



# chronosurveys

*Geological consultants*

*Training offer*

## **2D and 3D seismic interpretation**

# 2D and 3D seismic interpretation

## Classroom and online

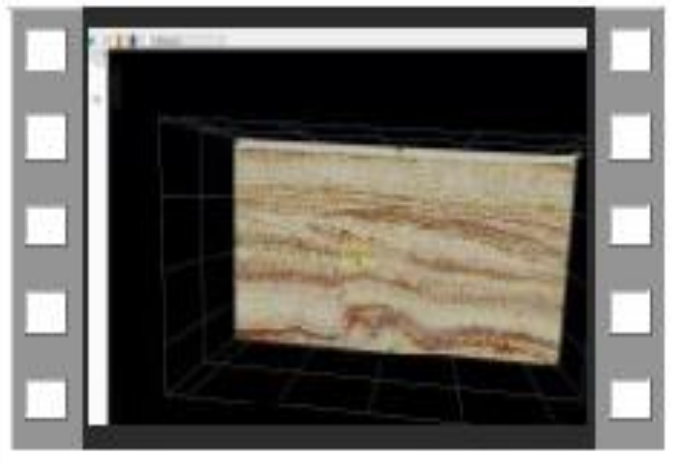
This course will cover the main concepts underlying the interpretation of 2D and 3D seismic data, from its History, the methods of data acquisition, processing, visualization and software. Several mapping exercises will be done using seismic data - faults and horizons - and how they can be used to understand the structure, stratigraphy and geodynamics of an area. The course is designed for geophysicists, geologists, geology engineers, students and professionals who are interested in gaining or deepening practical knowledge about 2D and 3D seismic interpretation. Available as in-house or public venue course from 2020 onwards.

### Objectives

- Understand reflection seismic data acquisition and processing
- Visualize seismic data and develop interpretation capacity
- Interpret and map faults and seismic horizons
- Characterize geological features on seismic
- Identify hydrocarbon accumulations using seismic data
- Quantify and risk hydrocarbon accumulations



*Classroom lectures and exercises*



*Online lectures*



# Training methodology

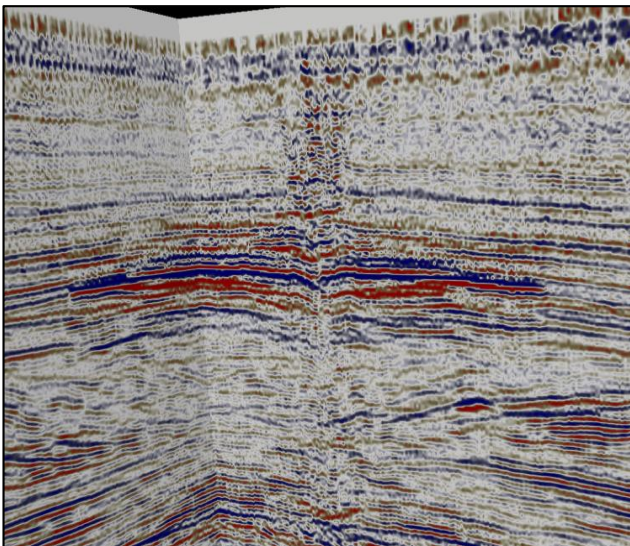
The training course will be based on slide presentations for each module, together with exercises. There will also be sessions with real exploration examples to get participants a hands-on experience on the usage of seismic data. Exercises and examples include several geodynamic settings and participants will be able to evaluate, quantify and risk the presence of reservoirs for hydrocarbons and carbon sequestration, salt structures for gas storage and mineral ores.

## Who Should Attend?

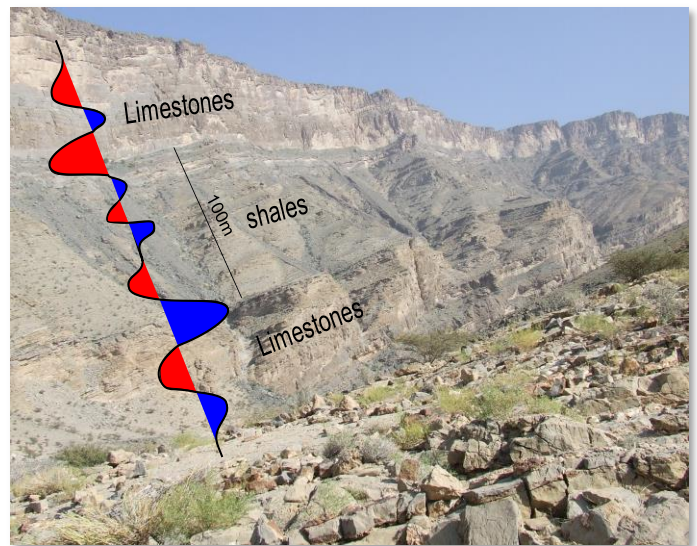
This course is designed for subsurface professionals who are interested in using seismic interpretation for their work or interact with seismic interpreters in their companies, including oil & gas, mining, carbon sequestration and gas storage industries.

This course is suitable to a wide range of professionals but will greatly benefit:

- *Petroleum Geologists*
- *Exploration geoscientists*
- *Sedimentologists and stratigraphers*
- *Petrophysicists*
- *Basin modellers*
- *Reservoir and drilling engineers*



*Flat spot and gas chimneys*



*Comparison of seismic and outcrop scales*

# **Course contents**

## **Introduction to seismic data**

History of seismic studies  
Rock properties  
Data acquisition – Land and Marine

## **Other geophysical methods**

Gravimetry  
Magnetics  
Electro magnetics

## **Seismic data processing overview**

Conventional pre-stack processing and CMP gathers  
Post-stack processing  
Seismic migration, velocity models.

## **Calibration methods**

Velocity surveys  
Sonic logs  
Synthetic seismograms  
Vertical Seismic Profiles

## **2D and 3D Seismic Data**

Parameters, visualization, polarity  
Seismic Data Libraries, licenses  
Software

## **2D and 3D interpretation techniques**

hard and soft events  
Vertical exaggeration  
Horizontal and Vertical slicing in 3D data  
Seismic horizons

## **Quantitative interpretation geophysics**

Acoustic impedance and inversion  
AVO and pseudo-gradient  
RMS amplitude  
Spectral decomposition  
Other methods

## **Fault interpretation**

Introduction to fault interpretation  
Structural styles  
Rift basins  
Compressional domains  
Salt tectonics  
Strike-slip faults  
Mapping faults in 2D data  
Faults in each seismic line  
Connecting faults  
Building fault planes  
Mapping faults in 3D data  
Building fault planes

## **Structural models**

Building a structural model  
Visualization  
Geometry, kinetics, geodynamics  
Palinspastic Reconstructions

## **Stratigraphic interpretation**

Horizon interpretation techniques  
Horizon attributes  
Continuity and lateral variations  
Unconformities and stratal terminations

## **Seismic facies**

Carbonate systems seismic facies  
Siliciclastic systems seismic facies  
Gross depositional environments

## **Advanced stratigraphic interpretation**

Wheeler diagrams  
Seismic sequence stratigraphy

## **The petroleum system elements and processes**

## **Mapping hydrocarbon accumulations**

Volumetrics  
Risking

# **About Chronosurveys**

Chronosurveys brings together the best of the Oil & Gas Industry and Academia. We are a group of consultants based in Portugal with experience in Oil & Gas and specialist researchers in Academia that provide integrated services in Stratigraphy, Source Rock evaluation and other Petroleum Geology disciplines. Our services include:

- Biostratigraphy
  - Palynology
  - Nannofossils
  - Micropaleontology (forams)
  - Conodonts
  - Other disciplines (SSF, metamorphic terranes, etc)
  - Review of vintage reports
- Source rock evaluation
  - Organic geochemistry (TOC, RockEval)
  - Thermal maturity (vitrinite reflectance, spore colour, fluorescence)
  - Visual kerogen typing
- Seismic interpretation and prospect generation
  - Data room evaluations
  - Regional prospectivity
  - Volumetrics and risking
- Stratigraphy and reservoir geology
  - Well correlation
  - Petrographic descriptions
  - XRD
- Multiclient regional prospectivity reports
  - Dynamic GIS project (and webGIS version)
  - Petroleum system evaluation with plays, GDE and CRS maps, well data, seismic and cross-sections, outcrop data, source rock and reservoir parameters
- Training
  - In house and offsite training courses (biostratigraphy, petroleum geology)
  - Field trips in Portugal
  - Geo-Historical tours of Lisbon

We are available to discuss further details in a Skype meeting or by email:  
[info@chronosurveys.com](mailto:info@chronosurveys.com)