PEA
PETROLEUM ENGINEERS ASSOCIATION

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GIL MACHADO

Technical Director at
Chronosurveys

5 Days Online Practical Training on

Seismic Interpretation Using OpendTect

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COURSE OBJECTIVES

The Main Objective of this Course is to Prepare Geologists, Geology Engineers and Other Professionals and Students for the Use of Seismic Data in Their Activity, Particularly in the Oil Industry. Several Examples of Tools, Test Data and Interpretation Techniques Will Be Given That Will Enable Participants to Continue Their Training During and After the Course.

During the Course and in an Organized and Systematic Manner, We Aim to Achieve Several Objectives That are Briefly Presented:

- General Understanding of Seismic Data Acquisition Methods
- Understand Other Data Sources Used in Conjunction With Seismic
- Understand Seismic Data Processing
- View Seismic Data and Know How It Can Be Adapted
- Know the Various Software Programs
- Know the Various Types of Data and Licenses
- Map Geological Faults
- Identify Structure Types and Geodynamic Environments
- Build Simple Structural Models
- Map 2D and 3D Horizons
- Use Seismic Attributes to Identify Sedimentary Macrostructures
- Identify Seismic Facies
- Build Wheeler Diagrams
- Interpret Sequence Stratigraphy in a Generic Way
- Know the Elements and Processes of the Petroleum System
- Map Hydrocarbon Accumulations
- Quantify a Hydrocarbon Accumulation
- Determine the Risk Associated With a Hydrocarbon Accumulation

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CONTENTS

DAY 1

- Introduction
- History of Seismic Studies
- The Seismic Method
  - Rock Properties
  - Wave Propagation, Reflection, and Refraction of Seismic Waves, Reflectivity, Impedance
  - 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 (Well-tie)
  - Velocity Surveys
  - Sonic Logs
  - Synthetic Seismograms
  - Vertical Seismic Profiles

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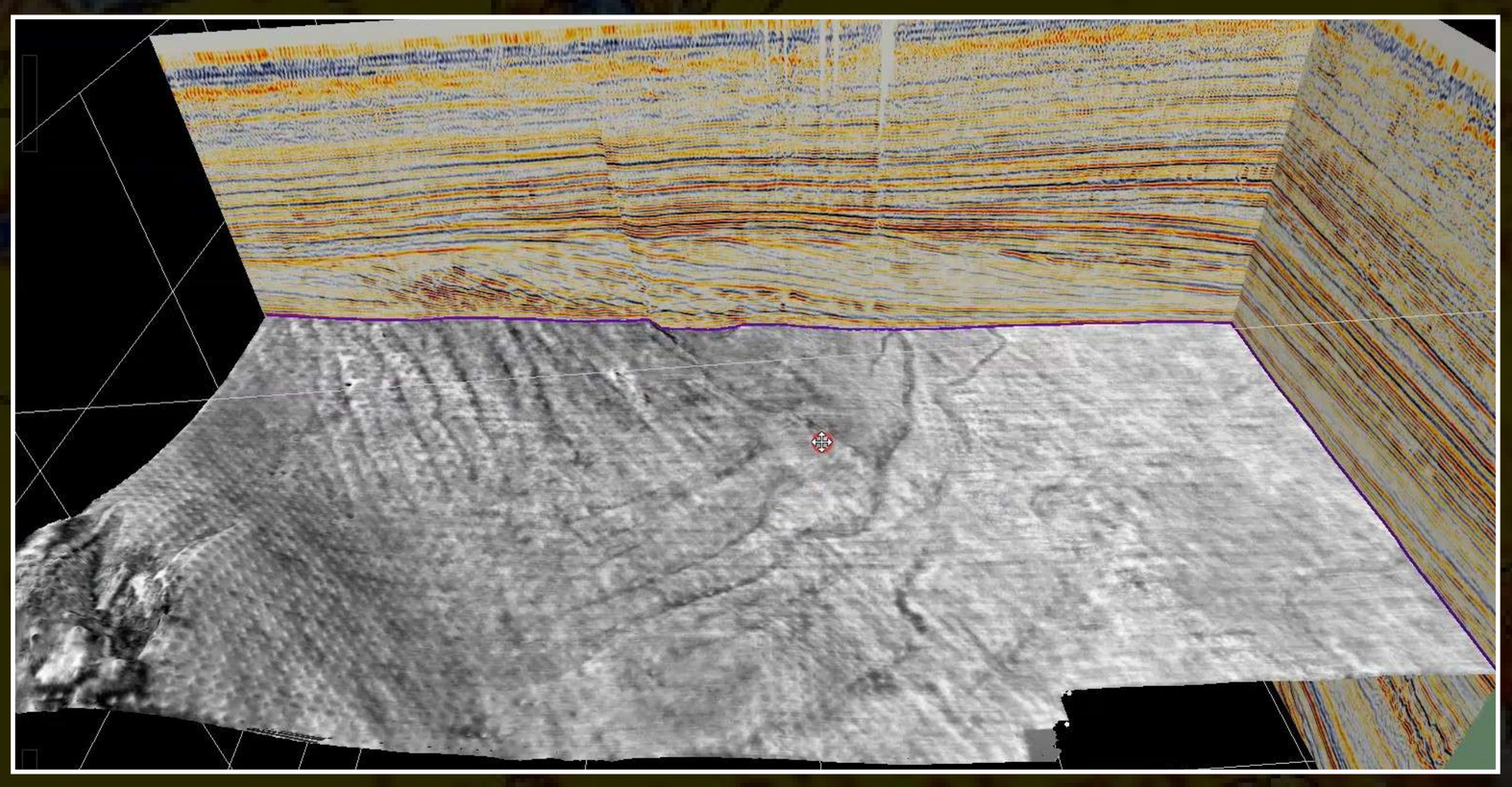
DAY 2

- 2D and 3D Seismic Data
  - Parameters, Visualization, Polarity
  - Seismic Data Libraries, Public, Private and Licenses
  - Software
- 2D and 3D Interpretation Techniques
  - Hard and Soft Events
  - Vertical Exaggeration
  - Horizontal and Vertical Slicing in 3D Data
  - Seismic Horizons – Stratal Interface, Fluid Contacts and Non-geological Horizons
- Quantitative Interpretation Geophysics
  - Acoustic Impedance and Inversion
  - AVO and Pseudo-gradient
  - RMS Amplitude
  - Spectral Decomposition
  - Other Methods



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DAY 3

- 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 From Different Seismic Lines
  - Building Fault Planes
- Mapping Faults in 3D Data
  - Mapping Faults in Vertical and Horizontal Slices
  - Building Fault Planes
- Structural Models
  - Building a Structural Model
  - Visualization
  - Geometry, Kinetics, Geodynamics
  - Palinspastic Reconstructions

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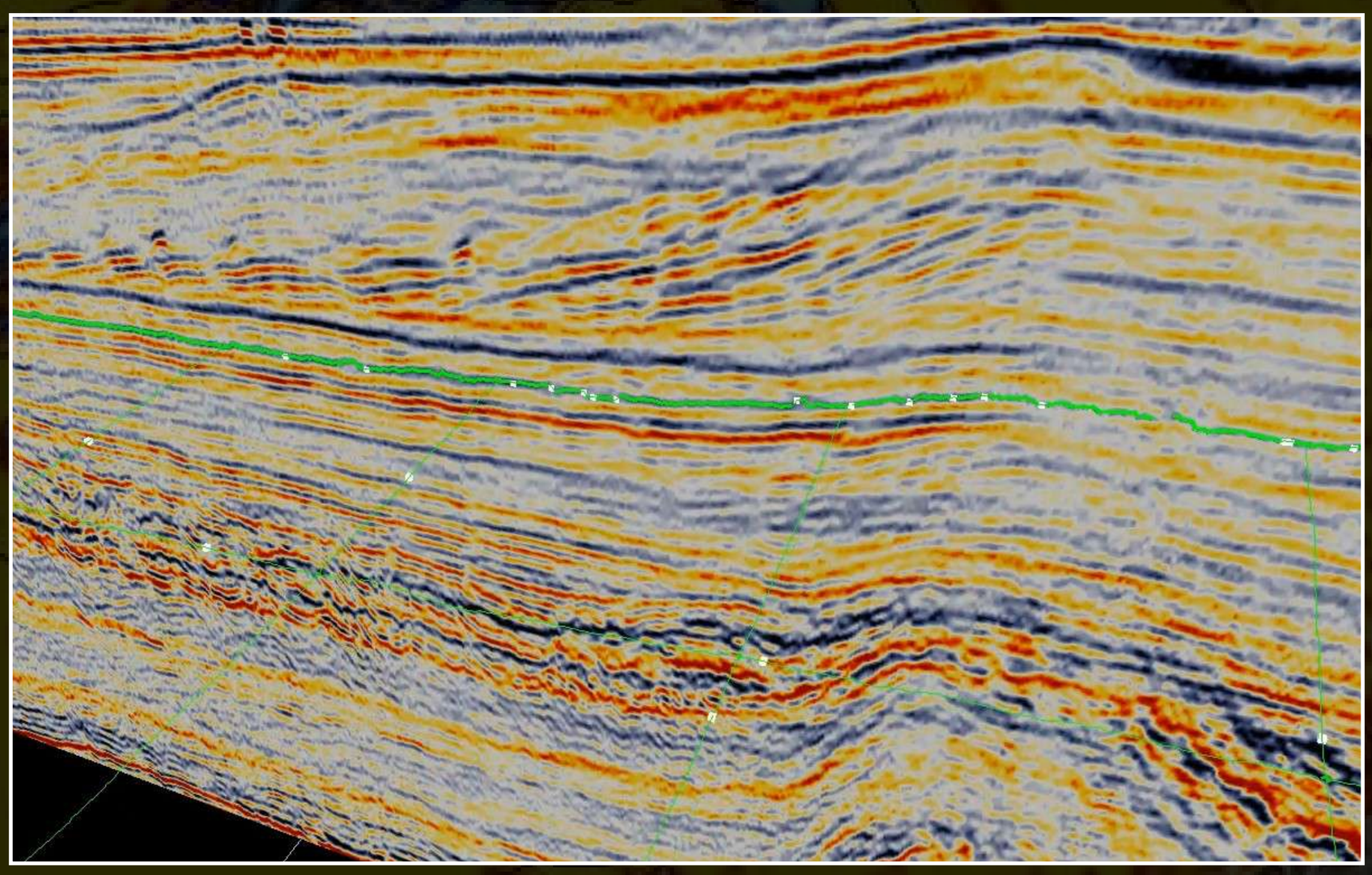
DAY 4

- 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



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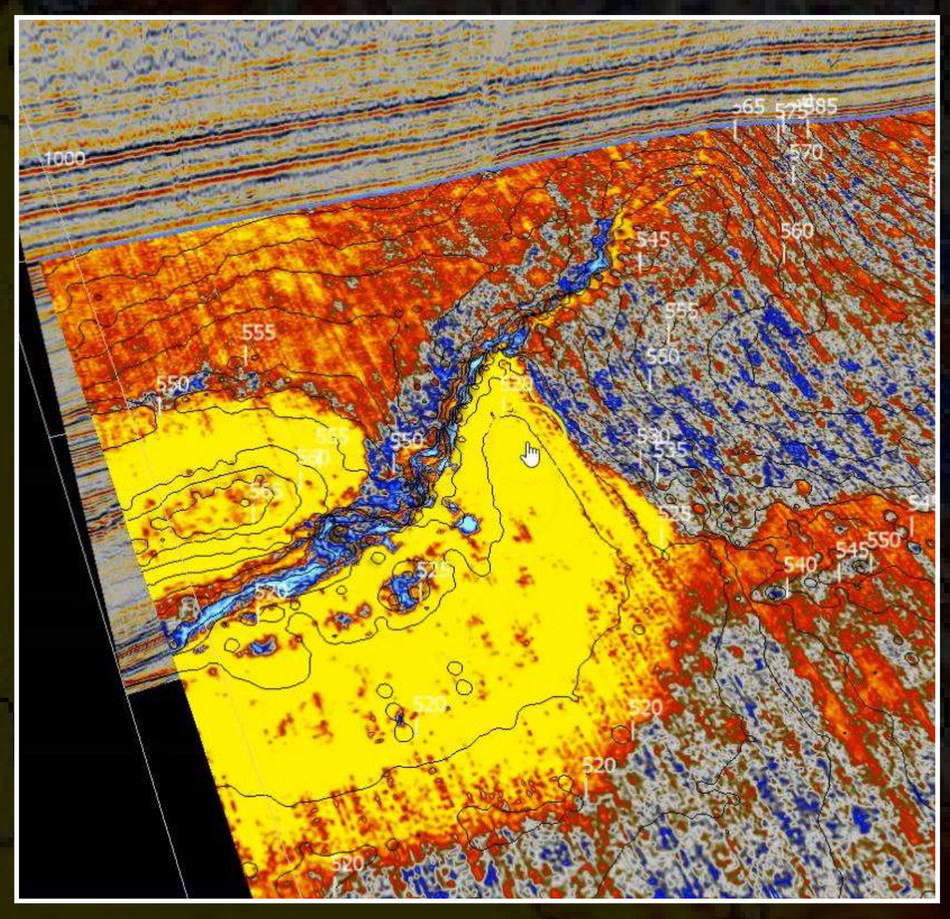
DAY 5

- The Petroleum System Elements and Processes
  - Reservoir
  - Seal
  - Source Rock
  - Trap
  - Timing and Migration
- Mapping Hydrocarbon Accumulations
  - Structural Traps
  - Stratigraphic Traps
  - Mixed Traps
- Volumetrics
  - Leads, Prospects, Reserves, Resources
  - Volumetric Calculation Methods
  - P10, P50, P90 and Mean
- Risking
  - Risking Methods and Software
  - Evaluation of Cos, Pos
  - Incorporation of Geological Risk Into Economic Evaluations



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