

CURRICULUM VITAE
Eugene F. Kelly
Department of Soil and Crop Sciences
Colorado State University
Fort Collins, Colorado 80523

EDUCATION

Ph.D. Soil Science, University of California-Berkeley, 1989
M.S. Soil Science, Colorado State University, 1984
B.S. Forest and Range Mgt, Colorado State University, 1980

Areas of Specialization: Pedology, Ecosystem Ecology, Soil Science, Sustainable Agriculture, Soil Degradation, Isotope Geochemistry, Biogeochemistry, Global Change Science, Environmental Forensics

PROFESSIONAL EXPERIENCE

Academic Positions

2016- Present	Professor of Pedology, Deputy Director Colorado Agricultural Experiment Station & Associate Dean of Extension, College of Agricultural Sciences, CSU, Fort Collins, CO
2011 – 2016	Professor of Pedology and Head, Department of Soil and Crop Sciences, CSU, Fort Collins, CO
2001 - 2011	Professor of Pedology, Department of Soil and Crop Sciences, CSU, Fort Collins, CO
1995 - 2001	Associate Professor of Pedology, Department of Soil and Crop Science, CSU, Fort Collins, CO
1989 -1994	Assistant Professor of Pedology, Department of Agronomy, CSU, Fort Collins, CO

Scientific Leadership Positions

2008 - Present	Associate Director for Research and Development, School of Global Environmental Sustainability, Colorado State Univ.
2015 - 2019	Chief Scientist, Visiting Head Scientist, Interim CEO, National Ecological Observatory Network, Boulder, CO
2010- 2015	Panel Manager, USDA- AFRI – Climate Change Mitigation Bioenergy/ Carbon/Climate Program, Washington, D.C.
2006-2008	Panel Manager, USDA, Soils Program, Washington, D.C.
2000- 2008	Administrative Leader and Principal Investigator, Short Grass Steppe-Long Term Ecological Research Program, College of Agricultural Sciences, Colorado State University

National Advisory Activities and Service

2019-present	Senior Advisor, Agriculture and Soil Carbon, Planet Alpha Corp
2016-present	Board of Directors, Society for Science at User Research Facilities (SSURF)
2016-present	Board of Directors, Industrial Hemp Research Foundation
2015-present	USDA State Emergency Board Farm Service Agency
2014-2015	Chair, Strategic Planning 5yr Review NCCS, USDA-NRCS
2008-2009	Tri Societies Representative - Hill Visit Bio-fuels Research
2005-2006	Tri Societies NSF Hill Day Representative
1992-2001	Technical Advisor NCCS Program, Washington, D.C.
1994-1996	Technical Advisor to Biosphere 2, Columbia University
1992-2010	Scientific Advisory Committee - USDA/ARS, Ft Collins, CO

Membership in Professional Organizations:

Soil Science Society of America, Division S5-Chair (2008-2010)
Sigma Xi, Colorado State University
Ecological Society of America
American Geophysical Union
American Association for Advancement of Science

Honors and Awards

2018 Resident Distinguished Ecologist, Colorado State University
2016 Soil Science Research Award, Soil Science Society of America
2009 Fellow of Soil Science Society of America
2009 Honorary Degree – Colorado FFA
2000 Faculty Award of Merit, Gamma Sigma Delta, Colorado State University
1993 Charles G. Shepardson Faculty Teaching Award
1991 Sigma Xi, Colorado State University.
1985 Outstanding Graduate Instructor, University of California, Berkeley.
1982 Gamma Sigma Delta, Colorado State University.
1983 Colorado Fellowship, Excellence in Teaching & Graduate Research

TEACHING, ADVISING AND MENTORING

Course Instruction

Pedology, Global Environmental Sustainability; Fundamentals of Ecology; Forest & Range Soils; Isotope Geochemistry; Advanced Topics in Ecology

Graduate Students (Chaired/co-Chaired)

<u>Year</u>	<u>Student</u>	<u>Degree</u>	<u>Thesis Topic</u>
Current	Hairik Honarchian	Ph.D	Soil Monitoring (co-advisor Ham)
2020	Ryan Taylor	Ph.D.	Pedology/Sustainable Ag
2020	Greta Birch	Ph.D.	Pedology
2017	Keri Minatre	M.S.	Forest Ecology
2016	Judith Daniels	Ph.D.	Pedology/Soil Survey
2015	Robert Bergstrom	Ph.D.	Pedology/Hydrology
2014	Shawn Salley	Ph.D.	Pedology/Ecology
2010	John Norman	M.S.	Pedology/Soil Survey
2009	Suellen Melzer	Ph.D.	Geochemistry/Pedology
2005	Steven Blecker	M.S., Ph.D.	Geochemistry/Pedology
2003	John Brenner	M.S.	SOC (co-advisor/Paustain)
2002	Suzanne Loadholt	M.S.	Pedology
2002	Abdula Farar	Ph.D.	Mineralogy (co-advisor/Heil)
2002	Nancy Okeefe	M.S.	Water Quality
2000	Elizabeth Sulzman	Ph.D.	Biogeochemistry/Pedology
1999	Johan Six	Ph.D.	SOC (co-advisor/Elliott)
1998	Yutaka Hagimoto	M.S.	Biogeochemistry
1997	Bryan Stevenson	Ph.D.	Soils and Paleoclimate
1997	Stephanie Connolly	M.S.	Chemistry (co-advisor/Cardon)
1995	Dennis Cleary	M.S.	Wetlands of Colorado
1994	Charles Peacock	M.S.	Soils and Geomorphology
1994	Daniel Palic	M.S.	Geospatial Modeling

Graduate Students (Committee Member)

Degree Committees

Ph.D. 58 M.S. 56

Postdoctoral Fellows/Visiting Scholars/Research Associates

<u>Name</u>	<u>Research Specialization</u>	<u>Years</u>
Dr. Floor Vanderveen	Biogenic Si and Land Use	2012-2014
Dr. Susan Melzer-Drinnen	Pedology/Ecology	2010-2013
Robert Flynn	GIS/Programmer	1998-2012
Troy Kashon	Web Design and IM –NPS	2009-2012
Danelle Malget	GIS/Remote Sensing	2009-2012
Michael O'Konski	GIS and Web Design	2009-2012
Dr. Judy Daniels	GIS- Soils Data	2009-2012
Dr. Sallie Sprague	Project Manager SGS-LTER	2002-2008
Caroline Yonker	Pedology/Ecology	1991-2008
Mark Lindquist	Range Science	1999-2008
John Norman	GIS/Geography	1999-2004
Dr. Jan Cipra	GIS/Remote Sensing	1994-2004
Dr. Karen Ziegler	Stable Si Isotopes of Plants	1999-2001
Dr. Xiu Ou	Soil Health	1999-2001
Dan Reuss	Mass Spectrometry	1996-2000
Dr. Jean Hsieh	Stable O Isotopes	1994-1997
Dr. Larry Munn	Stable C and O Isotopes	1996
Dr. Eric MacDonald	Soils and Paleoclimate	1994-1996
Dr. Anne Alexander	Silica Biogeochemistry	1995
Dr. Felipe Garcia-Oliva	Soil Carbon Dynamics	1992-1994

SCHOLARLY ACTIVITIES *Citation indices; total citations 4780; h-index 36; i10-index 46;*
Source: Google Scholar

Peer Reviewed Publications (125 total)

1. Kelly, E.F. , Knapp, A.K. and S.E. Melzer, (In Prep). Reservoir of Biogenic Silica in Grassland Ecosystems: A Key Storage Component in the Global Silica Cycle
2. Bergstrom, R. M., S.E. Melzer, C. C. Rhoades, S.W. Salley, P.M. Martin, T. Borch, and E.F. Kelly,. (In Review). The Morphology and Biogeochemistry of high elevation catenary sequences in the Fraser Experimental Forest, Colorado, U.S.
3. Salley, S.W., R. Bergstrom, P.H. Martin, A.K. Knapp, O.A. Chadwick, and E. F. Kelly (Accepted for publication). Soil Development Conditions Biologically Available Water in Water Limited Ecosystems of Western U.S. *Catena*
4. Daugherty, E.E., G. A. McKee, R. Bergstrom, S. Burton, C. Pallud, R.M. Hubbard, C.C. Rhoades, T. Borch, and E.F. Kelly. (2019). Hydrogeomorphic controls on soil C composition in two classes of subalpine wetlands. Biogeochemistry.(
<https://doi.org/10.1007/s10533-019-00597-y>)
5. Bergstrom, R. M., S.E. Melzer, C. C. Rhoades, S.W. Salley, T. Borch, and E.F. Kelly,. (2019). The generation and redistribution of nutrients in high elevation catenary sequences of sub-alpine ecosystems of Colorado, U.S.A. *Geoderma* 333, 135-144
6. Richter, D. D., Billings, S. A., Groffman, P. M., Kelly, E. F., Lohse, K. A., McDowell, W. H., Riebe, C., Silver, W. L., White, T. S., Anderson, S., Brantley, S., Brecheisen, Z. S., Chadwick, O. A., Hartnett, H. E., Hobbie, S. E., Kazanski, C. E., Markewitz, D., O'Neill, K., Schroeder, P., and Thompson, A. (2018). *Biogeochemistry, Ideas and perspectives: Strengthening biogeosciences in research networks.*
<https://doi.org/10.5194/bg-2018-67>.

7. Rhoades, C.C., Minatre, K.L., Pierson, D.N., Fegel, T.S, Cotrufo, F.M, and E.F. Kelly (2017). Examining the Potential of Forest Residue-Based Amendments For Post-Wildfire Rehabilitation. *Scientifica* (2017), Article ID 4758316, 10 pages <https://doi.org/10.1155/2017/4758316>
8. Kelly, E.F. and Loescher, H.W. (2016). NEON Reboot. *BioScience* 66:9:p711.
9. Kuhlman, M., Loescher, H.W., Leonard, R., Farnsworth, R., Dawson, T.E., and E.F. Kelly (2016). A New Engagement Model to Complete and Operate the National Ecological Observatory Network, *Bulletin of the Ecological Society of America*, 97(3):283-287.
10. Kelly, E.F. and Loescher, H.W. (2016). Big Data and the Ecological Nexus of Water, Energy and Food. *Colorado Water, July/August*, pp2-5.
11. Loescher HW, E.F. Kelly, R Lea. (2016). National Ecological Observatory Network: Beginnings, Programmatic and Scientific Challenges, and Ecological Forecasting. In *Terrestrial Ecosystem Research Infrastructures: Challenges, New developments and Perspectives*, . Chabbi, H. W. Loescher, Editors
12. Salley, S.W., R.O. Slezzer, R. Bergstrom, P.H. Martin, E. F. Kelly (2016). Long-term analysis of the historical dry boundary for the Great Plains of North America: Implications of climatic variability and climatic change on temporal and spatial patterns in soil moisture. *Geoderma* 274: 104-113.
13. Dawson, T., S. Frey, E.F. Kelly, S. Stafford, D.S. Schimel (2015). Illuminating next steps for NEON. *Science*, pp1176-77, V349, Issue 6253.
14. Crausbay, S.D., P.H. Martin, and E.F. Kelly. (2015). Tropical montane vegetation dynamics near the upper cloud belt strongly associated with ITCZ position and fire. *Journal of Ecology* DOI: 10.1111/1365-2745.12423
15. Vandevenne F.I, Barão L., Ronchi B., Meire P., Struyf E, Kelly E.E.,(2015). Silicon pools in human impacted soils of temperate zones, *Global Biogeochem. Cycles*, 29, doi:10.1002/2014GB005049
16. Giuliani, A.L. Kelly, E.F. and Alan K. Knapp. (2014). Geographic variation in growth and phenology of two dominant Central US grasses: Consequences for climate change". *J Plant Ecol* . 7 (3): 211-221.
17. Ramirez, K.S., Jonathan W L, A. Barberán, S.T. Bates, J. Betley, T. Crowther, E.F Kelly, E.E Oldfield, E.A. Shaw, C.Steenbock, M.A Bradford, D. H Wall, N.Fierer. (2014). Biogeographic patterns in belowground diversity in New York City's Central Park are similar to those observed globally. *Proceedings of the Royal Society B: Biological Sciences*. 281:1795
18. Childress, A., E. Kelly, and W. Travis (2014). Climate Impacts on Agriculture Sector. In *Colorado Climate Change Vulnerability Study*, edited by Eric Gordon and Dennis Ojima. University of Colorado, Boulder, CO and Colorado State University, Fort Collins, CO.
19. Melzer, S.E, Chadwick, O.A., Hartshorn A.S., Khomo,L.M., Knapp A.K. and E. F. Kelly (2011). Lithologic Controls on Biogenic Silica Cycling in South African Savanna Ecosystems. *Biogeochemistry*, DOI : 10.1007/s10533-011-9602-2.
20. Lohman, G., Keske, C.M.H., and E.F. Kelly, 2011, Environmental Impacts from Recreation on Colorado Fourteeners. VDM, Verlag Dr. Müller Aktiengesellschaft & Co. Publishers, ISBN: 978-3- 844-388091
21. Wall, D.H. , Bardgett, R.D. and E.F. Kelly. (2010). Biodiversity in the dark. *Nature Geosciences*, V 3 , pp 297-298.

22. Stevenson, B.A., E.F. Kelly, E.V. McDonald, A.J. Busacca and J Welker (2010). Oxygen Isotopes In Meteoric Water, Soil Water and Holocene Pedogenic Carbonates Across a Climatic Gradient, E. Washington, USA. *The Holocene* 20 (4), 575-583.
23. Ippolito, J.I., S.W. Blecker, C. Freeman, R.L. McCulley, J. Blair and E.F. Kelly. (2010). Phosphorous biogeochemistry along a grassland climosequence. *Journal of Arid Environments*. doi:10.1016/j.jaridenv.2010.01.003
24. Melzer, S.E, Knapp, A.K., Fynn, R.W.S. Kirkman, K.P. , Smith M.D. , Blair, J.M. and E.F. Kelly. (2009). Fire & Grazing Impacts on Silica Production & Storage in Grass Dominated Ecosystems. *Biogeochemistry*, DOI 10.1007/s10533-009-9371
25. Heisler-White, J.L., Blair, J.M., Kelly, E.F., Harmoney, K. and A. K. Knapp. (2009). Contingent productivity responses to more extreme rainfall regimes across a grassland biome. *Global Change Biology*, doi: 10.1111/j.1365-2486.2009.01961
26. Scheintaub, M., Derner, J.D., Kelly, E.F. and A.K. Knapp (2009) Response of the Shortgrass Steppe to Fire,. *Journal of Arid Zone Research*.
27. Blecker, S.W., Connolly, S.C., Cardon, G.E. and E.F. Kelly (2009). The role of mining and agricultural activity in creating coexisting but divergent soils, San Luis Valley, Colorado, USA *Geoderma*, Vo1 48, Issues 3-4, pp 384-39.
28. Heisler-White, J.L., A.K. Knapp and E.F. Kelly. (2008). Increasing precipitation event size increases aboveground net primary productivity in a semi-arid grassland. *Oecologia*, DOI: 10.1007/s00442-008-1116-9.
29. Kelly, E.F., Yonker, C.M. Blecker, S., and C.G.Olson (2008). Factors that Influence the Development of Shortgrass Steppe Soils: An Example from northeastern Colorado, USA. In : *Ecology of the Shortgrass Steppe: LTER*
30. Blecker, S.W., King, S.L., Derry, L.A., Chadwick, O.A., Ippolito, J.A., and E.F. Kelly. (2007). The ratio of germanium to silicon in plant phytoliths: quantification of biological discrimination under controlled experimental conditions. *Biogeochemistry*, 86:189-199.
31. L. Saccone, D. J. Conley, E. Koning, D. Sauer, M. Sommer, D. Kaczorek, S. W. Blecker, and E. F. Kelly. (2007). Assessing the extraction and quantification of amorphous silica in soils of forest and grassland ecosystems. *European Journal of Soil Science*, doi: 10.1111/j.1365-2389.2007.00949
32. Chadwick, O.A., Kelly E.F., Hotchkiss, S.C. and P. Vitousek (2007). Pre-contact vegetation and soil nutrient status in the shadow of Kohala Volcano, Hawaii. *Geomorphology*, 80:70-83
33. Blecker, S.W., R.L. McCulley, O.A. Chadwick, and E.F. Kelly. (2006) Silica biogeochemistry in grassland ecosystems of the Great Plains. *Global Biogeochemical Cycles*. 20 GB3023, doi:10.102.
34. Keeler, C., Kelly, E.F. and G.E. Maciel. (2006). Chemical Structural Information from Solid State ¹³C NMR Studies of a Suite of Humic Materials from Lower Montane Forest Soil, Colorado, USA. *Geoderma*. 130:124-140.
35. Ziegler, K, O.A. Chadwick, M.A. Brzezinski and E.F. Kelly, (2005). Natural variations of $\delta^{30}\text{Si}$ ratios during progressive basalt weathering, Hawaiian Islands. *Geochim. Cosmochim. Acta*.19:4597-4610.
36. McCulley, R.L, Burke, I.C., Nelson, J.A., Lauenroth, W.K, Knapp, A.K. and E.F. Kelly. (2005). Regional patterns in carbon cycling across the Great Plains of North America. *Ecosystems*. 8:106-121.

37. Stevenson, B.A., E.F. Kelly, E.V. McDonald, and A.J. Busacca (2005). Carbon Isotope Ratios of Soil Organic Matter And Holocene Carbonates Across A Bioclimatic Gradient In the Palouse Region of Eastern Washington, USA. *Geoderma*.124:37-47.
38. Farley, K.A., Kelly, E.F. and R.G.M. Hofstede (2004). Changes in soil carbon and water retention following conversion of grasslands to pine plantations in the Ecuadorian Andes. *Ecosystems*. V7, 7:729-729.
39. Farley, K.A., and Kelly, E.F. (2004). Effects of afforestation of a páramo grassland on soil nutrient status. *Journal of Forest Ecology and Management*. 195:281-290.
40. Kelly, E.F. and C.M. Yonker (2004). Soil Forming Factors/Time. *In The Encyclopedia Soils in the Environment*. Editor D. Hillel, Elsevier Ltd., Oxford, U.K. V1:536-539
41. Chadwick, O.A., R.T. Gavenda, E.F. Kelly, K. Ziegler, C.G. Olson, W.C. Elliott, and D.M. Hendricks.(2003). The Impact of Climate on the Biogeochemical Functioning of Volcanic Soils. *Chemical Geology*. 202:195-223
42. Ziegler, K, J.C. Hsieh, O.A. Chadwick, E.F. Kelly, D.M. Hendricks, and S.M. Savin. (2003). Formation of halloysite as the thermodynamically metastable arid-zone weathering aluminosilicate end product. *Chemical Geology*. 202:461-478.
43. Cipra, J.E., E.F. Kelly, L. MacDonald, J.B. Norman. (2003). Ecological effects of the Hayman Fire-Part 3: Soil properties, erosion, and implications for rehabilitation and aquatic ecosystems. *In: Graham, Russell T., and Tech Editor. Hayman Fire Case Study. Gen. Tech. Rep. RMRS-GTR-114. Ogden, UT: USDA. p. 204-219, V114,*
44. Cipra, J. E., E. F. Kelly, S. J. Lynn, L. A. Neve, M. L. Petersen, T. J. Wheeler, and S. Blecker. (2003). Use of geostatistics and remotely sensed data in conducting the soil survey of Rocky Mountain National Park. *Soil Survey Horizons* 44:1-4.
45. Green, C.H., D.M. Heil, G.E. Cardon, G. Butters, and E.F. Kelly. (2003). Solubilization of manganese and trace metals in soils impacted by acid mine runoff. *Journal of Environmental Quality*.(32:1323-1334)
46. Ziegler, K., Chadwick, O.A., Kelly, E.F. & Brzezinski, M.A. (2002): The $\delta^{30}\text{Si}$ values of soil weathering profiles: Indicators of Si pathways at the lithosphere/hydro (bio) sphere Interface. *Geochimica et Cosmochimica. Acta*, 66:A881
47. Doolittle, J., Stuebe, A., Price, A. and E.F. Kelly. (2002). Mapping Bedrock Depths with EM Induction in Costilla County, CO. *Soil Survey Horizons*. 43:14-21
48. Monger, H.C. and E.F. Kelly. (2002). Soil Minerals. In *Soil Mineralogy with Environmental Applications* Ed. J.B. Dixon. American Society of Agronomy Special Publication No 7. pp 611-63
49. Larson, M.R., Todd, L.C., Kelly, E.F., and J.M. Welker (2001). Carbon Stable Isotopic Analysis of Bison Dentition. *Great Plains Research. Great Plains Research*. 25-64
50. Grigal, D, J. Bell, R. Ahrens, D. Armstrong, R. Boone, E.F. Kelly, C.H. Monger, and P. Sollins. (1999). Site and Landscape Characterization for Ecological Studies. *In* Standard soil methods for long term ecological research. Robertson, G.P., C.S. Bledsoe, D.C. Coleman, and P. Sollins, eds. Oxford Univ Press, NY.
51. Jarrel, W, D. Armstrong, D. Grigal, E.F. Kelly, and H. C. Monger. (1999). Evaluating Soil Temperature and Moisture Status for Long Term Ecological Research. *In* Standard soil methods for long term ecological research. Robertson, G.P., C.S. Bledsoe, D.C. Coleman, and P. Sollins, eds. Oxford Univ Press, NY

52. Harrington, R. R., Poulson, S.R., Drever J., Colberg, P.J., and Kelly E.F. (1999). Carbon isotope systematics of mono-aromatic hydrocarbons: Vaporization and soil adsorption experiments. *Organic Geochemistry v. 30, issue 8A, p. 765-775.*
53. Elliott, E.T, D. Coleman, M. Harmon, E.F. Kelly, and H. C. Monger. (1999). Methods of quantifying Soil Structure for Long Term Ecological Research. In Standard soil methods for long term ecological research. Robertson, G.P., C.S. Bledsoe, D.C. Coleman, and P. Sollins, eds. Oxford University Press, NY.
54. Garcia-Oliva, F., Sanford, R.L., and Kelly, E.F. (1999). Effects of slash and burn management on soil aggregate C & N in tropical deciduous forest. *Geoderma. 88:1-12.*
55. Garcia-Oliva, F., Sanford, R.L., and Kelly, E.F. (1998). Effect of burning of tropical deciduous forest soil in Mexico on the microbial degradation of organic matter. *Plant and Soil 206 (1): 31-38.*
56. Nordt, L.C., Kelly, E.F., Boutton, T.W., and O.A. Chadwick (1998). Biogeochemistry of isotopes in soil: theory and application. *Geoderma.82:1-4.*
57. Hsieh, J., Savin, S.M., Kelly, E.F., and Chadwick, O.A. (1998). Oxygen Isotope Composition of Soil Water: Quantifying evaporation and Transpiration. *Geoderma. 82:269-293.*
58. Kelly, E.F. Blecker, S., Yonker, C.M., Olson, E.E. Wohl, and L. Todd. (1998). Stable Isotope Composition of Soil Organic Matter and Phytoliths as Paleoenvironmental Indicators. *Geoderma. 82:59-81.*
59. Hsieh, J., Savin, S.M., Kelly, E.F., and Chadwick, O.A. (1998). Measurement of soil-water $\delta^{18}\text{O}$ by in situ CO_2 equilibration Method. *Geoderma. 82:255-269.*
60. Kelly, E.F., Chadwick, O.A., and T. Hilinski. (1998). The Effect of Plants on Mineral Weathering. *Biogeochemistry. 42:21-53*
61. Jacobi, W.R., E.F. Kelly, C.A. Troendle P.A. Angwin C.A. Wettstein. (1998). Environmental Conditions and Aspen Regeneration Failure. Technical Report R2-60, USDA Forest Service, Rocky Mountain Region. Golden, CO.
62. Blecker, S., Yonker, C.M., Olson, C.G. and Kelly, E.F. (1997). Indicators of Holocene Climate Variations: Pedogenic Characterization of Shortgrass Steppe Soils, Colorado. *Geoderma. 76:113-130.*
63. Connolly, S.J., Blecker, S.W., Cardon, G.E. and E.F. Kelly. (1996). Mineralogical Alterations of Soil Irrigated with Acid Mine Water in the Alamosa River Basin. Paper # TRP20310 In *Geologic Excursions to the Rocky Mountains and Beyond. CGS Special Publication No. 44. CGS, Denver, CO.*
64. Hanson, J.D., Palic, D.B., Dunn, G.H., and E.F. Kelly (1996). Spatial Analysis of Various Soil Properties in Semiarid Rangeland. *Geocarto International, Vol. 11, No.3 pp 93-98.*
65. Paustian, K., Cibra, J., Cole, C.V., Elliott, E.T. Kelly, E.F., Killian, K., and Yonker, C.M. (1995). Assessment of the Contribution of CRP Lands to C Sequestration and CO_2 Mitigation. *Report to USDA-NRCS and USDA-ARS.*
66. Gavenda, R., Smith, C., Chadwick, O.A. and E.F. Kelly. (1995). Fertility Status of Volcanic Ash Soils Along a Climate Gradient, Hawaii,, USA. *In the Proceedings of the Indonesia Forest Soils Conference.*
67. Chadwick, O., Hall, R., Kelly, E.F., Amundson, R., Gosse, J.R. Phillips, F., Jaworoski, C. (1994). Quaternary Geology of the Wind River Basin, Wyoming. *Friends of the Pleistocene - Rocky Mountain Cell.*

68. Chadwick, O. A., C. G. Olson, D. M. Hendricks, E. F. Kelly, and R. T. Gavenda. (1994). Quantifying climatic effects on mineral weathering and neof ormation in Hawaii, *Proceedings of the 15th International Soil Science Congress. 8a:94-105*
69. Chadwick, O.A., Kelly, E.F., Merritts, D.M., Amundson, R.G. (1994). Atmospheric CO₂ Consumption during Soil Development. *Biogeochemistry, 24:115-127.*
70. Kelly, E.F. (1994). Organic matter and sustainability of tropical ecosystems. *Geoderma. 63:313-34*
71. Wilding, L.P. and Kelly, E.F. (1993). A pedologists perspective regarding biotic controls on soil formation. *Geoderma, 57:217-221.*
72. Kelly, E.F., Marino, B.D, Yonker. (1993). The Stable Carbon Isotope Composition of Paleosols: An Application to the Holocene. *Climate Change in Continental Isotopic Records, AGU. Geophysical Monograph 78:233-240.*
73. Kelly, E.F., Marino, B.D., Cole, C.V., Elliott, E.T. and Metherell, A.K. (1992). Modeling Water Movement throughout Ecosystems. Waltman, W.J., Levine, and Kimble, J.M. eds. IN *the Proc of the First Soil Genesis Modeling Conference. USDA-SCS, Lincoln, NE.*
74. Kelly, E.F. (1992). America's Renewable Resources: Historical trends and current challenges. *J. Envir. Qual. 21:513-514.*
75. Kelly, E.F., Amundson, R.G., Marino, B.D. and DeNiro, M.J. (1991). Environmental and Geological Influences on the Stable Isotope Composition of Carbonate in Holocene Grassland Soils. *Soil Sci. Soc Am. J. 55:1651-1658.*
76. Kelly, E.F., Amundson, R.G., Marino, B.D. and DeNiro, M.J. (1991). The Stable Isotope Ratios Carbon in Phytoliths as a Quantitative Method of Monitoring Vegetation and Climatic Change. *Quaternary. Research. 35:222-233.*
77. Kelly E.F. (1990). Methods for extracting opal phytoliths from soil and plant material. In. Department of Agronomy, Colorado State University Fort Collins.
78. Aguilar, R., Kelly, E.F., Heil, R.D. (1988). Effects of Cultivation on Soils in Northern Great Plains Rangeland. *Soil Sci. Soc. Amer. 52:1081-1085.*
79. Kelly, E.F., Aguilar, R., Muhaimed, A.S., Deutsch, P.C. and, Heil R.D. (1988). Profile Reconstruction: A method to quantify changes in soil properties resulting from cultivation. *Agriculture, Ecosystems, and Environment. 21:153-162.*
80. Amundson, R. and Kelly, E.F. (1987). The Chemistry and Mineralogy of a CO₂-rich depositing spring in the California Coast Range. *Geochim. Cosmochim. Acta. 51:2883-2890.*
81. Schimel, D.S., Kelly, E.F., Yonker, C., Aguilar, R. and Heil, R.D. (1985). Effects of erosional processes on nutrient cycling in semi-arid landscapes. IN D.E. Caldwell, J.A. Brierley and C.L. Brierley (Ed.), *Planetary Ecology. Van Nostrand Rienhold, N.Y.,N.Y.*

Invited Keynote Research Presentations (selected from 150)

1. Notes from the underground: Apropos the Living Soil. Graduate Degree Program in Ecology, Colorado State University, October 31, 2018
2. Soil Health in the western U.S. Landscape. College of Applied Sciences, University of Guam, July 9, 2018.
3. Soil and Human Health. USDA-NRCS, USDA-ARS, Washington, D.C. June 12, 2017.
4. Observing Climate Impacts on Ecosystems: Challenges and Opportunities, Joint Session on Climate Change and Ecology, National Academy of Sciences – Engineering and Medicine, Irvine CA, November 29, 2016.
5. Using the Ecological Sciences to Better Understand our World, School of the Environment and Natural Resources, The Ohio State University, Nov 10, 2016
6. Enhancing continental-scale understanding of agriculture: Integrating the National Ecological Observatory Network (NEON) with existing research networks to address global change, AGU National Meeting. December 18, 2015
7. Sustaining the Pedosphere: Establishing a Framework for Management, Utilization and Restoration of Soils in Cultured Systems. Michigan Chapter Soil & Water Conservation Society, March 7, 2014, East Lansing MI,
8. Pedology and Ecosystem Services: research Opportunities and issues for the NCSS. West Regional Soil Survey Work Conference, Portland Ore, July 17, 2014.
9. Landscape Resilience: The Vulnerability of Soils to Changing Climatic and Land Use Conditions. Conference Keynote and 2013 Pritchard Lecturer for The 68th International Conference of the Soil and Water Conservation Society, Reno, Nv, July 22, 2013.
10. Visions for Soil and Critical Zone Monitoring With a Systems Approach, Technical Keynote for "Soil Survey — Planning for Soil Health in the Critical Zone". National Conference for the National Cooperative Soil Survey June 17, 2013.
11. The Necessity of and Opportunities for Collaborative US-Russia Pedology Research in Network-Level Science, Russian State Agrarian University, Moscow Russia, June 18, 2012
12. Global Change and Soil Degradation, Russian State Agrarian University, Moscow Russia, June 19, 2012
13. Crossing evolutionary and contemporary scales: the critical importance of grassland expansion to global silica cycling, Ecological Society of America, Pittsburg, PA, August 5, 2010
14. Mobilization of silica in terrestrial grassland ecosystems and the potential Impact on the global silica cycle, Ecological Society of America, Milwaukee, WI, August 4, 2008
15. Afforestation effects on soil development, NATO-OTAN- Influences of tree species on soil properties, Krasnoyarsk, Russia, August 27, 2004.
16. Biogeochemistry of Silica in Soil-Vegetation Systems: Theory, Methods and Applications for Quantifying the Role of Plants in Terrestrial Weathering. Second International Meeting on Phytolith Research, Aix en Provence, France, August 29, 1998.
17. Edaphic controls on soil carbon dynamics along a bioclimatic gradient, north Central Colorado. American Association for the Advancement of Science, Pacific Division, Honolulu, Hawaii, June 30, 1998
18. Long term Processes of Soil Development, NATO-ASI - Soils and Global Change: Carbon Cycle, Trace Gas Exchange, and Hydrology, Toulouse, France June 27, 1997

19. The Use of Isotopic Techniques in Biogeochemical Research, NATO-ASI - Soils and Global Change: Carbon Cycle, Trace gas Exchange, and Hydrology, Toulouse, France, June 19, 1997
20. Using Isotope Techniques to Study Soil Hydrology, NATO-ASI - Soils and Global Change: Carbon Cycle, Trace gas Exchange, and Hydrology, Toulouse, France June 16, 1997
21. Crossing Evolutionary and Contemporary Scales: The Critical Importance of Grassland Expansion and Contraction to Global Silica Cycling, Department of Soil Science, North Carolina State University, April 4, 2012.
22. The Potential Impacts of Global Change Drivers On the Terrestrial Silica Cycle Department of Soil Science, North Carolina State University, April 5, 2012.
23. The Impact of Native Grassland Conversion to Cultured Systems On the Terrestrial Silica Cycle. Division S9, SSSA Meetings, Long Beach, CA, November 1, 2010.
24. Crossing evolutionary and contemporary scales: the critical importance of grassland expansion to global silica cycling. Ecological Society of America, Pittsburg, PA, August 5, 2010.
25. The necessity of and opportunities for Pedology in network-level science SSSA Nov 1, 2010. Division S5, SSSA Meetings, Long Beach, CA, November 1, 2010.
26. Mobilization of Silica in Terrestrial Grassland Ecosystems and the Potential Impact on the global Silica Cycle. Geological Society of America, Houston, Texas, October 7, 2008.
27. A study of the origin, evolution, and maintenance of the short-grass teppe (SGS) ecosystem, The Land Institute, Salinas, KS. June 8, 2004.
28. Long term monitoring of the Short Grass Steppe Ecosystem: Quantifying the Spatial and Temporal Controls on Ecosystem Structure and Function", Monitoring Science and Technology, September 22, 2004.
29. The Biogeochemistry of Silica in Grasslands Ecosystems of the central Great Plains of North America. Dept of Soil and Environmental Sciences University of California, Riverside CA. February 5, 2003.
30. The Biogeochemistry of Silica in Grasslands Ecosystems of the central Great Plains of North America. Department of Land Air and Water Resources, University of California, Davis CA. March 5, 2003
31. The Biogeochemistry of Silica in Grasslands Ecosystems of the central Great Plains of North America, Division S5 and S7 - SSSA Meeting Indianapolis, Indiana. November, 2002.
32. The use of terrestrial paleoenvironmental data to drive regional and global biogeochemical models. Reno Nevada, November 15, 2000
33. Soil biota, soil formation and recovery processes in rangeland ecosystems. Division S3-SSSA Meeting Indianapolis, Indiana. November 3, 2000.
34. Chemical and mineralogical Properties of Soils Along a Bioclimatic gradient in Hawaii, Department of Chemistry, Colorado School of Mines, February 3, 1998
35. Pre-contact vegetation on the Kohala Penninsula, Hawaii, USA. at Geological Society of America Cordilleran Meeting , Hawaii, May, 1997
36. The Effects of Plants on Mineral Weathering. SSSA Meeting Indianapolis, Indiana. November 3-6, 1996.
37. The Use of Stable isotopes of O and H in Monitoring Hydrological Processes in Soils. NCAR Colloquium on Terrestrial Ecosystems and the Atmosphere. Boulder Colorado, July 18, 1996

38. Pedologic and Isotopic Studies of Climate and Vegetation in Pleistocene Palouse Loess, Pacific Northwestern, U.S., Texas A&M Univ. College Station Texas, November 8, 1995.
39. Comparative studies of Pedogenesis and Carbon Cycling across Ecosystems of Biosphere 2. Presented for Symposium Biosphere 2: The Next Frontier, The College of Agricultural Sciences, Texas A&M University, College Station, Texas, Nov 7, 1995.
40. Stable Isotope Composition of Soil Organic Matter and Phytoliths as Paleoenvironmental Indicators. Presented for Symposium on "Stable Isotopes in Soil Environments: Theory and Applications". Seattle, Washington, November 15, 1994
41. Applications of Isotope geochemistry for Climatic reconstruction in Ecosystems: Examples from the North American Great Plains. College of Agriculture and Home Economics Visiting Professor Program, Washington State Univ., March 13, 1992.
42. Isotopically Driven Models in Soil Genesis Research, Workshop for USDA-SCS-NSSC, Lincoln, NE August 13, 1991.
43. The distribution of Stable C and O Isotopes in Materials Derived from Lake Sediments: Methods and Applications. INSTAR Workshop on Techniques for Research within Arctic Systems. Univ. Colorado, Boulder, Colorado, March, 1991.
44. Isotopic Composition of Phytolith, Soil Organic Matter and Carbonates. Workshop on Carbon, Oxygen Isotope Ratios of Soils, Plants and Atmosphere, Harvard University, April 19, 1991.
45. Isotope Ratios of Plant Phytoliths as Indicators of Climatic and Vegetation I Change. Forest Ecosystems Studies Research Group: Workshop on Biotic Indicators of Climatic Change. June 1, 1990, University of Washington, Seattle, Washington 98195.
46. Soils and Global Change Research, Beet Street's Science Café, Fort Collins, Colorado, November 10, 2010
47. The Response of Colorado Ecosystems to Climate Change, Colorado State University Alumni Association, Denver, Colorado, September 27, 2010
48. The use of soils to construct ancient climates American Chemical Society, Colorado Local Section, Sept 24, 2010.
49. Methods of Reconstructing Past Climates, Colloquium on Changing Climate, Colorado State University, September 25, 2007.
50. The Utility of Soil Classification and Surveys in On Site Waste Water Systems, Colorado Environmental Health Association, Breckenridge, CO, September 30, 2004
51. The Effects of Plants on Mineral Weathering. Department of Soil and Crop Sciences, Colorado State University, September 25, 1997
52. Pedology and Biogeochemistry Research on the Island of Hawaii. Department of Soil and Crop Sciences, Colorado State University, April 4, 1996
53. The Use of Soils to Reconstruct Ancient Climates. Sigma Xi, Colorado State University Chapter, September 30, 1994.
54. The Use of Stable Isotope Analysis in Plant and Soil Sciences, Department of Agronomy, Colorado State University, September 5, 1991
55. Soil Science and Its Environmental Applications. Youth in Natural Resources Education Initiative and the College of Agricultural Sciences, July 24, 1991.
56. Use of Plant-Produced Phytoliths in Paleoclimatic Research: Potentials and Pitfalls. Colloquium in the Life Sciences. December 3, 1990, Colorado State University, Fort Collins, Colorado 80523.
57. Why I'm Not A Paleopedologist? Long Term Ecological Research Group. April 18, 1990, Colorado State University, Fort Collins, Colorado 80523

CONTRACTS AND GRANTS Total 61 Awards: \$160M (PI), \$40M (Co-PI)

1. NSF-DBI, "Mid-Scale RI-1: SAGE: A Software-Defined Sensor Network. PI's P.H. Beckman, I. Altintas, E.F. Kelly, S.M. Collis, C.E. Catlett. October 1, 2019- September 30, 2021. \$9,026,927.
2. NSF-DEB, Workshop Optimizing NEON Science, PI E.F. Kelly, Co PI M. Khulman September 1, 2016-August 30, 2019. \$99,776.
3. NSF-DEB, Visiting Head Scientist, National Ecological Observatory Network, PI E.F. Kelly, August 1, 2015-July 30, 2018. \$767,000.
4. NSF-MREFC, Cooperative Support Agreement for Major Research Equipment and Facilities Construction (MREFC) of the National Ecological Observatory, Lead PI E.F. Kelly, Co-PI J. Marte. \$91,789,931. October 1, 2015 – June 1, 2016.
5. NSF-MREFC, Cooperative Support Agreement for Major Research Equipment and Facilities for Operations of the National Ecological Observatory, Lead PI E.F. Kelly, Co-PI K. Ruiz. \$55,342,100. October 1, 2015 – June 1, 2016
6. USDA-NIFA, Sustaining Agriculture through adaptive management to preserve the Ogallala Aquifer under climate change. , Lead PI; M. Schipanski, Co-PI(s): E.F. Kelly, R. Waskom, C. Rice, C. West, K. Wagner, B. Auvermann, C. Ray, M. Marsalis, J. Warren, B. Guerrero. \$9,800,000. 2016–2020.
7. USDA-AFRI, Biogeochemical Iron Cycling in Subalpine Wetlands with Different Hydraulic Connectivity: Impact on Fate and Transport of Organic C, Lead PI. T. Borch, Co-PI's E.F. Kelly, C. Rhoades October 1, 2013–September 30, 2016 \$499,422.
8. USDA-USFS, The Influence of Pine Beetle Kill on the Physical and Biogeochemical properties of Soils in the Fraser Experimental Forest. April 1, 2014- March 31, 2016. \$85,000. PI E.F. Kelly.
9. DOI, Soil Survey and Resource Inventory of the National Parks, October 1, 2012- March 31, 2013. \$289,000
10. USDA-NRCS, Rapid Carbon Assessment of Agricultural Soils, September 30, 2011 – July, 1, 2012. \$ 24,543
11. NSF- Long Term Ecological Research-of the Shortgrass Steppe. \$1,840,000. November 1, 2010 – April 30, 2014 (Lead PI: J. Moore; Co-PI 's: M. Antolin; J. Derner, N. Kaplan and E.F. Kelly)
12. DOI, Soil Survey and Resource Inventory of the National Parks, October 1, 2009- September 30, 2012. \$1,049,000
13. NSF, Ecosystems Collaborative Research: Assessing the primary controls on biogenic silica in grass dominated ecosystems. August 1, 2008- March 30, 2011. \$398,983 (Additional PI's: A.K. Knapp and O.A. Chadwick).
14. NSF, Critical Zone Observatory, Geosciences: Soil Development and weathering in the Central Great Plains. August 15, 2008 – July 30, 2010. \$20,000.
15. USDA-USFS, The Influence of Pine Beetle Kill on the Physical and Biogeochemical properties of Soils in the Fraser Forest. Apr1, 2008- Mar 31, 2011. \$155,000
16. NSF- Long Term Ecological Research-of the Shortgrass Steppe. \$1,680,000. November 1, 2008 – October 31, 2010 (Lead PI: M. Antolin, Co-PI 's: I.C. Burke; J. Morgan, J. Moore; E.F. Kelly).
17. NSF-Environmental Education and Outreach Program for Educators of Native American Students. \$84,000: 2005-2006. (Co-PI J. Moore, UNC)
18. NSF- Environmental Education and Outreach Program for Educators of Native American Students. \$68,708, June 2004. (Co-PI J. Moore, UNC)

19. NSF. International Collaborations: LTER International Cross-Site Research on Grassland and Savanna Ecosystems in North America and South Africa - \$148,667. June 2004.
20. NSF- Soil Water Dynamics across Environmental Gradients on the Shortgrass Steppe. \$20,000. June 2003.
21. NSF- Rapid Response to Plague Outbreaks to Identify Reservoir Species, II. Data Management, III. Dust Deposition, IV. Outreach and Collaborations. \$142,000. June 2003.
22. USDA-EPA-DOE. Consortium for Agricultural Soil Mitigation of Greenhouse Gases. January 1, 2000- December 2005. \$ 250,000. (PI: K. Paustain, Co-I E.F. Kelly)
23. NSF- Research Experience for Undergraduates, \$20,000. June 2003. (Co-PI's.W.K. Laurenroth, I.C. Burke).
24. NSF- Research Experience for Undergraduates, \$12,000. June 2002. (Co-PI-K. Paustain).
25. NSF - Equipment purchases for LTER shortgrass steppe program, \$25,000. (Co-PI's.W.K. Laurenroth, I.C. Burke, J. Morgan, B.V. VanHorn).
26. NSF.Supplemental Grant - Research Experience for Undergraduates, \$20,000. June 2000. (Co-PI's.W.K. Laurenroth, I.C. Burke)
27. Bureau of Land Management. : Utilization of remote Sensing Technologies: California Desert *Predictive Modeling Project*. \$57,370. January 1, 2002-December 31, 2003
28. NSF- LongTerm Ecological Research-of the Shortgrass Steppe. \$4,680,000. November 1, 2002 – October 31, 2008 (Lead PI E.F. Kelly; Co-PI's: W.K. Laurenroth, I.C. Burke; J. Morgan, J. Moore; M. Antolin).
29. USDA-ARS, Delivery of GIS and Web Based Models of Soil Processes. \$318,000. October 1, 2000 - September 30, 2004. (Co-PI's , M. Schaffer, J. Cipra, B. Flynn
30. National Park Service, Soils resources in National Parks: Production of SSURGO data for use in the National Park System, \$54,000. June 1, 2000 - May 31, 2001
31. NSF, Aggregate Turnover Controls on Soil Organic Matter: The Influence of Management and Mineralogy, \$ 600,000. January 1, 2000 - December 31, 2002. (Co-PI's K. Paustain, J. Six, E.T. Elliott)
32. Colorado Agricultural Experiment Station, Building Soil Landscape Models for Soil Inventories and Precision Farming. \$ 76,622. July 1, 1999 - June 30, 2001.
33. USDA-NRCS, Soil Survey and Soil Survey Certification. \$ 85,700. October 1, 1997- September 30, 1999.
34. NSF, Proof of Concept Grant, Stable Si Isotope Geochemistry, \$ 49,310. (Co-I, PI's O.A. Chadwick, M.J. DeNiro). October 1, 1998 to September31, 1999.
35. Faculty Research Grants, Colorado State University, The Utility of Stable Silicon Isotopes in Terrestrial Biogeochemical Research \$4,330. July 1, 1998 - June 30, 1999.
36. USDA, Use of GIS to Determine Nematode Occurrence in Platte River Basin. \$170, 000. January 1, 1998- December 31, 2000. (PI's D. Wall, R. Niles)
37. Colorado State University Agricultural Experiment Station. Acquisition of equipment to enhance the use of soils data and geographic information systems. \$16,000.
38. NASA, Partitioning of Ecosystem Respiration and Vectors of Water Loss: An Analysis Using Stable C and O Isotopes. \$66,000. October 1, 1996 - September 30, 1999. (Co-PI E. Sulzman).
39. NSF-LTER, Shortgrass Steppe. \$3,195,850. October 1, 1996 - September 30, 2002. (Lead PI: I.C. Burke; Co-I's: W.K. Laurenroth, E.F. Kelly, W. Parton; R. Pielke; B. Van Horne).
40. NSF-LTER, The use of Stable Isotopes to Investigate Hydrocarbon-Contaminated Soils and Groundwater. \$297,117. August 1, 1996 - July 31, 1999. (Co-PI's S.R. Poulson, J. Drever, P. Colberg, University of Wyoming).

41. NSF, Coarse Woody Debris and Site Productivity in Rocky Mountain Coniferous Forests. \$396,100. July 1, 1996 - June 30, 1998. (PI's: E.F. Kelly, D.H. Knight, G.F. Vance, L.C. Munn, University of Wyoming).
42. EPA, Pedogenesis and Buffering Capacity of Irrigated Soils of the San Luis Valley \$ 224,878. October 1, 1995-December 31, 2002.(Additional PI: G.C. Cardon).
43. USDA-NRCS, Soil Surveys and Pedologic Investigation of Rocky Mountain National Park, \$19,000. May 1, 1995-September 30, 1996.
44. USDA-NRCS. SSURGO Certification for State of Colorado, October 1, 1994-September 30, 1996. \$91,000. (Additional PI: J.E. Cipra)
45. USDA-SCS, The Contribution of CRP Lands to C Sequestration and CO₂ Mitigation. \$75,000. Aug 1, 1994 – Sept 30, 1995. (Co-I -K. Paustian, E.T. Elliott.
46. USDA-USFS, Carbon Isotope Determinations for Paleo-climatic Research in the Rio Puerco Watershed. \$3,500. September 1, 1994 - March 31, 1995. (Additional PI's: S. Lofton)
47. NSF, Acquisition of an Isotope Facility to Study Atmosphere Ecosystem Interactions. \$380,575. October 1, 1994. (Additional PI.: D.S. Schimel, J. Welker, D. Valintine)
48. Colorado State University Agricultural Experiment Station. Soil Resource Information Center to Support Interdisciplinary Research at Colorado State University. \$29,000. (Additional PI's: I.C. Burks, E.T. Elliott).
49. USFS, Paleosols and Geomorphic Analyses of the Hudson-Meng Bonebed. \$11,925. July 1, 1993 - December 15, 1993. (Additional PI: E.E. Wohl)
50. NSF, Division of Earth Sciences, "The Geologic and Pedologic Record of Climate and Vegetation in Pleistocene Palouse Loess, Pacific Northwestern U.S., July 1, 1993 - June 30, 1996. \$372,000. (Additional PI: A.J. Busacca)
51. NSF, Division of Earth Sciences, the Relationship of Climate to the Stable Isotopic Composition of Hackberry (*Celtis*) Endocarps. \$126,686. July 1, 1993 - June 30, 1995. (Additional PI's: R.G. Amundson, L Tiezen, M. Gabel).
52. NSF, Acquisition of a powder X-ray Diffractometer. \$75,000. 1993. (Co-PI S.Sutton)
53. NASA-JPL, The Influence of Climate on the Stable Oxygen Isotope Composition of Pedogenic Clays in Tropical Soils. \$15,000/yr. January 1, 1992 - September 30, 1995.
54. NSF-LTER, Shortgrass Steppe. \$3,195,850. January 1, 1991 - September 30, 1996. (Investigator: Co-PI's: W.K. Laurenroth, I.C. Burke).
55. USDA-SCS-ARS, The Soil Survey and Pedologic/Geomorphic studies of the Central Plains Experimental Range. \$20,000. October 1, 1992 – Sept 30, 1993.
56. Colorado State University Experiment Station, "The Influence of Climate on the Isotopic Composition of SOM." \$4,000. July, 1, 1989 - June 30, 1993.
57. NASA-JPL, A Chronosequential and Paleoclimatic Study of Soils in the Western Wind River Basin, Wyoming. \$9,500. October 1, 1989 - September 30, 1991. (Additional PI: O.A. Chadwick)
58. Faculty Research Grants, Colorado State University, "The Paleoecology of the Central Plains Experimental Range," Colorado. \$4,007. October 15, 1990 - December 1991.
59. USGS, A Chronosequential Evaluation of Carbon Fixation in Great Plains Soils. \$3,000. October 1, 1991 September 30, 1992.
60. Chancellor's Patent Fund, University of California-Berkeley, A Study of the Influence of Climate and Vegetation on the Stable Isotope Chemistry of Soils in Grassland Ecosystems of the Great Plains. \$1,630. Sept 1987 - June 30, 1988.
61. NSF, Doctoral Dissertation Improvement Program, A Study of the Relationship of Climate and Vegetation to the Stable Isotope Chemistry of Soils in Grassland Ecosystems of the Great Plains. \$9,612. October 15, 1988 - April 30, 1990. (Advisor: R.G. Amundson).

OUTREACH AND PROFESSIONAL SERVICE ACTIVITIES

Editorships

Geoderma – Associate Editor 1993-2013
Biogeochemistry - Associate Editor 2009- 2012

Outreach and Extension Activities

Managing the Planet Series, Host Public Forum and Panel Discussion on Current Topics in Sustainability, Fort Collins, CO, April 2010 – Present
Exploring Soils, Logan School of Denver, October 15, 2010
Colorado Final Acre Ceremony, USDA-NCSS. September, 28, 2010.
CSU Accelerates, Climate Change and Environmental Sustainability, New York, New York, March 26, 2008
Teachers on the Prairie, 2006-2008
Boys Math Club, Boulder Valley School District, 2000-2007
Schoolyard LTER, 2002-2010
Show Case Colorado State, 1994, 1999
Earth day Display, Fort Collins Environmental learning center, 1993
USDA-NRCS Field Reviews, 1989- Present
Superintendent State FFA Contest, 1990-2010

National Panels, Review and Committees

NRCS-NIFA-AES-CES Partnership on Soil Health, Washington, D.C. 2017
NASA-DOE-USDA, Carbon Cycle Science, Washington, D.C. 2013, 2015
USDA- Soil Processes, Washington, D.C., 2004-2006, 2010-2012
NASA-DOE-USDA, Carbon Cycle Science, Washington, D.C. 2004
ASA-SSSA-NSF, Biogeosciences Critical Zone Observatory, Madison, WI, 1999
National Science Foundation, Geological Sciences, Washington, D.C., 1998-02
National Science Foundation, Biological Sciences, Washington, D.C., 1999-01

University Committees

Creating an Agrotropolis at DIA, Chair, 2014-2015
Task Force Creating CSU Water Center, Chair, 2012-2013
President's Carbon Advisory Group, 2010-2012
SPARC Research subcommittee, 2008-present
Task force for the School of the Environment, 2007-2008
University Review Committee, Geosciences, 2008
President's Development Activities-Climate Change and Sustainability, 2008
Committee on Sustainability, 2007-present
Faculty Council Executive Committee, 2000-2001
Faculty Council, 1999-2002
New Federal Initiative in Agriculture, 1994-1995
Faculty Council Graduate Council, 1994-1995
University Plant Ecosystem Task Force, 1993-1994
Colorado State Activities Board, 1993-1994
Strategic Plan Working Group - Plant Ecosystem Studies, 1993

College of Agricultural Sciences Committees

Strategic Initiatives for Agriculture – Land Use, Water, 2010-present
Graduate Summer Discovery Internship Program, 1994
Recruitment of Minority students by CSU, Pingree Park Retreat. 1989-1992
Soil Science and Its Environmental Applications.
The Youth in Natural Resources Education, 1992
Initiative and the College of Agricultural Sciences, July 24, 1991.

Department of Soil and Crop Sciences Committees

Soil Ecology Concentration, 2010
Search Committee Chair, Environmental Physics, 2008
Search Committee Chair, Soil Chemistry, 2005
Search Committee - Department Head, 2003
Search Committee - Soil Microbiology, 2000
Search Committee - Soil Chemistry, 1996
Search Committee - Soil Irrigation, 1992
Graduate Studies Committee, 1993-1995
Resident Instruction Panel 1989-1992, 1998-2001
Chair, Soil Judging Contests Committee, 1989

Professional Service

Soil Science Society of America- Fellow Committee, 2013-2016
Soil Science Society of America- S5 Division Past Chair, 2010 Soil Science Society of America- S5 Division Chair, 2009
Soil Science Society of America- S5 Division Chair Elect, 2008
Soils and Geomorphology Committee (S880) SSSA, 2003
Soils and Geomorphology Tour, ASA, Denver, CO. October, 2003.
Farming Systems Tour, ASA, Denver, CO. October, 2003.
Soils and Geomorphology Tour, ASA, Denver, CO. October, 1991.
Farming Systems Tour, ASA, Denver, CO. October, 1991.
Soils of the Rocky Mountains", SSSA, Denver, CO. October, 1991.
Agronomy Field Days, Fort Collins, CO July, 1991
Field tour for International LTER Research Group, May 18, 1991
Field tour for NSSC Geomorphology and soils staff, May 5, 1990

Expert Witness* and Consulting Activities

Forensics, Federal and Colorado Bureau of investigation, January 2020*
Forensics, Jefferson County CO, Public Defenders, Expert Witness, March 17, 2014*
Consultant, Barkan & Robon Ltd., Maumee, Ohio June 2013,
Prime Farm Lands Designations, Grand Junction Colorado, 2012
Forensics, Denver Police Department, Missing Persons Unit, 2011
Forensics, Weld County District Attorney's Office, July 28, 2010*
Greeley Police Department, Soil Analysis, May 2010*
Soil Scientist, Mineralogical Analyses, ISSI consultants, January 2000*
Soil Scientist, Landscape assessment of South Platte River watershed, Foster-Wheeler Environmental Corp, November 1999.*
Soil Scientist, "Garden Windows Fertile Ground Company, LTD,. November, 1998
Soil Scientist, Soil Survey of Prime Farmland Markel and Company, 1995.*
Forensics Project, Soil Analyses for Robert Cook, Attorney at Law, 1994.*
Soil Scientists, Wetlands Delineation for Riverside Technology Inc.,. 1993
Crested Butte Bank Explosion Case, Watson, Ess, Marshall & Engass, Kansas City, MO. October, 1991.*
Forensics Project for State Patrol, Spokane, Washington November 1991. *
Soil Scientist, Erosion Evaluation and Field Review for USFS at the Rio Puerco Watershed Northern New Mexico. 1990
Soil Scientist, Soil Mapping of coastal areas for wetlands, Philip William & Associates, San Francisco, CA. 1989.
Soil Scientist, Interpretation of soils along the Hayward fault, California Division of Mines, 1985, 1987