Geothermal Resources Assessment: Quantification and Classification (G515)

Tutor(s)

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Overview

This course covers the principles of geothermal resources assessment, encompassing quantification and classification best practices. Leveraging lessons learnt from the oil and gas sector, the course highlights the need for transparency in the approach. It presents the challenges and opportunities of comparing the assessment of different energy resources within a mixed energy portfolio, towards the transition to a sustainable Net zero future.

Duration and Logistics

Classroom version: A 2-day course comprising a mix of lectures, case studies and exercises. The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: Four 3.5-hour interactive online sessions presented over 4 days. A digital manual will be distributed to participants before the course. Some reading is to be completed by participants off-line.

Level and Audience

Advanced. The course is intended for energy policy makers, energy stakeholders in charge of investment and funding decisions, and oil and gas professionals transitioning towards sustainable energy opportunities.

Objectives

You will learn to:

1. Understand the need for energy resource assessment.
2. Describe different resource estimation methods.
3. Interpret resource assessments according to different frameworks.
4. Identify the uncertainties and risks associated with a geothermal resource assessment.
5. Assess the impact of project definition on resource quantification and classification.
6. Discuss the technical, economic, social and environmental nexus of energy resources assessment.

Course Content

Course Details

This course will focus on geothermal resources assessment and classification methods, covering the following topics:

- The need for resource assessment
- Lessons learnt from the oil and gas sector
- Geothermal resource estimation methods
    - Probabilistic vs deterministic
    - Heat flow
    - Areal analogy (power density)
    - Stored heat method
    - Decline curve analysis
    - Numerical reservoir modelling
    - Monte Carlo simulation
- Past and present approaches to geothermal resources classification
- Project-based assessment
- Examples of current assessment framework for the energy transition