

H. CURTIS MONGER

Professor of Pedology and Environmental Science, Department of Plant and Environmental Sciences, New Mexico State University, Las Cruces, NM 88003-8003

Tele: 505-646-1910
Fax: 505-646-6041
cmonger@nmsu.edu



Education

1981	B.S.	Plant and Soil Science, University of Tennessee
1986	M.S.	Geology, University of Tennessee
1990	Ph.D.	Agronomy (Pedology), Minor: Geology, New Mexico State University

Professional Experience

2004-present	Professor of Pedology and Environmental Science, Dept. of Plant & Environmental Sci.
1998-2004	Associate Professor of Pedology and Environmental Science, Dept. of Agronomy & Hort.
1992-1998	Assistant Professor of Pedology, Dept. of Agronomy & Horticulture
1990-1992	Project Leader, Soil-Geomorphology-Paleoclimate Project, US DoD Fort Bliss, Texas
1984	Soil Scientist, Oak Ridge National Laboratory
1981-1982	Soil Scientist, USDA-Soil Conservation Service, Chester Co, Tenn.

Primary Research Interests

Soil-geomorphic-ecosystem change; Links between desert soils and the global carbon cycle; Paleoclimate; Geoarchaeology

Honors

2002	Distinguished Research Award, College of Agriculture & Home Economics, NMSU
2000	Roush Award for Teaching Excellence, New Mexico State University
1999	Distinguished Teaching Award, College of Agriculture & Home Economics, NMSU
1990	Outstanding Graduate Student Research Award, Sigma Xi, Las Cruces Chapter

Publications

Liu, X., H.C. Monger, and W.G. Whitford. 2007 Calcium carbonate in termite galleries—biomineralization or upward transport? *Biogeochemistry* 82:241-250.

Duniway, M.C., J.E. Herrick, and H.C. Monger. 2007. The high water-holding capacity of petrocalcic horizons. *Soil Science Society of America* 71:812-819.

Monger, H.C., G.H. Mack, B.A. Nolen, and L.H. Gile. 2006. Regional setting of the Jornada LTER. p. 15-43. In K. Havstad et al. (eds.) *A Chihuahuan Desert Ecosystem—the Jornada Basin LTER*. Oxford Press.

Monger H.C. 2006. Soil development in the Jornada Basin. p. 81-106. In K. Havstad et al. (eds.) *A Chihuahuan Desert Ecosystem—the Jornada Basin LTER*. Oxford Press.

- Gillette, D. and H.C. Monger H.C. 2006. Eolian processes on the Jonrada Basin. p. 189-210. *In* K. Havstad et al. (eds.) *A Chihuahuan Desert Ecosystem—the Jornada Basin LTER*. Oxford Press.
- Serna-Perez, A., H.C. Monger, J.E. Herrick, and L. Murray. 2006. Carbon dioxide emissions from exhumed petrocalcic horizons. *Soil Science Society of America Journal* 70:795-805.
- Monger, H.C. and B.T. Bestelmeyer. 2006. The soil-geomorphic template and biotic change in arid and semiarid ecosystems. *Journal of Arid Environments* 65:207-218.
- Peters, D.P.C., B.T. Bestelmeyer, J.E. Herrick, E.L. Fredrickson, H.C. Monger, and K.M. Havstad. 2006. Disentangling complex landscapes: New insights into arid and semiarid system dynamics. *Bioscience* 56:491-501.
- Kraimer, R.A. and H.C. Monger. 2005 Mineralogical distinctions of carbonates in desert soils. *Soil Science Society of America Journal* 69:1773-1781.
- Inzunza-Ibarra and H.C. Monger. 2005. Variation of soil chemical properties in irrigated and non-irrigated areas of La Laguna region of Mexico. *Terra* 23:429-436.
- Inzunza-Ibarra and H.C. Monger. 2005. Historical analysis of the irrigation evolution of La Laguna region of Mexico. *Terra* 23:363-370.
- Monger, H.C., J.J. Martinez-Rios, S.A. Kresat. 2005. Arid and semiarid soils. p. 182-187. *In* D.I. Hillel (ed.) *Encyclopedia of Soils in the Environment*. Academic Press, London.
- Khresat, S.A., Z. Rawajfih, B. Buck, H.C. Monger. 2004. Geomorphic features and soil formation of arid lands in northeast Jordan. *Archives of Agronomy and Soil Science* 50:607-615.
- Monger, H.C. 2003. Millennial-scale climate variability and ecosystem response at the Jornada LTER site. p. 341-369. *In* D. Greenland, D.G. Goodin, and R.C. Smith (eds) *Climate Variability and Ecosystem Response at Long-Term Ecological Research Sites*. Oxford Univ. Press, New York.
- Monger, H.C. 2003. Regional setting and paleoclimate of the Pendejo Cave region. p. 17-24. *In* R.S. MacNeish and J.G. Libby (eds). *Pendejo Cave*. University of New Mexico Press.
- Buck, B.J., J.M. Kipp, and H.C. Monger. 2002. Inverted clast stratigraphy in an eolian archaeological environment. *Geoarchaeology* 17:665-687.
- Monger, H.C. and E.F. Kelly. 2002. Silica minerals. p. 611-636. *In* J.B. Dixon and D.G. Schluze (eds). *Soil Mineralogy with Environmental Applications*. SSSA Book Series, no. 7.
- Martinez-Rios, J.J. and H.C. Monger. 2002. Soil classification in arid lands with Thematic Mapper data. *Terra* 20:89-100.
- Monger, H.C. and L.P. Wilding. 2002. Inorganic carbon: composition and formation. p. 701-705. *Encyclopedia of Soil Science*. Marcel-Dekker, New York.
- Monger, H.C. 2002. Arid Soils. *Encyclopedia of Soil Science*. p. 84-88. Marcel-Dekker, New York.
- Deutz, P., I.P. Montañez, and H.C. Monger. 2002. Morphology and stable and radiogenic isotope composition of pedogenic carbonate in late Quaternary relict soils, New Mexico: an integrated record of pedogenic overprinting. *Journal of Sedimentary Research* 72:809-822.
- Monger, H.C. and J.J. Martinez-Rios. 2001. Inorganic carbon sequestration in grazing lands. p. 87-118 *In* R.F. Follett et al. (eds) *The Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect*. Lewis

Publishers, Boca Raton.

- Deutz, P., I.P. Montañez, H.C. Monger, and J. Morrison. 2001. Derivation of a palaeoenvironmental record from pedogenic carbonates in buried and relict Quaternary soils, Rio Grande Rift, New Mexico. *Palaeogeography, Palaeoclimatology, and Palaeoecology* 166:293-317.
- Monger, H.C. and R.A. Gallegos. 2000. Biotic and abiotic processes and rates of pedogenic carbonate accumulation in the southwestern United States—relationship to atmospheric CO₂ sequestration. p. 273-289. In R. Lal et al. (eds) *Global Climate Change and Pedogenic Carbonates*. Lewis Publishers, Boca Raton.
- Buck, B.J. and H.C. Monger. 1999. Stable isotopes and soil-geomorphology as indicators of Holocene climate change, northern Chihuahuan Desert. *J. Arid Environments*.
- Grigal, D., J. Bell, R. Ahrens, R. Boone, E. Kelly, C. Monger, and D. Wedin. 1999. Site and landscape characterization for ecological studies. pp. 29-54. In P. Robertson et al. (eds). *Standard Soil Methods for Long Term Ecological Research*. Oxford Univ. Press.
- Granados-Olivas, A. and H.C. Monger. 1999. Remote sensing technology for development planning along the US-Mexico border: hydrogeology and geomorphology. *New Mexico Journal of Science* 39:123-137.
- Monger, H.C., D.R. Cole, J.W. Gish, and T.H. Giordano. 1998. Stable carbon and oxygen isotopes in Quaternary soil carbonates as indicators of eogeomorphic changes in the northern Chihuahuan Desert, USA. *Geoderma* 82:137-172.
- Monger, H.C. and W.C. Lynn. 1996. Clay mineralogy of the Desert Project and Rincon soils. *Soil Survey Investigations Rpt. 44*, USDA, Lincoln, NE.
- Monger, H.C. and Adams. 1996. Micromorphology of calcite-silica deposits, Yucca Mountain, Nevada. *Soil Sci. Soc. Am. J.* 60:519-530.
- Monger, H.C. 1995. Pedology in arid lands archaeological research: An example from southern New Mexico western Texas. p. 35-40. In M.E. Collins (ed) *Pedological Perspectives in Archaeological Research*. *Soil Sci. Soc. Am. Spec. Publ.* 44. Madison, WI.
- Cole, D.R. and H.C. Monger. 1994. Influence of atmospheric CO₂ on the decline of C₄ plants during the last deglaciation. *Nature* 368:533-536.
- Monger, H.C. and D.R. Cole. 1994. Climate, CO₂, and plant abundance—Reply. *Nature* 372:626.
- Mack, G.H., W.C. James, and H.C. Monger. 1993. Classification of paleosols. *Geol. Soc. Am. Bull.* 105:129-136.
- Monger, H.C. and L.A. Daugherty. 1991. Neof ormation of palygorskite in a southern New Mexico Aridisol. *Soil Sci. Soc. Am.* 55:1646-1650.
- Monger, H.C. and L.A. Daugherty. 1991. Pressure solution: possible mechanism for silicate grain dissolution in a petrocalcic horizon. *Soil Sci. Soc. Am.* 55:1625-1629.
- Monger, H.C., L.A. Daugherty, W.C. Lindemann, and C.M. Liddell. 1991. Microbial precipitation of pedogenic calcite. *Geology* 19:997-1000.

Research Support

\$4,920,000 from National Science Foundation to D.P. Peters, B. Bestelmeyer, K.M. Havstad, J.E. Herrick, H.C. Monger for Jornada Basin LTER Program (2006-2012)

\$12,600 from NSF-EPSCoR/Los Alamos National Lab to M.H. Ebinger and H.C. Monger to study “Soil Carbon Measurements with Laser Technology.” (2003).

\$1,089 from T&E to M. Duniway, J.E. Herrick, and H.C. Monger for to study “Grassland recovery and role of soil-vegetation feedbacks” (2002-2003).

\$623,600 from EPA to H.C. Monger, J.T. Harrington, D.P. Peters, and J.E. Herrick to support the project “Carbon Sequestration Potential of Southwestern Rangelands” (2001 to 2003).

\$142,500 from USDA-NRI to H.C. Monger and J.E. Herrick to study “CO₂ emissions from the dissolution of soil carbonate as a contributor to greenhouse gases” (2000-2003).

\$4,300,000 from National Science Foundation to L.F. Huenneke, K.M. Havstad, H.C. Monger and D.P. Peters for Jornada LTER Program (2000-2006)

\$75,000 from International Arid Lands Consortium to H.C. Monger and S.A. Khresat to study “Atmospheric CO₂ sequestration by soil CaCO₃ in Jordan and New Mexico” (1999-2002).

\$2,500 from T&E to G.A. Michaud and H.C. Monger for project entitled “Identifying and modeling erosion on White Sands Missile Range using GIS” (1999-2000).

\$75,000 from International Arid Lands Consortium to H.C. Monger and G.J. Kidron to study “Microbiotic Crusts: Their nature and establishment in Israel and New Mexico” (1997-1999).

\$79,865 from USDA-NRI to H.C. Monger to study “Holocene grassland dynamics based on soil carbonate C-13 values, Chihuahuan Desert” (1996-1998).

\$79,865 from USDA-NRI to H.C. Monger to study “Holocene grassland dynamics based on soil carbonate C-13 values, Chihuahuan Desert” (1996 to 1998).

\$10,000 from USDA-NRCS to H.C. Monger to study “Global change between the southern High Plains and Chihuahuan Desert” (1996).

\$60,000 from USDA-NRCS to H.C. Monger and J.B. Gleason to make videos on Desert Geomorphology (1995-1998).

\$3,780,000 from National Science Foundation to W.H. Schlesinger, A. Abrahams, D. Gillette, V. Gutschick, K. Havstad, P. Herman, L. Huenneke, D. Lightfoot, C. Monger, J. Reynolds, R. Virginia for Jornada LTER Program (1994 to 2000).

\$4,200 from Nevada Nuclear Waste Project Office to H.C. Monger to study “Calcite-silica deposits at Yucca Mountain, Nevada” (1994).

\$4,745 from US Bureau of Reclamation to H.C. Monger to study “Geomorphic overview of the Mesilla and El Paso Valleys” (1994).

\$79,340 from US Department of Defense to H.C. Monger to study “Geomorphology of Fort Bliss, Texas” (1993-1994).

\$50,000 from US Geological Survey to J. Keaton, J. Barnes, and H.C. Monger to study “Paleoseismic evaluation of the East Franklin Mountains Fault Zone, El Paso, Texas” (1994-1995).

\$36,688 from New Mexico Department of Agriculture to B. Creel, T. Sammis, Z. Samani, and H.C. Monger to study “Assessing vulnerability of groundwater aquifers in New Mexico to contamination from pesticide” (1994 to 1995).

\$174,000 from US Department of Defense to H.C. Monger to study “Soil-Geomorphology-Paleoclimate of Fort Bliss, Texas” (1990-1992).

Thesis Advisors

Richard Arnseth, Geology, University of Tennessee. Thesis Title: “Geochemical and mineralogical properties of Copper Ridge and Chepultepec regolith at the Oak Ridge National Laboratory Reservation, West Chestnut Ridge Site.”
LeRoy Daugherty, Pedology, New Mexico State Univ. Thesis Title: “Mineralogical transformation in a New Mexico Aridisol: pedogenic palygorskite, mineral dissolution, and microbial-related calcite.”

Graduate Students (year graduated)

Sa'eb Khresat	Ph.D.	(1993)
Arnulfo Encina	M.S.	(1995)
Brenda Buck	Ph.D.	(1996)
John Kipp	Ph.D.	(1998)
Robert Gallegos	M.S.	(1999)
Juan Martinez	Ph.D.	(1999)
Alfredo Granados	Ph.D.	(2000)
Gordon Michaud	M.S.	(2000)
Marco Inzuna	Ph.D.	(2002)
Xiaoyun Liu	Ph.D.	(2002)
Haiyang Xing	M.S.	(2002)
Rebecca Kraimer	Ph.D.	(2003)
Alfonso Serna-Perez	Ph.D.	(2004)
Mike Duniway co-advise	Ph.D.	(2006)
Stacey Weems	M.S.	(2006)
Justin Riggs	M.S.	(current)
David Rachal co-advise	Ph.D.	(current)
Janella Cruz	M.S.	(current)
Keith Crossland co-advise	M.S.	(current)