Martha Cather, Senior Scientist/Section Head
Petroleum Recovery Research Center, New Mexico Tech

EDUCATION

M.A. Geology, University of Texas at Austin, Austin, 1986
B.S. Geology, University of Texas at Austin, Austin, 1981

AREAS OF SPECIALIZATION

Petroleum Data Access, Geographic Information Systems, Reservoir Characterization, Reservoir Diagenesis, Public Outreach, Project Management

PROFESSIONAL EXPERIENCE

- **Senior Scientist/Section Head**, Petroleum Recovery Research Center, New Mexico Institute of Mining and Technology (July, 2001- present) – Section Head for Industry Service Outreach Group – responsible for outreach and technology transfer for most PRRC projects; Project Manager – Small Producer Program element for Research Partnership to Secure Energy for America (RPSEA); PM/PI for various projects described below; Co-lead for Site Characterization at Farnsworth Field Unit Phase III project,
- **Industrial Outreach Coordinator**, Petroleum Recovery Research Center, New Mexico Institute of Mining and Technology (1999-2001) – Coordinator of PTTC's Southwest Regional Lead Organization; designed and maintained web site and data interface for NM oil and gas data (Go-Tech)
- **Research Geologist**, Petroleum Recovery Research Center, New Mexico Institute of Mining and Technology (1988-1999) – Reservoir characterization, log analysis, reservoir modeling

CURRENT PROJECTS

- Southwest Regional Partnership of Carbon Sequestration, Phase III (2010-2020) – Researcher, Co-leader of Characterization group, Outreach/Technology Transfer Lead
- Carbon Utilization and Storage Partnership (CUSP) for the Western USA (2019-present) – Project Management/outreach
- San Juan Basin CarbonSAFE Phase III: Ensuring Safe Subsurface Storage of CO2 in Saline Reservoirs (2020) Outreach team
- *Boosting Reliability of the State of Stress Characterization and Prediction in CO_2 Storage Reservoirs Using Machine Learning and Integrated Geomechanics and Geophysical Methods* (2018-present) Outreach/project management
- *New Mexico Universities Produced Water Synthesis Project* (2019 – present) Co-lead of NMT research group

PAST PROJECTS AS PI, CO-PI, OR KEY PERSONNEL

- *Evaluation of Oil, Gas, CO_2 and Helium Potential on Federal Lands Selected for Exchange with New Mexico State Land Offic*e
- *Evaluation of Oil, Gas, CO_2 and Helium Potential on State Lands Selected for Exchange with US Bureau of Land Management*
- *Characterization of Produced Water In New Mexico* – part of the Statewide Water Assessment Project funded through WRRI – 2014-2016

- *Petrophysical Analysis and Geographic Information System for San Juan Basin Tight Gas Reservoirs* – DE-AC26-05NT42662. 10/05 – 10/07.
- *NM WAIDS: A Produced Water Quality and Infrastructure GIS Database for New Mexico Oil Producer*s – DE-PS26-01BC15300. 03/02 – 03/05.
- *Reasonable Foreseeable Development for Northern New Mexico BLM Farmington District* – Co-PI funded by US Bureau of Land Management (2012-2014)
- "*Reasonable Foreseeable Development (RFD) Scenario for the BLM New Mexico Pecos District* – Co-PI funded by US Bureau of Land Management (2010-2014).

SELECT PUBLICATIONS & PRESENTATIONS

- Rasmussen, L., Fan, T., Rinehart, A., Luhmann, A., Ampomah, W., Dewers, T., Heath, J, **Cather, M**., and Grigg, R. (2019). *Carbon Storage and Enhanced Oil Recovery in Pennsylvanian Morrow Formation Clastic Reservoirs: Controls on Oil/Brine and Oil/CO2 Relative Permeability from Diagenetic Heterogeneity and Evolving Wettability*. Energies, Special Issue "CO_2 EOR and CO_2 Storage in Oil Reservoirs" Energies 2019, 12(19), 3663; https://doi.org/10.3390/en12193663
- Dewers T., Rasmussen L., Ampomah W., Heath J., Bower E., Luhmann A., **Cather M**., and Mozley P. (2018) *Diagenetic Capillary Heterogeneity Influences Multiphase Flow, Enhanced Oil Recovery, and CO_2 Storage in a Depleted Brownfield Reservoir*. American Geophysical Union Fall Meeting, Dec 10-14, 2018. Washington, D.C., USA.
- Ampomah, W., Balch, R. **Cather, M**., Rose-Coss, D., Gragg, E. (2017) *Numerical Simulation of CO_2-EOR and Storage Potential in the Morrow Formation, Ochiltree County, Texas*. Society of Petroleum Engineers. doi:10.2118/185086-MS
- Ampomah, W., Balch, R. **Cather, M**., Rose-Coss, D., Dai, Z, Heath, J., Dewers, T., and Mozley, P. (2016) *Evaluation of CO_2 Storage Mechanisms in CO_2 Enhanced Oil Recovery Sites: Application to Morrow Sandstone Reservoir*. Energy & Fuels 2016 30 (10), 8545-8555 DOI: 10.1021/acs.energyfuels.6b01888.
- Sabie, R. Jr., Sullivan Graham, J., Carroll, K.C., **Cather, M.**, Chaudhary, B., Cox, W., Chen, D., Flynn, R., Gallego, C., Houghton, W., Ma, G., Sarpong, K., Stoll, Z., Tellez, A., Willman, S., Xu, P., Fernald, A. (2016) *A Comprehensive Study Supporting Beneficial Uses of Produced Water in Southeastern New Mexico*. GSA Annual Meeting, September 2016. Denver, CO.
- Cather, S.M., and **Cather, M.E.** (2016) "Comparative petrography and paragenesis of Pennsylvanian (Upper Morrow) sandstones from the Farnsworth Unit 13-10A, 13-14, and 32-8 wells, Ochiltree County, Texas." PRRC Report 16-01.
- Rose-Coss, D., Ampomah, W., Hutton, A.C., Balch, R.S., **Cather, M.**, Grigg, R., and Mozley, P.M. (2015) "Geologic Characterization for CO2-EOR Simulation: A Case Study of the Farnsworth Unit, Anadarko Basin, Texas." Search and Discovery Article #80484, Oct. 2015.
- Wade, S., **Cather, M.**, Cumming, L., Dalyd, D., Garrette, G., Greenberg, S., Myhreg, R., Stone, M., Tollefson, L. (2014) *Digital Communications: Status and Potential Applications for CCUS Public Outreach*. Energy Procedia 63:7070-7086 · December 2014.
- **Cather, M.E.** (2014) *Characterization of Produced Water In New Mexico: the NM WAIDS Database*." 59th Annual NM Water Conference, November 2014. Santa Fe, NM.
- Ampomah, W., Gallagher, S., Hutton, A., Rose-Coss, D., Balch, B. and **Cather, M**. (2014) *Characterization of Farnsworth Unit, Ochiltree County, Texas*. 2014 Carbon Storage R&D Project Review Meeting: Developing the Technologies and Infrastructure for CCS, August 2014. Pittsburgh, PA.
- Engler, T.W., Balch, R., **Cather, M.E.**: (2012) *Reasonable Foreseeable Development (RFD) Scenario for the B.L.M. New Mexico Pecos District.* Final report.

- Balch, R., **Cather, M**., and Bammidi, V. (2009) *Oil and Gas Potential Analysis of the Secretary of the Interior's Potash Area, Southeastern New Mexico.* PRRC Report 09-07.

OTHER SYNERGISTIC ACTIVITIES

- Representative of SWP to NETL Outreach Working Group (2011-present)
- Co-lead, Characterization Working Group of SWP (2014-present)
- Project Manager – RPSEA Small Producer Program (2011 – 2014)
- Program Manager – RPSEA Small Producer Program (2007-2010)
- Coordinated activities of Southwest Regional Lead Organization of Petroleum Technology Transfer Council (1997-2006).