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EDUCATION

Ph.D. Geology	The University of Texas at Austin, 1986
M.A. Geology	The University of Texas at Austin, 1980
B.S. Geology	New Mexico Institute of Mining and Technology, 1976 (transferred from California State University, Northridge, 1971–1974)

PROFESSIONAL EXPERIENCE

New Mexico Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology (September 1987 to February 2019). *Field Geologist* (*Senior Field Geologist* as of 1996) and *Adjunct Faculty* at New Mexico Tech. Field-oriented stratigraphic, structural, and tectonic research.

New Mexico Petroleum Recovery Research Center and New Mexico Bureau of Mines and Mineral Resources, New Mexico Institute of Mining and Technology (Split appointment; August 1986 to September 1987). *Postdoctoral Fellow*. Diagenesis research.

New Mexico Petroleum Recovery Research Center, New Mexico Institute of Mining and Technology (January 1986-August 1986). *Consultant*. Diagenetic studies of tight gas sands.

Geoscience Department, New Mexico Institute of Mining and Technology (January 1986 to May 1986). *Sabbatical Leave Replacement* for Dr. J. MacMillan.

New Mexico Bureau of Mines, New Mexico Institute of Mining and Technology (February 1980 to October 1980). *Field Geologist*. Coal evaluation mapping.

Department of Geological Sciences, The University of Texas at Austin (September 1977 to May 1983). *Teaching Assistant*.

Houston Oil and Minerals Corporation (May 1977 to August 1977). *Uranium Exploration Geologist*.

Kerr-McGee Corporation (June 1976 to January 1977). *Uranium Grade-control Geologist*.

PROFESSIONAL SOCIETIES

Geological Society of America (Fellow, 2012)

New Mexico Geological Society

PH.D. DISSERTATION

Cather, S.M., 1986, *Volcano-sedimentary evolution and tectonic implications of the Datil Group (latest Eocene-early Oligocene), west-central New Mexico*, 486 p. (The University of Texas at Austin; R.L. Folk, supervisor).

MASTER'S THESIS

Cather, S.M., 1980, *Petrology, diagenesis, and genetic stratigraphy of the Eocene Baca Formation, Alamo Navajo Reservation and vicinity, Socorro County, New Mexico*, 240 p. (The University of Texas at Austin; R.L. Folk, supervisor).

REVIEWED PUBLICATIONS

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Cather, S.M., McIntosh, W.C., and Chapin, C.E., 1987, Stratigraphy, age, and rates of deposition of the Datil Group (upper Eocene-lower Oligocene), west-central New Mexico: New Mexico Geology, v. 9, p. 50–54.

Lucas, S.G., Cather, S.M., Sealey, P., and Hutchison, J.H., 1989, Stratigraphy, paleontology and depositional systems of the Eocene Cub Mountain Formation, Lincoln County, New Mexico: A preliminary report: New Mexico Geology, v. 11, p. 11–17.

Cather, S.M., and Chapin, C.E., 1989, Field guide to upper Eocene and lower Oligocene volcanoclastic rocks of the northern Mogollon-Datil field, *in* Chapin, C.E., and Zidek, J., *eds.*, Field excursions to volcanic terranes in the western United States, volume I: Southern Rocky Mountain region: New Mexico Bureau of Mines and Mineral Resources, Memoir 46, p. 60–68.

Cather, S.M., 1989, Post-Laramide tectonic and volcanic transition in west-central New Mexico: New Mexico Geological Society, Guidebook 40, p. 91–97.

Cather, S.M., and Chapin, C.E., 1990, Paleogeographic and paleotectonic setting of Laramide sedimentary basins in the central Rocky Mountain region: Alternative interpretation and reply: Geological Society of America Bulletin, v. 102, p. 256–260.

Cather, S.M., 1990, Reconnaissance geology of the Santa Fe Group near Amalia, New Mexico: New Mexico Geological Society, Guidebook 41, p. 337–340.

Cather, S.M., 1990, Stress and volcanism in the northern Mogollon-Datil field, New Mexico: Effects of the post-Laramide tectonic transition: Geological Society of America Bulletin, v. 102, p. 1447–1458.

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Chapin, C.E., and Cather, S.M., 1994, Tectonic setting of the axial basins of the northern and central Rio Grande rift, *in* Keller, G.R., and Cather, S.M., *eds.*, Basins of the Rio Grande rift: Structure, stratigraphy, and tectonic setting: Geological Society of America, Special Paper 291, p. 5–25.

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McIntosh, W.C., and Cather, S.M., 1994, $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of basaltic rocks and constraints on late Cenozoic stratigraphy and landscape development in the Red Hill - Quemado area, New Mexico: New Mexico Geological Society, Guidebook 45, p. 209–224.

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Harrison, R.W., and Cather, S.M., 2004, The Hot Springs fault system of southern New Mexico: Evidence for the northward translation of the Colorado Plateau during the Laramide orogeny, *in* Cather, S.M., Kelley, S.A., and McIntosh, W.C., *eds.*, Tectonics, geochronology, and volcanism in the southern Rocky Mountains and the Rio Grande rift: New Mexico Bureau of Geology and Mineral Resources Bulletin 160, p. 161–179.

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large igneous province (SLIP) hypothesis: *Geosphere*, v. 5; p. 315–324.

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Cather, S.M., and McIntosh, W.C., Flood deposits of lower Bandelier pumice and ash near Bosquecito, central New Mexico: *New Mexico Geological Society, Guidebook 60*, p. 44–45.

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Love, D.W., McCraw, D.J., Chamberlin, R.M., Reiter, M., Connell, S.D., Cather, S.M., and Majkowski, M., 2009, Progress report on tracking Rio Grande terraces across the uplift of the Socorro magma body: *New Mexico Geological Society, Guidebook 60*, p. 415–424.

Lucas, S.G., Sullivan, R.M., Cather, S.M., Jasinski, S.E., Fowler, D.W., Heckert, A.B., Spielmann, J.A. and Hunt, A.P., 2009, No definitive evidence of Paleocene dinosaurs in the San Juan Basin: *Palaeontologia Electronica*, article number 12.2.8A.

Dickinson, W.R., Cather, S.M., and Gehrels, G.E., 2010, Detrital zircon evidence for derivation of arkosic sand in the eolian Narbona Pass Member of the Eocene–Oligocene Chuska Sandstone from Precambrian basement rocks in central Arizona: *New Mexico Geological Society, Guidebook 61*, p. 125–134.

Cather, S.M., 2011, Late Oligocene–early Miocene deep erosion on the southern Colorado Plateau and southern Great Plains: *U.S. Geological Survey, Open-file Report 2011-1210*, p. 44–54.

Cather, S.M., Read, A.S., Dunbar, N.W., Kues, B.S., Krainer, K., Lucas, S.G., and Kelley, S.A., 2011, Provenance evidence for major post-Early Pennsylvanian dextral slip on the Picuris–Pecos fault, northern New Mexico: *Geosphere*, v. 7, p. 1175–1193.

Luther, A., Axen, G., and Cather, S., 2012, Deciphering the early history of a multiply reactivated fault using strain analysis in an adjacent fold: Evidence for early brittle-plastic slip on the Picuris-Pecos fault, New Mexico, USA: *Geosphere*, v. 8, p. 703–715.

Cather, S.M., Chapin, C.E., and Kelley, S.A., 2012, Diachronous episodes of Cenozoic

erosion in southwestern North America and their relationship to surface uplift, paleoclimate, paleodrainage, and paleoaltimetry: *Geosphere*, v. 8, p. 1177–1206.

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Cather, S.M., Zeigler, K.E., Mack, G.H., and Kelley, S.A., 2013, Toward standardization of Phanerozoic stratigraphic nomenclature in New Mexico: *Rocky Mountain Geology*, v. 48, p. 101–124.

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ROAD LOGS

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Bustos Well quadrangle, Socorro County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-file Digital Geologic Map OF-GM 237, scale 1:24,000.

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analysis in western tight gas sands, 1987 Annual Report, New Mexico Petroleum Recovery Research Center Report 87-11, 132 p.

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Cather, S.M., in review, Oasis State Park, *in* The geology of southern New Mexico's parks, monuments, and public lands: New Mexico Bureau of Geology and Mineral Resources.

Cather, S.M., in review, Sumner Lake State Park, *in* The geology of southern New Mexico's parks, monuments, and public lands: New Mexico Bureau of Geology and Mineral Resources.

Cather, S.M., in review, The Southern Great Plains, *in* The geology of southern New Mexico's parks, monuments, and public lands: New Mexico Bureau of Geology and Mineral Resources.

McLemore, V.T., and Cather, S.M., in review, Lincoln State Monument, *in* The geology of southern New Mexico's parks, monuments, and public lands: New Mexico Bureau of Geology and Mineral Resources.

OTHER PRESENTATIONS

"Rock matrix and fracture analysis of flow in western tight gas sands", U. S. Department of Energy Contractor's Meeting, Morgantown, West Virginia, July 1987.

"Paleogene sedimentation and volcanism in west-central New Mexico: tectonic and economic implications", invited lecture at University of New Orleans, November 1987.

"Volcano-sedimentary evolution and tectonic implications of the Datil Group (upper Eocene-lower Oligocene), west-central New Mexico," invited lecture at New Mexico State University, March 1988.

"Comparison of depositional characteristics of non-volcanic and volcanoclastic sequences in two Eocene foreland basins, west-central New Mexico," invited poster presentation (with C.E. Chapin) at Penrose Conference on "Influences of volcanism on terrestrial sedimentation" at Vancouver, Washington, August 1988.

"Paleogene geologic history of west-central New Mexico", invited lecture at University of New Mexico, February 1989.

"Paleogene tectonism and volcanism in west-central New Mexico", invited lecture at Albuquerque Geological Society, March 1990.

"Strike-slip faulting in the Rocky Mountain area", invited address at AGU Chapman Conference on "Rocky Mountains: Plate Tectonic Puzzle", Santa Fe, New Mexico, October 1991.

"Neogene structure and stratigraphy in the central Rio Grande rift", invited lecture at NMSU, November 1992.

"Tectonics and sedimentation in the Rio Grande rift", invited lecture at Southern Methodist University, March 1993.

"Tectonics and sedimentation in the central and northern Rio Grande rift", invited lecture at University of Texas, El Paso, November 1994.

"Laramide tectonics in central and northern New Mexico", invited lecture at New Mexico State University, November 2000.

"Laramide tectonics in the southern Rocky Mountains", invited lecture at the Keck fieldcamp in the Wet Mountains, Colorado, July 2001.

"The Chuska erg: paleogeomorphic and paleoclimatic implications of an Oligocene sand sea on the Colorado Plateau", invited lecture at Four Corners Geological Society, May 2007.

"The Chuska erg: paleogeomorphic and paleoclimatic implications of an Oligocene sand sea on the Colorado Plateau", invited lecture at the Albuquerque Geological Society, August 2007.

"Climate forcing by oceanic iron fertilization from repeated ignimbrite eruptions: The icehouse-silicic large igneous province (SLIP) hypothesis", invited seminar presentation at the University of New Mexico, November 2009.

SERVICE WORK

Leader of field trip for Shell, Sohio, and Elf Aquitaine geologists in Baca basin area, west-central New Mexico. May 1986.

Leader of helicopter flyover of Baca basin and vicinity for Amoco geologists. June 1987.

Participant and co-leader of Soviet-American tour of Rio Grande rift. May 1988.
Session chairman for 1989 New Mexico Geological Society Spring Meeting, Socorro, New Mexico.

Co-leader of 1989 IAVCEI field trip, Mogollon-Datil volcanic field, New Mexico.

Member of search committee for Director, New Mexico Bureau of Mines and Mineral Resources, 1991.

Contributor to upcoming USGS 1:500,000 scale geologic map of New Mexico.

Dissertation committee member for B.S. Brister (NMIMT, graduated 12/90).

Roadlog co-chairman of 1991 New Mexico Geological Society field conference.

Chairman of search committee for volcanologist, New Mexico Bureau of Mines and Mineral Resources.

Thesis advisor for S. Cross (NMIMT, graduated 12/94).

Thesis committee member for John Abbott (NMIMT, graduated 5/96).

Tenure committee chairman for W. C. McIntosh (NMBMMR & NMIMT).

Tenure committee member for M. Heizler (NMIMT).

Dissertation committee member for Robert Balch (NMIMT, graduated 5/97).

Roadlog co-chairman for 1994 New Mexico Geological Society field conference.

Thesis committee member for Ed Fry (NMIMT, left program 1996).

Tenure committee chairman for S.D. Connell.

Tenure committee chairman for B.D. Allen.

Chairman of editorial board for *New Mexico Geology* (1997–2000).

Thesis committee member for Jeffery Stone (NMIMT, graduated 12/97).

Thesis committee member for Dustin Smyth (NMIMT).

Thesis committee member for Rosie Behr (NMIMT, graduated 5/99).

Tenure committee member for Peggy Johnson.

Member of search committee for Director, New Mexico Bureau of Mines and Mineral Resources, 1999.

Tenure committee member for Harold Tobin.

Session co-chair, Rocky Mountain section of American Association of Petroleum Geologists meeting, Albuquerque, September 2000.

Tenure committee chairman for Bill Raatz.

Thesis committee member for Abby Howell (CSU, Graduated 12/02).

Co-leader of first day of 2003 NMGS Fall Field Conference

Thesis committee member for Seth Fankhauser (CSU, resigned 9/04).

Member of editorial board for *New Mexico Geology* (2000-2010).

Thesis supervisor for Katherine Mason-Barton until 9/06.

Thesis committee member for Amy Luther, NMIMT

Thesis committee member for Mark Green, NMIMT

Thesis committee member for Jeff Dobbins, NMIMT

Thesis committee member for Kevin Henry, NMIMT

Member of the publications committee, NMBMR, 2015-2016

COURSES TAUGHT

The University of Texas at Austin (September 1977 - May 1982) - Laboratory Teaching Assistant for Physical Geology, Historical Geology, Sediments and Sedimentary Rocks, Sandstone Petrology, Igneous Petrology, Carbonate Petrology, and Siliciclastic Depositional Systems.

New Mexico Tech (Spring semester, 1986) - Instructor (sabbatical replacement) for Geology 383, Sedimentation and Stratigraphy.

New Mexico Tech (Spring semester, 1992, 1994) - Instructor (with Peter Mozley) for Geol. 545, Sedimentary Petrology.