**Stephanie A. Ewing**

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# EDUCATION

**Ph.D.** **University of California Berkeley,** Environmental Science, Policy and Management – Ecosystem Science (2007), *Soil Biogeochemical Processes, Atmospheric Deposition, and In-soil Transport in the Hyperarid Atacama Desert, Chile*. Advisor: Ronald Amundson.

**M.S.** **University of California Davis,** Soil Science (2000), *Influence of Soil Organic C Inputs on Polysaccharide Chemistry, Microbial Communities, and Development of Structure in an Agricultural Soil*. Advisor: Michael J. Singer.

**B.A.** **Oberlin College,** Government *cum laude* (1989).

# PROFESSIONAL EXPERIENCE

2016 – present Associate Professor, Montana State University

2010 – 2016 Assistant Professor, Montana State University

2009 – 2010 Postdoctoral Researcher – Hydrologist, U. S. Geological Survey, Boulder, CO

2008 – 2009 NRC Postdoctoral Research Associate, U. S. Geological Survey, Boulder, CO

2007 – 2008 Post-Doctoral Scholar, University of California-Berkeley, Center for Isotope Geochemistry

2000 – 2007 Graduate Researcher and Instructor, University of California-Berkeley

1999 – 2000 Soil Scientist, Natural Resources Conservation Service, Fairbanks, AK

1996 – 1999 Graduate Research and Teaching Assistant, University of California-Davis

1989 – 1996 Project Manager, Science Applications International Corporation, Denver, CO and San Francisco, CA

# EXTERNAL GRANTS

USGS Award No. 2016MT308G (Lead research PI, **$130,381**), National Competitive (104g) Grants Program, *Using Weathering Geochemistry to Understand the Sources of Base Flow Water Supply in Rivers Across Mountain-Basin Transitions in the Upper Missouri Watershed* (2016-2019), Montana Water Center PI Wyatt Cross; Co-PIs R Payn, J Paces, and R Striegl.

US BLM Award (co-PI, **$109, 971**), Multiscale Analysis of the Effect of Prescribed Fire on terrestrial ecosystem dynamics in the Missouri and Musselshell River Breaks, central Montana (2016-2019); Lead PI ENJ Brookshire, co-PI S Powell.

USDA Award (co-PI, **$66,000** subaward of $498,000 total award), AFRI Water for Agriculture, *Hydrologic And Socioeconomic Impacts Of Water Use And Resource Allocation In Agricultural Regions Under Different Policy And Climate Scenarios* (2015-2017), Lead-PI MP Maneta-Lopez; co-PIs K Jencso, WP Gardner, J. Kimball, J. Sears, B. Maxwell.

USDA Award No. 2011-51130-31121 (Lead PI, **$598,500**), National Integrated Water Quality Program. *Water quality best management practices in the Judith River watershed: use of adaptive research and outreach to improve adoption* (2011-2015). Co-PIs CA Jones, D. Jackson-Smith, WA Sigler.

Montana Wheat & Barley Committee (Co-PI, **$27,356**), *Carbon and water exchange in fallow versus wheat fields: Are there any carbon and water benefits to fallow?* (2014), Lead-PI PC Stoy; co-PI PR Miller.

Montana Department of Environmental Quality (Co-PI, **$80,000**), *Story Mill Wetlands Restoration Monitoring* (2014), Lead PI O. Stein; co-PIs J. E. Cahoon, A. S. Harshorn.

Montana Fertilizer Advisory Committee (Lead PI, **$75,000**), *Research Analyst, Environmental Analytical Laboratory* (2013-2016). Co-PIs CA Jones, ENJ Brookshire, R Payn, J Klassen.

Montana Wheat & Barley Committee (Lead PI, **$70,000**), *Soil nutrient analysis for cutting edge agronomic studies: Purchase of a new Lachat Quickchem flow injection analysis system* (2013-2014), Co-PI ENJ Brookshire.

Montana Wheat & Barley Committee (Co-PI, **$20,000**), *Carbon and water exchange in fallow versus wheat fields: Are there any carbon and water benefits to fallow?* (2013-2014), Lead-PI PC Stoy; co-PI WA Sigler.

Wildlife Conservation Society (Lead PI, **$14,000**), *The role of soils in ecosystem resilience with bison reintroduction* (2013). Co-PI ENJ Brookshire.

USGS Award No. G11AC20369 (Lead PI, **$82,277**), *Surface-atmosphere methane fluxes in the context of ebullition and energy balance with rapid permafrost degradation in a northern peatland* (2011-2013). Co-PI PC Stoy.

USDA Award No. 2011-51106-31006 (collaborator, **$13,000** for educational component of $742,907 grant), *Reducing tillage intensity in organic crop systems: Ecological and economic impacts of sheep grazing on cover crops, weeds and soil*; development of a soil carbon teaching unit (2011-2014). PIs P. Hatfield, F. Menalled, P. Miller, Z. Miller, U. Sainju.

# INTERNAL GRANTS

Montana EPSCoR award (Lead PI, **$15,000**), *Using geochemical tools to constrain sources of elevated metals and metalloids on the Crow reservation*(2016-2017), co-PIs J Doyle, M Eggers.

Montana EPSCoR award (Lead PI, **$37,000**), *Maximizing Impact and Evaluating Outcomes of Participatory Research, Judith River Watershed*(2015-2016), co-PIs J Haggerty and S Parker (Montana Tech).

Montana EPSCoR award (Co-PI, **$30,000**), *Investigating sources of water to Chief Plenty Coups Spring: A community-led,collaborative research effort* (2015-2017), Lead PI J Doyle; co-PIs M Eggers, A Camper.

Montana State University College of Agriculture equipment grant (Co-PI with J. Klassen, **$700**). *ICP-OES internal standard kit* (2014).

Montana State University College of Agriculture equipment grant (Co-PI with A. Hartshorn, **$50,000**). *Soils Teaching Equipment: Malvern Particle Size Analyzer* (2013).

Montana Institute on Ecosystems incubation grant #W3941 (Lead PI with G. Shaw, J. Brookshire, P. Stoy, C. Jones; **$8,550**), *Long-term Water Balance and Nitrate Biogeochemistry in Cultivated Alluvial Landscapes of Central Montana* (2012).

Montana Institute on Ecosystems incubation grant #W3937 (Co-PI with J. Brookshire, P. Stoy, T. Weaver; **$11,828**), *Controls on Productivity and Biogeochemical Cycling in Sub-Alpine Grasslands of Central Montana* (2012).

Montana State University College of Agriculture equipment grant (Co-PI with C. Marlow, **$15,000**). *Soils Teaching Equipment: Soil C&N Elemental Analyzer* (2012).

Montana State University Montana Agricultural Experiment Station equipment grant (Co-PI with J. Brookshire, **$30,000**). *Enhancing Graduate Training and Research: Ion Chromatograph* (2012).

# AWARDS

North American Colleges and Teachers of Agriculture (NACTA) Teaching Award of Merit (2015)

Montana State University Alumni Association, Award for Excellence (nominated by undergraduate advisee K. Noland) (2015)

Montana State University Academic Advising Award nominee (2015)

National Research Council Postdoctoral Research Award (2008 – 2009)

Outstanding Student Paper Award, Hydrology Section, AGU Fall 2006 Meeting

University of California Dissertation Year Fellowship (2006 – 2007)

NASA Graduate Student Research Program Fellowship (2002 – 2005)

# TEACHING EXPERIENCE

**At Montana State University, undergraduate level**

Instructor, Landscape Pedology (ENSC 454, fall annually)

Guest lecturer, Land Resources & Environmental Science (ENSC 110, fall annually)

Guest lecturer, Ecosystem Biogeochemistry (ENSC 468/568, fall annually)

Co-instructor, Topics in Earth Systems: Yellowstone Field Experience (ERTH 102, fall 2013)

**At Montana State University, graduate level**

Instructor, Isotope Biogeochemistry (LRES 558, spring 2012, fall 2015; alternate years)

Instructor, Special Topics: Hydrologic Tracers (LRES 591, spring 2013)

# SOCIETIES AND AFFILIATIONS

American Geophysical Union

Geological Society of America

National Association of Geoscience Teachers

Soil Science Society of America

# PROFESSIONAL SERVICE ACTIVITIES

Co-Director, MSU Environmental Analysis Laboratory

Reviewer, *Biogeochemistry, Geology, Earth & Planetary Science Letters, Chemical Geology, Journal of Geophysical Research – Biogeosciences, Soil Biology and Biochemistry, Biogeochemistry, Biogeosciences, Soil Science, Geochimica et Cosmochimica Acta, Geophysical Research Letters*

External reviewer, NSF Division of Earth Sciences, NSF Office of Polar Programs, NSF Faculty Early Career Development Program

Peer reviewer, NASA Postdoctoral Program

Committee chair, Dept. of LRES, Peer Review of Teaching

Committee member, Dept. of LRES Graduate Student Curriculum

Undergraduate advisor, Dept. of LRES Evironmental Science – general and soil & water emphsis majors

Search committee member, LRES Soil Scientist (completed spring 2012), Earth Sciences Geomorpholgist (completed spring 2013), Watershed Analyst/Hydrologist (2015-2016).

Guest Editor, *Chemical Geology* (2008-2009)

# PUBLICATIONS (2012-2016, \*student advisee)

In review

Seipel, T., Jorgenson, D., **Ewing, S. A.**, Rew, L. J. (submitted March 2, 2016), Effect of the abiotic environment and prescribed fire on vegetation composition at the interface of the Great Plains and Sagebrush Steppe. In review, *Rangeland Ecology and Management*.

2016

Jones, M., Harden, J., O’Donnell, J., Manies, K., Jorgenson, M. T., Treat, C., **Ewing, S. A** (accepted 2016), Permafrost carbon loss and slow recovery following permafrost thaw in boreal peatlands. *Global Change Biology*, doi: 10.1111/gcb.13403.

2015

**Ewing, S. A.**, O’Donnell, J. A., Aiken, G. R., Butler, K., Butman, D.,Windham-Myers, L., and Kanevskiy, M. Z. (2015), Long-term anoxia and release of ancient, labile carbon upon thaw of Pleistocene permafrost. *Geophys. Res. Lett.* **42***,* doi: 10.1002/2015GL066296.

**Ewing, S. A.**, Paces, J. B., O’Donnell, J. A., Kanevskiy, M. Z., Shur, Y., Jorgenson, M. T., Aiken, G. R., Harden, J. W. and Striegl, R. (2015), Uranium isotopes and dissolved organic carbon in loess permafrost: modeling the age of ancient ice. *Geochimica et Cosmochimica Acta* **152**, 143-165 [doi:10.1016/j.gca.2014.11.008](http://dx.doi.org/10.1016/j.gca.2014.11.008%22%20%5Ct%20%22doilink).

2014

\*Johnston, C. E., **Ewing, S. A.,** Harden, J. W., Varner, R, K., Koch, J., Wickland, K. P., Manies, K., Jorgenson. M. T. (2014) Effect of permafrost thaw on CO2 and CH4 exchange in a western Alaska peatland chronosequence. *Environmental Research Letters* **9** 085004 [doi:10.1088/1748-9326/9/8/085004](http://dx.doi.org/10.1088/1748-9326/9/8/085004).

2013

Jorgenson M.T., Harden J.W., Kanevskiy M.Z., O’Donnell J., Wickland K., **Ewing S.A.**, Manies K, Zhuang Q., Shur Y., Striegl R. and Koch J. (2013). Hydrologic reorganization and soil carbon changes after permafrost degradation across heterogeneous boreal landscapes. *Environmental Research Letters* 8, 1-13, doi 10.1088/1748-9326/8/3/035017.

Koch, J. C., **Ewing, S. A.**, Striegl, R., and McKnight, D. M. (2013) Rapid runoff via shallow throughflow and deeper pipe flow in a boreal catchment underlain by frozen silt. *Hydrogeology Journal* 21, 93-106, doi 10.1007/s10040-012-0934-3.

2012

Stoy, P. C., Street, L.E., Johnson, A.V., Prieto-Blanco, A. and **Ewing, S.A.** (2012) Temperature, heat flux, and reflectance of common subarctic mosses and lichens under field conditions: Might changes to community composition impact climate-relevant surface fluxes? *Arctic, Antarctic and Alpine Research* 44(4), 500-508, doi 10.1657/1938-4246-44.4.500.

Amundson, R., Barnes, J.D., **Ewing, S.**, Heimsath, A., Chong, G. (2012) The Stable Isotope Composition of Halite and Sulfate of Hyperarid Soils and Its Relation to Aqueous Transport. *Geochimica et Cosmochimina Acta* doi: http://dx.doi.org/10.1016/j.gca.2012.04.044.

Amundson, R., Dietrich, W., Bellugi, D., **Ewing, S.**, Nishiizumi, K., Chong, G., Owen, J., Finkel, R., Heimsath, A., Stewart, B., Caffee, M. (2012) Geomorphic evidence for the late Pliocene onset of hyperaridity in the Atacama Desert. *GSA Bulletin* doi: 10.1130/B30445.1.

2010

**Ewing, S. A.**, Christensen, J. N., Brown, S. T., Cliff, S. S., VanCuren, R. A., and DePaolo, D. J. (2010) Pb isotopes as an indicator of the Asian contribution to particulate air pollution in urban California. *Environmental Science and Technology* 44, 8911-8916.

2009

Amundson, R., **Ewing, S.**, Dietrich, W., Sutter, B., Owen, J., Chadwick, O., Nishiizumi, K., Walvoord, M., McKay, C. (2009), On the *in situ* aqueous alteration of soils on Mars. *Geochimica et Cosmochimica Acta* 72, 3845-3864, doi:10.1016/j.gca.2008.04.038.

2008

**Ewing, S. A.**, Macalady, J. L., Warren-Rhodes, K., McKay, C. P., and Amundson, R. (2008) Changes in the soil C cycle at the arid-hyperarid transition in the Atacama Desert. *Journal of Geophysical Research – Biogeosciences* 113, G02S90, doi:10.1029/2007JG000495.

**Ewing, S. A.,** Yang, W., DePaolo, D. J., Michalski, G., Kendall, C., Stewart, B., Thiemans, M., and Amundson, R. (2008), Non-biological fractionation of Ca isotopes in soils of the Atacama Desert, Chile. *Geochimica et Cosmochimica Acta 72*, 1096–1110, doi:10.1016/j.gca.2007.10.029.

Amundson, R., **Ewing, S.**, Dietrich, W., Sutter, B., Owen, J., Chadwick, O., Nishiizumi, K., Walvoord, M., McKay, C. On the in situ aqueous alteration of soils on Mars. *Geochimica et Cosmochimica Acta 72*, 3845-3864, doi: doi:10.1016/j.gca.2008.04.038.

2007

**Ewing, S. A.,** Michalski, G., Thiemens, M., Quinn, R., Macalady, J., Kohl, S., Wankel, S. D., Kendall, C., McKay, C. P., and Amundson, R. (2007), Rainfall limit of the N cycle on Earth. *Global Biogeochemical Cycles* *21,* GB3009, doi: 10.1029/2006GB002838.

**Ewing, S. A.**, Southard, R. J., Macalady, J. L., Hartshorn, A. S., and Johnson, M. J. (2007), Soil microbial fingerprints, carbon, and nitrogen in a Mojave Desert creosote bush ecosystem. *Soil Science Society of America Journal* 71, 469-475, doi: 10.2136/sssaj2005.0283*.*

2006

**Ewing, S. A.**, Sutter, B., Amundson, R., Owen, J., Nishiizumi, K., Sharp, W., Cliff, S. S., Perry, K., Dietrich, W. E. and McKay, C. P. (2006), A threshold in soil formation at Earth’s arid-hyperarid transition. *Geochimica et Cosmochimica Acta* 70(21), 5293-5322, doi: 10.1016/j.gca.2006.08.020.

**Ewing, S. A.,** Sanderman, J., Baisden, W. T., Wang, Y., and Amundson, R. (2006), The role of large scale soil structure in organic carbon turnover rates. *Journal of Geophysical Research – Biogeosciences* 111(G3), G03012, doi: 10.1029/2006JG000174.

Warren-Rhodes, K., Rhodes, K. L., Pointing, S. B., **Ewing, S.**, Lacap, D. C., Gómez-Silva, B., Amundson, R., Friedmann, E. I., McKay, C. P. (2006), The influence of water availability on cyanobacterial community ecology and the dry limit to photosynthetic life in the Atacama Desert, Chile. *Microbial Ecology* 52 (3), 389-398, doi: 10.1007/s00248-006-9055-7.

In preparation 2015

**Ewing S A**, Brookshire E N J, Miller, C R Sigler W A, Payn, R and Wankel S D. Groundwater nitrate and the fate of native soil fertility with cultivation. In preparation for *Biogeochemistry.*

\*Sigler W A, **Ewing S A**, Payn R, Brookshire E N J, John A, Jones. C A and Weissmann G S. Using chemistry of groundwater and surface water to infer sources of groundwater nitrate associated with dryland wheat production in central Montana. In preparation for *Hydrogeology J.*

John A. A., Jones, C. A., **Ewing, S. A**., Sigler, W. A., Bekkerman, A., and Miller, P. R. Fallow replacement and alternative fertilizer practices: Grain yield, grain protein, and net revenue responses in a semiarid region. In preparation for *Agroecol. Sust. Food Syst.*

**Ewing, S. A.**, Paces, J. B., O’Donnell, J. A., Jorgenson, M. T., Harden, J. W., Aiken, G. R., and Striegl, R. Transformation of upland hydrology by thawing permafrost in the Alaskan Interior: Evidence from U series isotopes and DOC. In preparation for *Geophys. Res. Lett.*

**Ewing, S. A.,** Stewart, B. W.,Yang, W., DePaolo, D. J., Michalski, G., Kendall, C., Thiemans, M., and Amundson, R. Ca isotopes and weathering in hyperarid soils of the Atacama Desert, Chile. In preparation for *Geochimica et Cosmochimica Acta*.

# BOOK CHAPTERS

**Ewing, S. A.** (2015). Uranium Series – Ice. *In*: (Rink, W. J. and Thompson, J. W., eds.) Encyclopedia of Scientific Dating Methods. Springer, 1000 pp. doi: 10.1007/978-94-007-6326-5\_96-1.

**Ewing S. A.** and Singer M. J. (2011) Soil Quality. In: (P. M. Huang, Y. Li and M. E. Sumner, ed.) *Handbook of Soil Sciences: Resource Management and Environmental Impacts*. CRC Press LLC, pp 26–1, 77 pages.

Singer, M. J. and **Ewing, S. A.** (2000). *Soil Quality*. In: (M. Sumner, ed.) *Handbook of Soils*. CRC Press.

# FIRST-AUTHOR OR STUDENT ADVISEE PRESENTATIONS (\*student advisee)

\*Sigler, W. A., **S. A. Ewing**, R, A. Payn, C. A. Jones, E. N. J. Brookshire, G. S. Weissmann (2015), Connecting soil water, groundwater and streams to inform nitrogen sources and flux through a dryland agricultural landscape in the Upper Missouri River Watershed. Montana Chapter, American Water Resources Association. Missoula, MT. 8 Oct.

Doyle, J., M. Eggers, J. Geddes, J. Klassen, J. Ishaq, J. Eggers, A. NotAfraid, J. OldElk, E. ThreeIrons, **Ewing, S. A.**  (2015). Investigating sources of water to Chief Plenty Coups Spring: Water chemistry and microbial communities reveal seasonably variable contamination pathways. Montana Chapter, American Water Resources Association. Missoula, MT. 8 Oct.

**Ewing, S. A.** (2015). Bridging divides in earth education: Tying field observation of soils to broader understanding in science education. Session: Teaching for Diversity, Earth Educators Rendezvous, Boulder, CO, 16 July.

**Ewing, S. A.** (2015), *[invited]* Reading the biogeochemical legacy recorded in soils: Long-term landscape processes, human activities, and environmental consequences. Oregon State University, Corvallis, OR, 24 June.

**Ewing, S. A.** and Sigler W. A. (2014), *[invited]* How does land use link terrestrial and aquatic carbon in western North America?: Implications from an agricultural case study in central Montana. In session: Soil Organic Matter Dynamics: Novel Techniques, Big Data, and Functional Models. Presentation B12B-04 at the American Geophysical Union fall meeting, San Francisco, CA 15-19 Dec.

\*Sigler, W. A., **Ewing, S. A.**, Payn, R. A., Jones, C. A., Brookshire, E. N. J., Wankel, S. D., and Weissmann, G. S. (2014), Use of a finite difference hydrologic model to assess the potential effectiveness of changes in cropping practices to reduce nitrate loading to a shallow aquifer, Abstract H23G-0949 presented at the American Geophysical Union fall meeting, San Francisco, CA 15-19 Dec.

\*Sigler, W. A., **Ewing, S.A.**, Jones, C.A., John, A., Jackson-Smith, D. (2014) *[invited]* Engaging farmers in participatory research to understand and address nitrate leaching in the Judith Basin of central Montana. Montana State University Earth Sciences Department seminar, 20 Nov.

\*Sigler, W. A., **S. A. Ewing**, R. A. Payn, C. A. Jones, E. Harris, G. S. Weissmann. How an exclusively infiltration recharged groundwater system underlying agricultural land use may improve understanding of water and solute fluxes from cultivated soils. Montana American Water Resources Association meeting, Kalispell, MT, 9-11 Oct.

**Ewing, S. A.**, Miller, C. R., Sigler, W. A., Jones, C., Weissmann, G. (2014), *[invited]* From soils to streams – linking human activities with environmental consequences in the arctic and central Montana. Montana University System Institute on Ecosystems Rough Cut seminar series, Bozeman, MT, 1 Oct.

\*Anderson, E. A., Sigler W. A., Klassen J., Fordyce S., **Ewing S. A.**, (2014) Using Water Isotopes to Link Water and Solute Movement in Cultivated Soils. Poster and presentation at 2014 Montana State Summer Undergraduate Research Celebration, Bozeman, MT 14 Aug.

**Ewing, S. A.**, Sigler W. A., Brookshire E. N. J., Payn R. and Wankel S. D. (2014) Groundwater nitrate and the fate of native soil fertility with cultivation. In session: “The biogeochemical cycling of the nutrients N, P and Si: terrestrial and marine insights for the present, past and future,” V. M.Goldschmidt conference June 8-13, Sacramento, CA.

**Ewing, S. A.**, Miller, C. R., Brookshire, E.N.J., Jones, C.A., Sigler, W. A., Weissmann, G. S., Jackson-Smith, D. (2014) Effect of historic land management on groundwater nitrate in the Judith River Watershed. Nitrate in Montana Hydrologic Systems conference, April 23-24, Helena, MT.

Jones, C. A., John, A., Sigler, W. A., Miller, P. R. and **Ewing, S. A**. (2014) Effect of agricultural practices on nitrate leaching in the Judith River Watershed. Nitrate in Montana Hydrologic Systems conference, April 23-24, Helena, MT.

\*Sigler, W. A., **Ewing, S. A**., Jones, C. A., John, A., Jackson-Smith, D. (2014), Engaging farmers in participatory research to understand and address nitrate leaching in the Judith Basin of central Montana. Nitrate in Montana Hydrologic Systems conference, April 23-24, Helena, MT.

**Ewing, S. A.**, Sigler, W. A., Miller, C. R., John, A., Bestwick, M., Jones, C. A., Brookshire, E.N.J., Jones, C.A., Payn, R. A. (2014) *[invited]* Reading our land use legacy in groundwater: Nitrate dynamics in the Judith River Watershed. Montana Bureau of Mines and Geology seminar series, Butte, MT, 13 Feb.

\*Sigler, W. A., **Ewing, S. A.**, Jones, C., Weissmann, G. S. (2013), Linking soil water balance and water age with leaching of nitrate to groundwater in an agricultural setting, Abstract H53F-1482 presented at the American Geophysical Union fall meeting, San Francisco, CA 8-13 Dec.

\*Noland, K., M. Bestwick, J. Klassen, W.A. Sigler, C. A. Jones, **S. A. Ewing** (2013), Soil nitrate in the Judith River Watershed and the American Prairie Reserve: A comparison between cultivated and uncultivated native prairie land. Poster presented at the 23rd National NSF EPSCoR Conference, Nashville, TN, November 2013.

**Ewing, S. A.,** M. Bestwick, W.A. Sigler, K. Noland, C. A. Jones. Role of Soils in Nitrate Leaching to Groundwater. Montana American Water Resources Association, October 2013, Bozeman, MT.

\*Sigler, W. A., **S. A. Ewing**, C. A. Jones and R. A. Payn (2013), Use of a vertical hydrologic model to assess leaching of nitrate to groundwater under agricultural soils of the Judith River Watershed. Montana American Water Resources meeting, Bozeman, MT, 3 Oct.

\*Noland, K., M. Bestwick, J. Klassen, C. A. Jones, **S. A. Ewing** (2013), Soil nitrate in the Judith River Watershed and the American Prairie Reserve: A comparison between cultivated and uncultivated native prairie land. Poster presented at Montana EPSCoR/Institute on Ecosystems Annual Science Summit, Helena, MT, August 2013.

\*Rivers, S. (2013), Can soil influence bison behavior? Soil nitrogen in a sagebrush steppe ecosystem in north central Montana. Poster presented at the Leadership Alliance National Symposium, July 26-28, Stamford Connecticut, with mentorship from S.A. Ewing and Montana State University’s American Indian Research Opportunities program.

**Ewing, S.A.,** Sigler W.A., Jones C.A., Jackson-Smith D., Weissmann G.S. Water quality best management practices in the Judith River Watershed, Montana. SWCA conference July 2013, Reno, Nevada.

\*Noland, K. and **S. A. Ewing** (2013). Soil Nitrate in the Judith River Watershed and American Prairie Reserve: A Comparison between Cultivated and Uncultivated/ Native Prairie Lands. Poster presented at the Montana Institute on Ecosystems Summer Internship Program 2013 Student Presentations, Bozeman, MT.

**Ewing, S. A.** (2013) [*invited*] Uranium isotopes in loess permafrost: ground ice residence times and resiliency of interior landscapes. University of Alaska Fairbanks, Institute of Northern Engineering. June 14, 2013.

**Ewing, S. A.** Comprehending soil process: Connecting field description with quantitative process understanding in the Judith River Watershed. National Association of Geoscience Teachers On the Cutting Edge Workshop: Teaching Hydrogeology, Soils, and Low-T Geochemistry in the 21st Century, June 2013, Albuquerque, NM.

**Ewing, S. A.** (2013) [*invited*] Uranium isotopes in loess permafrost: modeling the age of ancient ice. Montana State University, Department of Earth Sciences. March 28, 2013.

**\***Johnston, C. E., **S.A. Ewing**, R.K. Varner, J.W. Harden, M.R. Turetsky, A.D. McGuire. Methane Emission through Diffusion and Ebullition in Thaw Wetlands in Interior Alaska. American Geophysical Union Fall Meeting, December 2012, San Francisco, CA. Abstract number B23L-05.

\*Miller, C.R., Sigler, W. A., **Ewing, S. A.**, Weissmann, G. S. (2012) Nitrate and groundwater residence time in a shallow unconfined aquifer of the Judith River Basin, Montana. AGU fall meeting, San Francisco, CA. Abstract number H41E-1219.

\*Sigler, W. A., **Ewing, S. A.**, Jones, C., Weissmann, G. S. (2012), Effects of cereal production on shallow, unconfined aquifers of central Montana, AGU fall meeting, San Francisco, CA. Abstract number H41E-1217.

**Ewing, S. A.**, Miller, C. R., Sigler, W. A., Jones, C., Weissmann, G. (2012), *[invited]* Long-term water balance and nitrate biogeochemistry in cultivated alluvial landscapes of central Montana. Montana University System Institute on Ecosystems Rough Cut seminar series, Missoula and Bozeman, MT, November 3 and 5, 2012.

**Ewing, S. A.**, Miller, C. R., Sigler, W. A., Jones, C., Weissmann, G. (2012), *[invited]* Long-term water balance and nitrate biogeochemistry in cultivated alluvial landscapes of central Montana. ASA-CSA-SSSA Meeting, Cincinnati, OH, October 21-24, 2012.

\*Miller, C. R., **Ewing, S. A.**, Sigler, W. A., Weissmann, G. S. (2012), Water Quality and Groundwater Age in an Isolated Shallow Aquifer of the Judith River Basin, Montana. Montana AWRA Meeting, October 2012.

\*Sigler, W.A., **Ewing, S. A.**, Weissmann, G. S., Miller, C. R., Chandler, K. (2012), Judith Basin Nitrogen Project: Landform Influence on Nitrate in Groundwaterm Montana AWRA Meeting, October 2012.

\*Johnston, C. E., **Ewing, S. A.**, Harden, J.W., Stoy, P.C., Varner, R.K., Jorgenson, M.T. (2012) The effect of permafrost thaw duration on methane emissions in a western Alaska peatland. Tenth International Conference on Permafrost, Salekhard, Russia, June 25, 2012

**Ewing, S. A.**, Sigler, W. A., Jackson-Smith, D., Jones, C., Weissmann, G. (2012) Reducing groundwater nitrate in the Judith River watershed: a participatory approach to achieve effective management for improved water quality. National Water Quality Conference, Portland, OR, March 21-24, 2012.

\*Sigler, W.A., **Ewing, S. A.**, Jackson-Smith, D., Jones, C. (2012), Participatory research to reduce nitrate leaching, National Water Quality Conference, Portland, OR, March 21-24, 2012.

**Ewing, S. A.,** Johnston, C. E., Harden, J. W., Varner, R, K., Stoy, P. C., Koch, J., Wickland, K. P., Jorgenson. M. T. (2011) Short term biogeochemical consequences of long-term permafrost degradation in a northern peatland. Abstract C52A-06 presented at 2011 fall meeting, AGU, San Francisco, Calif., 5-9 Dec.

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# OTHER RECENT PRESENTATIONS

Jackson-Smith, D., **Ewing, S. A.,** Jones, C. A., and Sigler, W. A. (2016) The road less travelled: Assessing the impacts of farmer participation in research on nitrate pollution in the Northern Great Plains. Abstract for oral presentation, annual meeting of the Rural Sociological Society, 7-10 August, Toronto, Ontario.

Harden, J.W., J. O'Donnell; C.F.; C.A. Sierra; K.D. Johnson; K. Manies; T. Jorgenson; M. Jones; **S. A. Ewing;** C. Yue; M. Turetsky (2013). Beneath the Arctic Green: Have recent increases in plant production been offset by increases in soil decomposition? Abstract B21D-0530 presented at the 2013 fall meeting, AGU, San Francisco, CA 8-13 Dec.

Varner, R. K., M.W. Palace; J.M. Lennartz; M.Wik; P.M. Crill; **S.A. Ewing;** J.W. Harden; M.R. Turetsky (2013). Acoustic and manual measurements of methane ebullition in peatlands. Abstract B51E-0336 presented at the 2013 fall meeting, AGU, San Francisco, CA 8-13 Dec.

Harris, E.S., A. Johnson; W. A. Sigler; **S. A. Ewing**; P. C. Stoy (2013). Evapotranspiration from a winter wheat field: seasonal patterns and implications for scaling. Abstract H51E-1248 presented at the 2013 fall meeting, AGU, San Francisco, CA 8-13 Dec.

Johnson, A., Stoy, P., **Ewing, S.A.** (2013) Quantifying the uncertainty of Landsat tm derived energy balance parameters in the discontinuous permafrost zone: A Monte Carlo approach. Abstract B43C-0534 presented at the 2013 fall meeting, AGU, San Francisco, CA 8-13 Dec.

John, A. C. A. Jones, **S.A. Ewing**, P. Miller and W.A. Sigler. 2013. Effect of agricultural practices on nitrate leaching and nitrogen fertilizer recovery in a semi-arid region. Abstract. ASA, CSA, and SSSA Annual Conference Nov 2-5 2013, Tampa FL.

Koch, J. C., Smith, R. L.; Gurney, K.; Wipfli, M.; **Ewing, S. A.**; Jorgenson, M. T.; Striegl, R. G.; Schmutz, J. (2012). Evolving drainage networks and nutrient fluxes in continuous permafrost zones of interior and arctic Alaska. Abstract GC12A-07 presented at the 2012 fall meeting, AGU, San Francisco, Calif., 4-8 Dec.

Treat, C. C.; Bhagat, M.; Talbot, J.; Varner, R. K.; Grandy, S.; **Ewing, S. A.**; Wollheim, W. M.; Frolking. S.(2012). Controls on soil carbon loss with permafrost thaw in Alaskan peatland ecosystems, Abstract B21D-0414, presented at the 2012 fall meeting, AGU, San Francisco, Calif., 4-8 Dec.

Johnson, A.; Stoy, P. C.; Brunsell, N. A.; Ewing, S. A. (2012) Tracking Spatial and Temporal Changes in the Discontinuous Permafrost Zone using Multi-Resolution Analysis, Abstract GC51B-1192, presented at the 2012 fall meeting, AGU, San Francisco, Calif., 4-8 Dec.

Christensen, J. N.; **Stephanie A. Ewing**; Shaun T. Brown; Richard A. VanCuren; Steven S. Cliff; Donald J. DePaolo (2011), Exploring the Temporal Relationship Between Trans-Pacific Particulate Transport and Ozone Transport to Northern California Using Pb Isotopes. Abstract A23B-0133 presented at 2011 fall meeting , AGU, San Francisco, Calif., 5-9 Dec.

Varner, R. K.; Michael W. Palace; Jillian M. Lennartz; Patrick M. Crill; Martin Wik; Jacqueline Amante; Christopher Dorich; Jennifer W. Harden; **Stephanie A. Ewing**; Merritt R. Turetsky (2011), Using an Acoustic System to Estimate the Timing and Magnitude of Ebullition Release from Wetland Ecosystems, Abstract B13F-0642 presented at 2011 fall meeting , AGU, San Francisco, Calif., 5-9 Dec.