

Carbonate Sequence Stratigraphy (G131)



Tutor(s)

[Jo Garland](#): Director, Cambridge Carbonates.

Overview

This course explores the interpretation of carbonates successions within a sequence stratigraphic framework. The course provides an overview of carbonate sedimentology and diagenesis, and then dives deeper into the advantages of sequence stratigraphic approaches, the principles of sequence stratigraphy and how carbonates respond to both high order and third order relative sea level changes. The course integrates many case studies and exercises.

Duration and Logistics

Classroom version: A 3-day classroom course comprising a mix of lectures and case studies. The manual will be provided in digital format.

Virtual version: Six, 3.5 hr interactive online sessions presented over 3 days. A digital manual will be distributed to participants before the course

Level and Audience

Fundamental. This course is intended for exploration geoscientists who want to rapidly improve their knowledge of carbonate systems. An overview of carbonate sedimentary systems will be provided, as will an overview of diagenesis.

Objectives

You will learn to:

1. Understand the controls on carbonate and evaporite sedimentation/production.
2. Describe the distribution of carbonate depositional systems.
3. Establish the sequence stratigraphic principles in relation to carbonate and evaporite systems.
4. Assess carbonate diagenesis in a sequence stratigraphic framework.
5. Examine seismic sequence stratigraphy of carbonates.

Course Content

Session 1: Introduction to carbonate reservoirs

- Presentation

Session 2: Description of carbonate systems

- Carbonate mineralogy and components
- Classifications of carbonate textures (includes an exercise)
- Carbonate platforms
- Controls on carbonate deposition
- Controls on evaporite precipitation
- Depositional environments in carbonate systems (includes an exercise)

Session 3: Carbonate facies analysis workflow

- Presentation and exercise

Session 4: Seismic expression of carbonates

- Presentation and exercise

Session 5: Sequence stratigraphy

- Principles of sequence stratigraphy
- High resolution sequence stratigraphy
- Response of carbonates and evaporites (includes an exercise)
- Sequence stratigraphy workflow in carbonates (includes an exercise)
- Case study

Session 6: Sequence stratigraphy

- Diagenesis in a sequence stratigraphic context
- Introduction and definitions
- Diagenetic processes and products
- Diagenesis realms and porosity evolution
- Dual porosity systems: karst and evaporite collapse
- Methods of study