



Orleans

CO₂ Geological Storage Modelling Workshop

10th-12th February 2009

Orleans, France

Organised by

IEA Greenhouse Gas R&D Programme,
BRGM, Schlumberger and CO₂GeoNet

Sponsored by

Total
IFP



Schlumberger





10th February 2009 Day 1

09.30 to 10.30 Registration Opens

Session 1 Introduction

10.30 to 10.35 Welcome and Introduction: **Christian Fouillac**, Research Director, BRGM and CO₂Geonet

10.35 to 10.45 Welcome and outline agenda: **Neil Wildgust**, IEA GHG

10.45 to 11.00 Modelling Overview for CO₂ Storage: **Isabelle Czernichowski**, BRGM and CO₂Geonet

11.00 to 11.20 Regulatory Perspective: **IEA GHG**

Session 2 Assessment Objectives for Modelling: Chairs Karsten Pruess, LBNL and Suzanne Hurter, Schlumberger

11.20 to 11.30 Introduction: **Session Chairs**

11.30 to 11.45 Storage Capacity: **Bert van der Meer**, TNO and CO₂GeoNet

11.45 to 12.00 Injectivity: **Yann le Gallo**, Geogreen

12.00 to 12.15 Plume Evolution and Trapping Phases: **Sylvain Thibeau**, Total

12.15 to 12.30 Caprock Integrity: **Brian McPherson**, University of Utah

12.30 to 13.00 Plenary question/discussion session

13.00 to 14.00 Lunch

14.00 to 14.15 Leakage through wellbores: **Mike Celia**, Princeton University

14.15 to 14.30 Leakage through faults: **Andrew Cavanagh**, Permedia

14.30 to 15.50 Breakout Discussion Session

Theme: Can current coupled models allow adequate modelling of reservoir and caprock behaviour? Does current knowledge and uncertainty allow adequate modelling of leakage processes?

Aspects for detailed consideration:

- Is there significant divergence in approaches to modelling adopted by different organisations?
- How much confidence can be placed in current approaches and resulting models?
- How modelling technologies can be developed to fulfil likely regulatory requirements?
- What are the current knowledge gaps, and what should be the future focus for research?

15.50 to 16.10 Break

16.10 to 17.30 Facilitated Plenary Discussion

Feedback from breakout session and chair summary

Close Day 1

18.00 Reception Orleans City Hall



11th February 2009 Day 2

Session 3 Processes Session Chairs Brian McPherson, University of Utah and Pascal Audigane, BRGM and CO₂GeoNet

08.30 to 08.40 Introduction: [Session Chairs](#)

08.40 to 08.55 Geological modelling, heterogeneities and scale relations: [Peter Frykman, GEUS and CO₂GeoNet](#)

08.55 to 09.10 Multiphase fluid flow modelling: [Suzanne Hurter, Schlumberger](#)

09.10 to 09.25 Geochemistry and reactive transport modelling: [Mohamed Azaroual, BRGM and CO₂GeoNet](#)

09.25 to 09.40 Geomechanical modelling: [Johnny Rutqvist, LBNL](#)

09.40 to 09.55 Modelling heat transfer: [Karsten Pruess, LBNL](#)

09.55 to 10.15 Break

10.15 to 11.45 **Breakout Discussion Session**

Themes:

- What are the processes and parameters that are critical to modelling requirements?
- What knowledge gaps still exist?

Consider the above questions for base geological models, multiphase flow, geochemistry and reactive transport, geomechanics, and thermics.

11.45 to 13.00 **Facilitated Plenary Discussion**

Feedback from breakout groups and chair summary

13.00 to 14.00 Lunch

Session 4 Special Issues Session Chairs Sascha van Putten, Shell and Tess Dance, CO₂CRC

14.00 to 14.05 Introduction: [Session Chairs](#)

14.05 to 14.20 Code comparison exercises: [Holger Class, Stuttgart University](#)

14.20 to 14.35 Model comparison exercises: [Jens Birkholzer, LBNL](#)

14.35 to 14.50 Numerical tools improvement: [Anthony Michel, IFP and CO₂GeoNet](#)

14.50 to 15.05 Modelling and monitoring: [Susan Hovorka, University of Texas](#)

15.05 to 15.20 Modelling and risk assessment: [Rajesh Pawar, LANL](#)

15.20 to 15.40 Break

15.40 to 16.30 **Breakout Discussion Session**

Theme: How can modelling be used to optimise monitoring strategies and inform risk assessments?
How confident are we with model predictions?

Regulatory aspects are an important aspect here, and a discussion of the relationship between risk assessment and modelling, especially in the context of risk management frameworks.

16.30 to 17.30 **Facilitated Plenary Discussion**

Feedback from breakout groups and chair summary

Close Day 2

19.00 Gala Dinner at Chateau de la Ferté St Aubin, sponsored by BRGM, Schlumberger, IFP and Total



12th February 2009 Day 3

Session 5 Aims and objectives for potential modelling network Session Chairs Isabelle Czernichowski, BRGM and CO₂GeoNet, Gabriel Marquette, Schlumberger and Neil Wildgust, IEA GHG

08.30 to 08.40 Introduction: **Session Chairs**

08.40 to 08.50 Aims of monitoring network: **Neil Wildgust, IEA GHG**

08.50 to 09.00 Aims of wellbore integrity network: **Toby Aiken, IEA GHG**

09.00 to 09.10 Aims of risk assessment network: **Neil Wildgust, IEA GHG**

09.10 to 10.30 **Breakout Discussion Session**

Theme: What should be the aims of a modelling network, objectives and first steps?

10.30 to 10.50 Break

10.50 to 12.00 **Facilitated Plenary Discussion**

Feedback from breakout groups and chair summary

12.00 to 12.30 Wrap Up

Close Day 3