

Susan D. Hovorka

Professional Summary

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Business address: The University of Texas at Austin
Bureau of Economic Geology
University Station, Box X
Austin, TX 78713-8924

Telephone: (512) 471-4863

E-mail address: susan.hovorka@beg.utexas.edu

Professional Preparation

Academic Background

Ph.D. Geology, The University of Texas at Austin, 1990

M.A. Geology, The University of Texas at Austin, 1981

B.A. Geology, Earlham College, 1974

Professional Appointments

Present Position: Research Scientist, Bureau of Economic Geology, The University of Texas at Austin (1981 - Present). CO₂ sequestration in saline formations and EOR (1998-present); Edwards aquifer studies (1993-2005); Austin Chalk study for Superconducting Super Collider project (1990-1994); K-12 outreach coordinator; salt cavern studies in the Midland Basin (1996-1999); Montague County saline contamination study (1997-1998); Quaternary studies: geologic analogs for engineered barriers (1995-1997); reservoir characterization, Delaware Mountain Group (1995-1996); playa basin sediment study, Pantex Plant area (1992-1995); San Andres Reservoir Characterization Research Laboratory project (1989-1990); University Lands, Siluro-Devonian reservoirs project (1989-1990); host rock analysis, West Texas Waste Isolation project (1981-1988).

Geologist, Bendix Field Engineering Corporation, Austin, TX (April 1979 - April 1981). National Uranium Resource Evaluation (NURE) program.

Professional Registrations and Certificates

Texas Professional Geologist, No. 1617

Theses

Stratigraphy and petrography of the Upper Chert and Shale Member, Caballos Formation, Brewster County, West Texas: The University of Texas at Austin, M.A. thesis, 272 p., 1981

Dissertations

Sedimentary processes controlling deposition of halite, Permian Basin, Texas: The University of Texas at Austin, Ph.D. dissertation, 394 p., 1990

Areas of Expertise

Areas of Expertise

Design and execution of field tests of geologic sequestration of CO₂

K-12 outreach

Petrography

Sedimentology supporting hydrogeologic assessments

Site characterization and monitoring for geologic storage of CO₂

Awards

Awards and Honorary Societies

Greenman Award from the Greenhouse Gas Control Technologies (GHGT) Conference, recognizing individuals who had made a significant contribution to the field of CO₂ removal, storage, and utilization, 2018-2019

Jackson School of Geosciences (UT Austin) Outstanding Research Award (to entire Gulf Coast Carbon Center staff), 2016

Bureau of Economic Geology 2013 Publication Award, Exemplary Publication of Scientific or Economic Impact, for Process-based approach to CO₂ leakage detection by vadose zone gas monitoring at geologic CO₂ storage sites, 2013

One of Top 12 Best Abstracts, 11th Annual Conference on Carbon Capture Utilization & Sequestration, Pittsburgh, 2012

Top 12 Presentation, Annual Carbon Capture, Utilization, and Sequestration Conference, April 30-May 3, 2012

Research Award, Division of Environmental Geosciences, American Association of Petroleum Geologists, 2008-2009

Award of Excellence, Association for Women in Communications, World of Water Simulation, 2006

Joseph C. Walter Jr. Award, Jackson School of Geosciences, 2005

Service

University Committees

Member, Jackson School of Geosciences Endowment Committee, September 2018-September 2019

External Committees Participation

Member, International Steering Committee, IEAGHG Monitoring Network and Environmental Research Network Meeting, University of Calgary, January 2019-Present

Member, Technical Program Committee, GHGT-14 Melbourne, 2018

Member, International Steering Committee, Monitoring Network Meeting, 2017-2018

Member, Steering Committee, Modeling and Monitoring Combined Network meeting, IEAGHG, Edinburgh, Scotland, 2016-2017

Member, Steering Committee, Greenhouse Gas Technologies (GHGT), Ecole Polytechnique Fédérale de Lausanne, October 1, 2015-November 1, 2016

Member, Steering Committee, 2014 Greenhouse Gas Control Technologies Meeting, 2014

Member, Steering Committee, 2012 International Energy Agency Greenhouse Gas Control Technologies Joint Network Meeting, 2012

Chair, K-12 and Public Outreach Committee, John A. and Katherine G. Jackson School of Geosciences, The University of Texas at Austin, 2006 - 2011

U.S. Senate Committee on Energy and Natural Resources, Introduction to geologic sequestration of CO₂.

Member, Climate Systems Science Theme Hire Review Panel, Jackson School of Geosciences, 2007

Member, Promotions Advisory Committee, Bureau of Economic Geology, 2007

Expert Review Panel Member, Greenhouse Gas Program, Review of Weyburn Phase II, Regina, Saskatchewan, International Energy Agency (Paris), 2006

Member, Expert Review Panel, Edwards Aquifer Authority, 2006

National Academy of Science Committee, Earth resources in "Overview of Carbon Storage Field Projects," Washington, DC, April 6.

Member, Outreach Working Group, Regional Geological Sequestration Partnerships, 2005 - 2006

Issue Leader, Monitoring Working Group, International Energy Agency, Greenhouse Gas Program, Rome,, 2005

Member, Organizing Committee, Applied Technology Workshop on CO2 Sequestration, Society of Petroleum Engineers, 2005

Member, Organizing Committee, Applied Technology Workshop on CO2 Sequestration, Society of Petroleum Engineers, 2005

Member, Geological Storage Working Group, Regional Geological Sequestration Partnerships, 2004 - 2005

Member, Symposium Coordinating Committee, Symposium on Edwards Resources in Central Texas: Retrospective and Prospective, South Texas Geological Society and Austin Geological Society, 2004

Session Chair, Symposium on Edwards Water Resources in Central Texas: Retrospective and Prospective, South Texas Geological Society and Austin Geological Society, 2004

Chair, Geoscience Alliance, Jackson School K-12 and Public Outreach Committee, John A. and Katherine G. Jackson School of Geosciences, The University of Texas at Austin, Austin, Texas, June, 2002 - 2003

Member, Texas Education Commission Task Force of Geoscience Education in High School, June, 2002 - 2003

Chairman, Evaporite Research Group, Society of Economic Paleontologists and Mineralogists, 1988

Published Interviews

Hovorka, S. D., 2014, CO2: commodity vs. waste, Texas CEO Magazine, v. 5, no. 2, p. 36-38 [Hovorka interviewed]

Romanak, Katherine, and Hovorka, S. D., 2013, Kyoto: have hopes for CCS been realized?: Conference highlights: Greenhouse Gases Science and Technology, v. 3, p. 5-7 [Katherine Romanak and Susan Hovorka mentioned]

Harman, G., and Hovorka, S. D., 2012, Cleaning up coal in West Texas expected to help fuel SA and wring out the oil patch: San Antonio Current, <http://sacurrent.com/news/cleaning-up-coal-in-west-texas-expected-to-help-fuel-sa-and-wring-out-the-oil-patch-1.1392355>, published October 24 [Hovorka extensively quoted]

Bull, P., and Hovorka, S. D., 2011, Aided by oil, carbon capture projects advance in Texas: The Texas Tribune, January 26, <http://www.texastribune.org/texas-energy/energy/aided-by-oil-carbon-projects-advance-in-texas/> [Hovorka quoted heavily in front-page article; same article appeared in 1-7-11 New York Times]

Bull, P., and Hovorka, S. D., 2011, Dirty business: "clean coal" and the battle for our energy future: 90-minute documentary produced by the Center for Investigative Reporting [Hovorka appears in "video extras" in which she is interviewed]

Orcutt, M., and Hovorka, S. D., 2011, Experts criticize evidence used to diagnose a suspected leak at one of the world's largest CO₂ storage sites: Scientific American, January 20, <http://www.scientificamerican.com/article.cfm?id=weyburn-carbon-storage-alleged-leak#comments> [Hovorka quoted heavily in article]

Wiseman, Paul, and Hovorka, S. D., 2010, Importance of CO₂ monitoring increases as environmental questions grow: Midland Reporter-Telegram, December 15 [including extensive quotes by Hovorka], http://www.mywesttexas.com/business/oil/article_4212f023-29c5-5018-87cb-bbda76cfeed6.html

Biello, David, and Hovorka, S. D., 2009, Carbon capture and storage: absolute necessity or crazy scheme?: 60-Second Science Blog [Online article in which Hovorka is heavily quoted.]

Biello, David, and Hovorka, S. D., 2009, Carbon storage: a few good CO₂ reservoirs could go a long way toward making coal 'clean,' in Climatewire, <http://www.eenews.net/cw/2009/03/09>. [Online article in which Hovorka is heavily quoted.]

Price, Lena, and Hovorka, S. D., 2009, UT takes on carbon research, In The Daily Texan, September 11. [Front-page, above-the-fold article in which Hovorka is heavily quoted and features a color photo of her.]

Hovorka, S. D., 2008, Locked up: Can we solve global warming by storing CO₂ underground? Energy Special Report: GOVERNING.com, <http://www.governing.com/articles/0809carbon.htm>, September (Christopher Swope).

Clayton, Mark, Smyth, R. C., and Hovorka, S. D., 2007, Earth too warm? Bury the CO₂, in Christian Science Monitor, July 31, <http://www.csmonitor.com/2007/0731/po1s05-wogi.html> Article in which Smyth and Hovorka are heavily quoted.

Nowak, Rachel, and Hovorka, S. D., 2007, Biggest carbon-burial test will hunt for leaks: NewScientist Environment, February, NewScientist.com [Hovorka quoted extensively]

Hovorka, S. D., 2006, On-camera interview by Perth, Australia, ABC affiliate on greenhouse gas technologies, fall 2006.

Stowell, Cindy, and Hovorka, S. D., 2005, Solution to warming: go underground: researchers consider storing carbon dioxide beneath Earth's surface: Daily Texan, Focus, February 25 [feature in which Hovorka is quoted extensively].

Berger, Eric, Nowlan, Godfrey, and Hovorka, S. D., 2004, Greenhouse gas goes underground: geologists catch, compress and bury carbon dioxide from smokestacks: Houston Chronicle, City and State, October 5 [feature in which Hovorka is quoted extensively + photo].

Hovorka, S. D., 2004, A global threat buried: The Times, London, May 20 [feature in which Hovorka is quoted extensively].

Hovorka, S. D., 2004, CEC environmental exchange: carbon sequestration may be answer to excess greenhouse gas: CEC Newsletter, July, http://www.cechouston.org/newsletter/2004/nl_07-04/carbon.html [feature in which Hovorka is quoted extensively].

Hovorka, S. D., 2004, Experiment seeks answers on burying carbon dioxide deep underground: The University of Texas at Austin web page, December, <http://www.utexas.edu/research/projects/frio.html> [feature in which Hovorka is quoted extensively + photo].

Hovorka, S. D., 2004, Geologists bury carbon dioxide in test: The Beaumont Enterprise, October 5 [feature in which Hovorka is quoted extensively].

Hovorka, S. D., 2004, Geologists bury carbon dioxide in test: The State.com: South Carolina's home page, October 5, <http://www.thestate.com/mld/thestate/business/9839112.htm> [feature in which Hovorka is quoted extensively].

Hovorka, S. D., 2004, New technology shows promise for state of Texas: Midland Reporter-Telegram, December 6 [story in which Hovorka is featured].

Hovorka, S. D., 2004, Techline: Frio Formation Test Well injected with carbon dioxide: researchers perform small scale, short term carbon sequestration field test: DOE National Technology Laboratory web page, November 19, file://C:\User\CO2iii\press\NETL%20-%20Carbon%20Sequestration_files\tl_frio_injection [Hovorka prominently featured].

Hovorka, S. D., 2004, Texas locks up greenhouse gases-underground: The Christian Science Monitor, December 1 [feature in which Hovorka is quoted extensively].

Laramée, Valéry, and Hovorka, S. D., 2004, Entretien: La séquestration reste encore trop chère pour les raffineurs: Enerpresse, November [one-on-one interview].

Romanak, Katherine, and Hovorka, S. D., ed., 2001, Need for DOE oil, gas R&D seen rising: inside energy/with Federal Lands, August 13, p. 1, 9-10 [feature summarizing Tinker's views on DOE's role in funding energy research; extensive quotations from Tinker].

Outreach Activities

What to Do with CO₂: presented to Texas Environmental Education Advisory Committee (TEEAC) field day, Austin, Tex., January 3, 2019.

Carbon Sequestration: Can It Work?: presented to Third Annual UT Austin Energy Journalism Workshop, Austin, Tex., September 25, 2018.

Overview of CCS; part of panel on Bridging the Space between the Lab and the Press: presented to Austin Science Writers, Austin, Tex., September 22, 2018.

Panel exploring academic opportunities in CCS in North America: presented to 5th North American Energy Ministers Trilateral Meeting for Carbon Capture, Utilization, and Storage in the U.S., Mexico, and Canada., Mexico City, Mexico, via webinar, September 20, 2018.

What to Do with CO₂?: presented to Jackson School of Geosciences On Ramps Dual Enrollment Earth, Wind, and Fire course (UT Austin), February 12, 2018.

What to Do with CO₂?: presented to Earth Science Career Day, Austin, Tex., October 6, 2017.

"Status and Policy of CCUS in US," "Update on CCS Research at the GCCC," "CO₂ for Enhanced Oil Recovery (EOR)," and "Estimating the Storage Capacity Using Enhanced Analytical Simulation Tool (EASI-tool)": presented to China Australia Geologic Storage Workshop and CCS School, Xinjian, Chang, June 27-29, 2017.

What to Do with CO₂? Global and local progress on capturing emissions from point sources and injecting them into the deep subsurface: presented to Lakeway Men's Breakfast Club, presented at Lakeway, Tex., May 10, 2017.

Geologic Storage of CO₂ in Deep Saline Aquifers. One-week workshop taught by Seyyed Hosseini, Susan Hovorka, and Vanessa Nunez-Lopez: presented to SENER's Specialized Program for CCS Capacity Development, Mexico City, Mexico, April 24-28, 2017.

What to Do with CO₂?: presented to Explore UT, The University of Texas at Austin, March 4, 2017.

Monitoring, Measurement and Verification for CO₂-EOR Projects: presented to Ministry of Energy in Mexico (SENER), Villahermosa, Tabasco, Mexico, October 17-21, 2016.

The Role of Reservoir Characterization in CCUS and visit to Yanchang Oil Company: presented to 2016 US China Clean Coal Development Forum, Xian, Ordos, China, September 9-12, 2016.

Academic Trilateral Efforts, Workshop for Pemex Professionals: presented to North American Energy Minister's Trilateral, Villahermosa, Mexico, April 15, 2016.

Case Study C: Early Test at Cranfield Oil Field in Mississippi by SECARB: presented to CS Working Group, North American Energy Minister's Trilateral, Mexico City, Mexico, April 13, 2016.

BEG virtual reality tour: presented to Whitte Museum staff, Austin, Texas, December 18, 2002.

Water for Texas (assisting Sigrid Cliff with workshop): presented at the Conference for Advancement of Science Teaching, El Paso, Texas Texas, November 7-9, 2002.

Aquifer-in-a-tank and sugar karst: presented at Environmental Science Institute Public Lecture Series, Austin, Texas, October 18, 2002.

Aquifer-in-a-tank: presented at the Aquarena Groundwater Festival, September 20, 2002.

Virtual reality and Bureau tour: presented to the Austin Nature and Science Center staff, Austin, Texas, September 4, 2002.

Introducing the Jackson School Geoscience Alliance: presented to Austin Geological Society, Austin, Texas, February 4, 2002.

Aquifer in a tank: presented at the Southwest Texas State University Groundwater Festival, Aquarena Springs, Texas, September 21, 2001.

GIS 101: Using a computer for environmental assessment: think globally work locally: presented to the River Basin Institute, Jefferson, Texas, August 2001.

GIS 101: Using a computer for environmental assessment: presented to Texas Earth Science Teachers Association, short course, Selah Bamberger Ranch, Johnson City, Texas, February 17, 2001.

Rocks from space: meteorites in the classroom: presented at Workshop Conference for the Advancement of Science Teaching (CAST) (with Roger Stryker and Dan Lester), College Station, Texas, October 14, 2000.

EarthView Texas: high-tech investigation of geology in your backyard: presented at Cyprus Valley Education Center, Jefferson, Texas, July 2000.

Bureau Professional Development Programs: presented to Conference for the Advancement of Science Teaching (CAST) Informal Science Association Showcase, Lubbock, Texas, October 1999.

Teaching and Advising

University Courses Taught

Is there really enough space to "put it back"?: Capacity estimation for geologic storage of CO₂: presented at Bureau of Economic Geology Research Seminar, The University of Texas at Austin, Austin, Texas, September 8, 2006.

Climate change: the issues and the options: presented at BEG Summer Lecture Series, Austin, Texas, June 10, 2005.

Climate change--issues and answers for Texas: presented at Bureau of Economic Geology seminar with P. R. Knox, M. H. Holtz, K. Fouad, S. Sakurai, J. G. Paine, and J. Yeh, Austin, Texas, October 18, 2002.

Introducing the Jackson School Geoscience Alliance: presented at Bureau of Economic Geology seminar, Austin, Texas, February 22, 2002.

Sedimentary processes: Bureau of Economic Geology research seminar, The University of Texas at Austin, Austin, TX, 2000.

Why should you include an educational element in an applied research project?: present at the Bureau of Economic Geology, University of Texas at Austin, November 1999.

"3-D visualization of the Edwards Aquifer": presented to Bureau of Economic Geology, April 1998, June 1998, February 1999, 1998.

Salt dissolution in the Permian Basin: process and implications: February 1997.

Regional distribution of permeability in the Edwards aquifer: January 1995.

Porosity distribution in the Edwards aquifer--depositional facies, Cretaceous dolomitization, and Cenozoic fresh-water alteration: presented at Bureau of Economic Geology Colloquium, April 1994.

Quaternary playa basin fills on the Southern High Plains, Texas--implications for Pleistocene climate, Ogallala recharge, and playa basin evolution: presented at Bureau of Economic Geology Colloquium, April 1993.

Cyclic sedimentation in deep-water shelf facies of the Austin Chalk: presented at Bureau of Economic Geology Colloquium, April 1992.

Porosity Development in Chert Three Bar Devonian Field: Andrews County, Texas, February 1989.

Early Diagenesis in Sulfates: December 1987.

Update of Depositional Models for Palo Duro Evaporites and Carbonates: November 1986.

Cyclicity in the San Andres Formation, Palo Duro Basin, New Models: presented at a BEG research seminar, March 1984.

Cyclicity in the San Andres Formation: presented at a BEG research seminar, May 1983.

Diagenesis and Dissolution in Evaporites, Donley and Swisher County Cores, West Texas: presented at a BEG research seminar, April 1982.

Continuing Education Courses Taught

Denbury Resources Green Pipeline CO₂ Sequestration: Video appearance during course of 3½-minute presentation for Denbury Resources, Plano, Texas, September 2009.

Geologic assessments of karst areas: presented at the 10th Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst, San Antonio, Texas, September 2005.

Examples from the Edwards aquifer: using hydrocarbon resource assessment to understand an aquifer/using aquifer tests to understand hydrocarbon resources and Revision to TNRCC Guidance for Geologists Doing Geologic Assessments of the Edwards Aquifer Recharge Zone: presented to South Texas Geological Society, December 11, 2002.

Revision to TNRCC Guidance for Geologists Doing Geologic Assessments of the Edwards Aquifer Recharge Zone: presented to San Antonio College, November 20, 2002.

Revision to TNRCC Guidance for Geologists Doing Geologic Assessments of the Edwards Aquifer Recharge Zone: presented to Government Canyon, August 28, 2002.

Environmental assessment of your town--water, soils, rocks, and pollution: presented as short course to teachers: Conference for the Advancement of Science Teaching (CAST), College Station, TX, October 12-13, 2000.

Field Trips Leadership

Leader, Frio Brine Pilot: MIBRAG group, Anhalt-Saxony, Germany, Dayton, Texas, November 2005.

Leader, Frio Brine Pilot: Community and stakeholders tour, Dayton, Texas, October 2004.

Leader, Frio Brine Pilot: Regional Sequestration Partnership Working Group on Geologic Storage, Dayton, Texas, October 2004.

Leader, Frio Brine Pilot: Toyota site tour, Dayton, Texas, 2004.

Leader, Evolution of conduits in the Edwards Group (and field trip to Edwards outcrops): presented at U.S. Geological Society Fracture Workshop, San Antonio, Texas, September 2002.

Student Committee Supervision

Supervisor, M.S. Thesis Committee, Stuart Hedrick Coleman, The University of Texas at Austin, 2010

Presentations

Invited Presentations

Latest in Geologic Storage: presented at Carbon Management Workshop of the CO₂ and ROZ Conference Week, Midland, Tex., December 3, 2018.

CCUS Business Model Game: presented to Society of Petroleum Engineers (SPE), presented at Interactive Forum on CCUS, San Antonio, Tex., November 28, 2018.

Global Significance of Offshore Storage--Well Known and Frontier Areas: presented at MRCSP and Offshore Storage Annual Meetings, Annapolis, Md., November 14, 2018.

Global Status of Carbon Capture and Storage as a Greenhouse Gas Mitigation Measure: presented to Bureau of Economic Geology, The University of Texas at Austin, presented at Seminar Series, Austin, Tex., November 9, 2018.

GoMCarb--Offshore Gulf of Mexico Partnership for Carbon Storage Resources and Technology Development: presented to U.S. Department of Energy's NETL Carbon Storage Technology Meeting, Offshore Focus, webinar, September 17, 2018.

Roles of Tracers in Assuring Storage of Carbon Dioxide: presented at Goldschmidt 2018 Geochemistry Conference, Boston. Mass., August 16, 2018.

Cranfield Project: presented at Mastering the Subsurface through Technology Innovation, Partnerships and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting, Pittsburg, Pa., August 13, 2018.

Offshore Gulf of Mexico Partnership for Carbon Storage---Resources and Technology Development GoMCarb: presented at Mastering the Subsurface through Technology Innovation, Partnerships and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting, Pittsburg, Pa., August 13, 2018.

Experience with Containment and Environmental Monitoring: presented to SINOPEC, Austin, Tex., June 17, 2018.

Status of CCS and CCUS---Progress Has Been Made: presented to National Association of State Energy Officials (NASEO) workshop, Houston, Tex., January 30, 2018.

Monitoring CO₂ EOR to Document Storage Effectiveness and Environmental Protection: presented to China University of Petroleum, Beijing, October 26, 2017.

Cranfield Project, Southeast Regional Carbon Sequestration Partnership: presented at Mastering the Subsurface through Technology Innovation, Partnerships and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting, Pittsburgh, Pa., August 3, 2017.

Integrated CCS Pre-Feasibility in the Northwest Gulf of Mexico: presented at Mastering the Subsurface through Technology Innovation, Partnerships and Collaboration: Carbon Storage and Oil and Natural Gas Technologies Review Meeting, Pittsburgh, Pa., August 2, 2017.

Monitoring Design for Commercial EOR: Plans Now Deployed at a Site for Large Volume CO₂ EOR with Associated Storage: presented at 11th IEAGHG Monitoring Network Meeting, Traverse City, Mich., June 16, 2017.

Status, Challenges, and Potential Capacity of Reliable Geologic Storage of CO₂: presented at CO₂ Summit of Engineering Conferences International Series, Pathways to Carbon Capture, Utilization, and Storage Deployment, Centaro, Calabria, Italy, May 25, 2017.

Carbon Capture and Geologic Sequestration from Intermittent Use of Fossil Fuel: presented at CO₂ Summit of Engineering Conferences International Series, Pathways to Carbon Capture, Utilization, and Storage Deployment, Centaro, Calabria, Italy, May 24, 2017.

Progress toward Commercialization of Carbon Capture, Use, and Storage for Greenhouse Gas Management: presented at 6th International Acid Gas Injection Symposium, Houston, Tex., October 7, 2016.

Monitoring Geologic Storage: Hosted by U.S. Department of Energy, Chinese Ministry of Science & Technology and Ministry of Education of the People's Republic of China: presented at 5th U.S.-China Symposium on CO₂ Emission Control Science & Technology, Hangzhou, China, June 7, 2016.

MMV to Document Storage Effectiveness and Environmental Protection in EOR Setting: presented at 3rd CCUS Workshop U.S.-China Climate Change Working Group, Xian, Shaanxi, China, June 3, 2016.

Subsea Geologic Storage in Sediments Forming Continental Shelves--Needs, Potential, and Technical Issues: presented at Large Scale Integrated CCUS Project; Demonstration, Technical Needs and Policies; 3rd CCUS Workshop U.S.-China Climate Change Working Group, Xian, Shaanxi, China, June 2, 2016.

Use of Reservoir Engineering Skills in Carbon Capture and Geologic Storage Projects: presented to Craft and Hawkins Department of Petroleum Engineering at Louisiana State University, Baton Rouge, La., March 11, 2016.

Presentations

Monitoring Stored CO₂ to Document Permanence: presented at Offshore Technology Conference 2019, Houston, Tex., May 9, 2019.

What Offshore CCS Will Look Like in the Gulf of Mexico--Perspectives from Texas: presented at Offshore Technology Conference 2019, Houston, Tex., May 9, 2019.

Carbon Capture and Sequestration (Storage) - CCS: A Climate Change Mitigation Strategy for the Near-Offshore Northwestern Gulf of Mexico: presented at American Shore and Beach Preservation Association, Texas Chapter, 2019 Symposium, Harte Research Institute, Texas A&M University, Corpus Christi, April 16, 2019.

Assessment of Low-Probability Material Impacts: presented at GHGT-13, Lausanne, Switzerland, November 14, 2016.

Model-Based Assessment of the Site-Specific Cost of Monitoring: presented at GHGT13, Lausanne, Switzerland, November 14, 2016.

Monitoring after Closure: A Case of the Horse Already out of the Barn: presented at GHGT13, Lausanne, Switzerland, November 14, 2016.

Optimization Study of Microseismic Monitoring System at the CO₂ Injection Site---Lessons Learned from Monitoring Experiment at the Cranfield Site, Miss., U.S.A.: presented at GHGT13, Lausanne, Switzerland, November 14, 2016.

Model-Based Cost for Monitoring: presented at IEAGHG R&D Monitoring and Modeling Network, British Geological Survey at the University of Edinburgh Centre for Carbon Innovation, July 7, 2016.

Near-surface stratigraphy and geophysics: presented to Southeast Regional Carbon Sequestration Partnership (SECARB), presented at SECARB 10th Annual Stakeholders' Briefing, Atlanta, Ga., March 2015.

Effective use of Natural CO₂-rich systems for stakeholder communication: CO₂FACTS.org.: poster presented at American Geophysical Union Fall Meeting, San Francisco, California, December 5-9, 2011.

Process-based approach to carbon storage leakage detection using soil gas monitoring: lessons from natural and industrial analogues: poster presented at American Geophysical Union Fall Meeting, San Francisco, California, December 5-9, 2011.

Current BEG research in carbon: presented at Bureau of Economic Geology Visiting Committee meeting, Austin, Texas, August 2, 2010.

Role of EOR in CCS: presented at the Ninth Annual Conference on Carbon Capture & Sequestration, Pittsburgh, Pennsylvania, May 10-13, 2010.

Update on results of SECARB Test of monitoring large volume injection at Cranfield: presented at Ninth Annual Conference on Carbon Capture & Sequestration, Pittsburgh, Pennsylvania, May 10-13, 2010.

Assessing risk to fresh water resources from long term CO₂ injection--laboratory and field studies: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Comparing carbon sequestration in an oil reservoir to sequestration in a brine formation- field study: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Continuous pressure monitoring for large volume CO₂ injections: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Geochemical modeling of near-surface CO₂ interactions: the critical element in cost-effective long-term monitoring: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Investigation of water displacement following large CO₂ sequestration operations view boundaries and borehole leakage driving forces: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Pressure perturbations from geologic carbon sequestration: Area-of-review boundaries and borehole leakage driving forces: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Recent advances in well-based monitoring of CO₂ sequestration: presented at the GHGT-9 (Green House Gas Technology) Conference, Washington, D.C., November 16-20, 2008.

Testing interactions of buoyancy, multiphase flow, and geochemical interactions: preliminary results for the Frio II Test: presented at Sixth Annual Conference on Carbon Capture & Sequestration: Expediting deployment of industrial scale systems: Can it be done? How? Concerns to be addressed, Pittsburgh, Pennsylvania, May 8, 2007.

Update on carbon storage field projects: presented at TCEQ Environmental Trade Fair and Conference, Austin, Texas, May 1-3, 2007.

Role of geochemical interactions in assuring permanence of storage of CO₂ in geologic environments: presented to AIChE, Houston, Texas, April 23, 2007.

All that glitters: demonstration presented at Zilker Geofest, Austin, Texas, August 12, 2006.

Downscaling capacity from a regional to a site scale--a case study for the southeastern U.S.: presented at Fifth Annual Conference on Carbon Capture & Sequestration, Alexandria, Virginia, May 8-11, 2006.

Update on the Frio Brine Storage Project--progress on estimating permanence: presented at Fifth Annual Conference on Carbon Capture & Sequestration, Alexandria, Virginia, May 8-11,

2006.

All that glitters: demonstration presented at Explore UT, Austin, Texas, March 4, 2006.

All that glitters: demonstration presented at Explore UT, Austin, Texas, March 4, 2006.

Making of "Tour through the Edwards Aquifer" movies: presented at Explore UT, Austin, Texas, March 4, 2006.

Tour through Edwards aquifer: presented at Explore UT, Austin, Texas, March 4, 2006.

Update on Frio Brine Project--15 months after injection: presented at Workshop on Carbon Capture and Storage, hosted by RITE, Tokyo, Japan, February 18-23, 2006.

Host for shadowing: three "COOL Week" students from Leander and Cedar Park High Schools, Austin, Texas, February 8-9, 2006.

Assessment of geological storage capacity of the southeastern U.S. for CO₂ in brines and economic use for EOR: presented at SECARB Industry Briefing, Atlanta, Georgia, January 18-19, 2006.

Monitoring and verification issues for carbon storage pilot experiments: presented at SECARB Industry Briefing, Atlanta, Georgia, January 18-19, 2006.

Stacked storage field project: presented at SECARB Industry Briefing, Atlanta, Georgia, January 18-19, 2006.

Monitoring and verification issues for carbon storage: presented as online lecture to Regional Sequestration Partnerships Outreach and Geologic Working Groups, Austin, Texas, 2006.

One-on-one mentoring of high school students Trey Ballman, Jenna Kroman, Tanner Scheneward: Bureau of Economic Geology, Austin, Texas, 2006.

Verification: does geologic storage really provide environmental benefit?: presented at GCCC 4th Quarter Partners Meeting, Austin, Texas, December 14, 2005.

Frio site visit and Frio Pilot overview: presented to Group from MIBRAG and Anhalt-Saxony, Germany, Dayton, Texas, November 22-23, 2005.

Update on the Frio Brine Pilot: 1 year after injection: presented at Applied Technology Workshop (ATW) CO₂ Sequestration, Galveston, Texas, November 16, 2005.

"Sugar karst" demonstration: presented at Cave Week, Austin, Texas, October 27, 2005.

Frio case study: presented at IEA Annual Monitoring Network Workshop, Rome, Italy, October 5, 2005.

Update on the Frio Brine Pilot: 1 year after injection: presented at IEA Annual Monitoring Network Workshop, Rome, Italy, October 4, 2005.

Update on the Frio Brine Pilot: 1 year after injection: presented at Carbon Sequestration Leadership Forum, GeoForschungszentrum, Potsdam, Germany, September 29, 2005.

Update on the Frio Brine Pilot: 1 year after injection: presented at Carbon Sequestration Leadership Forum, CSLF Project Exhibits by Policy Group & Technical Group delegates and VIP's, Ministry of Economics and Labor (BMWA), Berlin, Germany, September 28, 2005.

GCCC plan and scope: presented to GCCC partners, Houston, Texas, August 20, 2005.

Karst and flow in the confined and unconfined Edwards aquifer--key issues and unresolved problems: presented at Edwards Aquifer Workshop, San Antonio, Texas, July 18, 2005.

Frio Brine Pilot: field validation of numerical simulation of CO₂ storage: presented at American Association of Petroleum Geologists Annual Meeting, Calgary, Canada, June 23, 2005.

Update on the Frio Brine Pilot: 8 months after injection: invited talk presented at First India-U.S.

CCS Workshop, Hyderabad, India, June 2, 2005.

From concept to reality: a systematic management approach for field implementation of the Frio Brine Pilot Test: presented at Fourth Annual Conference on Carbon Capture and Sequestration DOE/NETL, Alexandria, Virginia, May 2-5, 2005.

Review of existing injection well permit regulations and expectations of future geologic sequestration CO₂ regulations with monitoring conditions: presented at Fourth Annual Conference on Carbon Capture and Sequestration DOE/NETL, Alexandria, Virginia, May 2-5, 2005.

Frio Brine Pilot: lessons learned and questions restated: presented at Fourth Annual Conference on Carbon Capture and Sequestration DOE/NETL, Alexandria, Virginia, May 2, 2005.

The U-tube: a novel system for sampling and analyzing multi-phase borehole fluid samples during the Frio Brine Pilot Test: presented at Fourth Annual Conference on Carbon Capture and Sequestration DOE/NETL, Alexandria, Virginia, May 2, 2005.

Draft strategic plan: presented to GCCC partners, Houston, Texas, April 11, 2005.

Application of numerical models to development of the Frio Brine Storage Experiment: presented at EPA Modeling Workshop, Houston, Texas, April 6, 2005.

Testing the concepts of sequestration--field demonstration and economic projects: presented at UT CPGE Geological Storage JIP, Austin, Texas, March 22, 2005.

Testing geologic sequestration in high-permeability sandstone of the Frio Formation: 6-month update: presented to Society of Petroleum Engineers Perth, Perth, Western Australia, March 8, 2005.

Testing geologic sequestration in high-permeability sandstone of the Frio Formation: 6-month update: presented at AJW CCS Conference, Melbourne, Australia, March 3, 2005.

Testing geologic sequestration in high-permeability sandstone of the Frio Formation: 6-month update: presented at Australian CO₂ CRC-Peter Cook Group, Canberra, Australia, March 2, 2005.

Frio Brine pilot: CO₂ outreach: Testing geologic sequestration in high-permeability sandstone of the Frio Formation: 6-month update: presented at the BP Festival, Houston, Texas, February 20, 2005.

Progress update: Developing a science and business plan for carbon storage and use in the Gulf Coast: presented to NETL management, Pittsburg, Pennsylvania, November 22, 2004.

Gulf Coast Carbon Center review: presented to GCCC partners, Houston, Texas, November 15, 2004.

Is dirt just dirt?: presented at CAST meeting, Corpus Christi, Texas, November 6, 2004.

Panning for pyrite: presented at CAST meeting, Corpus Christi, Texas, November 4, 2004.

Testing efficiency of storage in the subsurface: Frio Brine Pilot Experiment: presented at MIT CSS Workshop, Boston, Massachusetts, November 4, 2004.

New views of familiar places: elementary geoscience labs: Is dirt just dirt? and How the Earth makes us rich: presented at CAST, Corpus Christi, Texas, November 3, 2004.

Frio Brine Pilot Experiment: update: presented at Geological Society of America Annual Meeting, Denver, Colorado, October 30, 2004.

Texas Gulf Coast: presented to Geologic Working Group of the U.S. Department of Energy Regional Partnerships Program, Dayton, Texas, October 21-22, 2004.

Testing efficiency of storage in the subsurface: Frio Brine Pilot experiment: presented at the Gulf Coast Association of Geological Societies Annual Meeting, San Antonio, Texas, October 10,

2004.

Informal update: Frio Brine Pilot: presented to GCCC partners, Houston, Texas, September 15, 2004.

Monitoring and verification issues for carbon storage: presented at SSEB Annual Meeting, Atlanta, Georgia, September 13, 2004.

Subsurface monitoring and verification: presented at the 7th Greenhouse Gas Technology Conference, Vancouver, British Columbia, September 4, 2004.

Developing a business plan for carbon use and carbon sequestration in the Gulf Coast: presented at Baker Center, Rice University, Houston, Texas, September 1, 2004.

Progress update: Frio Brine Pilot, Texas Gulf Coast: presented at DOE-NETL Program Review, Pittsburg, Pennsylvania, April 18, 2004.

Outreach lecture: CO₂ is a gas: presented to BP, CO₂ Fest, Houston, Texas, February 21-22, 2004.

Monitoring and verification issues for carbon storage: invited talk presented to EPA, Washington, D.C., February 2, 2004.

Frio Brine Pilot poster: presented to BP, CO₂ Fest, Houston, Texas, February 2004.

Geoscience news on global warming: presented at CAST meeting, Houston, Texas, November 1, 2003.

New views of familiar places using GIS in the classroom: presented at CAST meeting, Houston, Texas, October 31, 2003.

Partnership kick-off: presented to U.S. Department of Energy, Pittsburg, Pennsylvania, October 29, 2003.

Energy and the environment--tapping the potential for large-volume storage of carbon in the Gulf Coast: presented at Meeting of the Texas PTTC Producers Advisory Group (PAG) and State of Texas Policy Makers, Austin, Texas, May 22, 2003.

Is Dirt Just Dirt Classroom Activity: Laurel Mountain Elementary, April 2003.

The role of map dimension and movement in helping students solve geology problems: presented at the annual meeting of the American Educational Research Association, Chicago, Illinois, April 2003.

New views of familiar places--a GIS program for students: presented at the Conference for Advancement of Science Teaching (CAST), Austin, Texas, November 7-9, 2002.

Geologic sequestration--case studies in the onshore U.S.: presented at IBC Workshop on Carbon Sequestration, Houston, Texas, October 25, 2002.

Recharge to the BFZ Edwards aquifer--the issues and the unknowns: presented at The University of Texas at Austin, Department of Geological Sciences Hydro Brown Bag Seminar, Austin, Texas, September 6, 2002.

Frio Brine Pilot Project status report: presented to National Energy Technology Laboratory, Pittsburgh, Pennsylvania, August 27, 2002.

New views of familiar places short course, Region XIII training: presented to the Round Rock ISD, Round Rock, Texas, June 26-27, 2002.

New views of familiar places--a GIS program for students: presented at the 18th Annual GIS Conference, Education Session, Austin, Texas, February 1, 2002.

Overview of Frio Brine Project: presented to GEO-SEQ advisory panel, Berkeley, California, January 23, 2002.

Zoom into the environment: presented at a workshop Conference for the Advancement of Science Teaching (CAST), November 2, 2001.

Geoscience looks at global warming: presented at Earth Science Week Career Fair, 7th grade, Austin, Texas, October 9, 2001.

Reducing atmospheric emissions of greenhouse gasses by injecting them underground: presented to Austin Geological Society, Austin, Texas, April 30, 2001.

Identifying optimal environments for geologic storage of large volumes of CO₂, onshore US: presented at Princeton Environmental Institute, Princeton University, Princeton, NJ, April 6, 2001.

Aquifer in a tank: presented at the Eanes Elementary School Science Night, Austin, Texas, March 27, 2001.

Disaster masters--using GIS in the classroom: presented at Austin Science Fun Day, Parkside Community School, Austin, Texas, March 3, 2001.

Tour of the Edwards aquifer: presented to Honor Society, Southwest Texas Junior College, Uvalde, Texas, September 26, 2000.

Geoscience projects and virtual field trips for K-12 teachers: presented to Department of Geological Sciences Public Outreach program, The University of Texas at Austin (with Sigrid Clift), Austin, Texas, September 15, 2000.

Virtual reality tour of the Edwards aquifer: presented at Groundwater Festival 2000, Aquarena Center (with Scott Rodgers and John Andrews), San Marcos, Texas, September 15, 2000.

Virtual reality tour of Earth Science research in Texas: presented to Leakey School (with John Andrews and Dallas Dunlap), Leakey, Texas, April 17-18, 2000.

Rocks from space: meteorites in the classroom: presented at National Science Teachers Association National Convention (with D. F. Lester, M. Walker, R. Stryker, and J. Jackson), Orlando, Florida, April 6, 2000.

Bureau of Economic Geology K-12 outreach: presented to Austin Geological Society, Austin, Texas, February 7, 2000.

Exploring for optimal environments for CO₂ sequestration, onshore U.S.: presented at International Energy Agency Greenhouse Gas R&D Programme, Leeuwenhorst, Netherlands, 2000.

Flood! : presented at College of Natural Science, The University of Texas at Austin, Science Fun Day (with Bureau staff and Mrs. Hernandez' 6th grade), Austin, Texas, 2000.

Strategies for identification of optimal saline formations for sequestration of carbon dioxide in the United States: presented at ENERGX Conference, Las Vegas, Nevada, 2000.

Virtual field trip through Texas and high-tech investigation of geology in your backyard: presented at Think Globally, Learn Locally Technology Conference (with John Andrews), Jefferson, Texas, 2000.

Virtual field trip through Texas: presented at Math and Science Technology Conference (with John Andrews), Austin, Texas, 2000.

Workshop on salt core: Solution Mining Research Institute Field Trip to Bureau of Economic Geology Core Research Center (with Steve Seni), Austin, Texas, 2000.

Aquifer in a Tank: presentation of hands-on 4th grade experiment to Earth Camp, City of Austin environmental education training program for teachers, October 1999.

Aquifer in a Tank: presentation of hands-on 4th grade experiment for filming by Texas Education Agency "Eye on Earth" program, 1999.

Edwards Aquifer Issues and Scientific Resolution and Edwards aquifer field trip stop 3 and 4: presented to Commission Nacional del Agua, August 17-18, 1998.

Synsedimentary dissolution, a method for determining water depth in evaporites: presented to SEPM Evaporite Research Group, American Association of Petroleum Geologists National Meeting, Salt Lake City, Utah, May 20, 1998.

Determining water depth from evaporite sediments - a key element in modeling basin evolution: presented to Department of Geology, University of Texas at Arlington, March 26, 1998.

Long-term maintenance of playa lakes and lake basins on the Southern High Plains of Texas: presented to the Panhandle Geological Society, Amarillo, TX, October 22, 1996.

Permeability structure of the Edwards aquifer, South Texas--implications for aquifer management: presented to the South Texas Geological Society, San Antonio, Texas, November 8, 1995.

Porosity and permeability structure of the San Antonio segment of the Edwards aquifer: presented to the Austin Geological Society, Austin, Texas, November 6, 1995.

Recognition of evaporite dissolution textures: presented to Evaporite Research Group, March 1995, 1995.

Overview of recent research on the Edwards aquifer: presented to the TNRCC Groundwater Protection Committee, February 1995.

Regional distribution of permeability in the Edwards Aquifer: presented to Edwards Underground Water District Board Meeting, February 1995.

Regional distribution of permeability in the Edwards aquifer: presented to the technical review group of the Edwards Underground Water District, December 1994.

Gypsum in the Edwards group of South Texas: presented to SEPM Evaporite Research Group, Austin, Texas, October 1994.

Austin Chalk at the SSC site--cyclic sedimentation, synsedimentary volcanism, microfabrics, and fracture intensity: presented to Union Pacific Resources, Fort Worth, 1993.

Microfabric influence on fracture intensity, Austin Chalk, shallow subsurface, Ellis County, Texas: poster session presented to the Natural Fracture Workshop, Bureau of Economic Geology, Austin, Texas, 1992.

Origin of Porosity in Chert of the Devonian Thirty-one Formation: presented to Mobil, Midland, Texas, October 1989.

The Sedimentology of Salt, Examples from the Palo Duro and Delaware Basins: presented to Geology Department Technical Sessions, October 1988.

Marine to Non-Marine Transition in Evaporites: presented to Penrose Conference on Marine Evaporites, Windsor, Ontario, August 1988.

San Andres Evaporite Depositional Model: presented at AAPG meeting in New Orleans, Louisiana, April 1988.

Sedimentary Significance of Polyhalite, Glauberite, and Sylvite-A Problem from the Permian of the Texas Panhandle: presented to SEPM Evaporite Research Group, Houston, Texas, March 1988.

Core workshop: Dissolution of Evaporite: Petrologic Evidence of Dissolution and Criteria for Determining Timing: presented to Shell Exploration, February 1988.

Halite Pseudomorphs after Gypsum in Bedded Anhydrite-Clue to Gypsum-Anhydrite Relationships: presented to Department of Geological Sciences, January 1988.

Recap of August meeting: presented to U.S. Department of Energy and Nuclear Regulatory

Commission in Columbus, Ohio, November 1985.

Core workshop--overview of U.S. Department of Energy cores: U.S. Department of Energy and Nuclear Regulatory Commission, August 1985.

San Andres Evaporite Depositional Model: presented at AAPG meeting, April 1985.

Core workshop--overview of U.S. Department of Energy cores: presented at BEG Core Research Center to U.S. Department of Energy, March 1985.

Distinguishing between Permian and Post-Permian Dissolution: presented at a SWEC-ONWI-BEG Meeting, January 1983.

Activities of a Professional Nature

Professional Societies

Austin Geological Society

Geological Society of America

International Association of Sedimentologists

SEPM (Society for Sedimentary Geology)

Publications

Peer Reviewed Journal Articles

Alfi, M., Vasco, D. W., Hosseini, S. A., Meckel, T., and Hovorka, S. D., 2019, Validating compositional fluid flow simulations using 4D seismic interpretation and vice versa in the SECARB Early Test--a critical review: *International Journal of Greenhouse Gas Control*, v. 82, p. 162-174, <http://doi.org/10.1016/j.ijggc.2019.01.003>.

Anderson, J. S., Romanak, K. D., Alfi, M., and Hovorka, S. D., 2019, Light hydrocarbon and noble gas migration as an analogue for potential CO₂ leakage: numerical simulations and field data from three hydrocarbon systems: *Greenhouse Gases: Science and Technology*, v. 9, no. 2, p. 226-244, <http://doi.org/10.1002/ghg.1841>.

Feitz, A., Hovorka, S., and Lehane, K., 2019, Capturing the magic of carbon dioxide: engaging hands-on demonstrations to explain geological storage: *Journal of Science and Popular Culture*, v. 2, no. 2, p. 125-142, http://doi.org/10.1386/jspc_00003_1.

Vasco, D. W., Alfi, M., Hosseini, S. A., Zhang, R., Daley, T., Ajo-Franklin, J. B., and Hovorka, S. D., 2019, The seismic response to injected carbon dioxide: comparing observations to estimates based upon fluid flow modeling: *Journal of Geophysical Research: SolidEarth*, v. 124, no. 7, p. 6880-6907, <http://doi.org/10.1029/2018JB016429>.

Li, P., Lui, X., Lu, J., Zhou, D., Hovorka, S. D., Hu, G., and Liang, X., 2018, Potential evaluation of CO₂ EOR and storage in oilfields of the Pearl River Mouth Basin, northern South China Sea: *Greenhouse Gases: Science and Technology*, v. 8, p. 954 -977, <http://doi.org/10.1002/ghg.1808>.

Anderson, J. S., Romanak, K. D., Yang, C., Lu, J., Hovorka, S. D., and Young, M. H., 2017, Gas source attribution techniques for assessing leakage at geologic CO₂ storage sites: Evaluating a CO₂ and CH₄ soil gas anomaly at the Cranfield CO₂-EOR site: *Chemical Geology*, v. 454, p. 93-104, <http://doi.org/10.1016/j.chemgeo.2017.02.024>.

Yang, C., Jamison, K., Xue, L., Dai, Z., Hovorka, S. D., Fredin, L., and Treviño, R. H., 2017, Quantitative assessment of soil CO₂ concentration and stable carbon isotope for leakage detection at geological carbon sequestration sites: *Greenhouse Gases: Science and Technology*, v. 7, no. 4, p. 680-691, <http://doi.org/10.1002/ghg.1679>.

Yang, C., Romanak, K. D., Reedy, R. C., Hovorka, S. D., and Treviño, R. H., 2017, Soil gas dynamics monitoring at a CO₂-EOR site for leakage detection: *Geomechanics and Geophysics*

for *Geo-Energy and Geo-Resources*, v. 3, p. 351-364, <http://doi.org/10.1007/s40948-017-0053-7>.

Soltanian, M., Amooie, M. A., Cole, D. R., Graham, D. E., Hosseini, S. A., Hovorka, S. D., Pfiffner, S. M., Phelps, T. J., and Moortgat, J., 2016, Simulating the Cranfield geological carbon sequestration project with high-resolution static models and an accurate equation of state: *International Journal of Greenhouse Gas Control*, v. 54, p. 282-296, <http://doi.org/10.1016/j.ijggc.2016.10.002>.

Sun, A. Y., Lu, J., Freifeld, B. M., Hovorka, S. D., and Islam, A., 2016, Using pulse testing for leakage detection in carbon storage reservoirs: A field demonstration: *International Journal of Greenhouse Gas Control*, v. 46, p. 215-227, <http://doi.org/10.1016/j.ijggc.2016.01.015>.

Jenkins, C., Chadwick, A., and Hovorka, S. D., 2015, The state of the art in monitoring and verification--Ten years on: *International Journal of Greenhouse Gas Control*, v. 40, p. 312-349, <http://doi.org/10.1016/j.ijggc.2015.05.009>.

Karegar, M. A., Dixon, T. H., Malservisi, R., Yang, Q., Hosseini, S. A., and Hovorka, S. D., 2015, GPS-based monitoring of surface deformation associated with CO₂ injection at an enhanced oil recovery site: *International Journal of Greenhouse Gas Control*, v. 41, p. 116-126, <http://doi.org/10.1016/j.ijggc.2015.07.006>.

Sun, A. Y., Lu, J., and Hovorka, S. D., 2015, A harmonic pulse testing method for leakage detection in deep subsurface storage formations: *Water Resources Research*, v. 51, no. 6, p. 4263-4281, <http://doi.org/10.1002/2014WR016567>.

Yang, C., Hovorka, S. D., Treviño, R. H., and Delgado-Alonso, J., 2015, Integrated framework for assessing impacts of CO₂ leakage on groundwater quality and monitoring-network efficiency: case study at a CO₂ enhanced oil recovery site: *Environmental Science & Technology*, v. 49, p. 8887-8898, <http://doi.org/10.1021/acs.est.5b01574>.

Yang, C., Treviño, R. H., Hovorka, S. D., and Delgado-Alonso, J., 2015, Semi-analytical approach to reactive transport of CO₂ leakage into aquifers at carbon sequestration sites: *Greenhouse Gases Science and Technology*, v. 5, no. 6, p. 786-801, <http://doi.org/10.1002/ghg.1527>.

Yang, C., Dai, Z., Romanak, K. D., Hovorka, S. D., and Treviño, R. H., 2014, Inverse modeling of water-rock-CO₂ batch experiments: potential impacts on groundwater resources at carbon sequestration sites: *Environmental Science and Technology*, v. 48, no. 5, p. 2798-2806, doi: 10.1021/es4041368

Yang, C., Hovorka, S. D., Delgado-Alonso, J., Mickler, P. J., Treviño, R. H., and Phillips, S., 2014, Field demonstration of CO₂ leakage detection in potable aquifers with a pulslike CO₂-release test: *Environmental Science and Technology*, v. 48, no. 23, p. 14031-14040, <http://doi.org/10.1021/es5044003>.

Yang, C., Hovorka, S. D., Young, M. H., and Treviño, R. H., 2014, Geochemical sensitivity to CO₂ leakage: detection in potable aquifers at carbon sequestration sites: *Greenhouse Gases: Science and Technology*, v. 4, p. 384-399, <http://doi.org/10.1002/ghg.1406>.

Yang, C., Treviño, R. H., Zhang, T., Romanak, K. D., Kerstan, W., Lu, J., Mickler, P., and Hovorka, S. D., 2014, Regional assessment of CO₂-solubility trapping potential: a case study of the coastal and offshore Texas Miocene interval: *Environmental Science and Technology*, v. 48, p. 8275-8282, <http://doi.org/10.1021/es502152y>.

Zeidouni, M., Nicot, J. -P., and Hovorka, S. D., 2014, Monitoring above-zone temperature variations associated with CO₂ and brine leakage from a storage aquifer: *Environmental Earth Sciences*, v. 72, no. 5, p. 1733-1747, <http://doi.org/10.1007/s12665-014-3077-0>.

Butsch, R. J., Brown, Alan L., Bryans, B., Kolb, C., and Hovorka, S. D., 2013, Integration of well-based subsurface monitoring technologies: Lessons learned at SECARB study, Cranfield,

MS: International Journal of Greenhouse Gas Control, v. 18, p. 409-420.

Carrigan, C. R., Yang, X., La Brecque, D., Larsen, D., Freeman, D., Ramirez, A. L., Daily, W., Aines, R., Newmark, R., Friedmann, J., and Hovorka, S. D., 2013, Electrical resistance tomographic monitoring of CO₂ movement in deep geologic reservoirs: International Journal of Greenhouse Gas Control, v. 18, p. 401-408.

Choi, Jong-Won, Nicot, J. -P., Hosseini, S. A., Clift, S. J., and Hovorka, S. D., 2013, CO₂ recycling accounting and EOR operation scheduling to assist in storage capacity assessment at a U.S. gulf coast depleted reservoir: International Journal of Greenhouse Gas Control, v. 18, p. 474-484.

Ditkof, J., Caspari, E., Pevzner, R., Urosevic, M., Meckel, T., and Hovorka, S. D., 2013, Time-lapse seismic signal analysis for enhanced oil recovery at Cranfield CO₂ sequestration site, Cranfield field, Mississippi: Interpretation, v. 1, no. 2, p. T157-T166, <http://doi.org/10.1190/INT-2013-0056.1>, graduate student first author.

Dodds, K., Krahenbuhl, R., Reitz, A., Li, Y., and Hovorka, S. D., 2013, Evaluating time-lapse borehole gravity for CO₂ plume detection at SECARB Cranfield: International Journal of Greenhouse Gas Control, v. 18, p. 421-429.

Doetsch, J., Kowalsky, M. B., Doughty, C. A., Finsterle, S., Ajo-Franklin, J., Carrigan, C. R., Yang, X., Hovorka, S. D., and Daley, Tom, 2013, Constraining CO₂ simulations by coupled modeling and inversion of electrical resistance and gas composition data: International Journal of Greenhouse Gas Control, v. 18, p. 510-522.

Hosseini, S. A., Lashgari, H., Choi, Jong-Won, Nicot, J. -P., Lu, Jiemin, and Hovorka, S. D., 2013, Static and dynamic reservoir modeling for geological CO₂ sequestration at Cranfield, Mississippi, U.S.A.: International Journal of Greenhouse Gas Control, v. 18, p. 449-462.

Hovorka, S. D., Meckel, Timothy, and Treviño, R. H., 2013, Monitoring a large-volume injection at Cranfield, Mississippi--Project design and recommendations: International Journal of Greenhouse Gas Control, v. 18, p. 345-360.

Lu, Jiemin, Kordi, M., Hovorka, S. D., Meckel, Timothy, and Christopher, Charles, 2013, Reservoir characterization and complications for trapping mechanisms at Cranfield CO₂ injection site: International Journal of Greenhouse Gas Control, v. 18, p. 361-374.

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Puerta-Ortega, C., Bickel, J. E., and Hovorka, S. D., 2013, Assessing the value of permeability data in a carbon capture and storage project: International Journal of Greenhouse Gas Control, v. 17, p. 523-533.

Wolaver, B. D., Hovorka, S. D., and Smyth, R. C., 2013, Greensites and brownsites: Implications for CO₂ sequestration characterization, risk assessment, and monitoring: International Journal of Greenhouse Gas Control, v. 19, p. 49-62, doi: <http://dx.doi.org/10.1016/j.ijggc.2013.07.020>.

Yang, Changbing, Mickler, P., Reedy, R. C., Scanlon, B. R., Romanak, Katherine, Nicot, J. -P., Hovorka, S. D., Treviño, R. H., and Larson, T., 2013, Single-well push-pull test for assessing potential impacts of CO₂ leakage on groundwater quality in a shallow Gulf Coast aquifer in Cranfield, Mississippi: International Journal of Greenhouse Gas Control, v. 18, p. 375-387.

Yang, Changbing, Romanak, Katherine, Hovorka, S. D., and Treviño, R. H., 2013, Modeling CO₂ release experiment in the shallow subsurface and sensitivity analysis: Environmental & Engineering Geoscience, v. 19, no. 3, p. 207-220.

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- Ambrose, W. A., Breton, Caroline, Holtz, M. H., Nuñez-López, Vanessa, Hovorka, S. D., and Duncan, I. J., 2009, CO₂ source-sink matching in the lower 48 United States, with examples from the Texas Gulf Coast and Permian Basin: *Environmental Geology: Environmental Geology*, v. 57, p. 1537-1551.
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