

Postdoctoral Fellow
Department of Earth, Ocean, and Atmospheric Sciences
University of British Columbia
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EDUCATION

- 2012 – 2017 **Oregon State University**, Corvallis, OR
Ph.D. in Ocean, Earth, and Atmospheric Sciences
College of Earth, Ocean, and Atmospheric Sciences (CEOAS)
Discipline: Ocean Ecology and Biogeochemistry
Advisor: Julie Pett-Ridge
Thesis: Understanding Molybdenum Isotope Dynamics in Terrestrial Environments
- 2009 – 2012 **Boston University**, Boston, MA
B.S. in Marine Science and Earth Science, summa cum laude

PUBLICATIONS

- King, E.K.**, Thompson, A., Chadwick, O.A., and Pett-Ridge, J.C. (2016) Molybdenum sources and isotopic composition during early stages of pedogenesis along a basaltic climate transect. *Chemical Geology*. 445: 54-67.
- Marks, J.A., Perakis, S.S. **King, E.K.**, and Pett-Ridge, J.C. (2015) Soil organic matter regulates molybdenum storage and mobility in forests. *Biogeochemistry*. 125: 167-183.
- King, E.K.**, Thompson, A., Hodges, C., and Pett-Ridge, J.C. (2014) Towards understanding temporal and spatial patterns of molybdenum in the critical zone. *Procedia Earth and Planetary Science Letters*. 10: 56-62.

MANUSCRIPTS IN REVIEW

- King, E.K.**, Perakis, S.S., and Pett-Ridge, J.C. (accepted) Molybdenum isotope fractionation during adsorption onto organic matter. *Geochimica et Cosmochimica Acta*.
- King, E.K.**, Hodges, C.A., Chapela Lara, M., Aguirre, A.A., Foster, M.A., McClintock, M.M., and Richardson, J.B. (in review) Metals and metalloids as tracers of Critical Zone processes: A review. *International Geology Review*.
- King, E.K.**, Thompson, A.T., and Pett-Ridge, J.C. (in review) Interactions between lithology and redox cycling in controlling trace metal mobilization and Mo isotope dynamics in soil. *Environmental Science & Technology*.
- Hodges, C.A., **King, E.K.**, Pett-Ridge, J.C., and Thompson A.T. (in review) The potential for iron reduction increases with rainfall in basaltic soils. *Soil Science Society of America*.

PRESENTATIONS

- King, E.K.** (2017) Investigating the controls of Mo isotope fractionation: Insights from the terrestrial realm. Woods Hole Oceanographic Institute Paleoclimate Seminar, Woods Hole, MA. Oral Presentation.
- King, E.K.**, Perakis, S.S., and Pett-Ridge, J.C. (2016) Molybdenum isotope fractionation during complexation with organic matter. AGU Fall Meeting, San Francisco, CA. Oral Presentation.
- King, E.K.**, Thompson, A., Chadwick, O.A., and Pett-Ridge, J.C. (2016) The sources and isotopic composition of molybdenum during early stages of soil formation. Hawaii Ecosystems Meeting, Hilo HI. Oral Presentation.
- King, E.K.**, and Pett-Ridge, J.C. (2016) Molybdenum isotope dynamics during early stages of soil formation, CEOAS Seminar Series, Corvallis, OR. Oral Presentation.

- King, E.K.**, Thompson, A., Chadwick, O.A., and Pett-Ridge, J.C. (2015) Molybdenum isotopes and mass balance during early stages of pedogenesis. AGU Fall Meeting, San Francisco, CA. Oral Presentation.
- King, E.K.**, and Pett-Ridge, J.C (2015) Molybdenum isotopes and soil processes on a Kona climate gradient. Hawaii Ecosystems Meeting, Hilo HI. Oral Presentation.
- Pett-Ridge, J.C, and **King, E.K.** (2015) Trace element patterns in Hawaiian soils. Hawaii Ecosystems Meeting, Hilo HI. Oral Presentation.
- King, E.K.**, Thompson, A., Hodges, C., and Pett-Ridge, J.C. (2014) Towards understanding temporal and spatial patterns of molybdenum in the Critical Zone. Geochemistry of the Earth's Surface Meeting, Paris, France. Poster Presentation.
- King, E.K.**, Thompson, A., Hodges, C., and Pett-Ridge, J.C. (2014) Investigating molybdenum availability across established age and climate gradients, Goldschmidt Conferences, Sacramento, CA. Poster Presentation.
- King, E.K.** (2014) Understanding weathering processes across spatial and temporal scales, CEOAS Seminar Series, Corvallis, OR. Oral Presentation.
- King, E.K.**, and Pett-Ridge, J. C. (2013) Investigating molybdenum fractionation across a Maui climate gradient, Hawaii Ecosystems Meeting, Hilo, HI. Oral Presentation.

PUBLIC OUTREACH

- King, E.K.** (2017) "Molybdenum as a tracer of soil formation and atmospheric inputs." *Meet A Scientist*. Oregon Museum of Science and Industry (OMSI).
- King, E.K.** (2016) "Soils to the sea: The Hawaii example." *Meet A Scientist*. Corvallis Farmer's Market.
- King, E.K.** (2016) "Discovering Dirt: Trace metals and soil formation." *Meet A Scientist*. Oregon Museum of Science and Industry (OMSI).
- King, E.K.** (2016) "Molybdenum and the atmosphere-soil-sea connection." *Science in 60*. CEOAS, Corvallis, OR. Online video.
- King, E.K.** (2016) "Measuring isotopes with mass spectrometry." *Science in 60*. CEOAS, Corvallis, OR. Online video.
- King, E.K.** (2015) "From the River to the Sea: Trace Metals and the Circle of Life." *Inspiration Dissemination*. KBVR, Corvallis. 15 November 2015. Radio.
- King, E.K.** and Pett-Ridge, J.C. (2014) Trace element mobility across a climate-age matrix in Hawaii. ARCS Scholar Annual Meeting, Portland, OR. Oral Presentation.
- King, E.K.** (2013) Understanding weathering processes across spatial and temporal scales. ARCS Foundation Showcase, Corvallis, OR. Oral Presentation.

ACADEMIC APPOINTMENTS

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| 2017 – present | Postdoctoral Fellow, Department of Earth, Ocean, and Atmospheric Sciences, University of British Columbia
<i>Optimizing the analysis of iron isotopes using a Collision Cell MC-ICP-MS.</i> |
| 2012 – 2017 | Graduate Research Assistant, W.M. Keck Collaboratory, College of Earth, Ocean, and Atmospheric Sciences (CEOAS), Oregon State University
<i>Investigate sources of molybdenum (Mo) to tropical soils and use Mo fluxes and isotopic composition to distinguish between volcanic, marine-derived, dust, and bedrock inputs. Develop method for measuring Mo on Nu Plasma multi-collector ICP-MS. Determine Mo isotope fractionation during soil formation, chemical weathering, and redox oscillations in Hawaiian and Puerto Rican soils. Measure flux and isotopic composition of Mo during riverine and groundwater transport.</i> |

2010 – 2012 Undergraduate Research Assistant, Boston University TIMS Facility,
Department of Earth Science, Boston University
*Use strontium (Sr) isotopes to differentiate between carbonate and silicate weathering fluxes
during riverine transport.*

ANALYTICAL EXPERTISE

- Method development for optimizing iron isotope analysis using Collision Cell Technology on a Nu Plasma multi-collector ICP-MS (MC-ICP-MS).
- Method development and routine analysis of non-traditional stable isotopes (molybdenum and iron) and radiogenic isotopes (strontium and neodymium) using Nu Plasma MC-ICP-MS.
- Extensive training in operating, maintaining, and repairing Thermo X Series II ICP-MS, and Teledyne Leeman Prodigy ICP-OES.
- Operational experience analyzing samples using a Shimadzu TOC-V CSH (TOC/TON), Elementar Vario MACRO Cube (CNS), and Finnigan Triton TIMS.
- Technical development and routine preparation of samples for trace element and isotopic analyses using clean laboratory practices, hot plate and microwave digestions, and ion-exchange and extraction chromatography for analytical separation.
- Computing experience in MATLAB, R, ArcGIS.

TEACHING EXPERIENCE

2014 – 2017 Graduate Teaching Assistantships
SOIL 205/206 Introduction to Soil Science (2014, 2015, 2016, 2017)
GEO221 Environmental Geology, E-Campus (2017)
SUS 205/206 Environmental Science and Sustainability (2016)

GRANTS, FELLOWSHIPS, AWARDS, AND HONORS

2017 Geological Society of America: Graduate Student Research Grant (\$2,000)

2016 – 2017 Oregon Lottery Graduate Scholarship (\$2,250)

2016 Outstanding Service to the College Award (\$200)

2016 – 2019 Oregon Museum of Science and Industry (OMSI) Science Communications Fellow (\$3,500)

2015 NSF SAVI Summer Fellowship: Luquillo Critical Zone Observatory (\$5,200)
Title: “Molybdenum as a tracer of redox history and colloid dispersion.”

2015 NSF SAVI WUN Summer School at University of Western Australia: Soil Science and Climate Change Grant (\$4,000)
Title: “The effects of climate change on trace metal cycling across a land-use gradient in Southwestern Australia.”
I was one of seven U.S. Critical Zone graduate students to receive funding to attend this inaugural Worldwide Universities Network summer school.

2014 Oregon State University Graduate School Travel Award (\$1000)

ELIZABETH KATHERINE KING

- 2014 NSF SAVI Geochemistry of the Earth's Surface Meeting Travel Grant (\$2,500)
- 2014 Jackson Travel Award, Crop and Soil Sciences, Oregon State University (\$500)
- 2012 – 2014 Achievement Rewards for College Scientists (ARCS) Scholar Award (\$18,000)

UNIVERSITY SERVICE

- 2015 – 2017 Outreach Coordinator, Graduate Student Committee, CEOAS
Organized research demonstrations for the Corvallis Farmer's Market.
- 2015 – 2016 Graduate Student Chair, Promotions and Tenure Committee, CEOAS
Evaluated and compiled instructional and advising performance of faculty eligible for tenure based on the candidate dossiers.
- 2014 – 2016 Chair, Graduate Student Committee, CEOAS
The Graduate Student Committee acts as a liaison between students, faculty, and administration and is the main pathway through which student concerns are discussed with faculty and staff. I organized and led a committee of 20 students representing the 200-person graduate student body.
- 2013 Secretary, Graduate Student Committee, CEOAS
- 2013 – 2016 Graduate Student Representative, College Advisory Committee, CEOAS
College Advisory Committee advises the Dean on the operation of the college.
- 2013 – 2016 Graduate Student Representative, Seminar Series Committee, CEOAS
The Seminar Series Committee assists in planning, hosting, and advertising for five visiting lecturer series in CEOAS.

PROFESSIONAL AFFILIATIONS

American Geophysical Union, Geological Society of America, Soil Science Society of America, and Critical Zone Exploration Network