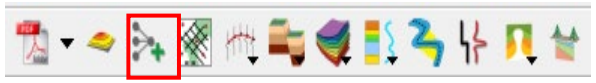
Exercise objective:

To predict seismic geo-bodies using the "*Seismic Classification (supervised 3D)*" tool which is part of the machine learning plugin. In this exercise, we want to predict Chimney location.

Seismic data Preparation
Seismic need to be available in the survey. If not, **import** seismic, and interpret key seismic bodies locations (e.g. Chimney yes, Chimney no), or use existing trained model.

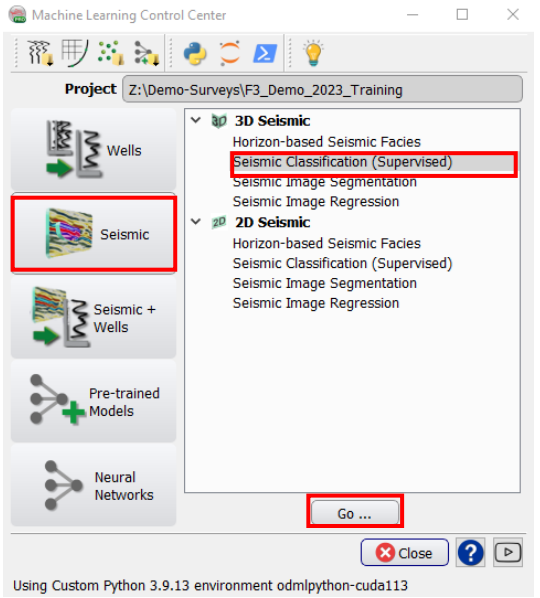


Workflow:

1. **Open** the Machine Learning Control Center with the  icon.

2. **Click** on Seismic.

3. **Select** Seismic Classification (Supervised) under 3D Seismic, and **Hit** Go.



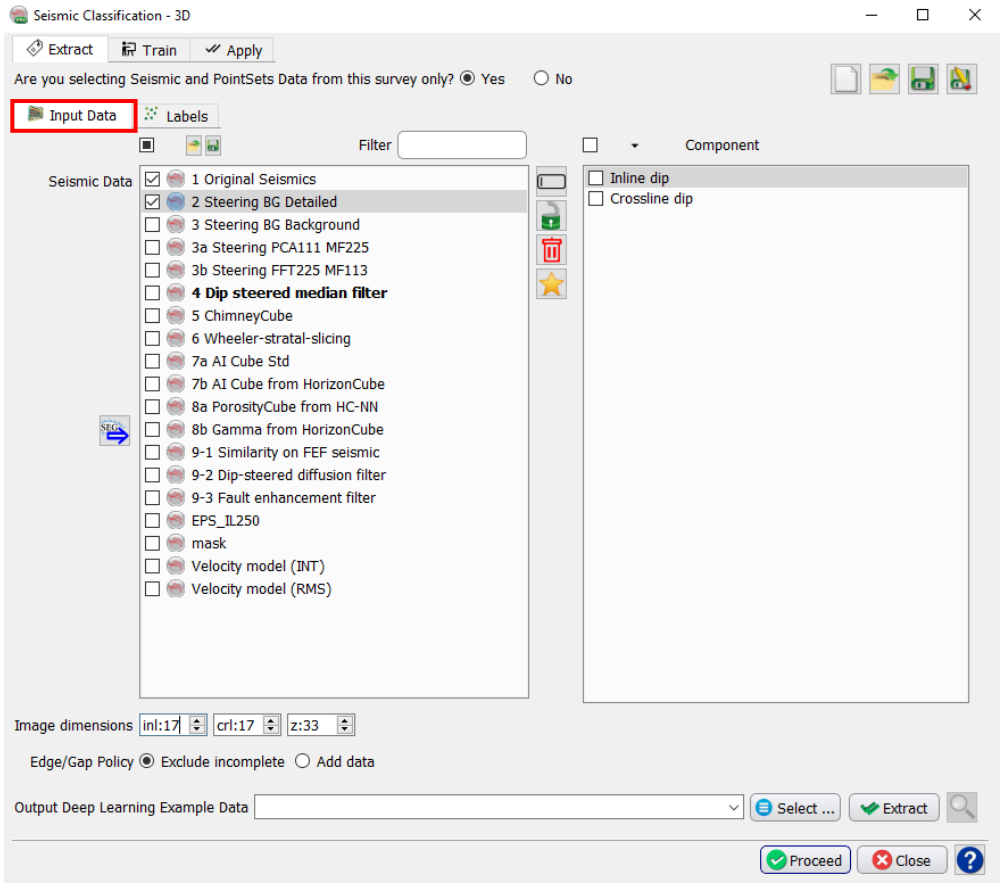
Workflow cont'd:

4. The *"Seismic Classification"* window pops up.

5. **Select** *Input Data* in the *''Extract Data" tab.*

6. In the "Seismic data field, **Select** the *Original seismic, and ''2 Steering BG Detailed" as an input*

7. Use the default image dimensions



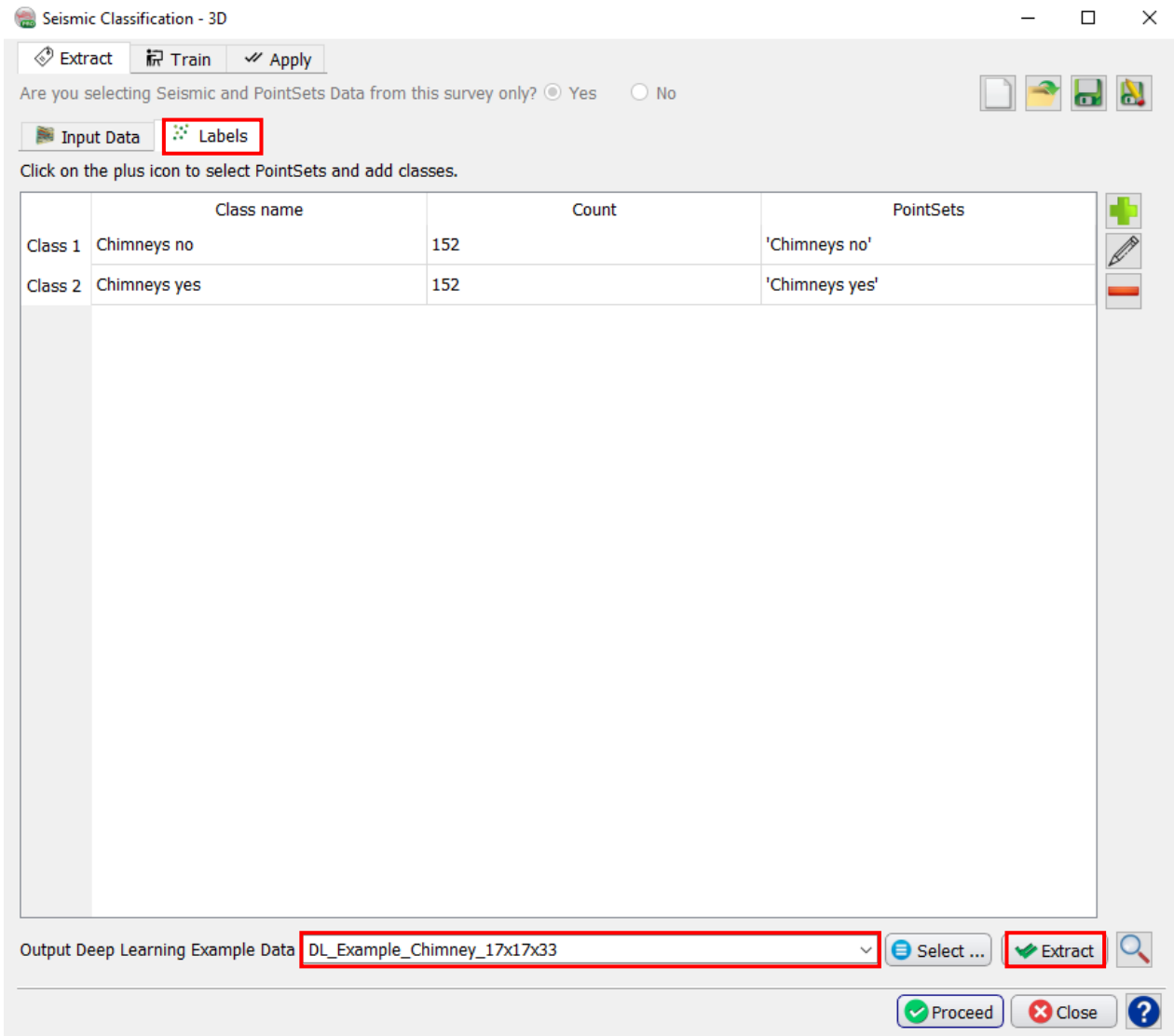
Workflow cont'd:

8. **Click on** in Labels .

9. Click on add class
and select the first and the 2nd *class example locations (e.g. Chimney yes, and chimney no)*.

10. Add a name for example data output and hit on

11. **Hit on** Extract



Workflow cont'd:

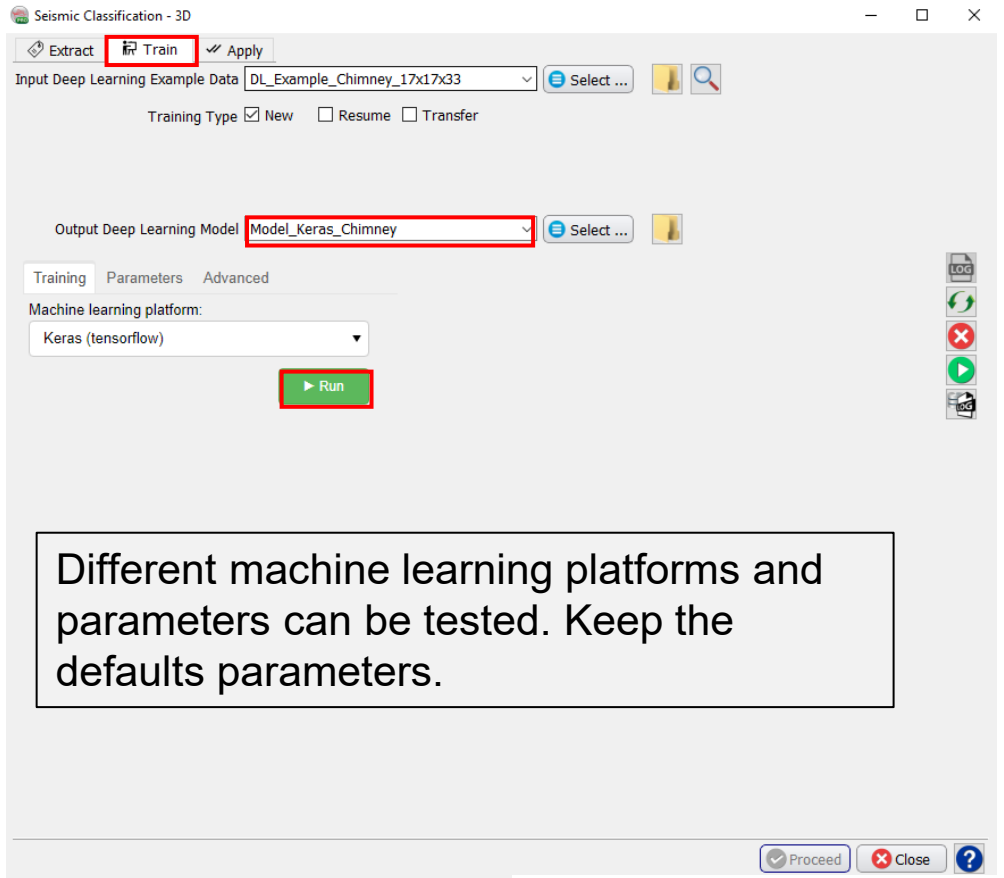
12. Click on the Train tab

    Select the example data.

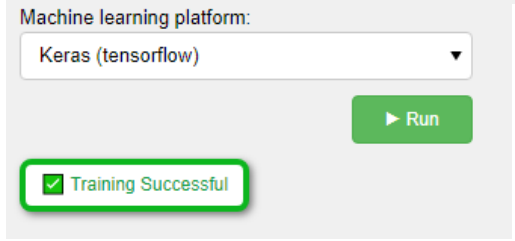
13. Toggle on New for the training type

14. Give a name to the output model
15. Select one of the learning algorithm (e.g. Keras-tensorflow) to train the extracted examples data.

16. **Press** on Run.



Different machine learning platforms and parameters can be tested. Keep the defaults parameters.



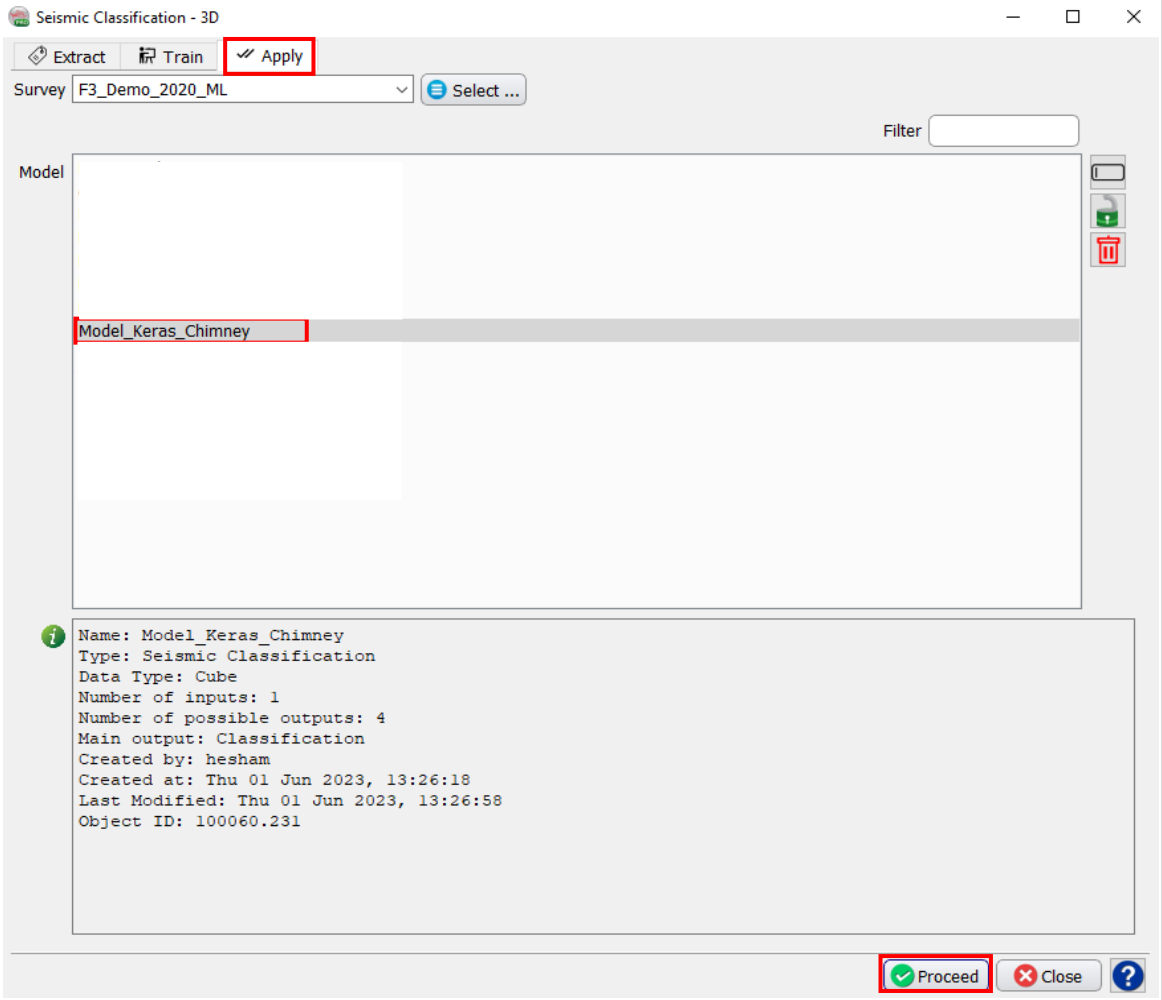
Wait till you see the training is complete and successuful.

Workflow cont'd:

17. **Select** the ''Apply'' tab.

18. Select the trained model.

19. **Press** Proceed.



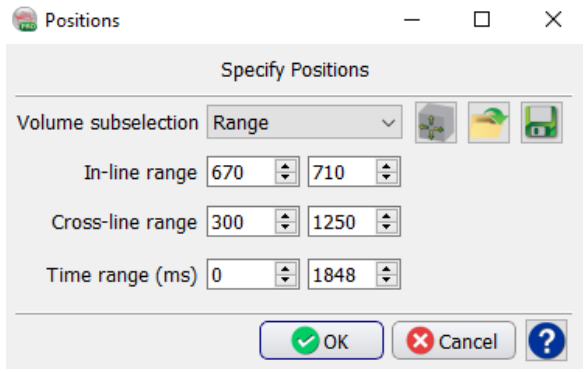
Workflow cont'd:

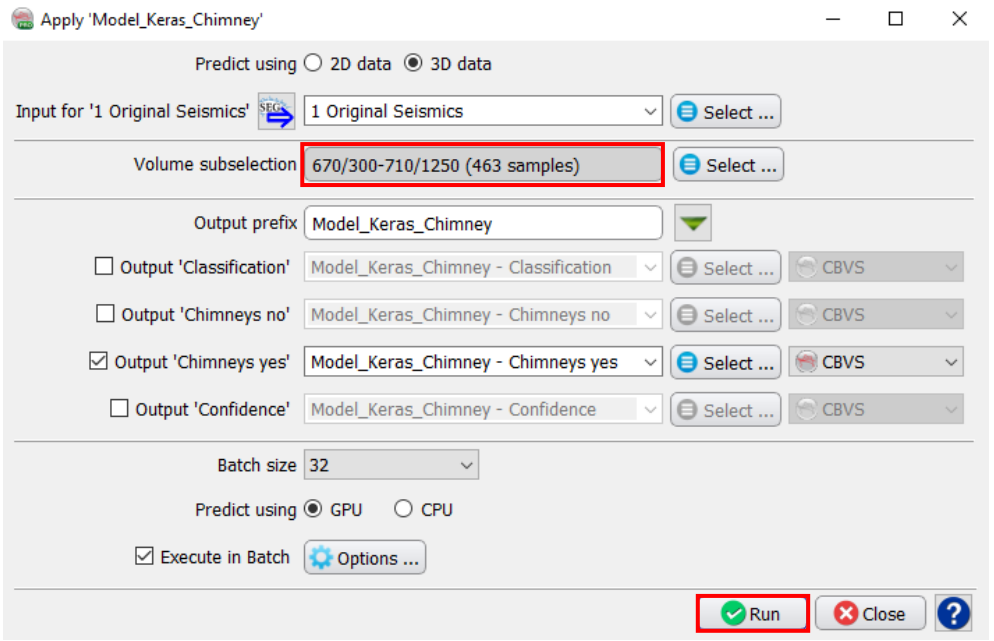
20. In the *"Apply created training model"* window, **Verify,** all the default selected input 3D cubes are correct.

    a. To optimize computation time, **Modify** ''Volume sub-selection'' and set it to an area of interest, where Chimneys have been interpreted (e.g. Inline range: 670-710, Crossline range: 300-1250).

    b. Specify a new name for the 3D output cubes: Classification, Chimney yes, Chimney no, and Confidence. Toggle on Chimney yes.

21. Press Run to continue.





Workflow cont'd:

QC results: display the predicted Chimney Yes probability 3D cube

22. **Right Click** on the: Scene > Inline > Add and select Data.

23. **Select** the predicted 3D Chimney location probability (e.g. Chimney_yes), and overlay the seismic (e.g. 1 Original Seismic).

    Modify the Inline number to be within the input range.

24. **Right-click** on the Inline number, and **Type** in the Inline field: 

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