Advanced Course :: Virtual Outcrop Model (VOM)

Application on high-resolution stratigraphic analysis.

The participant will acquire competence in using 3D outcrop modelling tools and their application in stratigraphic analysis and other areas of geosciences. The course uses world-class case studies that demonstrate its application in siliciclastic and carbonate successions analogous to subsurface reservoirs.

COURSE TYPE: LIVE STREAMING (05 DAYS, 40 HOURS)
CLASSES IN PREPARATION
COST: € 1000

Why is virtual outcrop modeling so important?

Virtual Outcrop Models (VOM, also called Digital Outcrop Models - DOM), are 3D photorealistic representations of natural rock exposures at the Earth's surface, usually in a sub-centimetre spatial resolution. 3D georeferenced geological information extracted from VOM supports building high-resolution geological models.

VOM is used in the petroleum industry to constrain the 3D geometrical architecture of sedimentary bodies in modelling analogous reservoirs, as well as aquifers and CO2 capture and storage.

3D outcrop modelling applied to stratigraphic analysis, Lusitanian Basin, Portugal.

Objectives

At the end of the course, participants are expected to:

- Understand the principles and experience the methodological workflow of virtual outcrop modelling applied to high-resolution stratigraphic analysis;
- Get to know the state-of-the-art of Structure-from-Motion-Multi-view Stereoworkflow to build and analyse VOM's;
- Extract and integrate information, and map stratigraphic units through VOM's..

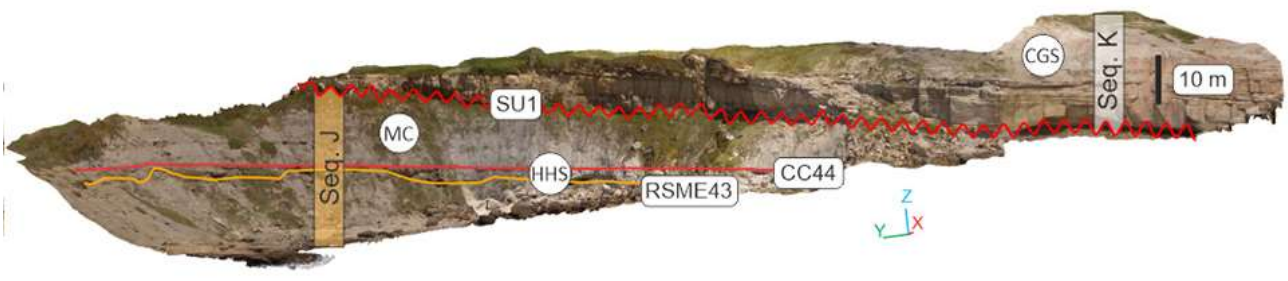
Content

It is a hands-on course, using commercial and open-source software to model world-class outcrops from siliciclastic and carbonate successions. Participants are expected to develop skills on VOM and using it on stratigraphic and other geological analyses.

1. Introduction
2. Virtual Outcrop Models -Structure-from-Motion-Multi-View Stereo Workflow
3. Data acquisition
4. Data processing and VOM building

3D outcrop model, Lusitanian Basin, Portugal. Fonte: Sketchfab

5. Extraction and integration of geological information
6. Future trends
7. Building and analysis of 3D geological models.



Stratigraphic interpretation based on VOM, Lusitanian Basin, Portugal.

Who should attend

Geologists and geophysicists who are dealing with 3D reservoir or analogue models for the exploration and production of petroleum and other natural resources, storage of C, H, and injection of contaminants.

Notes

Please ensure that you have the following software installed in your computer before the first lecture so you can make the most of your experience:

- Agisoft Metashape (www.agisoft.com);
- CloudCompare (www.danielgm.net/cc/);
- Python (www.python.org).

Specification:

- Quad-core Intel Core i7 CPU;
- DDR3-1600, 4 x 4 GB (16 GB total);
- NVIDIA GeForce GTX 980...

Instructor

- A.J.C. **Magal**hães, PhD