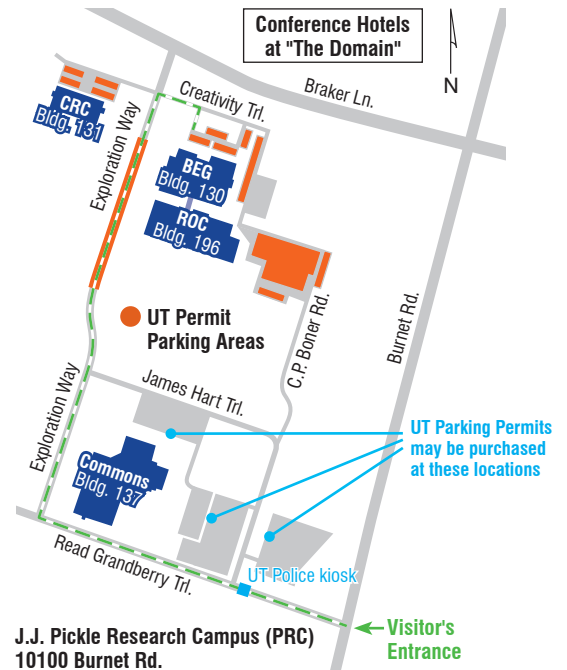




# International Workshop on Offshore Geologic CO<sub>2</sub> Storage

**April 19–21, 2016**

**Gulf Coast Carbon Center  
Bureau of Economic Geology  
The University of Texas at Austin  
Austin, Texas, USA**



Sponsored by





## SCOPE AND GOALS

---

- » Perform a global needs assessment for offshore geological CO<sub>2</sub> storage.
- » Initiate a discussion about the various aspects of offshore transport and storage to build an international community of parties interested in offshore storage.
- » Facilitate countries to identify their specific issues, challenges, opportunities, etc.
- » Identify synergies, common gaps and goals, and define common action items.

## PRE-WORKSHOP ACTIVITY

---

Survey. Pre-workshop status and needs assessment survey for each country.

## DAY 1 TUESDAY, APRIL 19, 2016

---

### Introduction

- 9:00am Welcome to BEG - *Scott Tinker, Director BEG*  
9:15am Workshop welcome - *Sue Hovorka, Tony Surridge*  
9:30am Workshop goals, expectations and logistics – *Katherine Romanak, Tip Meckel, Tim Dixon*  
9:45am Overview of CSLF Report on Offshore CCS – *Mark Ackiewicz*

### Current State of Knowledge - Workshop Talks by Experts

- 10:00am How to find and assess your storage offshore – *Tip Meckel*  
10:30am How to assess options for offshore transport and storage and onshore capture, Norway as a case study – *Philip Ringrose*  
11:00am Break  
11:30am How to develop a pilot injection project offshore, history of K12B – *Vincent Vandeweyer*  
12:00pm How to reach an offshore injection phase, Japan case study – *Ryozo Tanaka*  
12:30pm How to do risk management, including storage, monitoring, regulations and public acceptance, Shell case study – *Owain Tucker*  
1:15pm Lunch  
2:15pm How to do environmental monitoring offshore, Japan case study – *Jun Kita*  
2:45pm How to do EOR offshore, Brazil case study – *Paulo Seabra*  
3:15pm Subsea well stream processing/ship transport options, North Sea case study – *Philip Ringrose and Vincent Vandeweyer (with input from Paal Helge Nøkleby, Aker Solutions, and Filip Neele, TNO)*  
3:45pm How to meet international regulations covering offshore CCS – *Tim Dixon*  
4:15–4:30pm Wrap-up and summary – *Sue Hovorka and Tim Dixon*

Conference Dinner - County Line on the Lake, 6:30pm shuttle pick-up at the Lone Star Court Hotel



## DAY 2 WEDNESDAY, APRIL 20, 2016

### Country Status and Needs Assessment Reports and Discussions

- 9:00am Summary of survey responses – *Sue Hovorka*
- 9:15am South Africa – *Tony Surridge*
- 9:30am China – *Zhou Di*
- 9:45am USA – *Traci Rodosta*
- 10:00am Nigeria – *Felicia Mogo*
- 10:15am Ghana – *Joseph Essandoh-Yeddu*
- 10:30am Break
- 10:45am Korea – *Sang Hoon Lee*
- 11:00am Mexico – *Jazmin Mota*
- 11:15am Australia – *Charles Jenkins*
- 11:30am SE Asia and CCOP initiative – *Tim Dixon on behalf of Sim Caluyong, CCOP, Thailand*
- 11:45am Baltic BASREC project – *Tim Dixon (on behalf of Nicklas Nordback, GTK, Finland)*
- 12:00-1:30pm Lunch

### Guided Discussion – Sue Hovorka and Philip Ringrose lead

- 1:30pm Summary of needs, probing needs and uncertainties, look for commonalities, distill topics, including business models - breakout groups and reporting back.
- 3:30pm Break

### Recommendations and Next Steps – Sue Hovorka, Tip Meckel, Katherine Romanak, Tim Dixon

- 4:00pm Define next actions and explore mechanisms for implementation – e.g., follow-on workshops to address these needs, need for task forces, guiding documents, or other potential participants
- 4:40pm CTCN presentation and recognition of attendees – *Katherine Romanak*
- 4:50pm Introduction of CSLF Task Force on Offshore CO<sub>2</sub>-EOR – *Lars Ingolf Eide*
- 5:00pm Conclusions and End – *Sue Hovorka, Tip Meckel, Katherine Romanak, Tim Dixon, Tony Surridge*

Dinner on your own

## DAY 3 THURSDAY, APRIL 21, 2016

8:30–11:30am Expo – visit to capture pilot, core viewing, demonstrations, posters and CTCN application overview (developing countries only). Meet in CRC Building #131.\*

Schedule	8:30-9:30am	9:30-10:30am	10:30-11:30am
<b>BEG Bldg. 131 - CRC Exhibition Space</b>	All Participants	Group A	-----
<b>Rochelle CO<sub>2</sub> Capture / Power Plant Tour</b>	-----	Group B	Group A
<b>CTCN Activity - Library in Building #130</b>	-----	-----	Group B

\* CRC building (#131) is the Core Research facility immediately west of the main BEG building (#130, where we will be meeting on Tuesday and Wednesday). Posters, core, and other demonstrations will be set up in the CRC warehouse facility.

Dr. Rochelle of the UT Austin Department of Chemical Engineering has a mini-power plant with experimental CO<sub>2</sub> capture equipment (<http://rochelle.che.utexas.edu/>). The facility is a 5-minute walk from the CRC (Bldg. 131).



## DAY 3 (CONTINUED)

### OFFSHORE DEMONSTRATIONS:

- » Dallas Dunlap and Ramón Treviño, BEG, *P-Cable Ultra High Resolution 3-D (UHR3D) System selected components and operations video*
- » Jiemin Lu, BEG, *Examination and Discussion of Two Whole Cores from Miocene age rocks – Texas and Louisiana offshore areas*

### OFFSHORE POSTERS:

Authors	Institute / Project	Poster Title
Kerstan Wallace, David Carr	BEG / U.S. DOE Miocene Mega-Transect	<i>Use of 3-D Dynamic Modeling of CO<sub>2</sub> injection for Comparison to Regional static Capacity Assessments of Miocene Sandstone Reservoirs in the Texas State Waters, Gulf of Mexico</i>
David Carr	BEG / U.S. DOE Miocene Mega-Transect	<i>Offshore CO<sub>2</sub> Sequestration Research Program: Capabilities &amp; Selected Research Highlights</i>
Michael DeAngelo, Dallas Dunlap	BEG / U.S. DOE TXLA	<i>Evaluation of the seismic structural and stratigraphic framework of the Upper Texas Shelf and its potential for CCS</i>
Isis Fukai	Battelle / U.S. DOE - mid Atlantic	<i>Mid-Atlantic U.S. Offshore Carbon Storage Resource Assessment</i>
Ellen Gilliland	Va. Tech (SSEB) / U.S. DOE - mid Atlantic	<i>Southeast Offshore Storage Resource Assessment: Mid-Atlantic</i>
Khang Lao	GeoMechanics Technologies / U.S. DOE - GOM Ship Shoal	<i>Assessment of CO<sub>2</sub> Storage Resources in Depleted Oil and Gas Fields in the Ship Shoal Area, Gulf of Mexico</i>
Iulia Olariu	BEG / U.S. DOE TXLA	<i>Preliminary stratigraphy and depositional framework of Miocene in offshore Texas and Louisiana for CO<sub>2</sub>-EOR resource assessment</i>
Jack Pashin, Jingyao Meng, Denise Hills, Guohai Jin, Marcella McIntyre-Redden	OSU (SSEB) / U.S. DOE - eastern GOM	<i>Geologic Framework and CO<sub>2</sub> Storage Potential of the Eastern Gulf of Mexico Continental Shelf</i>
Rebecca Smyth, David Carr	GCCC / SSEB, EPRI, SE U.S. power companies	<i>2006-2011 GCCC Offshore Reconnaissance-Level CO<sub>2</sub> Capacity Studies, SE U.S. Atlantic and GOM</i>
Ramon Trevino, Dallas Dunlap	GCCC / U.S. DOE - TXLA	<i>First Seismic Acquisition Survey Cruise Using Newly Acquired "P-Cable" system</i>
Changbing Yang	BEG / U.S. DOE Miocene Mega-Transect	<i>Regional Assessment of CO<sub>2</sub>-Solubility Trapping Potential: A Case Study of the Coastal and Offshore Texas Miocene Interval</i>
Nick Hoffman	Carbon Net Project Australia	<i>3D mapping and correlation of intraformational seals within the Latrobe Group in the nearshore Gippsland Basin</i> <i>MMV constraints for shallow-water nearshore storage sites</i>



## International Workshop on Offshore Geologic CO<sub>2</sub> Storage

### STEERING COMMITTEE

Tim Dixon, IEAGHG (Chair)	Di Zhou, China Academy of Sciences
Katherine Romanak, BEG (Co-Chair, Host)	Filip Neele, TNO
Susan Hovorka, BEG (Host)	Paulo Negrais Seabra, Independent Consultant (formerly Petrobras)
Tip Meckel, BEG (Host)	Ryozo Tanaka, RITE
Anthony Surridge, SANEDI (Host)	Owain Tucker, Shell
Mark Ackiewicz, US DOE	Philip Ringrose, Statoil

### ATTENDEES

Name	Company
Mark Ackiewicz	US Department of Energy
Melissa Batum	Bureau of Ocean Energy Management
Patricia Berry	Southern States Energy Board
Michael Carney	Schlumberger Carbon Services
Susan Carroll	Lawrence Livermore National Laboratory
Tim Dixon	IEAGHG
Eric Drueppel	ExxonMobil URC
Stephanie Duran	U.S. Department of Energy
Jennifer Edwards	Bureau of Economic Geology, UT-Austin
Lars Ingolf Eide	Research Council of Norway
Joseph Essandoh-Yeddu	Energy Commission, Ghana
Isis Fukai	Battelle
Ramon A. Gil-Egui	Bureau of Economic Geology, UT-Austin
Ellen Gilliland	VCCER at Virginia Tech
Neeraj Gupta	Battelle
Jade Haug	Bureau of Ocean Energy Management
Kenneth Hood	ExxonMobil Upstream Research Co
Susan Hovorka	Bureau of Economic Geology, UT-Austin
Stephanie Ingle	Fugro Marine Geoservices, Inc.
Charles Jenkins	CO2CRC & CSIRO
Noel Kamrajh	SANEDI
Jun Kita	Research Institute of Innovative Technology for the Earth
Prasanna Krishnamurthy	The University of Texas at Austin



## International Workshop on Offshore Geologic CO<sub>2</sub> Storage

### ATTENDEES (CONTINUED)

<b>Name</b>	<b>Company</b>
Kang Lao	GeoMechanics Technologies
Sang Hoon Lee	Korea Institute of Ocean Science and Technology
Pengchun Li	South China Sea Institute of Oceanology, Chinese Academy of Sciences
Xi Liang	UK-China (Guangdong) CCUS Centre
Xueyan Liu	University of Texas at Austin
Jiemin Lu	Bureau of Economic Geology, UT-Austin
Tip Meckel	Bureau of Economic Geology, UT-Austin
Felicia Chinwe Mogo	Nigerian Maritime Administration and safety Agency (NIMASA)
Jazim Mota	Ministry of Energy, Mexico
Paulo Negrais Seabra	Independent Consultant
Lucie N'Guessan	ExxonMobil Upstream Research Company
Jack Pashin	Oklahoma State University
Chris Rathbun	Shell
Donald Rehmer	Bureau of Ocean Energy Management
Philip Ringrose	Statoil ASA
Traci Rodosta	DOE/NETL
Katherine Romanak	Bureau of Economic Geology, UT-Austin
Mahmood Shakiba	Bureau of Economic Geology, UT-Austin
Rebecca Smyth	Bureau of Economic Geology, UT-Austin
Tristan Stanley	International Energy Agency
Tony Surridge	SANEDI
Ryozo Tanaka	RITE
Ramón Treviño	Bureau of Economic Geology, UT-Austin
Luca Trevisan	Bureau of Economic Geology, UT-Austin
Owain Tucker	Shell
Bob Van Voorhees	Carbon Sequestration Counsel
Vincent Vandeweyer	TNO
Joshua White	Lawrence Livermore National Laboratory
Changbing Yang	Bureau of Economic Geology, UT-Austin
Michael Young	Bureau of Economic Geology, UT-Austin
Youqin Zou	Bureau of Economic Geology, UT-Austin
Zhou Di	South China Sea Institute, Chinese Academy of Sciences