

Assistant Professor and Chair  
Department of Geology  
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CV last updated: January 3, 2017

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## Education

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**Ph.D. Environmental Studies, September 2006**

**M.A. Environmental Studies, August 2005**

University of California, Santa Cruz, California

Dissertation: *Plant Control of Soil Organic Carbon Accumulation*

Advisor: Dr. Weixin Cheng

**M.S. Geosciences, August 1999**

University of Arizona, Tucson, Arizona

Thesis: *Pollen Analysis of Death Valley Sediments Deposited Between 166 and 114 ka*

Advisor: Dr. Owen Davis

**B.A. Geology, May 1997 (College Honors)**

Earlham College, Richmond, Indiana

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## Publications

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R.D. Gougis, J.F. Stomberg; A.T. O'Hare, C.M. O'Reilly, N.E. Bader, T. Meixner, and C.C. Carey, *in press*. Post-Secondary Science Students' Explanations of Randomness and Variation and Implications for Science Learning. *International Journal of Science and Mathematics Education*.

Bader, N.E., P.K. Spencer, \*A.S. Bailey, \*K.M. Gastineau, \*E.R. Tinkler, C.J. Pluhar, and B.N. Bjornstad, 2016. A loess record of pre-Late Wisconsinan glacial outburst flooding, Pleistocene paleoenvironment, and Irvingtonian fauna from the Rulo site, southeastern Washington, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 462, 57–69

Bader, N.E., D.C. Soule, D.N. Castendyk, T. Meixner, C. O'Reilly, and R.D. Gougis, 2016. Students, meet data. *Eos* 97(8), 14–19.

Bader, N.E., K. Nicolaysen, \*R. Lopez-Maldonado, \*K.E. Murray, and \*A.C. Mudd, 2015. Extensive middle Miocene weathering interpreted from a well-preserved paleosol, Cricket Flat, Oregon, USA. *Geoderma* 239–240: 195–205.

Bader, N.E., K. Pogue, and R.J. Carson, 2015. Geography II: Weather, water, and weathering. In R.J. Carson (ed.) *Many Waters: Natural History of the Walla Walla Valley*. Keokee Books, Sandpoint, Idaho.

- <sup>†</sup>**Bader, N.E.** and K. Nicolaysen, 2013. Lavas and interbeds of the Powder River Volcanic Field, northeastern Oregon. In R.J. Varga (ed.) *Keck Geology Consortium: Proceedings of the Twenty-Sixth Annual Keck Research Symposium in Geology*. Pomona College, Keck Geology Consortium.
- Frankel, K.L., K.W. Wegmann, A. Bayasgalan, R.J. Carson, **N.E. Bader**, \*T. Adiya, \*E. Bolor, \*C.C. Durfey, \*J. Otgonkhuu, \*J. Sprajcar, \*K.E. Sweeney, R.T. Walker, and T.L. Colbert, 2010. Late Pleistocene slip rate of the Höh Serh-Tsagaan Salaa fault system, Mongolian Altai and intra-continental deformation in central Asia. *Geophysical Journal International* 183: 1134–1150.
- <sup>†</sup>**Bader, N.E.**, A. Bayasgalan, R.J. Carson, K.L. Frankel, and K.W. Wegmann, 2009. Geology of the Höh Serh Range, Mongolian Altai. In A.P. DeWet (ed.) *Keck Geology Consortium: Proceedings of the Twenty-Second Annual Keck Research Symposium in Geology*. Franklin and Marshall College, Keck Geology Consortium, p. 219–225.
- Dijkstra F.A., **N.E. Bader**, W. Cheng, and D.W. Johnson, 2009. Does accelerated soil organic matter decomposition in the presence of plants increase net N mineralization? *Soil Biology and Biochemistry* 41: 1080–1087.
- Gershenson, A., **N.E. Bader**, and W. Cheng, 2009. Effects of substrate availability on the temperature sensitivity of soil organic matter decomposition. *Global Change Biology* 15: 176–183.
- Schook, D.M., M.D. Collins, W.E. Jensen, P.J. Williams, **N.E. Bader**, and T.H. Parker, 2008. Geographic patterns of song similarity in the Dickcissel, *Spiza americana*. *The Auk* 125: 953–964.
- Bader N.E.** and W. Cheng, 2007. Rhizosphere priming effect of *Populus fremontii* obscures the temperature sensitivity of soil organic carbon respiration. *Soil Biology and Biochemistry* 39: 600–606.
- Bader N.E.**, 2000. Pollen analysis of Death Valley sediments deposited between 166 and 114 ka. *Palynology* 24: 49–61.

\* — denotes undergraduate co-author

† — denotes conference paper

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### Selected professional presentations

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- Bader, N.E., P.K. Spencer, A.S. Bailey, K.M. Gastineau, E.R. Tinkler, C.J. Pluhar, and B.N. Bjornstad, 2016. A record of paleoenvironment, Pleistocene fossils, and glacial outburst flooding from a loess paleosol sequence in the Palouse, southeastern Washington. *Geological Society of America Annual Meeting*, Denver, Colorado. (Poster)
- Bader, N.E., 2015. Examination of Pedogenic Weathering Indices in the Coterminous USA Using a Large Nationwide Soil Database. *American Geophysical Union Fall Meeting*. San Francisco, California. (Poster)
- Soule, D., N.E. Bader, C. Carey, D. Castendyk, R. Fuller, C. Gibson, R. Gougis, J. Klug, T. Meixner, L. Nave, C. O'Reilly, D. Richardson, J. Stomberg, 2015. Project EDDIE: Improving Big Data skills in the classroom. *American Geophysical Union Fall Meeting*. San Francisco, California. (Poster)

- Castendyk, D., N.E. Bader, C. Carey, R. Gougis, R. Fuller, C. Gibson, J. Klug, T. Meixner, C. O'Reilly, D. Richardson, 2014. The use of high-frequency data to engage students in quantitative reasoning and scientific discourse. *Geological Society of America Annual Meeting*, Vancouver, British Columbia. (Poster)
- Bader, N.E., 2013. Using ancient soils to reconstruct environments of the past: an example from the Miocene of northeast Oregon. Invited speaker, *Dept. of Geological Sciences Seminar Series*, Central Washington University.
- Bader, N.E., R. Lopez-Maldonado, A. Mudd, K. Murray, and K. Nicolaysen, 2013. A Middle Miocene paleosol from Cricket Flat, Elgin, Oregon, USA. *Geological Society of America Annual Meeting*, Denver, Colorado.
- Bader, N.E., W. Cheng, R.J. Norby, and D.W. Johnson, 2010. Residence time of soil carbon after 11 years of elevated carbon dioxide at the Oak Ridge, Tennessee FACE site. *Ecological Society of America Annual Meeting*, Pittsburgh, Pennsylvania. (Poster)
- Frankel, K.L., K.W. Wegmann, N.E. Bader, R.J. Carson, A. Bayasgalan, C.C. Durfey, J. Sprajcar, K.E. Sweeney, T. Colbert, 2009. Late Pleistocene slip rate of the Höh Serh-Tsagaan Salaa fault zone, Mongolian Altai and intracontinental transpressional deformation in central Asia. *Geological Society of America Annual Meeting*, Portland, Oregon. (Poster)
- Wegmann, K.W., K.L. Frankel, R.J. Carson, N.E. Bader, A. Bayasgalan, K. Dundon, K. Ladig, R.J. Leary, G. Matzinger, G. Mortka, A.M. Seymour, and T. Colbert, 2009. Timing and extent of Late Pleistocene glaciation in the central Mongolian Altai. *Geological Society of America Annual Meeting*, Portland, Oregon. (Poster)
- Bader, N.E., R.J. Carson, K.W. Wegmann, K.L. Frankel, A. Bayasgalan, K.M. Dundon, K.L. Ladig, R.J. Leary, G.R. Matzinger, and A.M. Seymour, 2008. Late Quaternary Glacier Retreat in the Mongolian Altai. *American Geophysical Union Fall Meeting*. San Francisco, California. (Poster)
- Wegmann, K.W., K.L. Frankel, A. Bayasgalan, R.J. Carson, N.E. Bader, C.C. Durfey, B. Erdenebat, J. Otgonhun, J.J. Sprajcar, K.E. Sweeney, A. Tsolmon, 2008. Structure and geomorphic expression of the Delüün fault and late Cenozoic transpressional mountain building in the Mongolian Altai. *American Geophysical Union Fall Meeting*. San Francisco, California. (Poster)
- Bader, N.E., F.A. Dijkstra, and Weixin Cheng, 2006. Using stable isotopes to measure the effect of live roots on soil C decomposition and gross N mineralization. *Biogeomon: 5th International Symposium on Ecosystem Behavior*, June 29. Santa Cruz, California. (Honorable Mention, Best Student Presentation)
- Bader, N.E., 2005. Rapid transpiration accompanies rapid soil carbon loss in the rhizosphere of *Populus fremontii*. *Kearney Foundation of Soil Science Meeting*. University of California, Davis, California. (Poster)
- Bader, N.E., 2004. Assessing the influence of *Populus fremontii* roots on soil carbon stocks. *Ecological Society of America, 2004 Annual Meeting*. Portland, Oregon. (Poster)
- Bader, N.E., 2004. Predicting Soil Carbon Stocks. *PrecipNet/STEPS Workshop on Climate Change Science and Policy, First Annual Workshop*. Santa Cruz, California.

Bader, N.E., 1999. Preliminary results from a pollen analysis of Death Valley core DV93-1: a closeup of Marine Oxygen Isotope Stage 6 and Glacial Termination II. *Arizona-Nevada Academy of Sciences, 43rd Annual Meeting*. Flagstaff, Arizona.

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### Selected mentored student research presentations

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Carlise, G., 2015. Advance and retreat of Grinnell Glacier during the Last Glacial Maximum, Younger Dryas, and Early Holocene as recorded in Lake Josephine Sediments, Glacier National Park, Montana. In R. Varga (ed.) *Keck Geology Consortium: Proceedings of the Twenty-Eighth Annual Keck Research Symposium in Geology*. Union College, Keck Geology Consortium, p. 1–7.

Murray, K. and N.E. Bader, 2013. Fine-scale structure and micromorphology of the Cricket Flat paleosol, Elgin, Oregon, USA. *American Geophysical Union Fall Meeting*, San Francisco, California. (Poster)

Whiting, J., R.J. Carson, N.E. Bader, S. Roof, and M. Retelle, 2013. Ice-Marginal And Proglacial Fluvial Characteristics Of A High-Arctic Glacier, Linnbreen, Svalbard. *43rd Annual Arctic Workshop*, Amherst, Massachusetts. (Poster)

Mudd, A.C., N.E. Bader, M. Pollock, and R. Lopez-Maldonado, 2012. Interpretation of a Middle Miocene paleosol from the Powder River Volcanic Field, northeast Oregon. *Geological Society of America, 2012 Annual Meeting*, Charlotte, North Carolina. (Poster)

Hong, I. and N.E. Bader, 2011. Cation Leaching in Paleosols of the Columbia River Basalts. *Oregon Academy of Sciences, 70th Annual Meeting*, Portland, Oregon. (Poster)

Olson, L., K.R. Pogue, and N.E. Bader, 2011. Geographical and geomorphological effects on air temperatures in the Columbia Basins signature vineyards. *Murdock College Science Research Program Conference*, Seattle University, Seattle, WA. (Poster)

Vance, G., E. Ganbold, R.J. Carson, and N.E. Bader, 2011. Pleistocene glaciation of the eastern Sayan Range, northern Mongolia. *24th Keck Geology Undergraduate Research Symposium*, Union College, Schenectady, NY.

West, B.G., N.E. Bader, and D.L. Fox, 2011. Carbon and nitrogen isotopes in *Mammuthus primigenius* tusks from Yakutia, mainland Siberia show variation in mammoth diet. *Murdock College Science Research Program Conference*, Seattle University, Seattle, WA. (Poster)

Barnhart, T.B., R. Powell, J. Brigham-Grette, R.J. Carson, P. Spencer, N.E. Bader, and K. Nicolayson, 2010. Glaciomarine sediment flux and transportation mechanisms, Kongsbreen, Kongsfjorden, Svalbard. *40th International Arctic Workshop* Institute of Arctic and Alpine Research (INSTAAR), Winter Park, Colorado, p. 30.

Delaney, I., R.J. Carson, N.E. Bader, P. Kennard, and G. Grant, 2010. Geomorphic effects of debris flows in glacially fed drainages on Mount Rainier, Washington. *Oregon Academy of Science, 69th annual meeting*, Portland, Oregon. (Poster)

- McCune, S., T. Black, N. Nelson, C. Clifton, and N.E. Bader, 2010. Improving forest road management: An analysis of factors influencing road to stream connectivity. *Oregon Academy of Science, 69th annual meeting*, Portland, Oregon. (Poster)
- Leary, R.J., R.J. Carson, N.E. Bader, K.W. Wegmann, K.L. Frankel, G.E. Mortka, T. Battogtokh, and A. Bayasgalan, 2009. Glaciation of Debris Flow Valley, Höh Serh Range, Mongolian Altai, *Geological Society of America Abstracts with Programs*, 41(5).
- Barnhart, T., N.E. Bader, P. Arbetan, P. Brick, 2009. Restoring a cienega: monitoring groundwater levels through changes in vegetation, poster presented at the 10th Regional Conference on Undergraduate Research, Murdock College Science Research Program, Gonzaga University, Spokane, Washington.
- Durfey, C., 2008. Tectonic geomorphology of the Höh Serh Fault, Mongolian Altai, poster presented at the 10th Regional Conference on Undergraduate Research, Murdock College Science Research Program, Gonzaga University, Spokane, Washington.

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## Teaching Experience

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### WHITMAN COLLEGE, ASSISTANT PROFESSOR

Hydrology	2008–present
Introduction to Geographic Information Systems	2007–present
Environmental Geology	2009–present
Geology and Ecology of Soils	2008, 2012, 2015
The Physical Earth	2007, 2012
Introduction to Environmental Studies	2009, 2011
Earth History	2007–2011
Applied Hydrology	2010
Regional Geology	2007–present

### UNIVERSITY OF CALIFORNIA AT SANTA CRUZ, TEACHING ASSISTANT

GIS and Environmental Applications Lab	2003–2004
General Ecology	2003
The Physical and Chemical Environment	2001–2002
Plant Physiological Ecology Lab	2002

### UNIVERSITY OF ARIZONA, TEACHING ASSISTANT

Historical Geology Lab	1997–1998
Physical Geology Lab	1998

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## Other Professional Development

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NSF TUES team: “The use of high-frequency data to engage students in quantitative reasoning and scientific discourse” 2014–2016

Participant, NW5C workshop “Supporting Faculty of Color at Liberal Arts Institutions” 2015

Participant and review team, National Association of Geoscience Teachers workshop, "Teaching Hydrogeology, Soils, and Low-T Geochemistry in the 21st Century"	2013
Participant, CDTLI workshop, "Scientific inference"	2013
Participant, Council on Undergraduate Research conference, "Beginning a research program in the natural sciences at a predominantly undergraduate institution"	2011
Participant, NITTE virtual workshop, "Data Visualization with R"	2011
Participant, NITTE virtual workshop, "Spatial Statistics"	2010
Participant, Global Studies summer workshop	2010

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### Service to College and Community — past five years

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Geology Department Chair	2016–2019
External committee member, Economics TT search	2016
Sample classes for Admitted Students Day	2010–present
Environmental Studies Committee	2009–present
Pre-major advising	2009–present
Field trip leader, Lincoln School, "Water in the WW Valley"	2016
Volunteer, new Bernie Elementary School garden project	2016
Faculty adviser, Student Agriculture at Whitman	2015
Instructor, Whitman Summer Institute "School gardens top to bottom"	2015
Instructor, Whitman Summer College "If Nature is your teacher..."	2015
Field trip leader, First Generation/Working Class student orientation	2015
Guest instructor, Blue Ridge STEM program	2015
Guest instructor, Sharpstein Elementary	2015
Guest speaker, Marcus Whitman Gem and Mineral Society	2015
Off-Campus Studies Committee	2014–2015
Student Life Committee	2012–2015
Sustainability Committee	2012–2015
Faculty advisor, Phi Delta Theta Fraternity	2010–2014
ASID/Perry Committee	2014
Invited speaker, Foodsystems Northwest summer program	2014
Whitman Summer Read faculty panelist	2014
Guest instructor, Berney Kindergarten	2014
Public geology workshop for kids, Walla Walla Public Library	2013
Public presentation, <i>Perspectives in Landscape and Agriculture</i>	2012
Invited speaker, Native Plant Society	2012
Volunteer teaching workshops, Camp Fire USA	2008–2011
Instructor, HHMI Summer Institute	2011

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## History of support — past five years

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### External funding:

- 2016–2019 A record of Quaternary paleoclimate from the Palouse loess, southeastern Washington  
M.J. Murdock Charitable Trust, Murdock College Research Program for Natural Sciences  
\$70,000
- 2014–2017 The use of high-frequency data to engage students in quantitative reasoning and scientific discourse (PI: Catherine O’Reilly, Illinois State University)  
National Science Foundation; Transforming Undergraduate Education in Science, Technology, Engineering and Mathematics Supplement TUES 1245707  
*My role:* With other geoscientists, I produce data-driven activities for undergraduate classrooms
- 2012–2013 Middle to Late Miocene eruptive and climatic history in the Grande Ronde Valley, Northeast Oregon (co-PI: Kirsten Nicolaysen, Whitman College)  
Keck Geology Consortium  
\$40,000

### Internal funding:

- 2016 A record of Quaternary paleoclimate from the Palouse loess, southeastern Washington (supplemental proposal)  
Whitman Summer Research Award  
\$1,000
- 2014 Paleoenvironmental reconstruction using paleosols of the Rulo site, southeastern Washington  
Whitman College, Louis B. Perry Summer Research Scholarship  
\$5000
- 2014 Modernization of common lab activities for introductory geology classes  
Whitman College, Support for Innovation in Teaching and Learning Initiative  
\$11,683
- 2012 Middle to Late Miocene eruptive and climatic history in the Grande Ronde Valley, Northeast Oregon  
Whitman College, Louis B. Perry Summer Research Scholarship  
\$4485
- 2012 Improving student retention and mastery of GIS from computer-based exercises  
Whitman College, Center for Teaching and Learning Grant for Pedagogical Research  
\$1250
- 2011 The rebirth of Doan Creek: A documentary film  
Whitman College, Sally Ann Abshire Research Scholar Award  
\$1200

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## Professional Memberships

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Geological Society of America  
American Geophysical Union  
Soil Science Society of America  
Council on Undergraduate Research  
National Association of Geoscience Teachers  
Sigma Xi