

**Sally Merrick Benson**  
**CURRICULUM VITAE**

**Research Interests**

Clean Energy Innovation  
Carbon Capture and Storage  
Livelihood Improvement by Productive Energy Access in Emerging Economies  
Macro-Energy Systems  
Lifecycle Assessment of Clean Energy Technologies

**Education**

B.A.: Geology, Barnard College, 1977, Columbia University

M.S.: Material Science and Mineral Engineering, 1984  
University of California, Berkeley  
Thesis Topic: Interpretation of Non-Isothermal Well Tests

Ph.D.: Material Science and Mineral Engineering, 1988  
University of California, Berkeley  
Dissertation Topic: Characterization of the Flow and Transport Properties Under  
Kesterson Reservoir, California

**Leadership Positions**

2021 – 2023	Energy Division Director and Chief Strategist for the Energy Transition, White House Office of Science and Technology Policy
2020 – 2021	Co-Director, Stanford Center for Carbon Removal
2014 – 2020	Director and Co-Director, Precourt Institute for Energy
2012 – 2013	Acting Director, Precourt Institute for Energy, Stanford University
2012—present	Co-Director, Stanford Center for Carbon Storage
2009 – 2019	Director, Global Climate and Energy Project, Stanford University, Stanford, California
2007 – 2009	Executive Director, Global Climate and Energy Project, Stanford University, Stanford, California
2001 – 2004	Deputy Director for Operations, Lawrence Berkeley National Laboratory, Berkeley, California
1997 – 2001	Associate Laboratory Director, Energy Sciences, Lawrence Berkeley National Laboratory, Berkeley, California
1993 – 2001	Director, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California

## **Academic and Research Positions**

2020 – present	Precourt Family Professor, Department of Energy Science and Engineering, Stanford University (Took a 2-year leave from Stanford to work at the White House Office of Science and Technology Policy)
2013 – 2020	Professor, Department of Energy Resource Engineering, Stanford University
2007 – 2013	Professor (Research), Department of Energy Resource Engineering, Stanford University
1977 – 2007	Positions of growing responsibility to Senior Staff Scientist, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, California
1990 – 1998	Visiting Professor, Earth Sciences Department, Clemson University, Clemson, South Carolina

## **Memberships**

American Geophysical Union  
American Association for the Advancement of Science

## **Awards and Citations**

2023	Abdullah bin Hamad Al Attiyah Foundation for Energy and Sustainable Development Lifetime Achievement Award for Educating Future Energy Leaders
2023	Elected, American Academy of Arts and Science
2019	Society of Petroleum Engineers International Award, Health, Safety, and Environment
2018	Columbia University Arthur D. Storke Lecturer
2017	Distinguished CCS Lecture Tour, Peter Cook Centre, University of Melbourne, Australia
2015	Honorary Doctorate Degree, Smith College, Massachusetts
2015	Roslyn Silver'27 Science Lectureship, Barnard College
2012	Greenman Award, IEA Greenhouse Gas Program
2011	Alberta Innovates Lecturer of 2011
2009 – 2011	Stanford Fellow
2009	Michel T. Halbouty Distinguished Lecture Award, Geological Society of America
2009	ARCS 2009 American Pacesetter Award
2007	Contributed to the reports of the IPCC that received the Nobel Peace Prize for "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change."
1996	DOE Certificate of Appreciation awarded for leading development of the Natural and Accelerated Bioremediation Research Program Plan

## **Selected Board Memberships, Committees and Activities**

2023	Global Carbon Capture and Storage Institute, Board Member
2023	Breakthrough Energy, Member, Innovation Council
2021	Member of the Scientific Review Committee, Energy Technologies Area, Lawrence Berkeley National Laboratory
2021	Member of the Technical Advisory Board, The Atlantic Canada Energy System Modelling Framework, Nova Scotia, Canada
2021	Member of the Scientific Advisory Board, Breakthrough Energy Ventures
2020—2021	Member of the Technical Advisory Board, NYC Pathways to Zero Emissions Study
2020 – 2021	Member, Blue Print Advisory Committee, School of Climate and Sustainability, Stanford University
2019 – present	Editorial Board, Energy and Environmental Science, Royal Society of Chemistry
2018 – 2019	Member, Sustainability Design Team for Long Range Planning, Stanford University
2018 – 2020	Co-Chair, National Petroleum Council Study on Carbon Capture, Utilization, and Storage
2018 – 2021	Member, Payne Institute Advisory Board, Colorado School of Mines
2018 – 2021	Member, Director’s Scientific Advisory Board, Argonne National Laboratory
2018 – present	Member, Advisory Board, School of Science and Engineering, Lahore University of Management Science, Pakistan
2018	Host, Women in Clean Energy (C3E) Conference, Stanford University
2017-2018	Member, Research Subcommittee for Long Range Planning, Stanford University
2017 – 2019	Member, National Research Council Study on Negative Emissions
2016 – 2017	Member, Secretary of Energy Advisory Board Task Force on Negative Emissions and Carbon Utilization
2016 – 2018	Chair, Selection Committee for the Witherspoon Mid-Career Award in Hydrogeology, American Geophysical Union
2016 – 2016	Symposium, Women in Clean Energy (C3E) Conference, Stanford University
2015 – 2018	Chair, Witherspoon Mid-Career Award Committee, American Geophysical Union
2015 – present	Member, Advisory Council, Princeton University Andlinger Center for Energy and the Environment
2015 – present	Ambassador, Clean Energy, Education, and Empowerment Initiative (C3E)
2014 – 2018	Chair, Advisory Board, Lahore University of Management Science, School of Science and Engineering, Pakistan
2014 – 2021	Member, Energy, Energy and Environment Advisory Board, Pacific Northwest National laboratory, Richland, Washington
2014 – 2017	Chair, Energy, Climate and Infrastructure Advisory Board, Sandia National Laboratory, Albuquerque, NM
2013 – 2016	Co-founding editor, MRS Energy and Sustainability Journal
2013 – 2017	Member, Organizing Committee, International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme
2012 – 2018	Member, Energy Systems Integration Technical Review Committee, National Renewable Energy Laboratory, Golden, Colorado
2012 – 2018	Member, Visiting Committee, Department of Environmental Engineering and Earth Sciences, Clemson University
2012 – 2014	Member, Energy, Climate and Infrastructure Advisory Board, Sandia National Laboratory, Albuquerque, NM
2011 – 2017	Member, BIGCCS Scientific Committee, Research Council of Norway
2011 – 2012	Member, Organizing Committee, 11 <sup>th</sup> International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme
2011	Member, National Research Council Committee on Emerging Workforce Issues in the Energy and Mining Industries
2010	Member, State of California “Blue Ribbon” Panel on Carbon Capture and Storage

2010 – 2013	Board of Directors, Carbon Management Canada
2009 – 2010	Member, WRI Task for on CCS in China
2009 – 2012	<i>Coordinating Lead Author</i> , Global Energy Assessment (GEA), Chapter 13, Carbon Dioxide Capture and Storage
2009 – 2014	Member, Advisory Board, Lahore University of Management Science, Pakistan
2009 – 2012	Member, Scientific Policy Board, SLAC National Laboratory, Stanford, CA
2008 – 2020	Board of Directors, National Renewable Energy Laboratory, Colorado
2008 – 2021	Board of Directors, Climate Central, Princeton, New Jersey
2008 – 2010	American Association of Petroleum Geologists, Climate Change Committee
2007 – 2008	Member, Organizing Committee, 9 <sup>th</sup> International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme
2007	Task Force Member, Council on Foreign Relations, Climate Change Task Force
2006 – 2007	Section Co-Chair for Carbon Sequestration, Assessment of Basic Research Needs in the Earth Sciences, commissioned by DOE Basic Energy Sciences
2006 – 2008	Chair, Scientific Advisory Board, Atmospheric Radiation Measurement User Facility
2006	Co-Chair, Technical Review of the CO <sub>2</sub> CRC, Australia
2006	Member, Sleipner Risk Assessment Advisory Committee, Statoil
2006 – 2008	Member, FutureGen Technical Advisory Board
2005 – 2013	Member, Technical Advisory Board for the In Salah CO <sub>2</sub> Storage Project
2003 – 2005	Coordinating Lead Author, Intergovernmental Panel on Climate Change (IPCC) Special Report on CO <sub>2</sub> Capture and Storage: Chapter of Geologic Storage of CO <sub>2</sub>
2002 – 2004	Chair, School of Earth Sciences Advisory Board, Stanford University, Stanford, California
2002 – present	Member, Carbon Mitigation Initiative (CMI) Advisory Board, Princeton University, New Jersey
2002 – 2007	Member, CO <sub>2</sub> Capture Project (CCP) Technology Advisory Board

### **Congressional Testimony**

11/2007	“Research Priorities for Sequestration of Carbon Dioxide in Deep Geological Formations,” Testimony before the U.S. Senate Committee on Commerce, Science, and Transportation—Science, Technology, and Innovation Subcommittee hearing, Washington, DC, November 7, 2007.
11/2003	“What are the Administration Priorities for Climate Change Technology?” Testimony before the Energy Subcommittee of the House Science Committee, November 6, 2003.

### **Selected Invited Talks (2006-present)**

10/2021	On leave from Stanford University: Complete list of Invited Talks is being compiled
8/2021	Hydrogen for Decarbonizing Heavy Duty Transportation, California Foundation on the Environment and the Economy
8/2021	An Assessment of the Diablo Canyon Nuclear Plant for Clean Electricity, Desalination, and Hydrogen Production, Clean Air Task Force Legislative Briefing for the State of California
6/2021	Advances in CO <sub>2</sub> Storage Science and Engineering, Microsoft Tech Live Series
2/2021	Global Warming, the Unfolding Climate Emergency, and the Role of Silicon Valley, State of the Valley Conference, Santa Clara, California
7/2020	Opportunities and Challenges for Carbon Capture, Utilization and Storage in California, Western Australian Section of the Society of Petroleum Engineers, Webinar

5/2020 Influence of Heterogeneity of CO<sub>2</sub> Migration and Trapping, Geoscience and Geoenergy Webinar Series, TU Delft and Herriot Watt Universities

2/2020 Creating Value from Monitoring CO<sub>2</sub> Storage Projects, International Workshop on Monitoring CO<sub>2</sub> Storage Projects, Research Institute for the Earth (RITE), Tokyo, Japan

2/2020 The Global Climate and Energy Challenge, Alvin Anderson Keynote Award Ceremony, University of Minnesota

10/2019 Turning Oil and Gas Reservoirs into CO<sub>2</sub> Storage Assets, Innovation for Cool Earth Forum, Tokyo Japan

8/2019 Science Essentials for Political Reporters: The Climate Energy Nexus, AAAS sponsored event to connect political reporters with scientist, Drake School of Journalism, Des Moines, Iowa

8/2019 Energy Systems Integration for Deep Decarbonization, Princeton University, Andlinger Center

7/2019 Deep Decarbonization, International Summer School for the Materials Research Society, Cal Tech

7/2019 Carbon Management and Deep Decarbonization, International Energy Association Greenhouse Gas Control, presentation to the Board

5/2019 Long Term Evolution of Residually Trapped Carbon Dioxide Due to Ostwald Ripening, Interpore 11<sup>th</sup> Annual Meeting, Valencia, Spain

1/2019 Research Needs for Scaling Up CO<sub>2</sub> Sequestration, Shell Science Council, Bangalore, India

12/2018 Getting to Zero, Achieving California's Ambitious Climate Goals. Silicon Valley Leadership Group, Milpitas, CA.

10/2018 Carbon Capture, Use, and Sequestration, Game Changers Conference, Hoover Institute, Washington, DC.

7/2018 The Global Climate and Energy Challenge, International Summer School for Energy and Sustainability, Erice, Sicily.

6/2018 Keynote address, Geological Storage of CO<sub>2</sub> for Negative Emissions, International Conference on CO<sub>2</sub> Negative Emissions, Goteborg, Sweden

6/2018 Empowering women by clean energy access, Ideal Village Conference, Stanford University

6/2018 Carbon Removal in the Climate Response Portfolio, National Press Club, Washington DC

5/2018 Keynote Address, Geological Storage of Carbon Dioxide for Negative Emissions, International Conference on Negative Emissions, Goteborg, Sweden

5/2018 Keynote Address, Prospects for CO<sub>2</sub> Capture, Storage, Utilization, and Negative Emissions, Joint Workshop on Sustainability in the Hydrocarbon Value Chain, Mexico City, Mexico

4/2018 Keynote Address, The Global Climate and Energy Challenge, 1<sup>st</sup> Annual Energy Symposium, Notre Dame, Indiana

4/2018 Renewable Energy Integration in California, University of North Carolina Symposium on Renewable Energy Integration

4/2018 Geospatial Analysis of Near-Term Potential for Carbon-Negative Bioenergy in the U.S., Princeton University Carbon Mitigation Initiative Annual Meeting, BP Headquarters, London, U.K.

4/2018 Status of CO<sub>2</sub> Capture and Storage, CeraWeek, Houston, TX

1/2018 Recent Advances in CO<sub>2</sub> Sequestration Science and Engineering Lamont Dougherty, Columbia University, New York

10/2017 Energy Research at Stanford University, University of Brisbane, Australia

10/2017 Prospects for CO<sub>2</sub> Capture, Sequestration, Utilization, and Negative Emissions, CO2CRC, Australia

10/2017 Deep Decarbonization: A Role for the Fossil Fuel Industry, National Coal Council, Brisbane, Australia

10/2017 Multi-Scale Multi-Physics Investigation of Residual Gas Trapping in Reservoir Rocks, University of Melbourne, Australia

10/2017 Making Good Energy Choices, University of Melbourne, Australia

8/2017 Objectives and metrics for monitoring CO<sub>2</sub> storage projects, Society for Exploration Geophysics Research Workshop, Norway

7/2017 Towards resolution of conflicting information about the influence of CO<sub>2</sub> exposure on wetting properties, Department of Energy Research Frontier Symposium, Washington DC

7/2017 Deep Decarbonization, International Summer School for Material and Energy Science, CalTech

5/2017 Prospects for CO<sub>2</sub> Capture, Sequestration, Utilization, and Negative Emissions, Rutgers University, New Brunswick, New Jersey

3/2017 Engaging the Energy Industry in Transformational Energy Research, Council on Foreign Relations, New York, New York

3/2017 CO<sub>2</sub> Storage Status Report, Illinois Institute of Technology, Chicago, Illinois

3/2017 Recent Advances in CO<sub>2</sub> Storage Science, UT Austin, Austin, Texas

3/2017 Congressional Briefing, Status of Carbon Dioxide Capture and Storage, Washington, D.C.

3/2017 Making Good Energy Choices: The Role of Energy Systems Analysis, Yale University, New Haven, Connecticut

2/2017 Deep Decarbonization: A Role for the Oil and Gas Industry. NRC Canada, Edmonton, Canada

12/2016 Making Good Energy Choices: The Role of Energy Systems Analysis, Technical University of Munich, Munich Germany.

11/2016 Influence of Meso-Scale Heterogeneity on Multiphase Flow of CO<sub>2</sub>, Cambridge University, Cambridge, U.K.

9/2016 The Grid Connected Home Energy Hub, Institute for Energy Data, and Society, MIT, Boston, Massachusetts

7/2016 CCS and the last 20%, Aspen Institute Workshop on Decarbonizing the Last 20%, Aspen, Colorado

6/2016 Climate Change Science, Impacts, and Solutions, Stanford Graduate School of Business

04/2016 CO<sub>2</sub> Storage Capacity Assessments and Uncertainty, BP Research Workshop on CO<sub>2</sub> Storage, Sunbury, United Kingdom

03/2016 Status and Opportunities in CO<sub>2</sub> Capture and Storage, Annual Meeting, Global Family Offices, Monterey, California

03/2016 Impact of Ostwald Ripening on the Stability of Trapped CO<sub>2</sub>, Department of Energy, Germantown, Maryland

02/2016 Making Good Energy Choices: The Role of Energy Systems Analysis, MIT IHS Seminar, Cambridge, Massachusetts

02/2016 Influence of Fine Scale Heterogeneity and Ostwald Ripening on Residual Gas Trapping, Annual Meeting, Nano-Scale Control of Geological CO<sub>2</sub> Storage, Berkeley, California

10/2015 Roslyn Silver'27 Scientific Lecture, Barnard College, New York

07/2015 Invited co-convenor, "Our Common Climate Future Conference, Paris, France

07/2015 "CO<sub>2</sub> Capture, Reuse, and Storage." MRS Energy Summer School, Colorado School of Mines, Colorado

05/2015 "50<sup>th</sup> Reunion Panel on Climate Change," Yale University, New Haven, Connecticut

05/2015 Keynote Speaker at the "I am Innovation Forum," Delft University, Netherlands

05/2015 Invited Speaker, Gordon Conference on CO<sub>2</sub> Capture and Storage

04/2015 "The Future of Renewable Energy Generation," World Bank Energy and Extractives Week, Washington DC

02/2015 "A Glimpse into the Future of Energy," Sberbank Briefing, GSB, Stanford

02/2015 “Clean Energy—Technology,” Vail Global Energy Forum, Vail, Colorado

02/2015 “Status and Opportunities in CO<sub>2</sub> Capture, Storage and Utilization,” Workshop on Energy Research and Applications, American Physical Society Annual Meeting, San Antonio, Texas

02/2015 “Opportunities and Challenges for CO<sub>2</sub> Capture, Storage, and Utilization,” Vanderbilt University, Nashville, Tennessee

02/2015 “CO<sub>2</sub> Storage Research,” Strathclyde University, Scotland

12/2014 “Status of Geological Storage of CO<sub>2</sub> as Part of Negative Emissions Strategy,” American Geophysical Union, San Francisco, California

11/2014 “Permanence and Magnitude of Capillary Trapping: Influence of Scale Scale Heterogeneity and Ostwald Ripening,” NCGC Workshop, Lawrence Berkeley National Laboratory, Berkeley, California

09/2014 “Geological Storage of CO<sub>2</sub>: A Decade of Tremendous Progress,” GHGT-12, Closing Plenary, Austin, Texas

09/2014 “Recent Advances in CO<sub>2</sub> Storage,” University of Wyoming

08/2014 “Transitioning to a Sustainable Energy System: Opportunities and Challenges for CO<sub>2</sub> Capture, Storage and Recycle,” Graduate Student Symposium, American Chemical Society National Meeting, San Francisco, California

07/2014 “CO<sub>2</sub> sequestration and recycling,” School—Materials for Renewable Energy, Erice, Sicily

01/2014 “Renewable Energy—Progress and Prospects,” LUMS Popular Science Symposium, Lahore, Pakistan

01/2014 “Net Energy Analysis for Renewable Energy Systems,” NUST, Islamabad, Pakistan

12/2013 “The Future of Energy...and Why It’s Important...Challenges...Opportunities,” Palo Alto High School

12/2013 “Emerging Methods in Sub-Core Scale Imaging and Characterization of the Influence of Heterogeneity on Flow in Rocks,” AGU, San Francisco, California

08/2013 “The Impact of Geochemistry on Carbon Management,” Union Session at the Goldschmidt Conference, Florence, Italy

04/2013 “Renewable Energy: Progress, Prospects and Challenges,” ExxonMobil Sustainability Leaders, Fairfax, VA

04/2013 “Meeting the Global Energy Challenge: Role of Advanced Energy Technologies,” Sandia National Laboratory, Albuquerque, New Mexico

03/2013 “Clean, Affordable, and Abundant Energy: Can we Do It?” McKinsey, London, England

03/2013 “Global Climate and Energy Project: Energy for the 21<sup>st</sup> Century and Beyond,” Imperial College, London, U.K.s

03/2013 “Mesoscale Investigations of the Influence of Capillary Heterogeneity on Multiphase Flow of Fluids in Rocks,” Imperial College, London, U.K.

03/2013 “Research Needs and Opportunities in CO<sub>2</sub> Storage,” Uppsala University, Stockholm, Sweden

03/2013 “Game Changing Technologies in the transportation Sector,” Game Changers Forum, Washington DC

03/2013 “Renewable Energy: Progress and Prospects,” Vail Global Energy Forum, Vail, CO.

02/2013 “Innovation and Competitiveness in the Solar Industry,” Oslo Energy Forum, Oslo, Norway

02/2013 “Mesoscale Investigations of the Influence of Capillary Heterogeneity on Multiphase Flow of Fluids in Rocks”, SIAM Conference, Boston, Massachusetts

10/2012 Earth Matters, Energy Issues in the Upcoming Election, Stanford School of Earth Sciences, in partnership with the League of Women Voters

10/2012 “CCS:When will it Be Ready?” UC Berkeley, BERC Energy Symposium

10/2012 Prospects and Challenges for CO<sub>2</sub> Storage, Brigham Young University, Utah



10/2012 Invited Speaker, Mesoscale Science Workshop, SLAC National Laboratory, Mesoscale Investigations of Multiphase Flow

08/2012 Keynote Speaker, "Energy in a Carbon Constrained World," International Geological Congress, Brisbane, Australia

06/2012 "Carbon Capture and Storage," UKERC Energy Summer School, Warrick University, U.K.

06/2012 "Innovations in Energy R&D," Hamilton Project, Stanford University, Stanford, CA

06/2012 "Scalability and Implementation of CCS with Bio-Feedstocks," GCEP Workshop on Negative Emissions, Stanford University, Stanford, CA

06/2012 "Advanced Energy Technologies: Prospects and Challenges for Developing Countries," Center for International Security, Stanford University, Stanford, CA

05/2012 "Sticking to Your Convictions: Even When the Going Gets Tough," AAPG Prowess Luncheon Speaker, Long Beach California

04/2012 "Climate Change: What Can we Do?" Stanford's Women Club of San Francisco, San Francisco, CA

03/2012 "What's Next? Six Game Changing Energy Technologies," Vail Global Energy Forum, Vail, CO

02/2012 "Carbon Dioxide Capture and Sequestration: A Solution to Global Warming," Silicon Valley Clean Tech Speaker Series, San Jose, CA

02/2012 "Carbon Dioxide Sequestration in Deep Sedimentary Formations," AAAS Annual Meeting, Symposium on Stabilization of Global Carbon Dioxide Levels, Vancouver, British Columbia, Canada

01/2012 "Monitoring Performance of Geological Storage of CO<sub>2</sub>," RITE International Workshop on CO<sub>2</sub> Storage, Tokyo, Japan

12/2011 "The Influence of Meso-Scale Heterogeneity on CO<sub>2</sub> Plume Migration and Trapping," American Geophysical Union, San Francisco, California

10/2011 "Recent Advance in CO<sub>2</sub> Storage," U.S.-Norway Science Week, Berkeley, California

10/2011 "Remediation Methods for CO<sub>2</sub> Leakage," U.S. Department of Energy R&D Workshop on Storage on Saline Aquifers, Pittsburg, Pennsylvania

09/2011 "Contingency Planning and Methodologies for Intervention," International Petroleum Institute for Environmental and Social Issues (IPIECA) Workshop on Carbon Capture and Storage, Washington, DC

08/2011 "Sub-core Scale Experimentation and Modeling of CO<sub>2</sub> and Brine Migration in Homogeneous and Heterogeneous Rocks," American Chemical Society Annual Meeting, Denver, Colorado

07/2011 "Advanced Energy Technologies," International Energy Modeling Workshop, Stanford, California

06/2011 "Overview of Geological Storage of CO<sub>2</sub>," Research Experience in Carbon Storage (RECS), Birmingham, Alabama

05/2011 "Leak Detection and Mitigation," Carbon Capture Project (CCP3) Workshop on Contingency Planning, Houston, TX

05/2011 "Multiphase Flow of CO<sub>2</sub> and Brine," USGS Workshop on CO<sub>2</sub>-EOR, Stanford, CA

03/2011 "Energy Resources and Technology Options for a Sustainable Energy Future," Alberta Innovates Distinguished Lecturer, University of Alberta, Edmonton, Alberta, Canada

03/2011 "What Do Carbon Dioxide Capture and Storage (CCS) and Solar Energy Conversion Have in Common?" University of Colorado, Boulder Colorado

02/2011 "Carbon Dioxide Capture and Sequestration, Clemson University, Clemson, South Carolina

01/2011 "The Global Climate and Energy Project: Creating a Sustainable Energy System for the 21<sup>st</sup> Century and Beyond," LUMS Research Symposium 2011, Lahore, Pakistan



01/2011 “Can Sequestration of Carbon Dioxide in Deep Geological Formations Help Solve the Global Warming Problem?”, University of Toronto, Lectures at the Leading Edge, Toronto, Canada

11/2010 “The Global Climate and Energy Project,” Doha Carbon and Energy Forum, Qatar

10/2010 “GHGT-10 Closing Plenary From Research to Reality: Geological Storage of CO<sub>2</sub>,” GHGT-10, Amsterdam, The Netherlands

10/2010 “What Makes a Good Seal for geological Storage,” DOE Infrastructure Review Meeting, Pittsburg, PA

10/2010 “Technology Options for a Low Carbon Energy Future and the Potential Role of Carbon Dioxide Capture and Storage,” Climate Change Symposium, Northwestern University, Evanston, Illinois

10/2010 “Remediation of Leakage from Geologic CO<sub>2</sub> Storage Reservoirs into Groundwater Aquifers,” Chevron Seminar Series, San Ramon, California

07/2010 “Experimental and Numerical Investigation of CO<sub>2</sub> Sequestration in Saline aquifers,” Gordon Graduate Research Seminar, Bates College, Lewiston, Maine

06/2010 Benson, Sally M., “Geological Capture and Storage: A Primer,” Public Meeting on Carbon Dioxide Capture and Storage, Sacramento, California

06/2010 “Carbon Dioxide Capture and Sequestration,” UKERC Summer School, University of Warrick, United Kingdom

06/2010 “Application of X-Ray CT and High-Resolution Modeling to Elucidating Multiphase Flow Phenomena in CO<sub>2</sub> Sequestration,” Goldschmidt Conference, Knoxville, Tennessee

06/2010 “Monitoring Options CO<sub>2</sub> Sequestration Projects,” Ohio State Workshop on Characterization and Monitoring for Geological Sequestration, Columbus, Ohio

04/2010 “Advanced Energy Technologies for a Sustainable Energy Future: Needs and Prospects for the 21st Century and Beyond,” Energy Modeling Forum Workshop, Stanford University, CA.

03/2010 “What Have We Learned Lately about Prospects for Carbon Dioxide Sequestration in Deep Geological Formations?,” University of Southern California, Los Angeles, CA.

03/2010 “Carbon Dioxide Capture and Sequestration in Deep Geological Formations,” American Physical Society [APS], Energy Research Workshop, Oregon Convention Center, Portland, Oregon

01/2010 “Technologies and Pathways to a Sustainable Energy Future,” SDForum—State of the Clean Energy—Global Challenges and Opportunities, Sunnyvale, CA

12/2009 “Inventory Verification and Leakage Assessment: A Comparison of Complementary Strategies for Verification of Geological Sequestration Projects,” American Geophysical Union Annual Meeting, Union Session, San Francisco, CA.

10/2009 “Can CO<sub>2</sub> Sequestration Help Solve the Global Warming Problem?,” Michel T. Halbouty Distinguished Lecture, Geological Society of America Meeting (GSA), Annual Meeting, Portland, Oregon

10/2009 “Next Steps to Advance Carbon Storage Technology,” UC Berkeley’s Energy Frontier Research Center, Joint Kickoff Symposium, Berkeley, CA.

10/2009 “Designing A Sustainable Energy System for the 21st Century and Beyond,” ARCS Award Luncheon, San Francisco, CA

10/2009 “The Future of Energy,” Pacific Union Club, Lunchtime Lecture Series, San Francisco, CA

09/2009 “Emerging and Paradigm Changing Energy Technologies,” California Energy Commission, 6th Annual Climate Change Symposium, Sacramento, CA

06/2009 “Simulation of Core-Scale Multiphase Flow Experiments with CO<sub>2</sub> and Brine,” SIAM Conference on Mathematical and Computational Issues in the Geosciences, Leipzig, Germany.

- 06/2009 “Sequestration of Carbon Dioxide in Deep Geological Formations: Prospects and Priorities in 2009,” Okayama University, Okayama, Japan.
- 05/2009 “The Future of Energy,” Leading Matters—San Francisco, San Francisco, California
- 05/2009 “Steps to Accelerate Deployment of CCS...Storage,” National Energy Technology Laboratory Eighth Annual Conference on Carbon Capture and Sequestration, Pittsburgh, Pennsylvania
- 05/2009 Benson, Sally M., [discussant], “Technology Policy for RD&D of IGCC and CCS in the United States,” Joint Workshop of Harvard University, Ministry of Science and Technology, People’s Republic of China, Chinese Academy of Sciences, Cambridge, MA
- 05/2009 “The Future of Energy: Technology for a Sustainable Energy System,” 50<sup>th</sup> Anniversary of Japanese Association of Groundwater Hydrologists Memorial Lecture, Tokyo, Japan
- 04/2009 “The Coming Transition to a Sustainable Energy System for the 21<sup>st</sup> Century,” The Bruce Museum, Greenwich, Connecticut
- 03/2009 Benson, Sally M., Goodell, Jeff, Price, Tom, and Sharp, Phil, “Conventional Energy: Unconventional Demands,” Aspen Environmental Forum Panel moderated by Bill Blakemore, Aspen, CO
- 03/2009 Benson, Sally M., Flavin, Chris, Rogers, James, and Socolow, Robert, “Taking the Carbon Out of Energy: A Range of Choices,” Aspen Environmental Forum Panel moderated by Elizabeth Shogren, Aspen, CO
- 03/2009 “The Role of CCS and the Oil and Gas Industry in Carbon Management,” Society of Petroleum Engineers Western Regional Meeting, San Jose, California
- 03/2009 “Monitoring Requirements, Methods, and Strategies for Carbon Dioxide Capture and Sequestration Projects,” First International Greenhouse Gas Measurement Symposium, Burlingame, California
- 03/2009 “Cost of Monitoring for Full-Scale CO<sub>2</sub> Storage,” EPRI Workshop on Costs of CO<sub>2</sub> Transport and Storage, Stanford Park Hotel, Menlo Park, California
- 03/2009 “The Global Climate and Energy Project at Stanford University,” LUISS University Workshop, Rome, Italy
- 03/2009 “Carbon Dioxide Capture and Sequestration in Deep Geological Formations,” NRDC Public Workshops on Carbon Capture and Sequestration, Washington, DC
- 03/2009 “Carbon Dioxide Capture and Sequestration in Deep Geological Formations,” NRDC Public Workshops on Carbon Capture and Sequestration, New York
- 02/2009 “Key Technical Issues for Storage in Geological Formations,” Society of Petroleum Engineers/AIChE Carbon Management Workshop, Sonoma, California
- 02/2009 “Sequestration of Carbon Dioxide in Deep Geological Formations: Prospects and Priorities in 2009,” Energy, Environmental, and Chemical Engineering Seminar, Washington University, St. Louis, Missouri
- 01/2009 “Carbon Dioxide Sequestration in Deep Geological Formations,” American Solutions for Winning the Future—American Clean Energy Project, hosted by Newt Gingrich, Washington, DC
- 01/2009 “Carbon Dioxide Capture and Storage,” Clean Tech Forum Series, Palo Alto Research Center, Palo Alto, California
- 12/2008 “What Does a CO<sub>2</sub> Plume Look Like: Implications for Geophysical Monitoring,” American Geophysical Union, San Francisco, California
- 11/2008 “The Challenge Ahead: Geological Storage of CO<sub>2</sub>,” GHGT-9 Closing Plenary, Washington, DC
- 11/2008 “CO<sub>2</sub> Storage in Saline Aquifers,” 3rd Symposium of the Series on Carbon Capture and Sequestration, UC Berkeley, Berkeley, California
- 11/2008 “Multi-Phase Flow of CO<sub>2</sub> and Brine in Saline Aquifers,” Society of Exploration Geophysicists Annual Meeting, Las Vegas, Nevada

- 10/2009 “Carbon Dioxide Capture and Sequestration: Hype or Hope?” Google Energy Seminar, Mountain View, California
- 09/2008 “Geological Sequestration of CO<sub>2</sub> and Potential Groundwater Impacts,” 17<sup>th</sup> Annual Groundwater Resources Association Meeting and Conference, Costa Mesa, California
- 09/2008 “Carbon Dioxide Capture and Storage in Deep Geological Formations,” Workshop on Carbon Capture and Sequestration, Boulder, Colorado
- 09/2008 “Carbon Dioxide Capture and Sequestration in Saline Aquifers: Fundamental Studies of Multi-Phase Flow of CO<sub>2</sub> and Brine,” University of Cambridge, Cambridge, England
- 06/2008 “Carbon Dioxide Capture and Sequestration in Saline Aquifers: Fundamental Studies of Multi-Phase Flow of CO<sub>2</sub> and Brine,” Los Alamos National Laboratory, Los Alamos, NM
- 05/2008 “CO<sub>2</sub> Capture and Geological Sequestration—Getting Past No and Getting to Yes (What Do We Need to Know Now?),” 7<sup>th</sup> Annual Conference on Carbon Capture and Sequestration, Pittsburgh, PA
- 02/2008 “Global Climate & Energy Project at Stanford University,” Society of Petroleum Engineers—Practical Strategies for Managing CO<sub>2</sub> Emissions, Sonoma, CA
- 02/2008 “Carbon Dioxide Capture and Storage in Deep Geological Formations,” Natural Resources Defense Council and Environmental Defense CCS Education Seminar, Sacramento, CA
- 01/2008 “Carbon Dioxide Capture From Large Emission Sources and Storage in Deep Saline Aquifers,” Land, Air and Water Resources Seminar Series, UC Davis, Davis, CA
- 01/2008 “Science and Technology for a Low GHG Emission World,” Canadian Institute, 2<sup>nd</sup> Annual Carbon Capture and Storage Conference, Calgary, Canada
- 01/2008 “Global Climate and Energy Project Overview: CCS and Bio-Ethanol Research,” RITE International Symposium—IPCC 4<sup>th</sup> Assessment Report and Challenges to Mitigate Global Warming, Tokyo, Japan
- 01/2008 “Geological Storage of CO<sub>2</sub> and Groundwater Issues,” CENR Subcommittee on Water Availability and Quality, Washington, DC
- 12/2007 “Adequacy of Monitoring Methods and Strategies for Detecting Carbon Dioxide Leakage from Geological Storage Reservoirs,” American Geophysical Union Fall Meeting, San Francisco, CA
- 11/2007 “Is CCS (Geological Storage) Ready for Prime Time?” MIT Carbon Sequestration Forum VIII, Stanford, CA
- 10/2007 “Geological Potential for CO<sub>2</sub> Storage in the United States,” Gasification Technology Council, San Francisco, California
- 10/2007 “Carbon Dioxide Capture and Storage in Deep Geological Formations,” U.S. Geological Survey Western Region Colloquium, Menlo Park, California
- 09/2007 “GCEP Overview and CCS,” Yale University, New Haven, Connecticut
- 09/2007 “Safety and Monitoring of CO<sub>2</sub> Storage Projects,” The Division for Sustainable Development of the United Nations Department of Economic and Social Affairs small expert group meeting (EGM) on carbon capture and storage, New York, New York
- 09/2007 Benson, Sally M., with Ehrlich, Paul, Krupp, Fred, Shultz, George, and Straubel, J.B., Panelists, Goodman, Amy (moderator), *Clean, Secure, and Efficient Energy—Can We Have It All*, Aurora Forum, Stanford University
- 09/2007 “CCS—GCEP and Stanford,” EPRI Roundtable, San Francisco, CA
- 08/2007 “Six ‘Easy Steps’ Towards Energy Sustainability,” Event sponsored by Congressman Honda, *It’s Easy Being Green*, San Jose, CA
- 06/2007 “Potential Liabilities and Mitigation Strategies for CCS,” WRI CCS Long Term Liability Workshop, Washington, DC
- 05/2007 “Overview of Geological Storage of CO<sub>2</sub>,” National Research Council Geological Storage Roundtable, Washington, DC

05/2007 “Geological Storage of CO<sub>2</sub>: Analogues and Risk Management,” Carbon Sequestration Leadership Forum, Pittsburgh, PA

05/2007 “Recommendations for Basic Scientific Research Needs for Geological Storage of CO<sub>2</sub>,” Keynote address, 6<sup>th</sup> Annual Conference on Carbon Capture & Sequestration, Pittsburgh, PA

05/2007 “Security and Capacity of Geological Storage of CO<sub>2</sub>: What We Know and What We’d Like to Know,” Woods Energy Seminar, Stanford University

05/2007 “Overview of Geological Storage of CO<sub>2</sub>: Technical Issues,” Natural Resources Defense Council, Washington, DC

05/2007 “Potentials for and Risks of Carbon Sequestration & Coal Gasification,” The Haagen-Smit Symposium, 7<sup>th</sup> Annual Meeting, Aptos, CA

04/2007 “Security and Capacity of Geological Storage of CO<sub>2</sub>: What We Know and What We’d Like to Know,” General Electric Global Research Center, Niskayuna, NY

04/2007 “Carbon Dioxide Storage in Geological Reservoirs: Laboratory and Field Observations,” Columbia University, New York, NY

03/2007 “Carbon Dioxide Storage Capacity in Deep Saline Formations: Concepts and Optimization,” Society for Industrial and Applied Mathematics [SIAM] Conference, Santa Fe, New Mexico

02/2007 “Confidence Building in CCS: The Role of Industrial Analogues,” Carbon Sequestration Workshop, RITE, Tokyo, Japan.

02/2007 “Monitoring Carbon Dioxide Sequestration in Deep Geological Formations for Inventory Verification and Carbon Credits,” University of Calgary, Alberta, Canada

11/2006 “Carbon Dioxide Capture and Storage: A Role For Fossil Fuels in a CO<sub>2</sub> Constrained Future,” Climate Change Institute briefing for State Legislators, Wingspread Center, Racine, WI.

10/2006 “A U.S. Roadmap for Carbon Sequestration: Focus on CO<sub>2</sub> Storage.” Petrobras Workshop on Carbon Sequestration, Rio de Janeiro, Brazil

09/2006 “Pilot Testing of CO<sub>2</sub> Sequestration in California,” California Energy Commission, 3<sup>rd</sup> Annual Conference on Climate Change Research, Sacramento, CA

09/2006 “Monitoring Carbon Dioxide Sequestration in Deep Geological Formations for Inventory Verification and Carbon Credits”, keynote address at the 2006 SPE Annual Technical Conference and Exhibition held in San Antonio Texas, Sept. 24-27

07/2006 “Multiphase Flow of CO<sub>2</sub> and Brine: From the Pore to Field Scale,” Gordon Conference, New Hampshire

06/2006 “The Challenge of Gaining Public Acceptance for Geological Storage of Carbon Dioxide”, keynote address at the 8<sup>th</sup> International Conference on Greenhouse Gas Control Technologies, Trondheim, Norway

05/2006 “Geological Sequestration of Carbon Dioxide,” Environmental Defense Board of Directors meeting, New York, New York

05/2006 “Overview of Carbon Dioxide Capture and Storage, Oregon State University, OR

04/2006 “Monitoring Geological Storage Projects for Leakage,” presented to the Working Group on Carbon Sequestration, London Convention, London, U.K.

02/2006 “Siting and Monitoring CO<sub>2</sub> storage Projects,” World Resources Institute, Washington DC

02/2006 “Role of CO<sub>2</sub> Capture and Storage in Decarbonizing the U.S. Energy Mix,” AAAS Symposium on Decarbonization of the U.S. Energy Mix, St. Louis, Missouri

02/2006 “Monitoring Geological Storage Projects”, Montana State University, Bozeman, MT

01/2006 “Issues Related to Deployment of CO<sub>2</sub> Storage in Geological Formations,” Groundwater Protection Council, Austin Texas

## **Courses Taught**

Energy 153/253	Carbon Capture and Storage	Fall 2008-2020
Energy 104	Technologies in the Greenhouse	Spring, 2008
Energy 104	Sustainable Energy for 9 Billion	Spring 2010-2021
Energy 201	Laboratory Measurements for Multiphase Flow in Rocks (with Post-Docs)	Winter 2011, 2012, 2014, 2015, 2018
Energy 204	Universal Energy Access by 2030	Spring, 2018
Energy 301	Energy Seminar	Fall, Winter Spring 2009-2014
Energy 199	Senior Thesis for ERE Majors	2013-2015

**Past and Current Graduate Students and Post-Doctoral Fellows (Current Shown in *Italics*)**

M.S. and Ph.D Students			
Name	Degree	Thesis/Dissertation	Post- Graduation Employment
Ethan Chabora	MS, Energy Resources Engineering 2007-2009	Utility of Above-Zone Pressure Measurements in Monitoring Geologically Stored Carbon Dioxide	Schlumberger
Michael Krause	MS, Energy Resources Engineering 2007-2009	Modeling Sub-Core Scale Permeability in Sandstone for Use in Studying Multiphase Flow of CO <sub>2</sub> and Brine in Core Flooding Experiments	Continued in Ph.D program at Stanford
Ariel Esposito	MS, Energy Resources Engineering 2008-2010	Remediation of Possible Leakage from Geological CO <sub>2</sub> Storage Reservoirs into Groundwater Aquifers	National Renewable Energy Laboratory
Boxiao Li	MS, Energy Resources Engineering 2009-2011	Including Fine-Scale Capillary Heterogeneity in Modeling Multiphase Flow of CO <sub>2</sub> and Brine in Reservoir Cores	Continued in Ph.D program at Stanford
Karim Farhat	MS, Energy Resources Engineering 2009-2011	CO <sub>2</sub> Interim Storage as a Tool for CO <sub>2</sub> Market Development: A Comprehensive Technical Assessment	Continued in Ph.D program at Stanford
Israel Reyna	MS, Petroleum Engineering 2009-2011	Simulation Study of Cap Rock Performance in Saline Aquifers	Schlumberger
Christin Strandli	MS, Petroleum Engineering 2009-2011	The Utility of Multilevel Pressure Measurements in Monitoring Geologically Stored Carbon Dioxide	Continued in Ph.D program at Stanford
Lin Zuo	MS, Energy Resources Engineering 2009-2011	An Experimental Study of CO <sub>2</sub> Exsolution and Relative Permeability Measurements During CO <sub>2</sub> Saturated Water Depressurization	Continued in Ph.D program at Stanford
Whitney Sargent	MS, Petroleum Engineering 2010-2012	Characterization of the Sequestration Potential in the Powder River Basin, Wyoming	Chevron

Chia-Wei Kuo	Ph.D, Energy Resources Engineering 2007-2012	Effect of Flowrate, Heterogeneity, and Capillarity on Multiphase Flow of CO <sub>2</sub> and Brine	Post-Doctoral Fellow, National Taiwan University
Michael Krause	Ph.D, Energy Resources Engineering 2009-2012	The Influence of Capillary Heterogeneity on CO <sub>2</sub> Migration in Porous Media	Tiandi Energy, Houston
Boxiao Li	Ph.D, Petroleum Engineering 2011-2014	Including Small Scale Heterogeneity of Sedimentary Rocks in Large Scale Modeling of CO <sub>2</sub> Sequestration	Chevron
Christin Strandli	Ph.D, Petroleum Engineering 2011-2015	Use of Multilevel Pressure Data for Monitoring Plume and Brine Migration at Geological Storage Sites	Equinor
Lin Zuo	Ph.D, Energy Resources Engineering 2011-2014	Observation and Simulation of Carbon Dioxide Exsolution from Carbonated Water and its Applications	Chevron
Da Huo	Ph.D, Petroleum Engineering 2011-2015	Observation and Simulation of Multiphase Flow of CO <sub>2</sub> and Brine in Fractured Rocks	Energy Equity Associate, FBR
Michael Delgado	MS, Management Science and Engineering 2012-2014	Incorporation of Technology Advances in Integrated Assessment Models	E3, San Francisco
Thomas Aird	M.S. Energy Resources Engineering 2012-2014	Contingency Planning and Intervention Methods for Leakage Through Seals	Nuclear Regulatory Commission, Maryland
Chris Zahasky	M.S. Energy Resources Engineering 2012-2014	Simulation of Multi-Phase Flow of CO <sub>2</sub> and Brine Through Fractured Seals	Ph.D. Program, Stanford University
Dylan Moriarty	M.S. Energy Resources Engineering 2012-2014	Leak Detection and Quantification Using Real-Time CO <sub>2</sub> (C12/C13) Measurements on a Mobile Platform	Sandia
Jacques de Chalendar	M.S. Energy Resources Engineering 2014-2016	Stability of Residually Trapped CO <sub>2</sub>	Ph.D. program, Stanford
Yao Yao	M.S. Energy Resources Engineering, 2014-2016	Coursework only MS.	China
Scott McLaughlin	M.S. Energy Resources Engineering 2014-2016	Influence of Exsolution on Oil Recovery	Chevron

Sophie Trastour	M.S. Energy Resources Engineering 2015-2017	Impact of Capillary Heterogeneity on Carbon Dioxide Injection	Kappa Engineering, Houston, TX
Daniel Hatchell	M.S. Energy Resources Engineering 2015-2017	Gravity-Assisted Immiscible CO <sub>2</sub> for Enhanced Oil Recovery and Storage	Ph.D. UT Austin, TX
Chris Zahasky	Ph.D. Energy Resources Engineering 2014-2018	Use of PET Imaging for Studying Multiphase Flow in Rocks and Fractures	Assistant Professor, University of Wisconsin, Madison
Cindy Ni	Ph.D. Energy Resources Engineering 2015-2020	Influence of Small Scale Heterogeneity on Residual Gas Trapping	Texas Bureau of Economic Geology
Yaxin Li	Ph.D. Energy Resources Engineering 2016-2022	Large-Scale, Long Term Fate of Residually Trapped CO <sub>2</sub>	C3 AI Enterprise
Jacques de Chalendar	Ph.D. Energy Resources Engineering 2016-2020	Optimization of Electric Heating and Thermal Storage for Providing Electric Grid Services	Total and Stanford Adjunct Professor
EJ Baik	MS Energy Resources Engineering 2016-2018	Assessment of Near-Term Bioenergy & CCS (BECCS) Potential in the U.S.	Ph.D. in Energy Resources Engineering, Stanford University
Folasade Ayoola	MS Energy Resources Engineering 2017-2020	Disposal of CO <sub>2</sub> Dissolved in Reinjecting Production Water	PhD at in ERE, Stanford
Sudatta Ray	Ph.D. E-IPER, 2016-2021	Interdependence of Water and Energy Policy on Improving Lives of Small Holder Farmers in India	National University of Singapore
Austin Park	MS Energy Resources Engineering 2017-2019	Emission Intensity of Generators in the WECC Electrical Grid	Gridmatic
EJ Baik	Ph.D. Energy Resource Engineering 2018-2021	Analysis of Options for Carbon Neutral Power Grid in California	Bain and Company
<i>Gege Wen</i>	<i>Ph.D. Energy Resource Engineering 2018-</i>	<i>Machine Learning for Predicting the Performance of CO<sub>2</sub> Storage Projects</i>	
Nora Hennessey	Ph.D. Energy Resource Engineering	Environmental Equity Issues and the Energy Transition	Post-Doctoral Fellow, Arizona State University



	2019-		
Rebecca Grekin	M.S. Energy Resources Engineering 2019-2022	Scope 3 CO <sub>2</sub> Emission Quantification and Reduction	Ph.D. Stanford University, Energy Science and Engineering
Clothilde Venereau	MS Energy Resources Engineering 2019-2020	Assessing the Impact of Residential Buildings Heating Electrification on. Future Electric Loads and Grid. Capacity Requirements in California	
Justin Bracci	M.S. Energy Resources Engineering 2020-2022	Technoeconomic Assessment of Hydrogen for Heavy Duty Transport in California	National Renewable Energy Laboratory, Colorado
<i>Folasade Ayoola</i>	<i>PhD. Energy Science and Engineering 2020-</i>	<i>Transitional Strategies for Managing Decarbonization in Emerging Economies</i>	
<i>Catherine Hay</i>	<i>Ph.D. Energy Resource Engineering 2020-</i>	<i>CO<sub>2</sub> Storage in the Gulf of Mexico</i>	
<i>Jihan Zhuang</i>	<i>Ph.D. Material Science and. Engineering 2020-</i>	<i>Evaluation of Second-Life Batteries</i>	
Caitlin McMahan	M.S. Energy Resources Engineering 2020-2022	Improving Energy Efficiency and Building Resiliency With Better Cooling Demand Management	E3, Boston, Massachusetts
<i>Rebecca Grekin</i>	<i>Ph.D Energy Science and Engineering, 2023-</i>	<i>Improving Building Efficiency and Flexibility with Advanced Data Analytics and Controls</i>	
Post Doctoral Fellows			
		Research Topics	Employment
Jean-Christophe Perrin	Post-Doctoral Fellow 2007-2009	Core-flooding experiments with CO <sub>2</sub> and brine Role of sub-core scale heterogeneity on CO <sub>2</sub> saturation distributions	Professor, University of Nancy, France
Sam Krevor	Post-Doctoral Fellow 2009-2011	Relative permeability measurements in CO <sub>2</sub> brine systems Leakage detection and characterization using a novel surface monitoring system	Senior Lecturer (Associate Prof.), Imperial College, London, U.K.
Ronny Pini	Post-Doctoral Fellow 2010-2013	Development of a new method for in situ capillary pressure measurements for CO <sub>2</sub> /brine systems Direct quantification of capillary heterogeneity in rocks	Senior Lecturer (Associate Prof.), Imperial College, London

Charlie Barnhart	Post-Doctoral Fellow 2010-2014	Analysis of Technological, Economic and Resource Constraints on Large Scale Energy Storage	Assistant Prof. Western Washington University
Michael Dale	Post-Doctoral Fellow 2011-2014	The Importance of High Energy-Return on Investment for Modern Energy Systems	Assistant Prof. Clemson University
Matt Pellow	Post-Doctoral Fellow 2015-2017	Net energy analysis of hydrogen as an energy storage system	EPRI, Palo Alto, CA
Ferdinand Hingirl	Post-Doctoral Fellow 2011-2015	Core-Scale Investigations of CO <sub>2</sub> Reactions with Basalt Tuff	Ambyint, Swiss Federal Institute of Technology, Switzerland
Charlotte Garing	Post-Doctoral Fellow 2014-2018	Stability of Residually Trapped CO <sub>2</sub>	Assistant Prof., University of Georgia
Meritxell Gran	Post-Doctoral Fellow 2015-2018	Multiphase Flow in Fractured Basalt	Amphos21, Barcelona, Spain
David Cameron	Post-Doctoral Fellow 2015-2018	Inversion of Pressure Data for Monitoring CO <sub>2</sub> Migration and Leakage	Netflix, California
Simon Davidsson Kurland	Post-Doctoral Fellow 2017-2018	Net Energy Analysis of Solar PV with Battery Storage	Uppsala University, Associate Professors
Michael Machala	Post-Doctoral Fellow 2017-2022	Enhancing Incomes of Marginal Farmers in Rural India with Food Drying, Cold Storage and Market Data	Toyota Research Institute, Palo Alto, CA
Maartje Boon	Post-Doctoral Fellow 2017-	Upscaling Parameters for Multiphase Flow in Heterogeneous Systems	Junior Faculty, University of Stuttgart, Germany
Takeshi Kurotori	Post-Doctoral Fellow 2020-2023	Use of High Resolution Imaging for Studying Multiphase Flow in Fractured Rocks	Post Doctoral Fellow, Imperial College, London
<i>Aqsa Naeem</i>	<i>Post-Doctoral Fellow 2020-</i>	<i>Reduction of Energy Use and CO<sub>2</sub> Emissions by Advanced Building System Controls</i>	
<i>Maomao Hu</i>	<i>Post-Doctoral Fellow 2021-</i>	<i>Building Systems Data Analytics and Control</i>	
<i>Catherine Spurin</i>	<i>Post-Doctoral Fellow 2023-</i>	<i>Identifying and Harnessing Innovative Flow Regimes to Enhance Geological Storage of CO<sub>2</sub> in Deep Geological Settings</i>	

## Publications

### Refereed Journal Article

\*students and post-doctoral fellows

153. Crain, D. M., **Benson, S. M.**, Saltzer, S. D., & Durlofsky, L. J. (2023). An integrated framework for optimal monitoring and history matching in CO<sub>2</sub> storage projects. *Computational Geosciences*, 1-15.
152. Kurotori, T.\*, Murugesu, M. P., Zahasky, C., Vega, B., Druhan, J. L., **Benson, S. M.**, & Kovscek, A. R. (2023). Mixed imbibition controls the advance of wetting fluid in multiscale geological media. *Advances in Water Resources*, 175, 104429.
151. Callas, C., Kovscek, A. R., & **Benson, S. M.** (2023, April). Incorporating Data Confidence and Scoring Sensitivity into Site Selection Ranking in Depleted Hydrocarbon Reservoirs. In *Offshore Technology Conference* (p. D011S010R006). OTC.
150. Kurotori, T.\*, Zahasky, C., Gran, M., Kovscek, A. R., & **Benson, S. M.** (2023). Comparative Analysis of Imaging and Measurements of Micrometer-Scale Fracture Aperture Fields Within a Heterogeneous Rock Using PET and X-ray CT. *Transport in Porous Media*, 147(3), 519-539.
149. Mishra, A., Boon, M.\*, **Benson, S. M.**, Watson, M. N., & Haese, R. R. (2023). Reconciling predicted and observed carbon mineralization in siliciclastic formations. *Chemical Geology*, 619, 121324.
148. Wen, G., Li, Z., Long, Q., Azizzadenesheli, K., Anandkumar, A., & **Benson, S. M.** (2023). Real-time high-resolution CO<sub>2</sub> geological storage prediction using nested Fourier neural operators. *Energy & Environmental Science*, 16(4), 1732-1741.
147. de Chalendar\*, J. A., McMahon, C.\*, Valenzuela, L. F., Glynn, P. W., & **Benson, S. M.** (2023). Unlocking demand response in commercial buildings: Empirical response of commercial buildings to daily cooling set point adjustments. *Energy and Buildings*, 278, 112599.
146. Chu, A. K.\*, **Benson, S. M.**, & Wen, G.\* (2022). Deep-Learning-Based Flow Prediction for CO<sub>2</sub> Storage in Shale–Sandstone Formations. *Energies*, 16(1), 246.
145. Zahasky, C., Murugesu, M. P., Kurotori, T.\*, Sutton, C., Druhan, J. L., Vega, B., ... & Kovscek, A. R. (2022). Quantification of the Impact of Acidified Brine on Fracture-Matrix Transport in a Naturally Fractured Shale Using in Situ Imaging and Modeling. *Energy & Fuels*.
144. Callas, C.\*, Saltzer, S. D., Davis, J. S., Hashemi, S. S., Kovscek, A. R., Okoroafor, E. R., ... & **Benson, S. M.** (2022). Criteria and workflow for selecting depleted hydrocarbon reservoirs for carbon storage. *Applied Energy*, 324, 119668.
143. Shao, Q., Boon, M.\*, Youssef, A., Kurtev, K., **Benson, S. M.**, & Matthai, S. K. (2022). Modelling CO<sub>2</sub> plume spreading in highly heterogeneous rocks with anisotropic, rate-dependent saturation functions: A field-data based numeric simulation study of Otway. *International Journal of Greenhouse Gas Control*, 119, 103699.
142. Chapman, S.\*, Borgomano, J. V., Quintal, B., **Benson, S. M.**, & Fortin, J. (2022). Mass transfer between fluids as a mechanism for seismic wave attenuation: experimental evidence from water–CO<sub>2</sub> saturated sandstones. *Geophysical Journal International*, 230(1), 216-234.
141. Machala, M. L.\*, Tan, F. L., Poletayev, A., Khan, M. I., & **Benson, S. M.** (2022). Overcoming barriers to solar dryer adoption and the promise of multi-seasonal use in India. *Energy for Sustainable Development*, 68, 18-28.
140. Hennessy, E. M.\*, de Chalendar\*, J. A., Benson, S. M., & Azevedo, I. M. (2022). Distributional health impacts of electricity imports in the United States. *Environmental Research Letters*, 17(6), 064011.
139. Wen, G., Li, Z., Azizzadenesheli, K., Anandkumar, A., & **Benson, S. M.** (2022). U-FNO—An enhanced Fourier neural operator-based deep-learning model for multiphase flow. *Advances in Water Resources*, 163, 104180.
138. Huang, Z., Kurotori, T.\*, Pini, R., **Benson, S. M.**, & Zahasky, C. (2022). Three-Dimensional Permeability Inversion Using Convolutional Neural Networks and Positron Emission Tomography. *Water Resources Research*, 58(3), e2021WR031554.
137. Boon, M.\*, Matthai, S. K., Shao, Q., Youssef, A. A., Mishra, A., & **Benson, S. M.** (2022). Anisotropic rate-dependent saturation functions for compositional simulation of sandstone composites. *Journal of Petroleum Science and Engineering*, 209, 109934.
136. Zahasky, C., & **Benson, S. M.** (2022). Preferential solute transport in low permeability zones during spontaneous imbibition in heterogeneous porous media. *Water Resources Research*, 58(1), e2020WR029460.

135. \*Baik, E., Siala, K., Hamacher, T., & **Benson, S. M.** (2022). California's approach to decarbonizing the electricity sector and the role of dispatchable, low-carbon technologies. *International Journal of Greenhouse Gas Control*, 113, 103527.
134. \*Li, Y., Orr, F. M., & **Benson, S. M.** (2022). Long-Term Redistribution of Residual Gas Due to Non-convective Transport in the Aqueous Phase. *Transport in Porous Media*, 141(1), 231-253.
133. \*de Chalendar, J. A., & **Benson, S. M.** (2021). A physics-informed data reconciliation framework for real-time electricity and emissions tracking. *Applied Energy*, 304, 117761.
132. \*Baik, E., Chawla, K. P., Jenkins, J. D., Kolster, C., Patankar, N. S., Olson, A., **S.M. Benson**, and Long, J. C. (2021). What is different about different net-zero carbon electricity systems?. *Energy and Climate Change*, 2, 100046.
131. \*Boon, M., Matthäi, S. K., Shao, Q., Youssef, A. A., Mishra, A., & **Benson, S. M.** (2021). Anisotropic rate-dependent saturation functions for compositional simulation of sandstone composites. *Journal of Petroleum Science and Engineering*, 109934.
130. DePaolo, D. J., Thomas, D. M., Christensen, J. N., Zhang, S., Orr, F. M., Maher, K., ... & Mito, S. **M. Benson** (2021). Opportunities for large-scale CO<sub>2</sub> disposal in coastal marine volcanic basins based on the geology of northeast Hawaii. *International Journal of Greenhouse Gas Control*, 110, 103396.
129. Ni, H., Møyner, O., Kurtev, K. D., & **Benson, S. M.** (2021). Quantifying CO<sub>2</sub> capillary heterogeneity trapping through macroscopic percolation simulation. *Advances in Water Resources*, 155, 103990.
128. \*Wen, G., \*Hay, C., & **Benson, S. M.** (2021). CCSNet: A deep learning modeling suite for CO<sub>2</sub> storage. *Advances in Water Resources*, 155, 104009.
127. \*Boon, M., & **Benson, S. M.** (2021). A physics-based model to predict the impact of horizontal lamination on CO<sub>2</sub> plume migration. *Advances in Water Resources*, 150, 103881.
126. Romano, C. R., \*Garing, C., Minto, J. M., **Benson, S. M.**, Shipton, Z. K., & Lunn, R. J. (2021). Extreme capillary heterogeneities and in situ fluid compartmentalization due to clusters of deformation bands in sandstones. *International Journal of Greenhouse Gas Control*, 106, 103280.
125. Anto-Darkwah, E., **Benson, S. M.**, & Rabinovich, A. (2021). An improved procedure for sub-core property characterization using data from multiple coreflooding experiments. *International Journal of Greenhouse Gas Control*, 105, 103226.
124. Kuo, C. W., & **Benson, S. M.** (2021). Reliability of Relative Permeability Measurements for Heterogeneous Rocks Using Horizontal Core Flood Experiments. *Sustainability*, 13(5), 2744.
123. \*Wen, G., Tang, M., & **Benson, S. M.** (2020). Multiphase flow prediction with deep neural network. *International Journal of Greenhouse Gas Control*, in press.
122. \*Kurotori, T., \*Zahasky, C., **Benson, S. M.**, & Pini, R. (2020). Description of Chemical Transport in Laboratory Rock Cores Using the Continuous Random Walk Formalism. *Water Resources Research*, 56(9), e2020WR027511.
121. \*Ni, H., & **Benson, S. M.** (2020). Using Unsupervised Machine Learning to Characterize Capillary Flow and Residual Trapping. *Water Resources Research*, 56(8), e2020WR027473.
120. Kurotori, T., \*Zahasky, C., **Benson, S. M.**, & Pini, R. (2020). Description of Chemical Transport in Laboratory Rock Cores Using the Continuous Random Walk Formalism. *Water Resources Research*, 56(9), e2020WR027511.
119. Romano, C. R., \*Zahasky, C., \*Garing, C., Minto, J. M., **Benson, S. M.**, Shipton, Z. K., & Lunn, R. J. (2020). Subcore scale fluid flow behavior in a sandstone with cataclastic deformation bands. *Water Resources Research*, 56(4), e2019WR026715.
118. \*Li, Y., Garing, C., & **Benson, S. M.** (2020). A continuum-scale representation of Ostwald ripening in heterogeneous porous media. *Journal of Fluid Mechanics*, 889.
117. \*Ni, H., & **Benson, S. M.** (2020). Using Unsupervised Machine Learning to Characterize Capillary Flow and Residual Trapping. *Water Resources Research*, 56(8), e2020WR027473.

116. Romano, C. R., \*Zahasky, C., \*Garing, C., Minto, J. M., **Benson, S. M.**, Shipton, Z. K., & Lunn, R. J. (2020). Subcore scale fluid flow behavior in a sandstone with cataclastic deformation bands. *Water Resources Research*, 56(4), e2019WR026715.
115. \*de Chalendar, J. A., Taggart, J., & **Benson, S. M.** (2019). Tracking emissions in the US electricity system. *Proceedings of the National Academy of Sciences*, 116(51), 25497-25502.
114. Kelemen, P., **Benson, S. M.**, Pilorgé, H., Psarras, P., & Wilcox, J. (2019). An overview of the status and challenges of CO<sub>2</sub> storage in minerals and geological formations. *Frontiers in Climate*, 1, 9.
113. \*Wen, G., & **Benson, S. M.** (2019). CO<sub>2</sub> plume migration and dissolution in layered reservoirs. *International Journal of Greenhouse Gas Control*, 87, 66-79.
112. Levi, P. J., Kurland, S. D., Carbajales-Dale, M., Weyant, J. P., Brandt, A. R., & **Benson, S. M.** (2019). Macro-Energy Systems: Toward a New Discipline. *Joule*, 3(10), 2282-2286.
111. Kurotori, T., \*Zahasky, C., Hejazi, S. A. H., Shah, S. M., **Benson, S. M.**, & Pini, R. (2019). Measuring, imaging and modelling solute transport in a microporous limestone. *Chemical Engineering Science*, 196, 366-383.
110. \* de Chalendar, J. A., & **Benson, S. M.** (2019). Why 100% renewable energy is not enough. *Joule*, 3(6), 1389-1393.
109. \* Kurland, S. D., & **Benson, S.** (2019). The energetic implications of introducing lithium-ion batteries to distributed photovoltaic systems. *Sustainable Energy & Fuels*.
108. \*Ni, H., \*Boon, M. \*Garing, C., and **Benson, S.M.** (2019). Predicting CO<sub>2</sub> Residual Trapping Ability Based on Experimental Petrophysical Properties for Different Sandstone Types. *International Journal of Greenhouse Gas Control*, in press.
107. \*Zahasky, C., Kurotori, T., Pini, R., & **Benson, S. M.** (2019). Positron Emission Tomography in Water Resources and Subsurface Energy Resources Engineering Research. *Advances in Water Resources*.
106. \*de Chalendar, J.A. and **Benson, S.M.** (2019). City-scale decarbonization experiments with integrated energy systems, *Energy & Environmental Science*.
105. \*Garing, C., and **Benson, S.M.** (2019). CO<sub>2</sub> wettability of sandstones: addressing conflicting capillary behaviors, *Geophysical Research Letters*.
104. \*de Chalendar, J.A., \*Garing, C., and **Benson, S.M.** (2018). Pore-scale modelling of Ostwald ripening, JA de Chalendar, C Garing, SM Benson. *Journal of Fluid Mechanics* 835, 363-392.
103. \*Zahasky, C., and **Benson S.M.** (2018). Micro-positron emission tomography for measuring sub-core scale single and multiphase transport parameters in porous media, *Advances in Water Resources* 115, 1-16.
102. **Benson, S. M.**, & Deutch, J. (2018). Advancing Enhanced Oil Recovery as a Sequestration Asset. *Joule*, 2(8), 1386-1389.
101. Vasco, D. W., Pride, S. R., \*Zahasky, C., & **Benson, S. M.** (2018). Calculating trajectories associated with solute transport in a heterogeneous medium. *Water Resources Research*, 54(9), 6890-6908.
100. \*Zahasky, C., Thomas, D., Matter, J., Maher, K., & **Benson, S. M.** (2018). Multimodal imaging and stochastic percolation simulation for improved quantification of effective porosity and surface area in vesicular basalt. *Advances in Water Resources*, 121, 235-244.
99. Davis, S. J., Lewis, N. S., Shaner, M., Aggarwal, S., Arent, D., Azevedo, I. L., **Benson, S.M.** ... & Clack, C. T. (2018). Net-zero emissions energy systems. *Science*, 360(6396), eaas9793.
98. Kurotori, T., \*Zahasky, C., Hejazi, S. A. H., Shah, S. M., **Benson, S. M.**, & Pini, R. (2018). Measuring, imaging and modelling solute transport in a microporous limestone. *Chemical Engineering Science*.
97. Rasmusson, K., Rasmusson, M., Tsang, Y., **Benson, S.**, \*Hingerl, F., Fagerlund, F., & Niemi, A. (2018). Residual trapping of carbon dioxide during geological storage—Insight gained through a pore-network modeling approach. *International Journal of Greenhouse Gas Control*, 74, 62-78.
96. Turner, P. A., Mach, K. J., Lobell, D. B., **Benson, S. M.**, \*Baik, E., Sanchez, D. L., & Field, C. B. (2018). The global overlap of bioenergy and carbon sequestration potential. *Climatic Change*, 1-10.

95. \*Baik, E., Sanchez, D. L., Turner, P. A., Mach, K. J., Field, C. B., & **Benson, S. M.** (2018). Geospatial analysis of near-term potential for carbon-negative bioenergy in the United States. *Proceedings of the National Academy of Sciences*, 115(13), 3290-3295.
94. \*Garing, C., \*de Chalendar, J. A., Voltolini, M., Ajo-Franklin, J. B., & **Benson, S. M.** (2017). Pore-scale capillary pressure analysis using multi-scale X-ray micromotography. *Advances in Water Resources*, 104, 223-241.
93. \*Pini, R., & **Benson, S. M.** (2017). Capillary pressure heterogeneity and hysteresis for the supercritical CO<sub>2</sub>/water system in a sandstone. *Advances in Water Resources*, 108, 277-292.
92. Minto, J. M., \*Hingerl, F. F., **Benson, S. M.**, & Lunn, R. J. (2017). X-ray CT and multiphase flow characterization of a 'bio-grouted' sandstone core: The effect of dissolution on seal longevity. *International Journal of Greenhouse Gas Control*, 64, 152-162.
91. \*Felgenhauer, M. F., \*Pellow, M. A., **Benson, S. M.**, & Hamacher, T. (2016). Economic and Environmental Prospects of Battery and Fuel Cell Vehicles for the Energy Transition in German Communities. *Energy Procedia*, 99, 380-391.
90. \*Felgenhauer, M. F., Pellow, M. A., **Benson, S. M.**, & Hamacher, T. (2016). Evaluating co-benefits of battery and fuel cell vehicles in a community in California. *Energy*, 114, 360-368.
89. \*Cameron, D. A., Durlofsky, L. J., & Benson, S. M. (2016). Use of above-zone pressure data to locate and quantify leaks during carbon storage operations. *International Journal of Greenhouse Gas Control*, 52, 32-43.
88. \*Pini, R., Vandehey, N. T., Druhan, J., O'Neil, J. P., & **Benson, S. M.** (2016). Quantifying solute spreading and mixing in reservoir rocks using 3-D PET imaging. *Journal of Fluid Mechanics*, 796, 558-587.
87. \*Zuo, L., Ajo-Franklin, J. B., Voltolini, M., Geller, J. T., & Benson, S. M. (2017). Pore-scale multiphase flow modeling and imaging of CO<sub>2</sub> exsolution in Sandstone. *Journal of Petroleum Science and Engineering*, 155, 63-77.
86. \*Farhat, K., & **Benson, S. M.** (2016). Translating risk assessment to contingency planning for CO<sub>2</sub> geologic storage: A methodological framework. *International Journal of Greenhouse Gas Control*, 52, 410-431.
85. \*Zahasky, C., & **Benson, S. M.** (2016). Evaluation of hydraulic controls for leakage intervention in carbon storage reservoirs. *International Journal of Greenhouse Gas Control*, 47, 86-100.
84. \*Huo, D., Pini, R., & **Benson, S. M.** (2016). A calibration-free approach for measuring fracture aperture distributions using X-ray computed tomography. *Geosphere*, 12(2), 558-571.
83. Niemi, A., Bensabat, J., Shtivelman, V., Edlmann, K., Gouze, P., Luquot, L., \*Hingerl, F., **Benson, S.M.**,... & Liang, T. (2016). Heletz experimental site overview, characterization and data analysis for CO<sub>2</sub> injection and geological storage. *International Journal of Greenhouse Gas Control*, 48, 3-23.
82. \*Hingerl, F. F., Yang, F., \*Pini, R., Xiao, X., Toney, M. F., Liu, Y., & **Benson, S. M.** (2016). Characterization of heterogeneity in the Heletz sandstone from core to pore scale and quantification of its impact on multi-phase flow. *International Journal of Greenhouse Gas Control*, 48, 69-83.
81. \*Huo, D., & **Benson, S. M.** (2016). Experimental investigation of stress-dependency of relative permeability in rock fractures. *Transport in Porous Media*, 113(3), 567-590.
80. Kling, T., \*Huo, D., Schwarz, J. O., Enzmann, F., **Benson, S.**, & Blum, P. (2016). Simulating stress-dependent fluid flow in a fractured core sample using real-time X-ray CT data. *Solid Earth*, 7(4), 1109-1124.
79. \*Pellow, M. A., Emmott, C. J., Barnhart, C. J., & Benson, S. M. (2015). Hydrogen or batteries for grid storage? A net energy analysis. *Energy & Environmental Science*, 8(7), 1938-1952.
78. Yang, F., \*Hingerl, F. F., Xiao, X., Liu, Y., Wu, Z., **Benson, S. M.**, & Toney, M. F. (2015). Extraction of pore-morphology and capillary pressure curves of porous media from synchrotron-based tomography data. *Scientific reports*, 5.
77. \*Li, B., & **Benson, S. M.** (2015). Influence of small-scale heterogeneity on upward CO<sub>2</sub> plume migration in storage aquifers. *Advances in Water Resources*, 83, 389-404.

76. Yang, F., \*Hingerl, F. F., Xiao, X., Liu, Y., Wu, Z., **Benson, S. M.**, & Toney, M. F. (2015). Extraction of pore-morphology and capillary pressure curves of porous media from synchrotron-based tomography data. *Scientific reports*, 5, 10635.
75. \*Kuo, C. W., & Benson, S. M. (2015). Numerical and analytical study of effects of small scale heterogeneity on CO<sub>2</sub>/brine multiphase flow system in horizontal corefloods. *Advances in Water Resources*, 79, 1-17.
74. Yang, Y., Yang, F., \*Hingerl, F. F., Xiao, X., Liu, Y., Wu, Z., **Benson, S. M.** & Pianetta, P. (2015). Registration of the rotation axis in X-ray tomography. *Journal of synchrotron radiation*, 22(2), 452-457.
73. **Benson, S. M.** (2014). Negative-emissions insurance. *Science*, 344(6191), 1431-1431.
72. **Benson, S. M.**, & Friedmann, S. J. (2014). Spring Issue of The Bridge on Emerging Issues in Earth Resources Engineering.
71. Bazilian, M., Brandt, A. R., Billman, L., Heath, G., Logan, J., Mann, M., & **Benson, S. M.** (2014). Ensuring benefits from North American shale gas development: Towards a research agenda. *Journal of Unconventional Oil and Gas Resources*, 7, 71-74.
70. \*Carbajales-Dale, M., \*Barnhart, C. J., Brandt, A. R., & **Benson, S. M.** (2014). A better currency for investing in a sustainable future. *Nature Climate Change*, 4(7), 524-527.
69. \*Carbajales-Dale, M., \*Barnhart, C. J., & **Benson, S. M.** (2014). Can we afford storage? A dynamic net energy analysis of renewable electricity generation supported by energy storage. *Energy & Environmental Science*, 7(5), 1538-1544.
68. Ruprecht, C., \*Pini, R., Falta, R., **Benson, S.**, & Murdoch, L. (2014). Hysteretic trapping and relative permeability of CO<sub>2</sub> in sandstone at reservoir conditions. *International Journal of Greenhouse Gas Control*, 27, 15-27.
67. De Coninck, H., & **Benson, S. M.** (2014). Carbon Dioxide Capture and Storage: Issues and Prospects. *Annual Review of Environment and Resources*, 39, 243-270.
66. \*Zuo, L., & Benson, S. M. (2014). Process-dependent residual trapping of CO<sub>2</sub> in sandstone. *Geophysical Research Letters*, 41(8), 2820-2826.
65. \*Pini, R., & Benson, S. M. (2013). Characterization and scaling of mesoscale heterogeneities in sandstones. *Geophysical Research Letters*, 40(15), 3903-3908.
64. Falta, R. W., \*Zuo, L., & **Benson, S. M.** (2013). Migration of exsolved CO<sub>2</sub> following depressurization of saturated brines. *Greenhouse Gases: Science and Technology*, 3(6), 503-515.
63. \*Barnhart, C. J., \*Dale, M., Brandt, A. R., & **Benson, S. M.** (2013). The energetic implications of curtailing versus storing solar-and wind-generated electricity. *Energy & Environmental Science*, 6(10), 2804-2810.
62. \*Li, B., Tchelep, H. A., & Benson, S. M. (2013). Influence of capillary-pressure models on CO<sub>2</sub> solubility trapping. *Advances in water resources*, 62, 488-498.
61. \*Pini, R., & **Benson, S. M.** (2013). Simultaneous determination of capillary pressure and relative permeability curves from core-flooding experiments with various fluid pairs. *Water Resources Research*, 49(6), 3516-3530.
60. \*Strandli, C. W., & **Benson, S. M.** (2013). Identifying diagnostics for reservoir structure and CO<sub>2</sub> plume migration from multilevel pressure measurements. *Water Resources Research*, 49(6), 3462-3475.
59. \*Barnhart, C. J., & Benson, S. M. (2013). On the importance of reducing the energetic and material demands of electrical energy storage. *Energy & Environmental Science*, 6(4), 1083-1092.
58. \*Krause, M., \*Krevor, S., & **Benson, S. M.** (2013). A procedure for the accurate determination of sub-core scale permeability distributions with error quantification. *Transport in porous media*, 98(3), 565-588.
57. \*Carbajales-Dale, M., & **Benson, S. M.** (2013). The energy balance of the photovoltaic (PV) industry—Is the PV industry a net energy provider. *Environmental Science and Technology*, 47(7), 3482-3489.



56. \*Kuo, C. W., & **Benson, S. M.** (2013). Analytical study of effects of flow rate, capillarity, and gravity on CO/brine multiphase-flow system in horizontal corefloods. *SPE Journal*, 18(04), 708-720.
55. \*Farhat, K., & **Benson, S. M.** (2013). A technical assessment of CO<sub>2</sub> Interim Storage in deep saline aquifers. *International Journal of Greenhouse Gas Control*, 15, 200-212.
54. Jordan, P. D., & **Benson, S. M.** (2013). Worker safety in a mature carbon capture and storage industry in the United States based upon analog industry experience. *International Journal of Greenhouse Gas Control*, 14, 291-303.
53. \*Zuo, L., Zhang, C., Falta, R. W., & **Benson, S. M.** (2013). Micromodel investigations of CO<sub>2</sub> exsolution from carbonated water in sedimentary rocks. *Advances in water resources*, 53, 188-197.
52. \*Esposito, A., & **Benson, S. M.** (2012). Evaluation and development of options for remediation of CO<sub>2</sub> leakage into groundwater aquifers from geologic carbon storage. *International Journal of Greenhouse Gas Control*, 7, 62-73.
51. \*Krevor, S. C., \*Pini, R., \*Zuo, L., & **Benson, S. M.** (2012). Relative permeability and trapping of CO<sub>2</sub> and water in sandstone rocks at reservoir conditions. *Water resources research*, 48(2).
50. \*Pini, R., \*Krevor, S. C., & **Benson, S. M.** (2012). Capillary pressure and heterogeneity for the CO<sub>2</sub>/water system in sandstone rocks at reservoir conditions. *Advances in Water Resources*, 38, 48-59.
49. \*Krevor, S. C., \*Pini, R., \*Li, B., & **Benson, S. M.** (2011). Capillary heterogeneity trapping of CO<sub>2</sub> in a sandstone rock at reservoir conditions. *Geophysical Research Letters*, 38(15).
48. \*Krevor, S. C., Ide, T., **Benson, S. M.**, & Orr Jr, F. M. (2011). Real-time tracking of CO<sub>2</sub> injected into a subsurface coal fire through high-frequency measurements of the <sup>13</sup>CO<sub>2</sub> signature. *Environmental science & technology*, 45(9), 4179-4186.
47. \*Zuo, L., \*Krevor, S., Falta, R. W., & **Benson, S. M.** (2012). An experimental study of CO<sub>2</sub> exsolution and relative permeability measurements during CO<sub>2</sub> saturated water depressurization. *Transport in porous media*, 91(2), 459-478.
46. \*Krause, M. H., \*Perrin, J. C., & **Benson, S. M.** (2011). Modeling permeability distributions in a sandstone core for history matching coreflood experiments. *SPE Journal*, 16(04), 768-777.
45. Milne, J. L., Sassoon, R. E., Hung, E., Bosshard, P., & **Benson, S. M.** (2010). The Global Climate and Energy Project at Stanford University: Fundamental Research Towards Future Energy Technologies. *Journal of Groundwater Hydrology*, 52(3), 235-246.
44. Spangler, L. H., Dobeck, L. M., Repasky, K. S., Nehrir, A. R., Humphries, S. D., Barr, J. L., ... & **Benson, S. M.** (2010). A shallow subsurface controlled release facility in Bozeman, Montana, USA, for testing near surface CO<sub>2</sub> detection techniques and transport models. *Environmental Earth Sciences*, 60(2), 227-239.
43. \*Krevor, S., \*Perrin, J. C., \*Esposito, A., Rella, C., & **Benson, S. M.** (2010). Rapid detection and characterization of surface CO<sub>2</sub> leakage through the real-time measurement of  $\delta^{13}\text{C}$  signatures in CO<sub>2</sub> flux from the ground. *International Journal of Greenhouse Gas Control*, 4(5), 811-815.
42. Silin, D., Tomutsa, L., **Benson, S. M.**, & Patzek, T. W. (2011). Microtomography and pore-scale modeling of two-phase fluid distribution. *Transport in porous media*, 86(2), 495-515.
41. Nico, P. S., Ajo-Franklin, J. B., **Benson, S. M.**, McDowell, A., Silin, D. B., Tomutsa, L., & Wu, Y. (2010). Synchrotron X-ray Micro-Tomography and Geological CO<sub>2</sub> Sequestration. *Advances in Computed Tomography for Geomaterials: GeoX 2010*, 374-380.
40. \*Perrin, J. C., & **Benson, S. M.** (2010). An experimental study on the influence of sub-core scale heterogeneities on CO<sub>2</sub> distribution in reservoir rocks. *Transport in porous media*, 82(1), 93-109.
39. Jordan, P. D., & **Benson, S. M.** (2009). Well blowout rates in California Oil and Gas District 4—update and trends. *Exploration and Production Oil & Gas Review*, 7(2), 59-65.
38. Snieder, R., & **Benson, S. M.** (2008). Help make a difference with education and outreach for the global energy challenge! *The Leading Edge*, 27(10), 1364-1370.
37. Snieder, R., and **Benson, S. M.** (2008), Education for the Global Energy Challenge, *Physics Today*, pp. 48-49.

36. **Benson, S. M.**, & Cole, D. R. (2008). CO<sub>2</sub> sequestration in deep sedimentary formations. *Elements*, 4(5), 325-331.
35. Silin, D., Patzek, T. W., & **Benson, S. M.** (2009). A one-dimensional model of vertical gas plume migration through a heterogeneous porous medium. *International Journal of Greenhouse Gas Control*, 3(3), 300-310.
34. Jordan, P. D., & **Benson, S. M.** (2009). Well blowout rates and consequences in California Oil and Gas District 4 from 1991 to 2005: implications for geological storage of carbon dioxide. *Environmental Geology*, 57(5), 1103-1123.
33. Cortis, A., Oldenburg, C. M., & **Benson, S. M.** (2008). The role of optimality in characterizing CO<sub>2</sub> seepage from geologic carbon sequestration sites. *International Journal of Greenhouse Gas Control*, 2(4), 640-652.
32. **Benson, S. M.**, & Orr, F. M. (2008). Carbon dioxide capture and storage. *MRS bulletin*, 33(4), 303-305.
31. **Benson, S. M.**, & Orr, F. M. (2008). Sustainability and energy conversions. *MRS bulletin*, 33(4), 297-302.
30. Silin, D., Patzek, T., & **Benson, S. M.** (2009). A model of buoyancy-driven two-phase countercurrent fluid flow. *Transport in Porous Media*, 76(3), 449.
29. Daley, T. M., Solbau, R. D., Ajo-Franklin, J. B., & **Benson, S. M.** (2007). Continuous active-source seismic monitoring of CO<sub>2</sub> injection in a brine aquifer. *Geophysics*, 72(5), A57-A61.
28. Lewicki, J. L., Hilley, G. E., Tosha, T., Aoyagi, R., Yamamoto, K., & **Benson, S. M.** (2007). Dynamic coupling of volcanic CO<sub>2</sub> flow and wind at the Horseshoe Lake tree kill, Mammoth Mountain, California. *Geophysical Research Letters*, 34(3).
27. **Benson, S. M.**, & Surlles, T. (2006). Carbon dioxide capture and storage: An overview with emphasis on capture and storage in deep geological formations. *Proceedings of the IEEE*, 94(10), 1795-1805.
26. Hovorka, S. D., **Benson, S. M.**, Doughty, C., Freifeld, B. M., Sakurai, S., Daley, T. M., ... & Myer, L. R. (2006). Measuring permanence of CO<sub>2</sub> storage in saline formations: the Frio experiment. *Environmental Geosciences*, 13(2), 105-121.
25. Zhang, Y., Oldenburg, C. M., & **Benson, S. M.** (2004). Vadose zone remediation of carbon dioxide leakage from geologic carbon dioxide sequestration sites. *Vadose Zone Journal*, 3(3), 858-866.
24. Hepple, R. P., & **Benson, S. M.** (2005). Geologic storage of carbon dioxide as a climate change mitigation strategy: performance requirements and the implications of surface seepage. *Environmental Geology*, 47(4), 576-585.
23. Zawislanski, P. T., **Benson, S. M.**, TerBerg, R., & Borglin, S. E. (2003). Selenium speciation, solubility, and mobility in land-disposed dredged sediments. *Environmental science & technology*, 37(11), 2415-2420.
22. Tsang, C. F., **Benson, S. M.**, Kobelski, B., & Smith, R. E. (2002). Scientific considerations related to regulation development for CO<sub>2</sub> sequestration in brine formations. *Environmental Geology*, 42(2-3), 275-281.
21. Solodov, I., Malkovsky, V., Pek, A., & **Benson, S. M.**, (2002). New evidence for the combined influence of vapor condensation and thermal convection on groundwater monitoring wells. *Environmental geology*, 42(2-3), 145-150.
20. Patzek, T. W., Silin, D. B., **Benson, S. M.**, & Barenblatt, G. I. (2003). On vertical diffusion of gases in a horizontal reservoir. *Transport in Porous Media*, 51(2), 141-156.
19. Oldenburg, C. M., Pruess, K., & **Benson, S. M.** (2001). Process modeling of CO<sub>2</sub> injection into natural gas reservoirs for carbon sequestration and enhanced gas recovery. *Energy & Fuels*, 15(2), 293-298.
18. \* Kegley, W.P., Fallaw, W.C., Snipes, D.S., **Benson, S.M.** and V. Price Jr. (1994) "Textural Factors Affecting Permeability at the MWD Well Field, Savannah River Site, Aiken, South Carolina," *Southeastern Geology*, Vol. 34, No. 3, pp. 139-161.

17. Doughty, C., Long, J., Hestir, K., & **Benson, S. M.** (1994). Hydrologic characterization of heterogeneous geologic media with an inverse method based on iterated function systems. *Water resources research*, 30(6), 1721-1745.
16. \*Wahl, C., **Benson, S.**, & Santolo, G. (1994). Temporal and spatial monitoring of soil selenium at Kesterson Reservoir, California. *Water, Air, and Soil Pollution*, 74(3-4), 345-361.
15. Tokunaga, T. K., & **Benson, S. M.** (1992). Selenium in Kesterson Reservoir ephemeral pools formed by groundwater rise: I. A field study. *Journal of environmental quality*, 21(2), 246-251.
14. Zawislanski, P. T., Tokunaga, T. K., **Benson, S. M.**, Oldfather, J. M., & Narasimhan, T. N. (1992). Bare soil evaporation and solute movement in selenium-contaminated soils of Kesterson Reservoir. *Journal of environmental quality*, 21(3), 447-457.
13. Persoff, P., Radke, C. J., Pruess, K., **Benson, S. M.**, & Witherspoon, P. A. (1989, January). A laboratory investigation of foam flow in sandstone at elevated pressure. In *SPE California Regional Meeting*. Society of Petroleum Engineers.
12. Tokunaga, T. K., Lipton, D. S., **Benson, S. M.**, Yee, A. W., Oldfather, J. M., Duckart, E. C., ... & Halvorsen, K. E. (1991). Soil selenium fractionation, depth profiles and time trends in a vegetated site at Kesterson Reservoir. *Water, Air, and Soil Pollution*, 57(1), 31-41.
11. White, A. F., **Benson, S. M.**, Yee, A. W., Wollenberg, H. A., & Flexser, S. (1991). Groundwater contamination at the Kesterson Reservoir, California: 2. Geochemical parameters influencing selenium mobility. *Water Resources Research*, 27(6), 1085-1098.
10. **Benson, S. M.**, White, A. F., Halfman, S., Flexser, S., & Alavi, M. (1991). Groundwater contamination at the Kesterson Reservoir, California: 1. Hydrogeologic setting and conservative solute transport. *Water resources research*, 27(6), 1071-1084.
9. **Benson, S. M.**, Delamore, M., & Hoffman, S. (1993). Kesterson crisis. *Journal of irrigation and drainage engineering*, 119(3), 471-483.
8. Persoff, P., Pruess, K., **Benson, S. M.**, Wu, Y. S., Radke, C. J., Witherspoon, P. A., & Shikari, Y. A. (1990). Aqueous foams for control of gas migration and water coning in aquifer gas storage. *Energy Sources*, 12(4), 479-497.
7. Long, R. H., **Benson, S. M.**, Tokunaga, T. K., & Yee, A. (1990). Selenium immobilization in a pond sediment at Kesterson Reservoir. *Journal of environmental quality*, 19(2), 302-311.
6. **Benson, S. M.**, & Bodvarsson, G. S. (1986). Nonisothermal effects during injection and falloff tests. *SPE Formation Evaluation*, 1(01), 53-63.
5. Bodvarsson, G. S., **Benson, S. M.**, Sigurdsson, O., Stefansson, V., & Eliasson, E. T. (1984). The Krafla geothermal field, Iceland: 1. Analysis of well test data. *Water Resources Research*, 20(11), 1515-1530.
4. **Benson, S.M.**, and Lai C.H., (1984) "Analysis of Interference Data in a Highly Heterogeneous Naturally Fractured Geothermal Reservoir," paper SPE-13252, *Proceedings of the 59th Annual Technical Conference and Exhibition of the Society of Engineers of AIME*, Houston, Texas; also in (1986) *Formation Evaluation*, pp. 236-248.
3. Miller, C. W., Benson, S. M., O'Sullivan, M. J., & Pruess, K. (1982). Wellbore effects in the analysis of two-phase geothermal well tests. *Society of Petroleum Engineers Journal*, 22(03), 309-320.
2. Bodvarsson, G. S., **Benson, S. M.**, & Witherspoon, P. A. (1982). Theory of the development of geothermal systems charged by vertical faults. *Journal of Geophysical Research: Solid Earth*, 87(B11), 9317-9328.
1. Schroeder, R. C., Goranson, C. B., **Benson, S. M.**, & Lippmann, M. J. (1980). Well interference tests at the Cerro Prieto geothermal field. *Geothermics*, 9(1-2), 179-187.

### Peer Reviewed Book Chapters

23. Druhan, J., Vialle, S., Maher, K., and **Benson, S.M.** (2015). Carbon Dioxide Capture for Storage in Deep Geologic Formations—Results from the CO<sub>2</sub> Capture Project.

22. Pini, R., and **Benson, S.M.** (2015). Quantifying Geological Heterogeneity of Rocks Using Core Flooding. *Pore Scale Phenomena: Frontiers in Energy and Environment*, 243-261
21. T.B. Johansson, N. Nakicenovic, A. Patwardhan, L. Gomez-Echeverri, R. Banerjee, **S. M. Benson**, D. Bouille, A. Brew-Hammond, A. Cherp, S.T. Coelho, L. Emberson, M.J. Figueroa, A. Grubler, K. He, M. Jaccard, S. Kahn-Ribeiro, S. Karekezi, E.D. Larson, Z. Li, S. McDade, L.K. Mytelka, S. Pachauri, K. Riahi, J. Rockström, H.-H. Rogner, J. Roy, R.N. Schock, R. Sims, K.R. Smith, W.C. Turkenburg, D. Ürge-Vorsatz, F. von Hippel, and K. Yeager, 2012. *Global Energy Assessment, Technical Summary*.
20. T.B. Johansson, N. Nakicenovic, A. Patwardhan, L. Gomez-Echeverri, R. Banerjee, **S. M. Benson**, D. Bouille, A. Brew-Hammond, A. Cherp, S.T. Coelho, L. Emberson, M.J. Figueroa, A. Grubler, K. He, M. Jaccard, S. Kahn-Ribeiro, S. Karekezi, E.D. Larson, Z. Li, S. McDade, L.K. Mytelka, S. Pachauri, K. Riahi, J. Rockström, H.-H. Rogner, J. Roy, R.N. Schock, R. Sims, K.R. Smith, W.C. Turkenburg, D. Ürge-Vorsatz, F. von Hippel, and K. Yeager, 2012. *Global Energy Assessment, Summary for Policy Makers*.
19. **S.M. Benson**, K. Bennaceur, P. Cook, J. Davison, H. de Coninck, K. Farhat, A. Ramirez, D. Simbeck, T. Surles, P. Verma, and I. Wright, (2012): Carbon Dioxide Capture and Storage. In *Global Energy Assessment: Toward a Sustainable Future*. L. Gomez-Echeverri, T.B. Johansson, N. Nakicenovic, A. Patwardhan, (eds.), IIASA, Laxenburg, Austria and Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
18. F.M. Orr and **S.M. Benson**, 2011. Sustainability and Energy Conversions, in *Energy and Environmental Sustainability*, Materials Research Society.
17. **S.M. Benson**, 2011. Carbon Dioxide Capture and Sequestration in Deep Geological Formations, in *Energy and Environmental Sustainability*, Materials Research Society.
16. **S.M. Benson** (2007) Monitoring Geological Storage of Carbon Dioxide, *Carbon Capture and Geologic Sequestration: Integrating technology, monitoring, and regulation*, E.J. Wilson and D. Gerard (eds.) Blackwell Scientific Publishing, Ames, Iowa, Chapter 4.
15. **S. M. Benson** and P. Cook, Coordinating Lead Authors. J. Anderson, S. Bachu, H.B. Nimir, B. Basu, J. Bradshaw, G. Deguchi, J. Gale, G. von Goerne, W. Heidug, S. Holloway, R. Kamal, D. Keith, P. Lloyd, P. Rocha, B. Senior, J. Thomson, T. Torp, T. Wildenborg, M. Wilson, F. Zarlanga, and D. Zhou, Lead Authors. M. Celia, B. Gunter, J. Ennis King, E. Lindegerg, S. Lombardi, C. Oldenburg, K. Pruess, A. Rigg, S. Stevens, E. Wilson, S. Whittaker (2005) "Underground Geological Storage," IPCC Special Report on Carbon Dioxide Capture and Storage, Chapter 5. Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, U.K.
14. E. Rubin, L. Meyer, and H. deConinck, Coordinating Lead Authors. Abanades, J.C., M. 181. Akai, **S. M. Benson**, K. Caldeira, P. Cook, O. Davidson, R. Doctor, J. Dooley, P. Freund, J. Gale, W. Heidug, H. Herzog, D. Keith, M. Mazzotti, B. Metz, B. Osman-Elasha, A. Palmer, R. Pipatti, K. Smekens, M. Soltanieh, and K. Thambimuthu (2005) "Technical Summary," IPCC Special Report on Carbon Dioxide Capture and Storage. Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, U.K.
13. J.C. Abanades, M. Akai, **S. M. Benson**, K. Caldeira, H. de Coninck, P. Cook, O. Davidson, R. Doctor, J. Dooley, P. Freund, J. Gale, W. Heidug, H. Herzog, D. Keith, M. Mazzotti, B. Metz, L. Meyer, B. Osman-Elasha, A. Palmer, R. Pipatti, E. Rubin, K. Smekens, M. Soltanieh, and K. Thambimuthu (2005) "Summary for Policy Makers," IPCC Special Report on Carbon Dioxide Capture and Storage. Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, U.K.
12. W.D. Gunter, S. Bachu, and **S. M. Benson** (2004), "The Role of Hydrogeological and Geochemical Trapping in Sedimentary Basins for Secure Geological Storage of Carbon Dioxide," *Geological Storage of Carbon Dioxide for Emissions Reduction: Technology*, S.J. Baines, J. Gale, and R.H. Worden (eds). Geological Society, London, Special Publications, 233, 129-145.
11. S.D. Hovorka, C. Doughty, **S.M. Benson**, K. Pruess, and P.R. Knox (2004) "The Impact of Geological Heterogeneity on CO<sub>2</sub> Storage in Brine Formations: A Case Study from the Texas Gulf

Coast,” *Geological Storage of Carbon Dioxide*, S.J. Baines and R.H. Worden (eds.) Geological Society, London Special Publications, 233, p. 147-163.

10. **S.M. Benson** and R. Hepple (2005) “Prospects for Early Detection and Options for Remediation of Leakage from CO<sub>2</sub> Sequestration Projects,” *Carbon Dioxide Capture for Storage in Deep Geologic Formations—Results from the CO<sub>2</sub> Capture Project, Vol. 2: Geologic Storage of Carbon Dioxide with Monitoring and Verification*, Elsevier Publishing, UK, p. 1189-1203. **9. S.M. Benson** (2005) “Lessons Learned from Natural and Industrial Analogues,” *Carbon Dioxide Capture for Storage in Deep Geologic Formations—Results from the CO<sub>2</sub> Capture Project, Vol. 2: Geologic Storage of Carbon Dioxide with Monitoring and Verification*, Elsevier Publishing, UK, p. 1133-1141.
8. **S.M. Benson** (2005) “Overview of Geologic Storage of CO<sub>2</sub>,” *Carbon Dioxide Capture for Storage in Deep Geologic Formations—Results from the CO<sub>2</sub> Capture Project, Vol. 2: Geologic Storage of Carbon Dioxide with Monitoring and Verification*, Elsevier Publishing, UK, p. 665-672.
7. **S.M. Benson** and L. Myer (2002) “Monitoring to Ensure Safe and Effective Geologic Storage of Carbon Dioxide,” *Intergovernmental Panel on Climate Change (IPCC) Workshop on Carbon Sequestration*, November 18-22, 2002, Regina, Saskatchewan, Canada.
6. E.R. Byron, H.M. Ohlendorf, G.M. Santolo, **S.M. Benson**, P.T. Zawislanski, and T.K. Tokunaga (2002) “Ecological Risk Assessment Example: Waterfowl and Shorebirds Feeding in Ephemeral Pools at Kesterson Reservoir, California;” *Handbook of Ecotoxicology*, Chapter 37, pp. 977-1006.
5. **S.M. Benson**, T. Dorchak, G. Jacobs, J. Ekmann, J. Bishop, T. Grahame, Thomas (2000) “Carbon Dioxide Reuse and Sequestration: The State of the Art Today,” *Energy 2000: State of the Art*, P. Catania (ed.), pp. 205-226.
4. **S.M. Benson** (2000) “An Overview of Geologic Sequestration of CO<sub>2</sub>,” *ENERGY 2000: The Beginning of a New Millennium*, Peter Catania, (ed.), pp. 1219-1225.
3. **S.M. Benson** (1997) “Influence of Nitrate on the Mobility and Reduction Kinetics of Selenium in Groundwater Systems,” *Environmental Chemistry of Selenium*, W.T. Frankenberger and R.A. Engberg (eds) Marcel Dekker, Inc., Chap. 22, pp. 437-457.
2. T.K. Tokunaga, P.T. Zawislanski, P.W. Johannis, and **S. Benson** (1994) “Field Investigations of Selenium Speciation, Transformation, and Transport in Soils from Kesterson Reservoir and Lahontan Valley,” *Selenium in the Environment*, W.T. Frankenberger, Jr., and S. Benson (eds), Marcel Dekker, Inc., pp. 119-138.
1. N.E. Goldstein, **S.M. Benson**, and D. Alumbaugh (1990) “Saline Groundwater Plume Mapping with Electromagnetics,” *Geotechnical and Environmental Geophysics*, S.H. Ward (ed), Society of Exploration Geophysics, Tulsa, Oklahoma, Vol. II, pp. 17-25.

#### Edited Peer Reviewed Books

3. **S.M. Benson**, ed. (2005) *Carbon Dioxide Capture for Storage in Deep Geologic Formations—Results from the CO<sub>2</sub> Capture Project, Vol. 2: Geologic Storage of Carbon Dioxide with Monitoring and Verification*, Elsevier Publishing, UK. 654 pp.
2. B. Faybishenko, P.A. Witherspoon, and **S.M. Benson** (eds) (2000) “*Dynamics of Fluids in Fractured Rock*,” *Geophysical Monograph 122*, American Geophysical Union, Washington, D.C.
1. W.T. Frankenberger, Jr., and **S. M. Benson** (eds) (1994), *Selenium in the Environment*, Marcel Dekker, 1994.

#### Conference Papers

117. \*de Chalendar, J.A., Glynn, P., and **Benson, S.M.** (2019), Experimental Investigation of a Capacity-Based Demand Response Mechanism for District-Scale Application. Hawaii International Conference on System Science 2019, Hawaii.
116. \*de Chalendar, \* Frost, J.H. and **Benson, S.M.** (2018). Optimization of Electric Vehicle Charging in a Fully (Nearly) Electric Campus Energy System. IBPC2018. 7<sup>th</sup> International Building Physics Conference, Syracuse, NY.

115. \*de Chalendar, J., Glynn, W.P., Stagner, J., **Benson, S. M.** (2017). Decarbonization of Campus Energy Systems and Optimization of Grid-Friendly Electrified District Heating and Cooling with Thermal Storage. CIGRE US National Committee 2017 Grid of the Future Symposium, Cleveland, Ohio.
114. \*Hatchell, D., & **Benson, S. M.** (2017). Examining the potential of immiscible CO<sub>2</sub> for gravity-assisted enhanced oil recovery and storage. *Energy Procedia*, 114, 6980-6988.
113. \*de Chalendar, J. A., \*Garing, C., & **Benson, S. M.** (2017). Pore-scale considerations on Ostwald ripening in rocks. *Energy Procedia*, 114, 4857-4864.
112. \*Zahasky, C., & **Benson, S. M.** (2017). Using micro-positron emission tomography to quantify single and multiphase flow in heterogeneous reservoirs. *Energy Procedia*, 114, 5070-5082.
111. \*Garing, C., Voltolini, M., Ajo-Franklin J.B., and **Benson, S.M.** (2017). Pore-scale evolution of trapped CO<sub>2</sub> at early stages following imbibition using micro-CT imaging, *Energy Procedia* 114, 4872-4878.
110. \*Zahasky, C., and **Benson, S.M.** (2015). Phase Saturation validation and tracer transport quantification using micro-PET in heterogeneous sandstones. International Society of Core Analysts Symposium, Snowmass, CO.
109. \*Huo, D., \*Li, B., & **Benson, S. M.** (2014, October). Investigating Aperture-Based Stress-Dependent Permeability and Capillary Pressure in Rock Fractures. In *SPE Annual Technical Conference and Exhibition*. Society of Petroleum Engineers.
108. \*Hingerl, F. F., Marpu, S., Guzman, N., **Benson, S. M.**, & Delgado-Alonso, J. (2014). Development and Testing of a New Fiber Optic System for Monitoring CO<sub>2</sub> Solubility in Aqueous High-Pressure Geological Systems. *Energy Procedia*, 63, 4134-4144.
107. Druhan, J. L., Vialle, S., Maher, K., & **Benson, S. M.** (2014). A reactive transport model for geochemical mitigation of CO<sub>2</sub> leaking into a confined aquifer. *Energy Procedia*, 63, 4620-4629.
106. \*Strandli, C. W., Mehnert, E., & **Benson, S. M.** (2014). CO<sub>2</sub> Plume Tracking and History Matching Using Multilevel Pressure Monitoring at the Illinois Basin–Decatur Project. *Energy Procedia*, 63, 4473-4484.
105. \*Li, B., & **Benson, S. M.** (2014). Small-scale Heterogeneities and Buoyancy-driven CO<sub>2</sub> Migration in Geological Storage. *Energy Procedia*, 63, 3608-3615.
104. \*Zuo, L., & **Benson, S. M.** (2014). CO<sub>2</sub> Exsolution—challenges and Opportunities in Subsurface Flow Management. *Energy Procedia*, 63, 5664-5670.
103. \*Zahasky, C., & **Benson, S. M.** (2014). A Simple Approximate Semi-analytical Solution for Estimating Leakage of Carbon Dioxide Through Faults. *Energy Procedia*, 63, 4861-4874.
102. \*Zahasky, C., & **Benson, S. M.** (2014). Evaluation of the Effectiveness of Injection Termination and Hydraulic Controls for Leakage Containment. *Energy Procedia*, 63, 4666-4676.
101. \*Farhat, K., & **Benson, S. M.** (2013). A technical assessment of CO<sub>2</sub> Interim Storage in deep saline aquifers. *International Journal of Greenhouse Gas Control*, 15, 200-212.
100. Imbus, S. W., Dodds, K., Otto, C. J., Trautz, R. C., Christopher, C. A., Agarwal, A., & **Benson, S. M.** (2013). CO<sub>2</sub> Storage Contingencies Initiative: Detection, Intervention and Remediation of Unexpected CO<sub>2</sub> Migration. *Energy Procedia*, 37, 7802-7814.
99. \*Krevor, S., \*Pini, R., & **Benson, S. M.** (2013). Measurement of the multiphase flow properties of the CO<sub>2</sub> brine system for carbon sequestration. *Energy Procedia*, 37, 4499-4503.
98. \*Pini, R., \*Krevor, S., Krause, M., & **Benson, S. M.** (2013). Capillary Heterogeneity in Sandstone Rocks During CO<sub>2</sub>/Water Core-flooding Experiments. *Energy Procedia*, 37, 5473-5479.
97. \*Zuo, L., & **Benson, S. M.** (2013). Exsolution enhanced oil recovery with concurrent CO<sub>2</sub> sequestration. *Energy Procedia*, 37, 6957-6963.
96. \*C. W. Strandli and **S.M. Benson**, 2012. Diagnostics for Reservoir Structure and CO<sub>2</sub> Plume Migration from Multilevel Pressure Measurements. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012. *Energy Procedia*, (2013) 000–000.

95. \*R. Pini, \*S. Krevor, \*M. Krause, and **S.M. Benson**, 2012. Capillary Heterogeneity in Sandstone Rocks During CO<sub>2</sub>/water Core-Flooding Experiments. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012. Energy Procedia, (2013) 000–000.
94. B. \*Li, H. Tchelepi, and **S.M. Benson**, The Influence of Capillary Entry-Pressure Representation on CO<sub>2</sub> Solubility Trapping. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012. Energy Procedia, (2013) 000–000.
93. \*S. Krevor, \*R. Pini and **S.M. Benson**, 2012. Multiphase Flow Properties of the CO<sub>2</sub>/Brine System for Carbon Sequestration. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012. Energy Procedia, (2013) 000–000.
92. \*L. Zuo and **S.M. Benson**, 2012. Exsolution Enhanced Oil Recovery with Concurrent CO<sub>2</sub> Sequestration. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012. Energy Procedia, (2013) 000–000.
91. S. Imbus, K. Dodds, C. Otto, R. Trautz, C. Christopher, A. Agarwal, and **S. M. Benson**, 2012. CO<sub>2</sub> Storage Contingencies Initiative: Detection, Intervention and Remediation of Unexpected CO<sub>2</sub> Migration. Eleventh International Conference on Greenhouse Gas Control, Kyoto, Japan, November 19-22, 2012.
90. \*B. Li, H. Tchelepi, and **S.M. Benson**, 2012. The Influence of Capillary Entry-Pressure Representation on the Rate of CO<sub>2</sub> Solubility Trapping. PROCEEDINGS, TOUGH Symposium 2012, Lawrence Berkeley National Laboratory, Berkeley, California, September 17-19, 2012.
89. R. Falta, \*L. Zuo and **S.M. Benson**, 2012. Migration of exsolved CO<sub>2</sub> following depressurization of saturated brines. PROCEEDINGS, TOUGH Symposium 2012, Lawrence Berkeley National Laboratory, Berkeley, California, September 17-19, 2012.
88. \*B. Li, **S. M. Benson**, and H. A. Tchelepi, 2012. Modeling Fine-Scale Capillary Heterogeneity in Multiphase Flow of CO<sub>2</sub> and Brine in Sedimentary Rocks, International Conference on Water Resources, CMWR 2012, University of Illinois at Urbana-Champaign, June 17-22, 2012.
87. \*C-W, Kuo and S.M. Benson, 2012. Analytical Study of Effects of Flow Rate, and Gravity and Subcore Scale Heterogeneities on CO<sub>2</sub>/Brine Multiphase Flow System in Horizontal Corefloods. SPE- 153954, presented at the SPE Western North American Regional Meeting held in Bakersfield, California, USA, 19–23 March 2012.
86. \*K. Farhat, A. Brandt, and **S. M. Benson**, 2011. CO<sub>2</sub> Interim Storage: Technical Characteristics and Potential Role in CO<sub>2</sub> Market Development. Energy Procedia 4 (2011) 2628–2636.
85. \*A. Esposito and **S. M. Benson**, 2011. Remediation of possible leakage from geologic CO<sub>2</sub> storage reservoirs into groundwater aquifers. Energy Procedia 4 (2011) 3216–3223.
84. \*M. Krause, \*J-C. Perrin and **S. M. Benson**, 2011. Recent Progress in Predicting Permeability Distributions for History Matching Core Flooding Experiments. Energy Procedia 4 (2011) 4354–4361.
83. \*C-W Kuo, \*J-C Perrin, and **S. M. Benson**, 2011. Simulation studies of effect of flow rate and small scale heterogeneity on multiphase flow of CO<sub>2</sub> and brine. Energy Procedia 4 (2011) 4516–4523.
82. \*J-C Perrin, R. W. Falta, \*S. Krevor, \*L. Zuo, K. Ellison and **S. M. Benson**, 2011. Laboratory experiments on core-scale behavior of CO<sub>2</sub> exsolved from CO<sub>2</sub>- saturated brine, Energy Procedia 4 (2011) 3210–3215.
81. \*Esposito and **S.M. Benson**, 2010. Optimization of Remediation of Possible Leakage from Geologic CO<sub>2</sub> Storage Reservoirs into Groundwater Aquifers, SPE-133604, Western North America Regional Meeting held in Anaheim, California, USA, 26–30 May 2010.
80. \*C-W Kuo, \*J-C Perrin, and **S. M. Benson**, 2010. Effect of Gravity, Flow Rate, and Small Scale Heterogeneity on Multiphase Flow of CO<sub>2</sub> and Brine, SPE 132607, Western North America Regional Meeting held in Anaheim, California, USA, 26–30 May 2010.
79. \*M.H. Krause, \*J-C. Perrin, and **S.M. Benson**, 2009. Modeling Permeability Distributions in a Sandstone Core for History Matching Coreflood Experiments, SPE-126340. Presented at the 2009 SPE International Conference on CO<sub>2</sub> Capture, Storage, and Utilization held in San Diego, California, USA, 2–4, November 2009.



78. Richard E Sassoon, Weston A Hermann, I-Chun Hsiao, Ljuba Milkovic, Aaron J Simon, **S. M Benson**: Quantifying the Flow of Exergy and Carbon through the Natural and Human Systems, in Materials for Renewable Energy at the Society and Technology Nexus, edited by Reuben T. Collins (Mater. Res. Soc. Symp. Proc. **Volume 1170E**, Warrendale, PA, 2009), 1170-R01-03.
77. \*M.H. Krause, \*J.C. Perrin, **S.M. Benson**, Developing Permeability Relationships for use in Simulation of Core Flooding Experiments, Proceedings from The 8th Annual Conference on Carbon Capture and Sequestration, Pittsburg, PA, May 4-7th 2009.
76. Spangler, L. H., Dobeck, L. M., Repasky, K., Nehrir, A., Humphries, S., Barr, J., Keith, C., Shaw, J., Rouse, J., Cunningham, A., **Benson, S.**, Oldenburg, C. M., Lewicki, J. L., Wells, A., Diehl, R., Strazisar, B., Fessenden, J., Rahm, T., Amonette, J., Barr, J., Pickles, W., Jacobson, J., Silver, E., Male, E., Rauch, H., Gullickson, K., Trautz, R., Kharaka, Y., Birkholzer, J., Wielopolski, L., 2009. A controlled field pilot for testing near surface CO<sub>2</sub> detection techniques and transport models. *Energy Procedia* 1 (2143-2150).
75. \*Kuo, C.-W., \*Krause, M. \*Perrin, J.C., and **S. M. Benson**, 2009. Effect of Small Scale Heterogeneity on Multiphase Flow of CO<sub>2</sub> and Brine, 8<sup>th</sup> Annual NETL Carbon Sequestration Conference, Pittsburg, PA, May 5-8, 2009.
74. \*Ethan R. Chabora, **S. M. Benson**, 2008. Brine Displacement and Leakage Detection Using Pressure Measurements in Aquifers Overlying CO<sub>2</sub> Storage Reservoirs. *Energy Procedia*, Volume 1, Issue 1, February 2009, Pages 2405-2412.
73. \*Michael Krause, \*Jean-Christophe Perrin, Chia-Wei Kuo and **S. M. Benson**. Characterization of CO<sub>2</sub> storage properties using core analysis techniques and thin section data. *Energy Procedia*, Volume 1, Issue 1, 2009, Pages 2969-2974.
72. \* J-C Perrin, \*Michael Krause, \*Chia-Wei Kuo, Ljuba Miljkovic, \*Ethan Chabora and **S. M. Benson**, Core-scale experimental study of relative permeability properties of CO<sub>2</sub> and brine in reservoir rocks, *Energy Procedia*, Vol. 1, 1, February 2009, pp 3515-3522.
71. **Benson, S.M.** (2008). Multi-phase Flow and trapping in Saline Aquifers. Society of Petroleum Engineers, Off-shore Technology Conference. May 5-8, 2008. SPE Paper Number OTC 19244.
70. **Benson, S.M.** R. Sassoon and F.M. Orr, Jr, (2008). The Global Climate and Energy Project. Workshop on carbon Dioxide capture and Storage. The Canadian Institute, Calgary, Alberta, January 29-30, 2008.
69. Silin, D.B., T. W. Patzek and **S.M. Benson** (2006) Exact Solutions in a Model of Vertical Gas Migration, Proceedings of the 2006 Annual Technology Conference and Exhibition, San Antonio, Texas, Sept. 24-27, SPE 103145.
68. **Benson, S.M.** (2006) Monitoring Carbon Dioxide Sequestration in Deep Geological Formations for Inventory Verification and Carbon Credits, Proceedings of the 2006 Annual Technology Conference and Exhibition, San Antonio, Texas, Sept. 24-27, SPE 102833.
67. **Benson, S.M.** and C. Doughty (2006) Estimation of Field-Scale Relative Permeability From Pressure Transient Tests. Proceedings, EPA CO<sub>2</sub>SC Workshop, Lawrence Berkeley National Laboratory, Berkeley, California.
66. **Benson, S.M.**, L. Tomutsa, D. Silin, T. Kneafsey and L. Miljkovic (2006) Corescale and Porescale Studies of Carbon Dioxide Migration in Saline Formations, Proceedings of 8th International Conference on Greenhouse Gas Control Technologies (GHGT8), IEA Greenhouse Gas Programme, Trondheim, Norway, June 19-22, 2006.
65. Hoversten, G.M., E. Gasperikova and **S.M. Benson** (2006) Theoretical Limits for Seismic Detection of Small Accumulations of Carbon Dioxide in the Subsurface, Proceedings of 8th International Conference on Greenhouse Gas Control Technologies (GHGT8), IEA Greenhouse Gas Programme, Trondheim, Norway, June 19-22, 2006.
64. L. Tomutsa., D. Silin, **S. M. Benson** and T. Patzek (2005) Synchrotron Microtomography in CO<sub>2</sub> Geosequestration Research, poster presentation given at the American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, December 5, 2005.

63. L. Myer, **S. M. Benson**, J. Clikenbeard, C. Downey, H. Zhang, and H. Herzog (2005) "An Assessment of the Geologic Storage Capacity of California Sedimentary Basins," Proceedings of Fourth Annual Conference on Carbon Capture and Sequestration. Department of Energy/ National Energy Technology Laboratory. Alexandria, VA, May 2-5, 2005.
62. C. Doughty, K. Pruess, **S.M. Benson**, B.M. Freifeld and W.D. Gunter (2004) "Hydrological and Geochemical Monitoring for a CO<sub>2</sub> Sequestration Pilot in a Brine Formation," Department of Energy's Information Bridge, [www.osti.gov/servlets/purl/834639-d6XoU0/native/](http://www.osti.gov/servlets/purl/834639-d6XoU0/native/). Berkeley Lab Report LBNL-55104.
61. P.J. Cook and **S.M. Benson** (2005) "Overview and Current Issues in Geologic Storage of Carbon Dioxide," In, E.S. Rubin, D.W. Keith and C.F. Gilboy (Eds.), Proceedings of 7th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme, Vancouver, BC, Volume I, p. 15-20. <http://www.ghgt7.ca/programme.html>.
60. **S.M. Benson** and R.P. Hepple (2005) "Detection and Options for Remediation of Leakage from Underground CO<sub>2</sub> Storage Projects," In, E.S. Rubin, D.W. Keith and C.F. Gilboy (Eds.), Proceedings of 7th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme, Vancouver, BC, Volume II, p. 1329-1338. <http://www.ghgt7.ca/programme.html>.
59. **S.M. Benson**, M. Hoversten, E. Gasperikova, and M. Haines (2005) "Monitoring Protocols and Life-Cycle Costs for Geologic Storage of Carbon Dioxide," In, E.S. Rubin, D.W. Keith and C.F. Gilboy (Eds.), Proceedings of 7th International Conference on Greenhouse Gas Control Technologies, IEA Greenhouse Gas Programme, Vancouver, BC, Volume II, p. 1259-1265.
58. **S.M. Benson**, E. Gasperikova and G.M. Hoversten (2004) "Overview of Monitoring Techniques and Protocols for Geologic Storage Projects," IEA Greenhouse Gas R&D Programme Report.
57. **S.M. Benson** (2004) "Carbon Dioxide Capture and Storage in Underground Geologic Formations," *The 10-50 Solution: Technologies and Policies for a Low-Carbon Future*, Pew Center on Global Climate Change and the National Commission on Energy Policy, March 25-26, Washington, D.C.
56. M.J. Lippmann and **S.M. Benson** (2003) "Relevance of Underground Natural Gas Storage to Geologic Sequestration of Carbon Dioxide," Department of Energy's Information Bridge, <http://www.osti.gov/dublincore/ecd/servlets/purl/813565-MVm7Ve/native/813565.pdf>, U.S. Government Printing Office (GPO) on line.
55. L. Myer, **S. M. Benson**, D. Cole, C. Doughty, W. Foxall, W. Gunter, M. Hoversten, S. Hovorka, K. Knauss, P. Knox, E. Majer, R. Newmark, T. Phelps, K. Pruess, and D. Vasco (2003) "Monitoring and Verification at the Frio Pilot Test," *Proceedings of NETL Second Annual Conference on Carbon Sequestration*, May 5-8, 2003, Alexandria, Virginia.
54. **S.M. Benson** and L. Myer (2003) "The GEO-SEQ Project: Three Years of Progress," *Proceedings of NETL Second Annual Conference on Carbon Sequestration*, May 5-8, 2003, Alexandria, Virginia.
53. C. Doughty, K. Pruess, and **S.M. Benson** (2003) "Development of a Well-Testing Program for a CO<sub>2</sub> Sequestration Pilot in a Brine Formation," *Proceedings of NETL Second Annual Conference on Carbon Sequestration*, May 5-8, 2003, Alexandria, Virginia.
52. **S. M. Benson** (2002) "Geologic Sequestration of Carbon Dioxide," *The Carbon Dioxide Dilemma, Promising Technologies and Policies, Proceedings of a Symposium*, National Academy of Engineering, April 23-24, 2002, Washington, D.C., pp. 29-39.
51. C. Doughty, **S.M. Benson**, and K. Pruess (2002) "Capacity Investigation of Brine-Bearing Sands for Geologic Sequestration of CO<sub>2</sub>," *Proceedings of the Sixth International Conference on Greenhouse Gas Control Technologies, GHGT-6*, September 30–October 4, 2002, Kyoto, Japan, Vol. 2, pp. 1645-1648, J. Gale and Y. Kaya (eds).
50. L.R. Myer, **S.M. Benson**, C. Byrer, D. Cole, C.A. Doughty, W. Gunter, G.M. Hoversten, S. Hovorka, J.W. Johnson, K.G. Knauss, A. Kovscek, D. Law, M.J. Lippman, E.L. Majer, B. van der Meer, G. Moline, R.L. Newmark, C.M. Oldenburg, F.M. Orr, Jr., K. Pruess, and C.-F. Tsang, "The GEO-SEQ Project: A Status Report," *Proceedings of the Sixth International Conference on Greenhouse Gas Control Technologies, GHGT-6*, September 30–October 4, 2002, Kyoto, Japan, Vol. 2, pp. 1625-1628, J. Gale and Y. Kaya (eds).

49. C.M. Oldenburg, S.H. Stevens, and **S.M. Benson** (2002) "Economic Feasibility of Carbon Sequestration with Enhanced Gas Recovery (CSEGR)," *Proceedings of the Sixth International Conference on Greenhouse Gas Control Technologies, GHGT-6*, September 30–October 4, 2002, Kyoto, Japan, Vol. 1, pp. 691-696, J. Gale and Y. Kaya (eds).
48. **S.M. Benson**, J. Apps, R. Hepple, M. Lippman, C.-F. Tsang, and C. Lewis (2002) "Health, Safety and Environmental Risk Assessment for Geologic Storage of Carbon Dioxide: Lessons Learned From Industrial and Natural Analogues," *Proceedings of the Sixth International Conference on Greenhouse Gas Control Technologies, GHGT-6*, September 30–October 4, 2002, Kyoto, Japan, Vol. 1, pp. 243-248, J. Gale and Y. Kaya (eds).
47. R.P. Hepple and **S.M. Benson** (2002) "Implications of Surface Seepage on the Effectiveness of Geologic Storage of Carbon Dioxide as a Climate Change Mitigation Strategy," *Proceedings of the Sixth International Conference on Greenhouse Gas Control Technologies, GHGT-6*, September 30–October 4, 2002, Kyoto, Japan, Vol. 1, pp. 261-266, J. Gale and Y. Kaya (eds).
46. S.E. Borglin, **S.M. Benson**, and P.T. Zawislanski "Investigation of Selenium Biotransformations in Aquatic Ecosystems," *Proceedings of the Sixth International Conference on the Biogeochemistry of Trace Elements*, Guelph, Ontario, Canada.
45. C.M. Oldenburg and **S.M. Benson** (2002) "CO<sub>2</sub> Injection for Enhanced Gas Production and Carbon Sequestration," paper SPE-74367, *Proceedings of Society of Petroleum Engineers, Inc. SPE International Petroleum Conference and Exhibition*, February 10-12, 2002, Villahermosa, Mexico.
44. C.M. Oldenburg and **S.M. Benson** (2001) "Carbon Sequestration with Enhanced Gas Recovery: Identifying Candidate Sites for Pilot Study," *Proceedings of NETL First National Conference on Carbon Sequestration*, National Energy Technology Laboratory, May 15-17, 2001, Pittsburgh, Pennsylvania.
43. C. Doughty, K. Pruess, **S. M. Benson**, S. Hovorka, P. Knox, and C. Green (2001) "Capacity Investigation of Brine-Bearing Sands of the Frio Formation for Geologic Sequestration of CO<sub>2</sub>," *Proceedings of NETL First National Conference on Carbon Sequestration*, National Energy Technology Laboratory, May 15-17, 2001, Pittsburgh, Pennsylvania.
42. C.-F. Tsang, **S. M. Benson**, B. Kobelski, and R. Smith (2001) "Scientific Considerations Related to Development of Regulations for Geologic Sequestration of CO<sub>2</sub>," *Proceedings of NETL First National Conference on Carbon Sequestration*, May 15-17, 2001, Pittsburgh, Pennsylvania, pp. 36.
41. S. Hovorka, C. Doughty, P.R. Knox, C.T. Green, K. Pruess, and **S.M. Benson** (2001) "Evaluation of Brine-Bearing Sands of the Frio Formation, Upper Texas Gulf Coast for Geological Sequestration of CO<sub>2</sub>," *Proceedings of NETL First National Conference on Carbon Sequestration*, May 15-17, 2001, Pittsburgh, Pennsylvania, pp. 4A.2.
40. **S.M. Benson** and L. R. Myer (2001) "The GEO-SEQ Project: First Year Status Report," *Proceedings of NETL First National Conference on Carbon Sequestration*, May 15-17, 2001, Pittsburgh, Pennsylvania, pp. 1A.2.
39. **S.M. Benson** and L. Myer (2000) "Advances in Geologic Sequestration: Identifying and Addressing Key Issues," *Proceedings of GSA Meeting*, Vol. 32, No. 7, September 9-18, 2000, Reno, Nevada.
38. **S.M. Benson** and L. Myer (2000) "The GEO-SEQ Project," *Proceedings of the Fifth International Conference on Greenhouse Gas Control Technologies, GHGT-5*, August 13-16, 2000, Cairns, Australia.
37. **S.M. Benson** (2000) "Comparison of Three Options for Geologic Sequestration of CO<sub>2</sub>—A Case Study for California," *Proceedings of the Fifth International Conference on Greenhouse Gas Control Technologies, GHGT-5*, August 13-16, 2000, Cairns, Australia.
36. **S.M. Benson**, J. Daggett, and P. Zawislanski (1999) "Field-Measured Oxidation Rates of Biologically Reduced Selenium in Sludge," *Proceedings of the 5<sup>th</sup> Annual International Conference on the Biogeochemistry of Trace Elements*, July 1999 Vienna, Austria, Wenzel, Adriano, Alloway, Doner, Keller, Lepp, Mench, Naidu, and Pierzynski (eds).

35. P.T. Zawislanski, **S.M. Benson**, G.R. Jayaweera, L. Wu, and W.T. Frankenberger (1999) "In Situ Microbial Volatilization of Selenium in Soils: A Case History," *Proceedings of the In-Situ and On-Site Bioremediation 5<sup>th</sup> International Symposium*, San Diego, California, April 1999.
34. **S.M. Benson**, W. Chandler, J. Edmonds, J. Houghton, M. Levine, L. Bates, H. Chum, J. Dooley, D. Grether, J. Logan, G. Wiltsee, and L. Wright (1998) "Assessment of Basic Research Needs for Greenhouse Gas Control, Technologies," *Proceedings of the Greenhouse Gas Control Technologies 4<sup>th</sup> International Conference*, August, 1998, Interlaken, Switzerland, B. Eliasson, P.W.F. Riemer, and A. Wokaun (eds).
33. P.T. Zawislanski, **S.M. Benson**, G.R. Jayaweera, W.T. Frankenberger, L. Wu (1997) "Field Evaluation of the Effectiveness of Microbial Volatilization in Selenium Remediation from Soils," *Proceedings of the I&EC Special Symposium of the American Chemical Society*, September 15, 1997.
32. S. Finsterle, C.F. Tsang, **S.M. Benson**, and G.J. Moridis (1995) "Use of Blocking Agent to Improve the Effectiveness of Soil Vapor Extraction," *Proceedings of the I&EC Symposium: Emerging Technologies in Hazardous Waste Management VII*, American Chemical Society, September 17-20, 1995, Atlanta, Georgia.
31. C. Oldenburg, **S. M. Benson**, K. Pruess, J. Daisey, N. Brown, L. Gold, and J. MacFarlane (1995) "The SELECT Environmental Remedy Selection Tool: A Platform for T2VOC Multiphase Transport Modeling," *AIChE Symposium*, Series, No. 306, 91, pp. 38-43.
30. **S.M. Benson**, T.K. Tokunaga, P. Zawislanski, and C. Wahl (1994) "Mechanisms and Rates of Selenium Remobilization and Transport in Selenium Contaminated Soils," *Proceedings of the I&EC Special Symposium*, American Chemical Society, September 19-21, 1994, Atlanta, Georgia.
29. **S.M. Benson** (1991) "Electromagnetic Monitoring of Conductive Plumes," *Proceedings of the DOE/EPA Workshop on Siting Groundwater Monitoring Wells*, December 12, 1991, Reno, Nevada.
28. A. Mensch and **S.M. Benson** (1990) "Application of an Expert System for Analysis of Geothermal Well Tests," presented at the 15th Annual Geothermal Reservoir Engineering Workshop, January 23-25, 1990, Stanford, California.
27. P. Persoff, C.J. Radke, K. Pruess, **S.M. Benson**, and P.A. Witherspoon. (1989) "A Laboratory Investigation of Foam Flow in Sandstone at Elevated Pressure," paper SPE-18781, *The SPE California Regional Meeting*, April 5-7, 1989, Society of Petroleum Engineers, pp. 365-377, Bakersfield, California.
26. **S.M. Benson**, J. Daggett, J. Ortiz, and E. Iglesias (1989) "Permeability Enhancement due to Cold Water Injection: A Case Study at the Los Azufres Geothermal Field, Mexico," *Proceedings of the 1989 Final CFE/US Geothermal Symposium*, San Diego, California.
25. A. Mensch and **S.M. Benson** (1988) "WES, a Robust Expert System for Well Test Analysis," *Proceedings of the American Geophysical Union Fall Meeting*, December 5-9, 1988, San Francisco, California; Report No. LBL-27846, Lawrence Berkeley National Laboratory, Berkeley, California.
24. R.H. Long, **S.M. Benson**, M. Alavi, and T.N. Narasimhan (1988) "Transport of a Conservative Solute through a Shallow Pond Bottom," *Proceedings of the 8th Annual AGU Front Range Branch Hydrology Days*, April 19-21, 1988, Fort Collins, Colorado.
23. M.J. Lippmann, G.S. Bodvarsson, **S.M. Benson**, and K. Pruess (1987) "Recent Geothermal Reservoir Engineering Activities at Lawrence Berkeley Laboratory," *Proceedings of the International Symposium on the Development and Exploitation of Geothermal Resources*, October 5-9, 1987, Cuernavaca, Mexico; Report No. LBL-24033, Lawrence Berkeley National Laboratory, Berkeley, California.
22. P.A. Witherspoon, Y. Shikari, C.J. Radke, K. Pruess, P. Persoff, **S.M. Benson**, and R.Y.S. Wu (1987) "Feasibility Analysis and Development of a Foam-Protected Underground Natural Gas Storage Facility," *Proceedings of the 1987 Distribution/Transmission Conference*, May 4-6, 1987, Las Vegas, Nevada.

21. E.A. Sammel and **S.M. Benson** (1987) "An Analysis of the Hydrologic Effects of Proposed Test Drilling in the Winema National Forest near Crater Lake, Oregon," *Transactions of the Geothermal Resources Council*, Vol. 11, pp. 293-303.
20. R. Prucha, **S.M. Benson**, and P.A. Witherspoon (1987) "Conceptual Model of the Klamath Falls, Oregon Geothermal Area," *Proceedings of the 12th Annual Workshop, Geothermal Reservoir Engineering*, January 20-22, 1987, Stanford, California.
19. **S.M. Benson**, J.S. Daggett, E. Iglesias, V. Arellano, and J. Ortiz-Ramirez (1987) "Analysis of Thermally Induced Permeability Enhancement in Geothermal Injection Wells," *Proceedings of the 12th Annual Workshop, Geothermal Reservoir Engineering*, January 20-22, 1987, Stanford, California.
18. **S.M. Benson** (1986) "Computerized Data Acquisition System for Production, Injection, and Interference Tests," *Proceedings of the Annual Meeting of the Geothermal Resources Council*, September 30-October 1, 1986, Palm Springs, California; also in *Geothermal Resources Council, Transactions*, Vol. 10.
17. **S.M. Benson** and C. H. Lai (1985) "A New Method for Evaluating Composite Reservoir Systems," *Proceedings of the International Symposium on Geothermal Energy*, August 26-30, 1985, Kailua Kona, Hawaii; also in (1985) *Geothermal Resources Council, Transactions*, Vol. 9.
16. S. Halfman and **S.M. Benson** (1985) "Analysis of the Nonisothermal Injection and Falloff Tests in Layered Reservoirs," *Proceedings of the International Symposium on Geothermal Energy*, August 26-30, 1985, Kailua Kona, Hawaii; also in (1985) *Geothermal Resources Council, Transactions*, Vol. 9.
15. **S.M. Benson** and G.S. Bodvarsson (1983) "A Pressure Transient Method for Front Tracking," paper SPE-12130, *Proceedings of the 58th Annual Technical Conference and Exhibition of the Society of Petroleum Engineers*, October 5-8, 1983, San Francisco, California.
14. **S.M. Benson** (1983) "Interpretation of Interference Data from the Klamath Falls, Oregon Geothermal Resource," *Proceedings of the Ninth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, pp. 187-192; (1994) *GEO Heat Center Quarterly Bulletin*, Winter 1994, GEO Heat Center, Oregon Institute of Technology, Klamath Falls, Oregon, Paul J. Leinau (ed.).
13. R.S. Solbau, C.B. Goranson, and **S.M. Benson** (1983) "The Development and Use of a High Temperature Downhole Flowmeter for Geothermal Well Logging," *Proceeding of the Ninth Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, pp. 205-210.
12. G.S. Bodvarsson and **S.M. Benson** (1983) "A Summary of Well Testing Activities at Lawrence Berkeley National Laboratory, 1975-1983," *Annual Meeting of the Geothermal Resources Council*, October 24-27, 1983; also in (1983) *Geothermal Reservoir Council, Transactions*, Vol. 7, pp. 397-402.
11. **S.M. Benson** (1982) "Well Test Data Analysis from a Naturally Fractured Liquid-Dominated Hydrothermal System," *1982 Annual Geothermal Resources Council Conference*, October 11-14, 1982, San Diego, California; also in (1982) *Geothermal Resources Council, Transactions*, Vol. 6, pp. 237-240.
10. **S.M. Benson** (1982) "Interpretation of Nonisothermal Step Rate Injection Tests," *Proceedings of the Eighth Annual Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, pp. 103-109.
9. **S.M. Benson** and G.S. Bodvarsson (1982) "Nonisothermal Effects During Injection and Falloff Tests," paper SPE 11137, *Proceedings of the 57th Annual Technical Conference and Exhibition of the Society of Petroleum Engineers*, September 1982, New Orleans, Louisiana.
8. G.S. Bodvarsson, C.W. Miller, and **S.M. Benson** (1981) "A Simple Model for Fault Charged Hydrothermal Systems," *Geothermal Resources Council, Transactions*, Vol. 5, pp. 323-327.
7. G.S. Bodvarsson, **S.M. Benson**, O. Sigurdsson, G.K. Halldorsson, and V. Stephansson (1981) "Analysis of Well Data from the Krafla Geothermal Field in Iceland," *Proceedings of the Seventh*

*Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, pp. 71-76.

6. **S.M. Benson**, G.S. Bodvarsson, and D.C. Mangold (1981) "Reservoir Engineering of Shallow Fault-Charged Hydrothermal Systems," *Proceedings of the Seventh Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford, California, pp. 161-167.
5. D.G. McEdwards and **S.M. Benson** (1981) "User's Manual for Analyze—A Variable Rate, Multiple Well, Least Squares Matching Routine for Well Test Analysis," *Proceedings of the Geothermal Computer Program Workshop*, June 17-19, 1980, LBNL, University of California, Berkeley; Report No. LBL-10907, Lawrence Berkeley National Laboratory, Berkeley, California.
4. **S.M. Benson**, C.B. Goranson, and R.C. Schroeder (1980) "Evaluation of City Well I, Klamath Falls, Oregon," *Proceedings of the Symposium on Commercial Uses of Geothermal Energy*, June 16-18, 1980, Geothermal Resources Council, Boise, Idaho.
3. R.C. Schroeder, **S.M. Benson**, and C.B. Goranson (1979) "High Temperature Geothermal Reservoir Engineering," *Proceedings of the Second Symposium on the Cerro Prieto Geothermal Field*, Mexicali, Baja California, Mexico, pp. 459-472.
2. J.H. Howard, J.A. Apps, **S.M. Benson**, N.E. Goldstein, A.N. Graf, J.P. Haney, D.D. Jackson, S. Juprasert, E.L. Majer, D.G. McEdwards, T.V. McEvilly, T.N. Narasimhan, B. Schechter, R.C. Schroeder, R.W. Taylor, P.C. van de Kamp, and T.J. Wolery (1978) *Geothermal Resource and Reservoir Investigations of U.S. Bureau of Reclamation Leaseholds at East Mesa, Imperial Valley, California*, Report No. LBL-7094, Lawrence Berkeley National Laboratory, Berkeley, California.
1. **S.M. Benson** and D.G. McEdwards (1978) "Results of Two Injection Tests at the East Mesa KGRA," *Proceedings of the Second Invitational Well Testing Symposium*, Berkeley, California, pp. 34-40.

## Reports

1. **S.M. Benson**, C.B. Goranson, J. Noble, R.C. Schroeder, D. Corrigan, and H.A. Wollenberg (1980) *Evaluation of the Susanville, California Geothermal Resource*, Report No. LBL-11187, Lawrence Berkeley National Laboratory, Berkeley, California.
2. R.S. Solbau, C.B. Goranson, and **S.M. Benson** (1981) *Recently Developed Well Test Instrumentation for Low-to-Moderate Temperature Hydrothermal Reservoirs*, Report No. LBL-13260, Lawrence Berkeley National Laboratory, Berkeley, California.
3. M.G. Bodvarsson and **S.M. Benson** (1982) *Well Test Data From Geothermal Reservoirs*, Report No. LBL-13295, Lawrence Berkeley National Laboratory, Berkeley, California.
4. **S.M. Benson**, principal author, (1984) "Data from Pumping and Injection Tests and Chemical Sampling in the Geothermal Aquifer at Klamath Falls, Oregon" *U.S. Geological Survey Open File Report 84-146*, Menlo Park, California.
5. **S.M. Benson** (1984) *Technology Transfer Report: Feasibility Study for the Use of Geothermal Brine in the Ashdod Area, Israel*, Report No. LBL-18520, Lawrence Berkeley National Laboratory, Berkeley, California.
6. **S.M. Benson**, E.A. Sammel, R.D. Solbau, and C.H. Lai (1984) "Interpretation of Aquifer Test Data, Analysis and Interpretation of Data Obtained in Tests of the Geothermal Aquifer at Klamath Falls, Oregon," E.A. Sammel, (ed.) *U.S. Geological Survey Open File Report 84-4216*, Menlo Park, California, pp. 5-1—5-56.
7. **S.M. Benson** (1984) "Aquifer Response to Pumping and ReInjection, Analysis and Interpretation of Data Obtained in Tests of the Geothermal Aquifer at Klamath Falls, Oregon," E.A. Sammel, (ed.) *U.S. Geological Survey Open File Report 84-4216*, Menlo Park, California, pp. 6-1—6-9.
8. **S.M. Benson** (1984) "Analysis of Injection Tests in Liquid-Dominated Geothermal Reservoirs," *M. S. Thesis, University of California, Berkeley*; Report No. LBL-17953, Lawrence Berkeley National Laboratory, Berkeley, California.

9. E.P. Binnall, H.A. Wollenberg, **S.M. Benson**, L. Tsao, O. Weres, A.L. Ramirez, and G.A. Armontrout (1985) *Critical Parameters for a High-Level Waste Repository, Volume 1: Basalt*, LLNL NUREG/CR-4161, UCID-20092.
10. E.P. Binnall, **S.M. Benson**, L. Tsao, H.A. Wollenberg, T.K. Tokunaga, and E.M. Didwall (1987) *Critical Parameters for a High-Level Waste Repository, Vol. 2: Tuff*, LLNL NUREG/CR-4161, UCID-20092.
11. E.P. Binnall, H.A. Wollenberg, **S.M. Benson**, L. Tsao, and E.M. Didwall (1987) *Critical Parameters for a High Level Waste Repository, Vol. 3: Salt*, LLNL NUREG/CR4161, UCID-20092.
12. N.E. Goldstein, D. Alumbaugh, and **S.M. Benson** (1988) *Ground Conductivity Measurements Adjacent to the Kesterson Ponds 1, 2, and 5*, Report No. LBL-24657, Lawrence Berkeley National Laboratory, Berkeley, California.
13. D. Billaux, M. Uszynski, and **S.M. Benson** (1988) *The Applicability of Expert Systems to Risk Analysis for Waste Disposal Problems*, Report No. LBL-24967, Lawrence Berkeley National Laboratory, Berkeley, California.
14. N.E. Goldstein, S.L. Pillsbury, J.S. Daggett, and **S.M. Benson** (1989) *Contaminant Plume Monitoring Adjacent to the Kesterson Reservoir, California*, Report No. LBL-26557, Lawrence Berkeley National Laboratory, Berkeley, California.
15. T. Tokunaga, **S.M. Benson**, and A. Yee (1990) *Evaluation of Options for Disposal of TJ Drainage Water, Stillwater, Nevada: Progress Report 1*, Report No. LBID-1607, Lawrence Berkeley National Laboratory, Berkeley, California.
16. **S.M. Benson**, T.K. Tokunaga, P. Zawislanski, A.W. Yee, J.S. Daggett, J.M. Oldfather, L. Tsao, and P.W. Johannis (1990), *Hydrological and Geochemical Investigations of Selenium Behavior at Kesterson Reservoir: Annual Report October 1, 1989 through September 30, 1990*, Report No. LBL-29689, Lawrence Berkeley National Laboratory, Berkeley, California.
17. T. Tokunaga and **S. M. Benson** (1991) *Evaluation of Management Options for Disposal of Salt and Trace Element Laden Agricultural Drainage Water from the Fallon Indian Reservation, Fallon, Nevada: Final Report October 1, 1989 to December 30, 1990*, Report No. LBL 30473, Lawrence Berkeley National Laboratory, Berkeley, California.
18. **S.M. Benson**, T.K. Tokunaga, and P. Zawislanski (1992) *Anticipated Soil Selenium Concentrations at Kesterson Reservoir*, Report No. LBL-33080, Lawrence Berkeley National Laboratory, Berkeley, California.
19. T. K. Tokunaga and **S. M. Benson** (1992) *Evaluation of a Shallow Tile Drain System for Improving Drainage Water Quality in the TJ Drain Service Area of the Fallon Indian Reservation, Fallon, Nevada*, Report No. LBL-30473, Lawrence Berkeley National Laboratory, Berkeley, California.
20. S.L. Ita and **S.M. Benson** (1992) "Field Investigation of the Effect of Rainfall Infiltration on Soil Selenium and Salinity at Kesterson Reservoir," *Earth Sciences Division Annual Report*, Report No. LBL-31500, Lawrence Berkeley National Laboratory, Berkeley, California.
21. **S.M. Benson**, T. Tokunaga, P. Zawislanski, C. Wahl, P. Johannis, M. Zavarin, A. Yee, L. Tsao, D. Phillips, and S. Ita (1992) *Hydrological and Geochemical Investigations of Selenium Behavior at Kesterson Reservoir*, Report No. LBL-33532, Lawrence Berkeley National Laboratory, Berkeley, California.
22. P.T. Zawislanski, T.K. Tokunaga, **S.M. Benson**, P.W. Johannis, M. Zavarin, C. Wahl, T. Sears, J. Kengsoontra, L. Tsao, J. Oldfather, and A.W. Yee (1995) *Hydrological and Geochemical Investigations of Selenium Behavior at Kesterson Reservoir: Progress Report, October 1, 1992 through September 30, 1994*, Report No. LBNL-39518, Lawrence Berkeley National Laboratory, Berkeley, California.
23. P.T. Zawislanski, A.E. McGrath, **S.M. Benson**, H.S. Mountford, T.M. Johnson, L. Tsao, J. Oldfather, A.F. Haxo, and T.C. Sears (1995) *Selenium Fractionation and Cycling in the Intertidal Zone of the Carquinez Strait, Draft Annual Report, October 1, 1994 through September 30, 1995*, Report No. LBNL-39515, Lawrence Berkeley National Laboratory, Berkeley, California.



24. D.S. Snipes, **S.M. Benson**, V. Price, Jr. (1995) *Hydrologic Properties of Aquifers in the Central Savannah River Area: Volume One*, Department of Geological Sciences, Clemson University, Clemson, South Carolina.
25. P.T. Zawislanski, A.E. McGrath, **S.M. Benson**, H.S. Mountford, T.M. Johnson, S. Myneni, L. Tsao, J. Oldfather, A.F. Haxo and T.C. Sears (1996) *Selenium Fractionation and Cycling in the Intertidal Zone of the Carquinez Strait, Quarterly Progress Report, October 1, 1995 through December 31, 1995*, Report No. LBNL-39517, Lawrence Berkeley National Laboratory, Berkeley, California.
26. P.T. Zawislanski, **S.M. Benson**, A.A. Brownfield, E. Gabet, A.F. Haxo, T.M. Johnson, D. King, A.E. McGrath, H.S. Mountford, S.C.B. Myneni, J. Oldfather, T.C. Sears, and H.-W.C. Wong (1996) *Selenium Fractionation and Cycling in the Intertidal Zone of the Carquinez Strait, Quarterly Progress Report, January 1996 through March 1996*, Report No. LBNL-39616, Lawrence Berkeley National Laboratory, Berkeley, California.
27. A.J.B. Cohen, K. Karasaki, **S. Benson**, G. Bodvarsson, B. Freifield, P. Benito, P. Cook, J. Clyde, K. Grossenbacher, J. Peterson, R. Solbau, B. Thapa, D. Vasco, and P. Zawislanski (1996) "Hydrogeologic Characterization of Fractured Rock Formations: A Guide for Groundwater Remediators," *U.S. Environmental Protection Agency R&D Project Summary*, EPA/600/S-96/001.
28. P.T. Zawislanski, **S.M. Benson**, A.A. Brownfield, S. Chau, E. Gabet, T.M. Johnson, D. King, A.E. McGrath, H.S. Mountford, S.C.B. Myneni, J. Oldfather, T.C. Sears, and H.-W.C. Wong (1996) *Selenium Fractionation and Cycling in the Intertidal Zone of the Carquinez Strait, Quarterly Progress Report, April 1, 1996 through June 30, 1996*, Report No. LBNL-39617, Lawrence Berkeley National Laboratory, Berkeley, California.
29. C. Wahl and **S.M. Benson** (1996) *Update to Modeling Soil Selenium Concentrations in the Shallow Soil Profile at Kesterson Reservoir, Merced County, California*, Report No. LBNL-39215, Lawrence Berkeley National Laboratory, Berkeley, California.
30. D.S. Snipes, **S.M. Benson**, V. Price, Jr., and T.J. Temples (1996) *Hydrologic Properties of Aquifers in the Central Savannah River Area, Volume Two*, Department of Geological Sciences, Clemson University, Clemson, South Carolina; also Report No. LBNL-44160, Lawrence Berkeley National Laboratory, Berkeley, California.
31. **S.M. Benson** (1997) *Capturing and Sequestering Carbon by Enhancing the Natural Carbon Cycle: Preliminary Identification of Basic Science Needs and Opportunities*, Report No. LBNL-40813, Lawrence Berkeley National Laboratory, Berkeley, California.
32. P.T. Zawislanski, A.E. McGrath, **S.M. Benson**, H.S. Mountford, T.M. Johnson, E. Gabet, S.C.B. Myneni, T.K. Tokunaga, S. Chau, and H. Wong (1997) *Selenium Fractionation and Cycling in the Intertidal Zone of the Carquinez Strait—Annual Report October 1, 1995 - December 31, 1996*, Report No. LBNL-40993, Lawrence Berkeley National Laboratory, Berkeley, California.
33. P.T. Zawislanski, T.K. Tokunaga, **S.M. Benson**, H.S. Mountford, T.C. Sears, H. Wong, D. King, and J. Oldfather (1997) *Hydrological and Geochemical Investigations of Selenium Behavior at Kesterson Reservoir—Progress Report, October, 1994 - September, 1996*, Report No. LBNL-41027, Lawrence Berkeley National Laboratory, Berkeley, California.
34. **S. Benson**, W. Chandler, J. Edmonds, M. Levine, L. Bates, H. Chum, J. Dooley, D. Grether, J. Houghton, J. Logan, G. Wiltsee, and L. Wright (1997) *Carbon Management: Assessment of Fundamental Research Needs*, Office of Energy Research, Department of Energy, DOE/ER-0724.
35. J. McCullough, T.C. Hazen, **S.M. Benson**, F.B. Metting, and A.C. Palmisano (1999) *Bioremediation of Metals and Radionuclides...What It Is and How It Works*, Prepared for the Natural and Accelerated Bioremediation Research Program, Office of Biological and Environmental Research, Office of Science, U.S. Dept. of Energy; Report No. LBNL-42595, Lawrence Berkeley National Laboratory, Berkeley, California.
36. P.T. Zawislanski, T.K. Tokunaga, **S.M. Benson**, H.S. Mountford, H. Wong, T. Alusi, R. TerBerg, and K. Olson (1999) *Hydrological and Geochemical Investigations of Selenium Behavior at Kesterson Reservoir, Progress Report - October 1, 1996 through September 30, 1998*, Report No. LBNL-43535, Lawrence Berkeley National Laboratory, Berkeley, California.

37. D. Reichel, J. Houghton, R. Kane, J. Ekmann, **S. Benson**, J. Clarke, R. Dahlman, G. Hendrey, H. Herzog, J. Hunter-Cevera, G. Jacobs, R. Judkins, J. Ogden, A. Palmisano, R. Socolow, J. Stringer, T. Surles, A. Wolsky, N. Woodward, and M. York (1999) *Carbon Sequestration—Research and Development*, Office of Science, Office of Fossil Energy, U.S. Department of Energy Report.
38. **S. Benson**, J. Edmonds, R. Socolow, and T. Surles (1999) “Human Impacts and Management of Carbon Sources,” *Basic Research Needs for Sustainability: The Carbon Problem*,” sponsored by the NSF and DOE, P. Eisenberger and M. Knotek (eds).
39. **S.M. Benson** (2000) “GEO-SEQ Partnership,” *Greenhouse Issues*, Number 47, March 2000, IEA Greenhouse Gas R&D Programme.
40. P.T. Zawislanski, **S.M. Benson**, R. TerBerg, and S. Borglin (2001) *Land Disposal of San Luis Drain Sediments, Progress Report October 1998- November 2000*, Report No. LBNL-47861, Lawrence Berkeley National Laboratory, Berkeley, California.
41. P. Zawislanski, **S. Benson**, R. TerBerg, and S. Borglin (2002) “Land Disposal of San Luis Drain Sediments, Panoche Water District, South Dos Palos, California,” Department of Energy’s Information Bridge, <http://www.osti.gov/dublincore/ecd/servlets/purl/815477-x1StIB/native/815477.pdf>, U.S. Government Printing Office (GPO) on line; Report No. LBNL-51025, Lawrence Berkeley National Laboratory, Berkeley, California.
42. **S.M. Benson**, R. Hepple, J. Apps, C.-F. Tsang, and M. Lippman (2002) *Lessons Learned from Natural and Industrial Analogues for Storage of Carbon Dioxide in Deep Geological Formations*, Report No. LBNL-51170, Lawrence Berkeley National Laboratory, Berkeley, California.
43. R. Hepple, Y. Zihang, C. Oldenburg, and **S. M. Benson** (2003) “Scoping Paper on Options for Early Detection and Remediation of Leakage from CO<sub>2</sub> Storage Projects,” *CO<sub>2</sub> Capture Project—An Integrated, Collaborative Technology Development Project for Next Generation CO<sub>2</sub> Separation, Capture and Geologic Sequestration*, Department of Energy Semi-Annual Report.
44. **S.M. Benson**, L.R. Myer, C.M. Oldenburg, C.A. Doughty, K. Pruess, J. Lewicki, M. Hoversten, E. Gasperikova, T. Daley, E. Majer, M. Lippmann, C.-F. Tsang, K. Knauss, J. Johnson, W. Foxall, A. Ramirez, R. Newmark, D. Cole, T.J. Phelps, J. Parker, A. Palumbo, J. Horita, S. Fisher, G. Moline, L. Orr, T. Kavscek, K. Jessen, Y. Wang, J. Zhu, M. Cakici, S. Hovorka, M. Holtz, S. Sakurai, B. Gunter, D. Law, and B. van der Meer (2004) “GEO-SEQ Best Practices Manual, Geologic Carbon Dioxide Sequestration: Site Evaluation to Implementation,” Department of Energy’s Information Bridge, <http://www.osti.gov/bridge/purl.cover.jsp?purl=/842996-Bodt8y/native/>. Berkeley Lab Report LBNL-56623, 2004.
45. **S. M. Benson**, L.R. Myer, J.G. Blencoe, M.D. Cakici, D. Cole, W. Daily, T. Daley, C.A. Doughty, S. Fisher, W. Foxall, W. Gunter, M. Holtz, J. Horita, G.M. Hoversten, S. Hovorka, K. Jessen, J.W. Johnson, B.M. Kennedy, K.G. Knauss, A. Kavscek, D. Law, M.J. Lippmann, E.L. Majer, B. van der Meer, G. Moline, R.L. Newmark, C.M. Oldenburg, J. Orr, Franklin M., A.V. Palumbo, J.C. Parker, T.J. Phelps, K. Pruess, A. Ramirez, S. Sakurai, C.-F. Tsang, Y. Wang, and J. Zhu, The GEO-SEQ Project Results. Berkeley Lab Report LBNL/PUB-901, 2004.
46. **Benson, S.M.** , Pini, R., Reynolds, C., & Krevor, S. (2013). Global CCS Institute Targeted Report No. 2. Relative Permeability Analyses to Describe Multiphase Flow in CO<sub>2</sub> Storage Reservoirs.