOM_ Clustering**

3. Input parameters

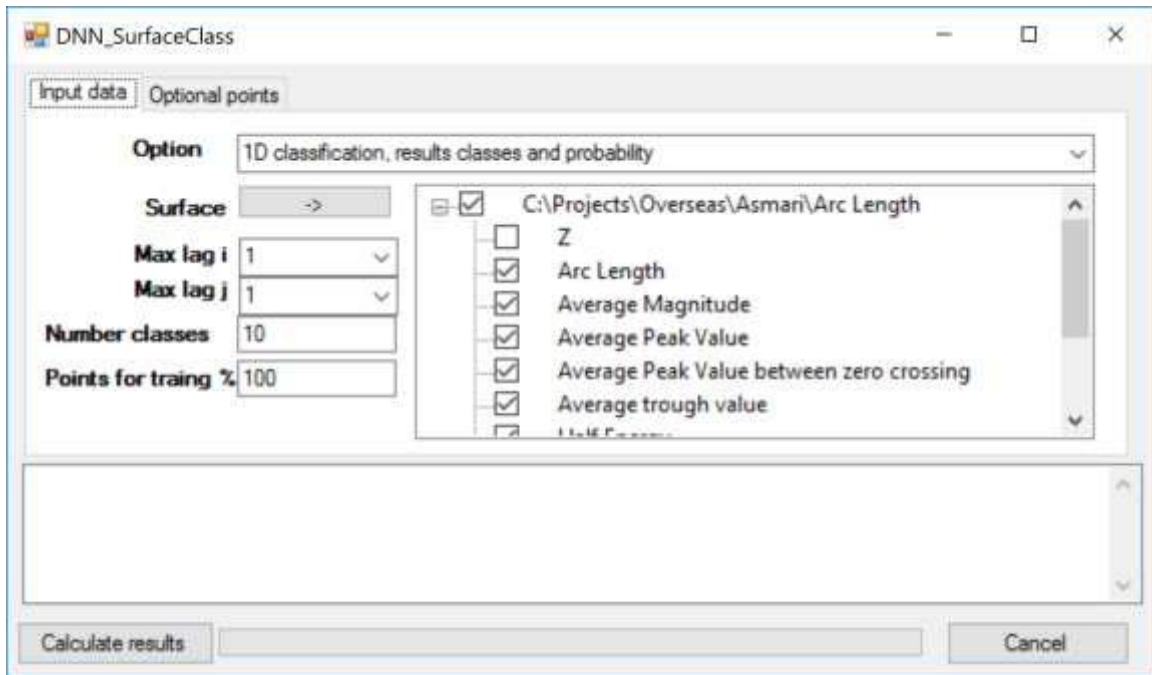


Figure 2: Input surface attributes data tab dialog view **SOM_Clustering**

Parameters have to be defined before calculation:

Option: 1D or 2D or 3D Kohonen mapping option and Optional points definition. Number classes for 2D will be Nclasses*Nclasses and for 3D will be three results attributes with Nclasses, Nclasses, Nclasses correspondently. Last option need to visualize with RGB map.

Surface: allow select surface with set of surface attributes from the project tree. All marked attributes will be used for calculations.

Max lag i, Max lag j: allow define moving window size around production points during training stage and around node for calculation during calculation stage.

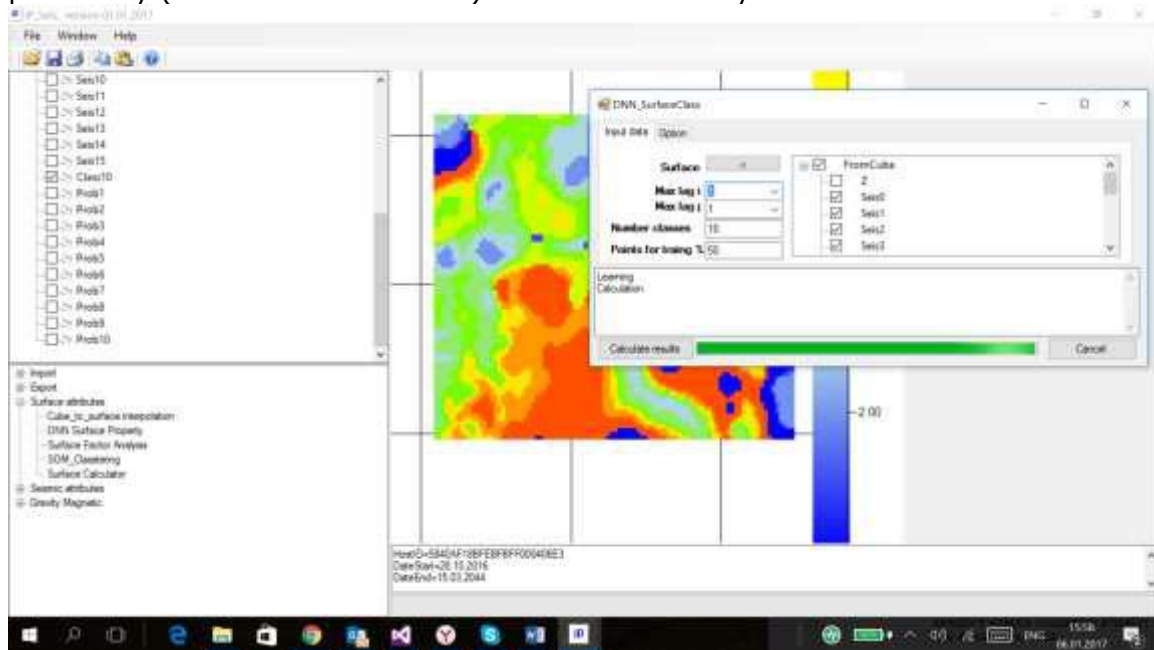
Number of classes: defined number classes (Nclasses).

Points for training: define % surface nodes to randomly use for training.

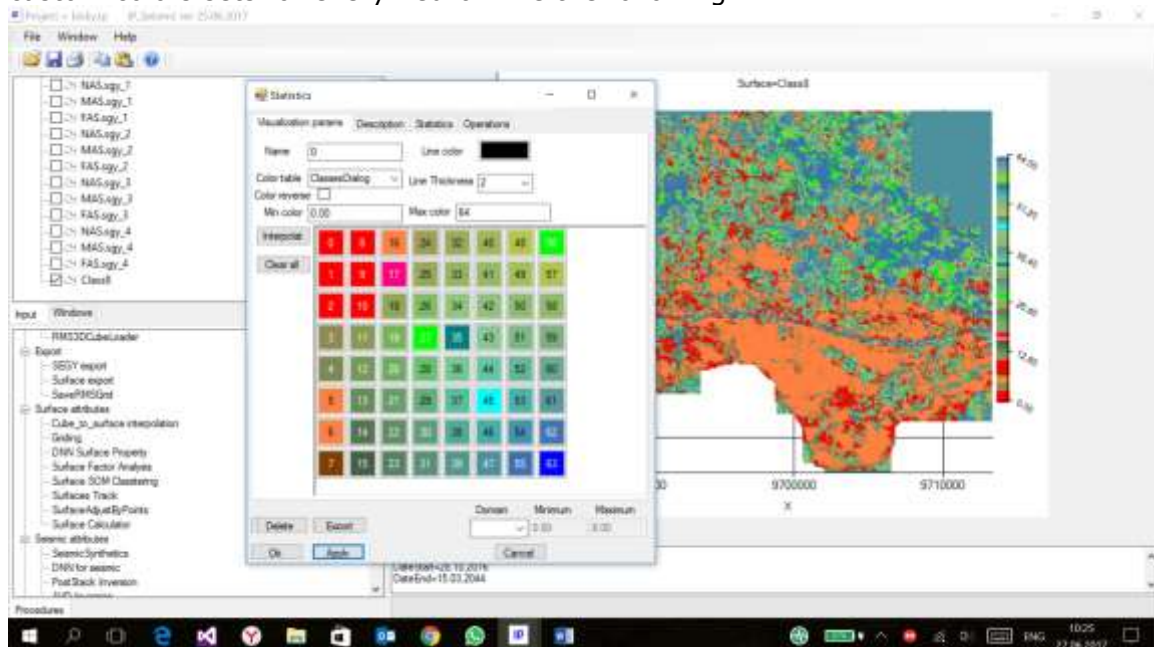
Optional Points: define points coordinates (used only X.Y) like centers of classes and allow to find similar to its points places on the map.

4. Results

Classification result will be added like additional surface attribute with name **Class#**, where Number of classes. It can be visualized in Map window. Also will be added probability (distance to the cluster) attributes for every class with name **Prob#**.



For option with 2D Kohonen mapping need to use ClassesDialog color table with custom colors sets for every neuron like the following:



For option with 3D Kohonen mapping need to use RGM map to mix by colors 3 classes surfaces like below:

RGB=ClassI4ClassJ4ClassK4

