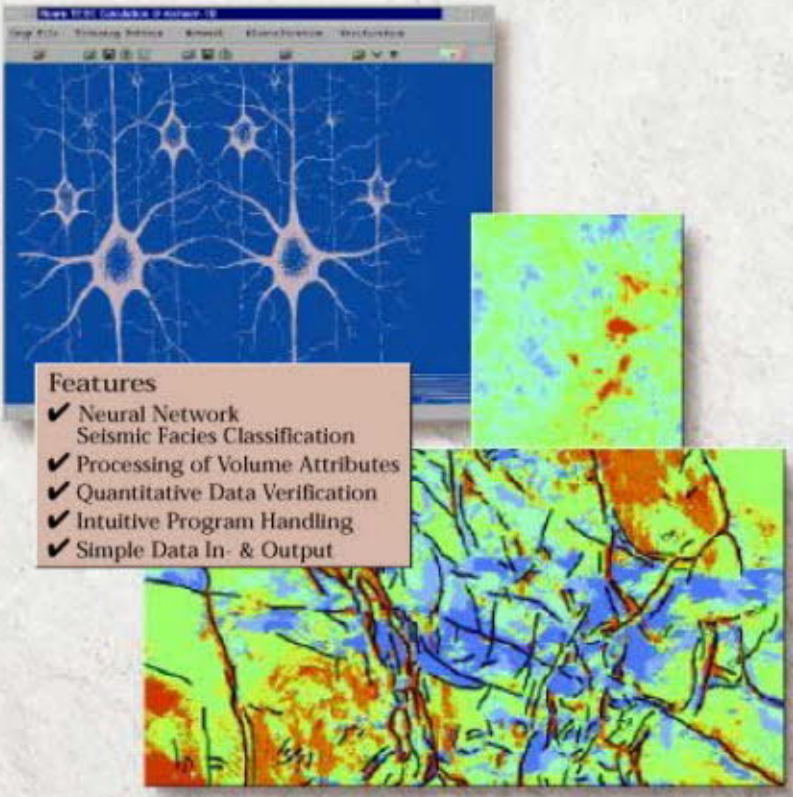
neuro/TEEC

Neural Network Seismic Facies Classification



Features

- ✔ Neural Network Seismic Facies Classification
- ✔ Processing of Volume Attributes
- ✔ Quantitative Data Verification
- ✔ Intuitive Program Handling
- ✔ Simple Data In- & Output

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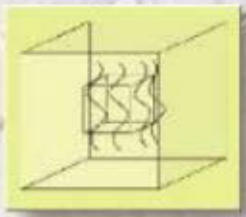
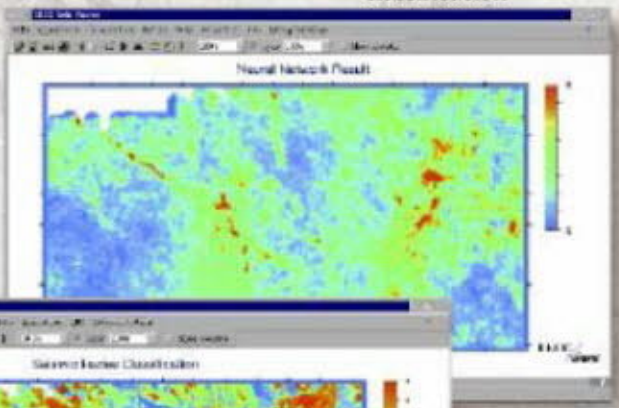
Finest Software for
Seismic Reservoir Characterisation

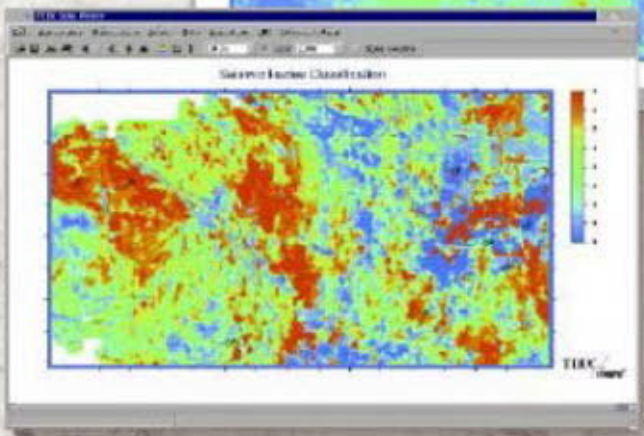
neuroTEEC provides the mapping of seismic facies by means of an unsupervised Neural Network. This classification technique is based on a patent granted to TEEC. The workflow comes with the assumption that changes in lithology, rock properties and fluid content should affect the seismic traces with respect to amplitude, shape and lateral continuity. This leads to the approach to take advantage of three dimensional seismic pattern where the individual characteristics of these pattern should be detected by the Neural Network. Contrary to the generation of dozens of seismic attributes which may be related to the reservoir heterogeneity later on, the Neural Network comes with the spatial distribution of classes representing similar signal characteristics or simply seismic facies classes. These seismic facies classes often represent features of the reservoir hetereogeneity that are otherwise hard to detect or time consuming to interpret.



3D seismic pattern recognition using defined subvolume

Error map of classification



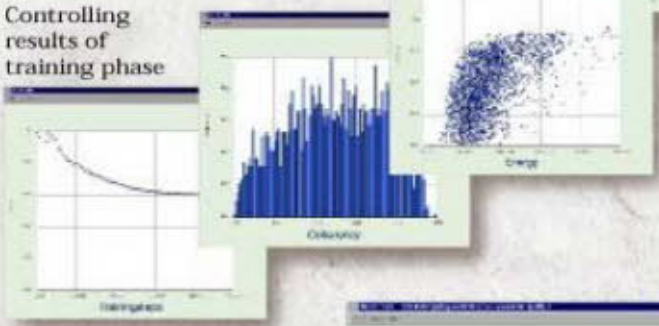


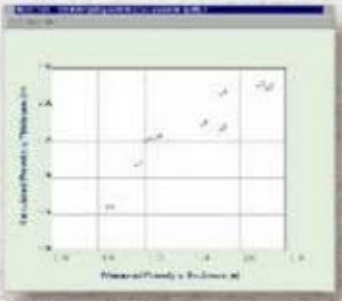
Seismic facies classification

Working with neuroTEEC is a four step approach:

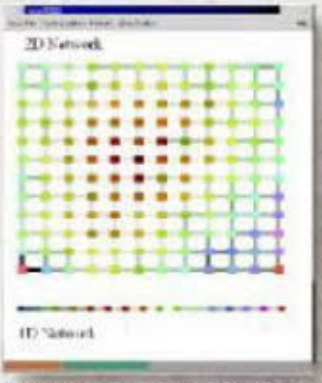
1. Extraction of 3D training patterns from the seismic data by a random process
2. Setting up a network architecture, training and analysing of training results
3. Classification of the whole seismic data
4. Calibration of facies classes by means of key wells and geological information

Controlling results of training phase





Verifying reservoir quality prediction



Choosing between 1D and 2D networks of any size

neuroTEEC is not a black box software. The menu driven interface is user friendly and intuitive to learn. Working with neuroTEEC allows an easy handling of training patterns, generation of control plots at each stage of the workflow and analysing the classification results.

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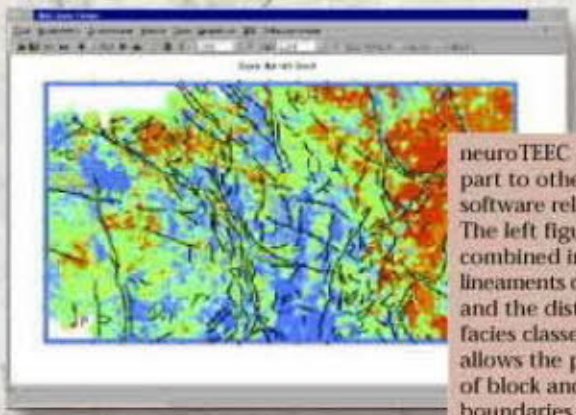
Neural Network Seismic Facies Classification



neuroTEEC is an ideal counterpart to other seismic reservoir software released by TEECware. The left figure shows the combined interpretation of lineaments detected by cohTEEC and the distribution of seismic facies classes. While cohTEEC allows the precise definition of block and compartment boundaries, neuroTEEC highlights the internal characteristics within the defined compartments.

neuroTEEC in Summary

- ✔ Intuitive menu driven software
- ✔ SEGY & ASCII input & output
- ✔ Generation of Bitmap & Postscript results
- ✔ Data preparation & horizon loading
- ✔ 1D & 2D unsupervised Neural Networks
- ✔ Interactive setup of 3D training pattern
- ✔ Neural Network seismic facies classification
- ✔ Verification of results
- ✔ Multiattribute displaying & viewing
- ✔ Preparation of animations
- ✔ Operating systems: Solaris, IRIX and LINUX

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