



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



June 19 – 20, 2017

Center of Innovation, Commercialization,  
and Entrepreneurship

Lamar University  
Beaumont, Texas, USA





## DAY 1 SUNDAY, JUNE 18, 2017

7:00–8:30pm

*Reception at MCM Eleganté Hotel, Veranda Room (located between the front desk and Starbuck's on the first floor), 2355 I-10 South Beaumont, Texas 77705*

*Menu: Light hors d'oeuvres, coffee, tea, water, and a cash bar. Kitchen will remain open until 10:00pm for anyone desiring a late meal*

## DAY 2 MONDAY, JUNE 19, 2017

8:10am

Welcome. Sue Hovorka, BEG, Paul Latiolais, Lamar University, Katherine Romanak, BEG, Tim Dixon, IEAGHG

### Session 1. How to find storage offshore – mapping and screening for good sites: Chair, Sue Hovorka

8:30am

South Africa from zero to pilot project and offshore assessment – Noel Kamrajh, SANEDI

8:50am

Australia CarbonNet Stage 3 – Nick Hoffman, CarbonNet

9:10am

CO<sub>2</sub>-storage screening for Norway – Niels Peter Christensen, Gassnova

9:30am

Deep Saline Formation storage screening in Petrel Australia – Owain Tucker, Shell

9:50am

EASiTool for storage capacity estimates – Seyyed Hosseini, BEG

10:00am

Discussion

10:30am

Coffee and posters

### Session 2. Technical Deep-dive Monitoring – How much is needed, how much do regulators need, limits of Monitoring: Chair, Tim Dixon

10:50am

Goldeneye monitoring for EU permit and cost reductions – Owain Tucker, Shell

11:10am

ROAD monitoring for EU permit – Vincent Vandeweyer, TNO

11:30am

Environmental regulations of subsea geological storage of CO<sub>2</sub> in Norway–Lars Ingolf Eide on behalf of Norwegian Environmental Directorate

11:50am

Update on Developing Best Practices for offshore storage in the US. – Melissa Batum, BOEM

12:10pm

Discussion

12:30pm

Lunch

### Session 3. Technical Deep-dive Environmental and overburden monitoring – Chair, Katherine Romanak

1:30pm

Leak detection – Keisuke Uchimoto, RITE

1:50pm

GoM shallow overburden work – Tip Meckel, BEG

2:10pm

AUVs for environmental monitoring – Kim Swords- Sonardyne

2:30pm

Discussion

2:50pm

Coffee and posters



## DAY 2 MONDAY, JUNE 19, 2017 (CONTINUED)

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### Session 4. Changing the Game for CO<sub>2</sub>-EOR Offshore: Chair, Paulo Negrais Seabra

- 3:10pm CSLF CO<sub>2</sub>-EOR Task Force update – Lars Ingolf Eide, RCN
- 3:30pm North Sea technical and economic potential – Stuart Haszeldine, SCCCS
- 3:50pm Establishing CO<sub>2</sub> Utilization, Storage and Pipeline Systems for Oil Fields in Shallow and Deep Waters of the Gulf of Mexico–Vello Kuuskraa, ARI
- 4:10pm US EOR learnings from onshore for offshore – Sue Hovorka, BEG
- 4:30pm Discussion
- 5:00pm End
- 7:00pm *Optional: Group dinner at Suga's Please bring \$50 cash and you will be given a receipt*

## DAY 3 TUESDAY, JUNE 20, 2017

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- 8:10am Introduction for the day, field trip and logistics – Tip Meckel

### Session 5. Infrastructure developments: Chair, Tip Meckel

- 8:20am CO<sub>2</sub> Transport and Storage infrastructure development – challenges and possible way forward, Thomas Berly, IEA
- 8:40am Smart Technology for CO<sub>2</sub> handling subsea – Lars Ingolf Eide on behalf of Aker Solutions
- 9:00am Re-use of hydrocarbon wells – Gert-Jan Heerens, TNO
- 9:20am Discussion on new versus re-use of existing infrastructure – Tip Meckel to chair
- 10:00am Coffee and posters

### Session 6. Panel discussion on US developments in offshore storage assessment: Chair, Lars Ingolf Eide

- 10:30am Mid-Atlantic Assessment – Neeraj Gupta, Battelle
- 10:40am Southeast Atlantic Offshore – Jack Pashin (Oklahoma State University) & Jim Knapp (University of South Carolina)
- 10:50am Near-offshore storage on the inner shelf of the Gulf of Mexico – Tip Meckel, BEG
- 11:00am Deep ocean basalt formations mineral carbonation – Dave Goldberg, Columbia University
- 11:10am Discussion

### Session 7. Conclusions and recommendations: Chairs, Susan Hovorka, Tip Meckel, Tim Dixon, Katherine Romanak

- 12:00pm End
- 12:00–7:00pm **Field trip** incorporating aspects of the full CCS chain: 1) Air Products capture facility, 2) Midstream transport terminal including rail, vessel and pipeline transport, 3) modern analogues of storage formations at the Texas coast, and 4) Museum of the Gulf Coast, Port Arthur Texas. Lunch and dinner will be provided. The bus will return to the hotel after the event.

*We thank Bart Owens of GT-Omniport for generously providing lunch at their facilities on the field trip Tuesday afternoon. We offer our sincere thanks to Jeff Hayes of Port Arthur for his support for the dinner on Tuesday night. The event could not have been possible without the thoughtful involvement of Tom Neal, the Director at the Museum of the Gulf Coast - thank you!*



## POSTERS

Title	Presenter / Author	Affiliation
<i>Use of high-resolution 3D marine seismic for characterization and monitoring of offshore CCS sites</i>	Tip Meckel	Gulf Coast Carbon Center, The University of Texas Bureau of Economic Geology
<i>CO<sub>2</sub> Storage Potential of the MAFLA Shelf, Eastern Gulf of Mexico</i>	Jack C. Pashin	Boone Pickens School of Geology, Oklahoma State University
<i>Public and stakeholder understandings of offshore CO<sub>2</sub> storage and implications for monitoring: The case of the Tomakomai CCS Demonstration Project</i>	Leslie Mabon	School of Applied Social Studies, Robert Gordon University, Scotland
<i>Long Term Prediction of CO<sub>2</sub> flow Behavior by Field Scale Flow Simulation Model</i>	Yutaka Tanaka, Daiji Tanase, Takayasu Honda	Japan CCS Co., Ltd.
<i>Carbon Dioxide (CO<sub>2</sub>) Project in the Brillante Field.- Sustainable EOR Project</i>	Heron Gachuz Muro	Pemex Exploration & Production
<i>Tomakomai CCS Demonstration Project - Environmental Impact Assessment and Leakage detection</i>	Jun Kita	Applied Biology Group, Marine Ecology Research Institute
<i>CO<sub>2</sub> storage options and CCS development in The Netherlands</i>	Filip Neele	TNO
<i>Brazil Country Update</i>	Paulo Negrais Seabra	Independent Consultant, formerly Petrobras
<i>Use of natural and artificial tracers to detect and quantify CO<sub>2</sub> leakages at the seafloor from marine CO<sub>2</sub> storage sites</i>	Anita Flohr	National Oceanography Centre, University of Southampton, UK, Carbon
<i>Carbon Sequestration in the Southeastern United States: Past, Present, and Future</i>	Camelia C. Knapp	School of the Earth, Ocean, and Environment/Earth Sciences and Resources Institute, University of South Carolina
<i>EASiTool : An Enhanced Analytical Simulation Tool for Storage Capacity Estimation</i>	Seyyed Hosseini	Gulf Coast Carbon Center, The University of Texas Bureau of Economic Geology

## INTERNATIONAL STEERING COMMITTEE

Tim Dixon, IEAGHG (Chair)

Katherine Romanak, BEG (Co-Chair, Host)

Susan Hovorka, BEG (Host)

Tip Meckel, BEG (Host)

Paul Latiolais Lamar (Host)

Thonda Harvey Lamar (Host)

Anthony Surridge, SANEDI

Noel Kamrajh, SANEDI

Lars Ingolf Eide, Research Council of Norway

Traci Rodosta, US DOE NETL

John Litynski US DOE

Di Zhou, China Academy of Sciences

Filip Neele, TNO

Paulo Negrais Seabra, Independent Consultant, formerly Petrobras

Ryozo Tanaka, RITE

Owain Tucker, Shell

Philip Ringrose, Statoil

Michael Carpenter, Gassnova



## ATTENDEES

Name	Company
David Adelman	University of Texas at Austin School of Law
Melissa Batum	Bureau of Ocean Energy Management
Thomas Berly	International Energy Agency (IEA)
Patti Berry	Southern States Energy Board
Alain Bonneville	Pacific Northwest National Laboratory
Kristen Carpenter	Louisiana State University
Niels Peter Christensen	Gassnova SF
Lydia Cumming	Battelle
Tim Dixon	IEAGHG
Hui Du	Louisiana State University
Lars Ingolf Eide	Research Council of Norway
Anita Flohr	National Oceanography Centre, University of Southampton, UK
Heron Gachuz Muro	Pemex
Ramon Gil Egui	UT-Austin, BEG
David Goldberg	Columbia University
Arne Graue	University of Bergen
Neeraj Gupta	Battelle
Stuart Haszeldine	University of Edinburgh
Gert-Jan Heerens	TNO
Brian Hill	Southern States Energy Board
Nick Hoffman	The CarbonNet Project
Seyyed Hosseini	UT-Austin, BEG
Susan Hovorka	UT-Austin, BEG
Carlos Jenkins	SME
Noel Kamrajh	Sanedi
Camelia Knapp	University of South Carolina
James (Jim) Knapp	University of South Carolina
Vello Kuuskraa	Advanced Resources International
Chi-Wen Liao	Industrial Technology Research Institute
Shangmin Lin	Deloitte
Tip Meckel	UT-Austin, BEG



## ATTENDEES (CONTINUED)

<b>Name</b>	<b>Company</b>
Robert Mitchell	Global CCS Institute
Paulo Negrais Seabra	Independent consultant
Vanessa Nunez-Lopez	UT-Austin, BEG
Hilary Olson	UT-Austin, BEG
Jeffrey Palmer	ExxonMobil Exploration
Jack Pashin	Oklahoma State University
Mileva Radonjic	LSU
Traci Rodosta	DOE-NETL
Katherine Romanak	UT-Austin, BEG
Babak Shafei	AquaNRG Consulting Inc.
Chung Shih	Leidos
Jeff Summers	U.S. Department of Energy
Alex Sun	UT-Austin, BEG
Kim Swords	Sonardyne
Ryozo Tanaka	RITE
Gary Teletzke	ExxonMobil Upstream Research
Burt Thomas	DOE NETL
Ramon Trevino	UT-Austin, BEG
Owain Tucker	Shell
Peter Tutton	University of Texas
Keisuke Uchimoto	Research Institute of Innovative Technology for the Earth
Betsy Valente	U.S. EPA
Vincent Vandeweyer	The Netherlands
Robert Wenger	ExxonMobil
Joshua White	Lawrence Livermore National Laboratory
Neil Wildgust	Energy & Environmental Research Center
Grace Womack	Drexel University
Michael Young	UT-Austin, BEG
Sophia Zabaraz	Shell
Di Zhou	UK-China (Guangdong) CCUS Centre



## Directions

### From I-10/69 North:

Take 69 South. Exit at Lamar University/MLK Parkway. Merge onto MLK Parkway. At the first traffic light turn left onto Florida Avenue (Jim Gilligan Way). Proceed to the first stop sign at Rolfe Christopher Drive. The CICE is the two-story building on the right.

### From Downtown/MLK Parkway:

Turn right onto Florida Avenue (Jim Gilligan Way). Proceed to the first stop sign at Rolfe Christopher Drive. The CICE is the two-story building on the right.

### From Mid-County/69 South:

Take 69 North. Exit at Lamar University/MLK Parkway. Merge onto MLK Parkway. At the first traffic light turn left onto Florida Avenue (Jim Gilligan Way). Proceed to the first stop sign at Rolfe Christopher Drive. The CICE is the two-story building on the right.

