



Selected Publications from the Carbon and Energy Storage, Emissions, and Economics Project

Open Access Journal Publications

Dynamic estimates of geologic CO₂ storage resources in the Illinois Basin constrained by reinjectivity of brine extracted for pressure management [2022, Greenhouse Gases: Science and Technology] (<https://doi.org/10.1002/ghg.2189>)

Assessing gas leakage potential into coal mines from shale gas well failures: Inference from field determination of strata permeability responses to longwall-induced deformations [2021, Natural Resources Research] (<https://doi.org/10.1007/s11053-021-09859-9>)

Computational methodology to analyze the effect of mass transfer rate on attenuation of leaked carbon dioxide in shallow aquifers [2021, Acta Polytechnica] (<https://doi.org/10.14311/AP.2021.61.0077>)

Estimating the net costs of brine production and disposal to expand pressure-limited dynamic capacity for basin-scale CO₂ storage in a saline formation [2020, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2020.103161>)

Characterization of the unconventional Tuscaloosa marine shale reservoir in southwestern Mississippi, USA: Insights from optical and SEM petrography [2020, Marine and Petroleum Geology] (<https://doi.org/10.1016/j.marpetgeo.2020.104580>)

Improving pressure-limited CO₂ storage capacity in saline formations by means of brine extraction [2019, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2019.06.009>)

Estimating the pressure-limited dynamic capacity and costs of basin-scale CO₂ storage in a saline formation [2019, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2019.05.031>)

Carbon dioxide enhanced oil recovery and residual oil zone studies at the U.S. Geological Survey [2019, Social Science Research Network (SSRN)] (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3366202)

Overview of future USGS Gulf of Mexico buoyant storage assessment project [2019, Social Science Research Network (SSRN)] (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3365595)



- Estimating the pressure-limited CO₂ injection and storage capacity of the United States saline formations: Effect of the presence of hydrocarbon reservoirs [2018, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2018.09.011>)
- Using mercury injection pressure analyses to estimate sealing capacity of the Tuscaloosa marine shale in Mississippi, USA: Implications for carbon dioxide sequestration [2018, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2018.09.006>)
- Microbial community composition of a hydrocarbon reservoir 40 years after a CO₂ enhanced oil recovery flood [2018, FEMS Microbiology Ecology] (<https://doi.org/10.1093/femsec/fiy153>)
- Economics, helium, and the U.S. Federal Helium Reserve: Summary and outlook [2018, Natural Resources Research] (<https://doi.org/10.1007/s11053-017-9359-y>)
- Simulating the evolution of fluid underpressures in the Great Plains, by incorporation of tectonic uplift and tilting, with a groundwater flow model [2018, Geofluids] (<https://dx.doi.org/10.1155/2018/3765743>)
- A database and probabilistic assessment methodology for carbon dioxide-enhanced oil recovery and associated carbon dioxide retention in the United States [2017, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2017.03.1847>)
- Chemical and isotopic evidence for CO₂ charge and migration within Bravo Dome and potential CO₂ leakage to the southwest [2017, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2017.03.1428>)
- Mantle and crustal gases of the Colorado Plateau: Geochemistry, sources, and migration pathways [2017, Geochimica et Cosmochimica Acta] (<http://dx.doi.org/10.1016/j.gca.2017.05.017>)
- 3D Pressure-limited approach to model and estimate CO₂ injection and storage capacity: saline Mount Simon Formation [2017, Greenhouse Gases Science and Technology] (<http://dx.doi.org/10.1002/ghg.1701>)
- A method for examining the geospatial distribution of CO₂ storage resources applied to the Pre-Punta Gorda Composite and Dollar Bay reservoirs of the South Florida Basin, U.S.A. [2016, Marine and Petroleum Geology] (<http://dx.doi.org/10.1016/j.marpetgeo.2016.06.010>)
- Carbon and oxygen isotopic composition of coal and carbon dioxide derived from laboratory coal combustion: A preliminary study [2016, International Journal of Coal Geology] (<http://dx.doi.org/10.1016/j.coal.2016.06.009>)



- Determining CO₂ storage potential during miscible CO₂ enhanced oil recovery: Noble gas and stable isotope tracers [2016, International Journal of Greenhouse Gas Control] (<http://dx.doi.org/10.1016/j.ijggc.2016.05.008>)
- Impact of formation water geochemistry and crude oil biodegradation on microbial methanogenesis [2016, Organic Geochemistry] (<http://dx.doi.org/10.1016/j.orggeochem.2016.05.008>)
- Risk, liability, and economic issues with long-term CO₂ storage—A review [2016, Natural Resources Research] (<http://dx.doi.org/10.1007/s11053-016-9303-6>)
- Cost implications of uncertainty in CO₂ storage resource estimates: A review [2016, Natural Resources Research] (<http://dx.doi.org/10.1007/s11053-016-9310-7>)
- Environmental drivers of differences in microbial community structure in crude oil reservoirs across a methanogenic gradient [2016, Frontiers in Microbiology] (<http://dx.doi.org/10.3389/fmicb.2016.01535>)
- Surface monitoring of microseismicity at the Decatur, Illinois, CO₂ sequestration demonstration site [2015, Seismological Research Letters] (<http://dx.doi.org/10.1785/0220150062>)
- U.S. Geological Survey carbon sequestration—Geologic research and assessments [2014, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2014.11.561>)
- Noble gas geochemistry investigation of high CO₂ natural gas at the LaBarge Platform, Wyoming, USA [2014, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2014.11.451>)
- Fate of injected CO₂ in the Wilcox Group, Louisiana, Gulf Coast Basin: Chemical and isotopic tracers of microbial-brine-rock-CO₂ interactions [2014, Applied Geochemistry] (<https://doi.org/10.1016/j.apgeochem.2014.09.015>)
- Significance of carbon dioxide density estimates for basin-scale storage resource assessments [2014, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2014.11.543>)
- The U.S. Geological Survey carbon dioxide storage efficiency value methodology: Results and observation [2014, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2014.11.542>)
- Seismic monitoring at the Decatur, IL, CO₂ sequestration demonstration site [2014, Energy Procedia] (<http://dx.doi.org/10.1016/j.egypro.2014.11.461>)
- New insights into the Nation's carbon storage potential [2012, Earth & Space Science News] (<http://dx.doi.org/10.1029/2012EO260001>)



Other Journal Publications

Predicting methane emissions and developing reduction strategies for a Central Appalachian Basin, USA, longwall mine through analysis and modeling of geology and degasification system performance [2023, International Journal of Coal Geology] (<https://doi.org/10.1016/j.coal.2023.104234>)

Possible effects of multiphase methane evolution during a glacial cycle on underpressure development in sedimentary basins: An analysis with application to the northeast Michigan Basin [2022, Journal of Geophysical Research: Solid Earth] (<https://doi.org/10.1029/2021JB023322>)

Possible Effects of Multiphase Methane Evolution During a Glacial Cycle on Underpressure Development in Sedimentary Basins: An Analysis With Application to the Northeast Michigan Basin [2022, Journal of Geophysical Research - Solid Earth] (<https://doi.org/10.1029/2021JB023322>)

Decision analysis and CO₂-enhanced oil recovery development strategies [2022, Natural Resources Research] (<https://doi.org/10.1007/s11053-021-09983-6>)

Single-well production history matching and geostatistical modeling as proxy to multi-well reservoir simulation for evaluating dynamic reservoir properties of coal seams [2021, International Journal of Coal Geology] (<https://doi.org/10.1016/j.coal.2021.103766>)

Potential Pb+2 mobilization, transport, and sequestration in shallow aquifers impacted by multiphase CO₂ leakage: A natural analogue study from the Virgin River Basin in Southwest Utah [2021, Petroleum Geoscience] (<https://doi.org/10.1144/petgeo2020-109>)

Modeling geologic sequestration of CO₂ in a deep saline carbonate reservoir with T2CPI, a new tool for reactive transport modeling [2020, American Association of Petroleum Geologists Environmental Geosciences] (<https://doi.org/10.1306/eg.08061919003>)

Methodology for estimating the prospective CO₂ storage resource of residual oil zones at the national and regional scale [2020, International Journal of Greenhouse Gas Control] (<https://doi.org/10.1016/j.ijggc.2020.103006>)

Dimensional effects of inter-phase mass transfer on attenuation of structurally trapped gaseous carbon dioxide in shallow aquifers [2020, Journal of Computational Physics] (<https://doi.org/10.1016/j.jcp.2019.109178>)



A fuzzy logic approach for estimating recovery factors of miscible CO₂-EOR projects in the United States [2019, Journal of Petroleum Science and Engineering] (<https://doi.org/10.1016/j.petrol.2019.106533>)

An ANCOVA model for porosity and its uncertainty for oil reservoirs based on TORIS dataset [2019, Journal of Petroleum Science and Engineering] (<https://doi.org/10.1016/j.petrol.2019.05.071>)

Zone identification and oil saturation prediction in a waterflooded field: Residual oil zone, East Seminole Field, Texas, USA, Permian Basin [2018, Society of Petroleum Engineers] (<https://doi.org/10.2118/190170-MS>)

Probabilistic aggregation of uncertain geological resources [2018, Mathematical Geosciences] (<https://doi.org/10.1007/s11004-018-9747-9>)

A stagey for low cost development of incremental oil in legacy reservoirs [2016, Society of Petroleum Engineers] (<https://doi.org/10.2118/179997-MS>)

CO₂ retention values in enhanced oil recovery [2015, Journal of Petroleum Science and Engineering] (<http://dx.doi.org/10.1016/j.petrol.2015.03.012>)

Aggregation of carbon dioxide sequestration storage assessment units [2013, Stochastic Environmental Research and Risk Assessment] (<https://doi.org/10.1007/s00477-013-0718-x>)

U.S. Geological Survey Publications

CO₂ utilization, storage, and related reports

Geologic energy storage, [2023] (<https://doi.org/10.3133/fs20223082>)

Analysis of the United States documented unplugged orphaned oil and gas well dataset [2023] (<https://doi.org/10.3133/dr1167>)

Optimization simulations to estimate maximum brine injection rates in the Illinois Basin [2022] (<https://doi.org/10.5066/P9544D9S>) (<https://doi.org/10.5066/P917O770>)

Model of potential multiphase methane evolution in the subsurface of southern Ontario across a wide range of initial gas contents [2022]

United States documented unplugged orphaned oil and gas well dataset, 2022 [2022] (<https://doi.org/10.5066/P91PJETI>)

Geologic formations and mine locations for potential CO₂ mineralization [2022] (<https://doi.org/10.5066/P9D92L53>)



- National assessment of helium resources within known natural gas reservoirs [2021]
(<https://doi.org/10.3133/sir20215085>)
- Natural gas compositional analyses from U.S. wells [2021] (<https://doi.org/10.5066/P9TR93E3>)
- Dataset of helium concentrations in United States wells [2021]
(<https://doi.org/10.5066/P92QL79J>)
- Model of groundwater flow, gas migration, and reactive transport in the Virgin River Basin, SW Utah [2021] (<https://doi.org/10.5066/P9ZSPA9D>)
- Compositional analysis of formation water geochemistry and microbiology of commercial and carbon dioxide-rich wells in the southwestern United States [2020]
(<https://doi.org/10.3133/sir20205037>)
- ATR data from interaction of kerogen with brine-saturated supercritical carbon dioxide (CO₂) and its implications to geologic carbon sequestration and enhanced oil/gas recovery (2018) [2019] (<https://doi.org/10.5066/P96IUH2>)
- Preliminary GIS representation of deep coal areas for carbon dioxide storage in the contiguous United States and Alaska [2019] (<https://doi.org/10.3133/ofr20181178>)
- Geospatial data for a preliminary GIS representation of deep coal areas for carbon dioxide storage in the contiguous United States and Alaska [2019, USGS Data Release]
(<https://doi.org/10.5066/P90GDHSZ>)
- Carbon dioxide mineralization feasibility in the United States [2019]
(<https://doi.org/10.3133/sir20185079>)
- Federal lands greenhouse gas emissions and sequestration in the United States—Estimates for 2005–14 [2018] (<https://doi.org/10.3133/sir20185131>)
- Federal lands greenhouse gas emissions and sequestration in the United States: Estimates 2005–14 – Data Release [2018] (<https://doi.org/10.5066/F7KH0MK4>)
- Material balance approach for determining oil saturation at the start of carbon dioxide enhanced oil recovery [2018] (<https://doi.org/10.3133/ofr20181146>)
- Overview of a comprehensive resource database for the assessment of recoverable hydrocarbons produced by carbon dioxide enhanced oil recovery [ver. 1.1, 2018]
(<https://dx.doi.org/10.3133/tm7C16>)
- Microbiology of the greater Bravo Dome region [2018] (<https://doi.org/10.5066/F76M361R>)



Physical properties of sidewall cores from Decatur, Illinois [2017]
(<https://doi.org/10.3133/ofr20171094>)

Three approaches for estimating recovery factors in carbon dioxide enhanced oil recovery [2017]
(<https://dx.doi.org/10.3133/sir20175062>)

Play-level distributions of estimates of recovery factors for a miscible carbon dioxide enhanced oil recovery method used in oil reservoirs in the conterminous United States [2016]
(<https://dx.doi.org/10.3133/ofr20151239>)

Profiles of reservoir properties of oil-bearing plays for selected petroleum provinces in the United States [2016] (<https://dx.doi.org/10.3133/ofr20151195>)

Carbon dioxide storage in unconventional reservoirs workshop—Summary of recommendations [2015] (<https://dx.doi.org/10.3133/ofr20151079>)

Fundamentals of carbon dioxide-enhanced oil recovery (CO₂-EOR)—A supporting document of the assessment methodology for hydrocarbon recovery using CO₂-EOR associated with carbon sequestration [2015] (<https://dx.doi.org/10.3133/ofr20151071>)

Preliminary catalog of the sedimentary basins of the United States [2012]
(<https://pubs.er.usgs.gov/publication/ofr20121111>)

Migration rates and formation injectivity to determine containment time scales of sequestered carbon dioxide [2012] (<https://pubs.usgs.gov/of/2012/1062/>)

The concept of geologic sequestration [2011] (<https://pubs.er.usgs.gov/publication/fs20103122>)

Geologic CO₂ Sequestration Interactive Web Map (<https://co2public.er.usgs.gov/viewer/>)

National Assessment of Geologic Carbon Dioxide Storage Reports

National Assessment of Carbon Dioxide Enhanced Oil Recovery and Associated Carbon Dioxide Retention Resources—Results [2022] (<https://doi.org/10.3133/cir1489>)

National Assessment of Carbon Dioxide Enhanced Oil Recovery and Associated Carbon Dioxide Retention Resources—Summary [2022] (<https://doi.org/10.3133/fs20213057>)

National Assessment of Carbon Dioxide Enhanced Oil Recovery and Associated Carbon Dioxide Retention Resources—Data [2022] (<https://doi.org/10.5066/P9AG37KI>)

National assessment of geologic carbon dioxide storage resources—Allocations of assessed areas to Federal lands [2015] (<https://doi.org/10.3133/sir20155021>)



National assessment of geologic carbon dioxide storage resources—Results [2013]
(<http://pubs.usgs.gov/circ/1386/>)

National assessment of geologic carbon dioxide storage resources—Data [2013]
(<http://pubs.usgs.gov/ds/774/>)

National assessment of geologic carbon dioxide storage resources—Summary [2013]
(<http://pubs.usgs.gov/fs/2013/3020/>)

National Assessment of Geologic Carbon Dioxide Storage Assessment Methodologies

A probabilistic assessment methodology for carbon dioxide enhanced oil recovery and associated carbon dioxide retention [2019] (<https://doi.org/10.3133/sir20195115>)

National assessment of geologic carbon dioxide storage resources—Methodology Implementation [2013] (<https://pubs.usgs.gov/of/2013/1055/>)

A probabilistic assessment methodology for the evaluation of geologic carbon dioxide storage [2010] (<https://pubs.usgs.gov/of/2010/1127/>)

Development of a probabilistic assessment methodology for evaluation of carbon dioxide storage [Draft of methodology, 2009] (<https://pubs.usgs.gov/of/2009/1035/>)

Geologic Framework for the National Assessment of Carbon Dioxide Storage Resources Open-File Reports

Geologic framework for the national assessment of carbon dioxide storage resources [2012]
(<https://doi.org/10.3133/ofr20121024>)

Chapter A: Bighorn Basin, Wyoming and Montana [2012]
(<https://pubs.er.usgs.gov/publication/ofr20121024A>)

Chapter B: Powder River Basin, Wyoming, Montana, South Dakota, and Nebraska [2012]
(<https://pubs.er.usgs.gov/publication/ofr20121024B>)

Chapter C: Hanna, Laramie, and Shirley Basins, Wyoming [2012]
(<https://pubs.er.usgs.gov/publication/ofr20121024C>)

Chapter D: Columbia Basin of Oregon, Washington, and Idaho, and the Western Oregon-Washington Basins [2013] (<http://dx.doi.org/10.3133/ofr20121024D>)

Chapter E: Greater Green River Basin, Wyoming, Colorado, and Utah, and Wyoming-Idaho-Utah Thrust Belt [2014] (<http://dx.doi.org/10.3133/ofr20121024E>)



Chapter F: Arkoma Basin, Kansas Basins, and Midcontinent Rift Basin study areas [2013] (<http://dx.doi.org/10.3133/ofr20121024F>)

Chapter G: Denver Basin, Colorado, Wyoming, and Nebraska [2014] (<http://dx.doi.org/10.3133/ofr20121024G>)

Chapter H: U.S. Gulf Coast [2014] (<http://dx.doi.org/10.3133/ofr20121024H>)

Chapter I: Alaska North Slope and Kandik Basin, Alaska [2014] (<http://dx.doi.org/10.3133/ofr20121024I>)

Chapter J: Williston Basin, Central Montana Basins, and Montana Thrust Belt study areas [2014] (<http://dx.doi.org/10.3133/ofr20121024J>)

Chapter K: Permian and Palo Duro Basins and Bend Arch-Fort Worth Basin [2015] (<https://dx.doi.org/10.3133/ofr20121024K>)

Chapter L: South Florida Basin [2015] (<http://dx.doi.org/10.3133/ofr20121024L>)

Chapter M: Southern Rocky Mountain Basins [2016] (<http://dx.doi.org/10.3133/ofr20121024M>)

Chapter N: Atlantic Coastal Plain and Eastern Mesozoic Rift Basins [2018] (<https://doi.org/10.3133/ofr20121024N>)

