“International Collaborations in Advancing CCS”

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COP 25 – Chile/Spain
Gulf Coast Carbon Center

• > 15 years experience in geological CO₂ storage research and implementation
• Develop and implement monitoring programs for geological CO₂ storage sites
  ✓ Site selection and permitting
  ✓ Regulatory compliance
  ✓ Technology transfer and education
• Monitored >9 demonstration projects
• Actively monitored over 10 million tonnes of CO₂ in the ground
Facilitating climate action through international co-operation

“Climate change is a global problem and extensive international cooperation is critical for effective solutions.”

UNFCCC
Workshops Connect Individual Knowledge and Experience

• Sharing individual experiences.
• Identifying key areas of interest
• Amplifying, modifying, and clarifying concepts through discussion
• Building a community of trust
Going Further - Learning through International Collaboration

- Simply sharing within the community cannot ensure success.
- Need to create experiences, actions, and strategic choices that will facilitate a higher level of learning.
- Collaborative learning by doing
  - Common experiences
  - Share cost burden
  - Effective technology and knowledge transfer
  - Create consensus of ideas and enhances understanding

The International Space Station is an example of international collaboration.
U.S. Seeking Technology Transfer from Japan in Offshore CCS

Local CCS Potential in Offshore Gulf of Mexico
Field Validation of MVA Technology for Offshore CCS, Tomakomai, Japan

Tip Meckel, Ramon Trevino, & Katherine Romanak

U.S. Department of Energy
National Energy Technology Laboratory
Project Number DE-FE0028193
Goals & Objectives - Seismic

**Goal:** Validate technologies to enhance MVA

**Objectives:**

1) Acquire UHR3D seismic dataset and validate MVA technology at an operational CCS field demonstration project

2) Validate untested dynamic acoustic positioning techniques

3) Define CO$_2$ plume boundaries

4) Provide insight into subsurface field conditions informed by UHR3D
   - Link shallow subsurface seismic structures to geochemical signatures
   - Advance techniques for attribution of leakage signals in marine environment
Goals & Objectives - Environmental

**Goal:** Validate technologies to enhance MVA

**Objectives:**
- Participate in routine monitoring
- Learn methods and protocols for marine environmental monitoring
- Integrate new analyses with current monitoring parameters and methods
- Link shallow subsurface seismic structures to geochemical signatures
- Advance techniques for attribution of leakage signals in marine environment
Environmental Monitoring May 2017

Many thanks to Jun Kita, Marine Ecology Research Institute and Japan CCS

UHR3D Acquisition August 2017

Photo by Eddie Tausch, courtesy of TDI-Brooks Int., Inc.
Lessons Learned

• International deployment was demonstrated
  • Overseas shipping transport, contracts, costs, production rates
  • Vessel modifications
  • International communications
• Real-time modifications of survey acquisition
  • Data coverage, density
• Processing techniques – hybrid commercial + other
• Local stakeholders consultation very important
• Marine environmental monitoring is challenging!
Thank you to our Japanese colleagues!
Developing Countries - Why is it important?

A total of 94 Gt captured and stored through 2050 in IEA 2DS

1996-2016: < 1 Gt verifiably stored

2017-2030: 8 Gt

2031-2040: 28 Gt

2041-2050: 58 Gt

75% from non-OECD countries

Modified from Jean-François Gagné, IEA, 2016 GHGT-13
Inviting Countries

An Invitation

• Opportunities are available at all levels for “getting on the path” to CCS.
• Explore your potential for geological CO₂ Storage.
• Do a needs assessment survey
• Utilize new funding mechanisms to build your capacity in CCS – e.g. CTCN
• Become involved in the CSLF
• Explore memberships with experienced organizations

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Getting On the Path to CCS

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COP 22 Marrakech/Morocco
Trinidad and Tobago
"...The time is ripe for us to ... explore opportunities to leverage international support. The opportunities for technology transfer, and for Trinidad and Tobago to join the technology leaders in CCS ... is to be encouraged and supported...The Government of Trinidad and Tobago will ... set the policy framework and support activities on carbon capture and storage... Our commitment to working collaboratively with you in this regard will remain unwavering."
Example - Mission Innovation - CCUS

- 20 countries and the EU
  - Mexico, Saudi Arabia, United Kingdom, Australia, Canada, China, Denmark, European Commission, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, Norway, Republic of Korea, Sweden, United Arab Emirates, United States

- Workshop 2017 Houston, Texas,
  - Assess gaps
  - Identify Priority Research Directions

- Workshop 2019, Trondheim, Norway
  - Follow up on important work so far
  - Ensure continued progress towards full-scale implementation and commercialization

- ACT - Demonstrating the impact of international collaboration
A new multinational funding scheme for research and innovation dedicated to CCUS. ACT envisages to launch additional calls and expand its network.
ACT- Accelerating CCS

• 8 projects in 2017 (€ 41 million)
• 12 projects in 2019 (€ 31 million)
• 2 projects include outside partners Australia, Iceland, Italy and Japan.
  • Capture, storage, monitoring, wells, utilization, mineralization
  • Outreach, knowledge sharing, and social aspects
• Plans for an ACT Call in 2020.
Thank you for your attention

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