

E-learning: Non-Seismic Data Acquisition and Processing

Introducing the teacher

My name is Jaap Mondt and I am the facilitator/teacher for the “*Non-Seismic Data Acquisition & Processing*” e-learning course. In this note I will explain my role and what is expected of you and how we can get the most out of your time spent on it.

My role

My main activity will consist of giving feedback to your questions based on studying certain chapters of the book and to your submitted solutions to the assignments. The assignment feedback will either consist of additional questions, which aim to increase your understanding and which you are kindly asked to answer or remarks that parts of the answers are in error and need to be redone, in which case I will ask you to resubmit updated solutions (adding v2 or v3 to the filename). My feedback could be personal, then it will only be seen by you, or it could be of interest to all and I will put it in the ‘Discussion Forum’ or ‘News Forum’.

Your role

You should within the 3 months given study the textbook chapters, solve the assignments and react to the feedback. If the next version of your answer/solution (max 2 re-submissions) is better, I will increase the score (only seen by you). In some cases, I might provide you the “official” solution, so that you at least understand the issue dealt with in the assignment. As another part of your activity you could put questions on the “Discussion Forum” and see if any of the other participants have an enlightening answer or provide feedback to items posted by others. I will also monitor it and make comments on the answers or give an answer myself. The questions and comments could include your name or not. In addition, you could contribute to the assignment issue by indicating errors or unclear statements or describing your own experience.

What kinds of Geophysical Data are used?

Various kinds of geophysical data are available. They are usually separated into Non-seismic and Seismic data. Non-seismic data (gravity, magnetics, electrical, electromagnetics, spectral, etc.) is the main data used in shallow subsurface applications (engineering, mapping pollution, archaeology, etc.) and at the early exploration stage in the search for oil, gas or minerals. Seismic is the main subsurface evaluation tool for the EP industry, but it has its limitations. Therefore, non-seismic methods are used successfully as complementary tools at the more mature exploration stages and even for production. In combination with seismic data they can significantly reduce the uncertainty of subsurface models as they measure different physical properties of the subsurface. Controlled Source EM, for example, responds to reservoir resistivity and can thus be used to differentiate between hydrocarbons and brine.

Business context

Geophysics provides technology with which we can "look" into the subsurface. It is a key enabler of many E&P activities and decisions. This course is designed to provide an introduction to non-seismic geophysics applied for exploration and development purposes. It gives an understanding in the fundamentals of non-seismic methods. Concepts will be taught not only based on a text book but above all by applying the theory in mainly Excel based assignments

Who should follow it

Geologists, geophysicists and petroleum engineers, involved in exploration and development of oil and gas fields and for persons involved in archaeology, determining the extent of underground pollution, monitoring salt water invasion, etc.

Requirements

A reasonable level of understanding of applied mathematics and physics is assumed

Course content

See “Non-Seismic Data Acquisition and Processing” Program

Learning, methods, and tools

At the end of the course participants will have a good understanding of what information non-seismic geophysical data can give and for what purposes it can be used. This will enable them to specify the requirements for a survey, either done by themselves or by a special service provider.

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