

CATHERINE M. COOPER, PH.D.

Curriculum Vitae

220 West Alder Street, Palouse, Washington 99161
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EDUCATION

Rice University, Department of Earth Science
Ph.D., Geophysics, May 2005

Texas A&M University, Department of Geology and Geophysics
Bachelor of Science in Geophysics, Minor in Mathematics, cum laude, 2000

EMPLOYMENT

Washington State University, School of the Environment
Associate Professor, 2014-present
Assistant Professor, 2008-2014

National Science Foundation, Directorate for Geosciences, Division of Earth Sciences
Assistant Program Director, EarthScope, 2007-2008

Carnegie Institution of Washington, Department of Terrestrial Magnetism
Research Scientist, 2007
Post-doctoral Fellowship, 2005-2007

RESEARCH INTERESTS

Thermal and tectonic evolution of the Earth, Europa and other planetary bodies. Structure and dynamics of continental lithosphere. Plate tectonics. Early Earth processes. Computational geodynamics. Large scale deformational events. Craton formation and evolution. Heat transfer. Fluid dynamics.

GRADUATE STUDENT MENTORING

Primary Advisor

Austin Green, Doctoral student, School of the Environment, Washington State University, 2015-present, Project: "Convection and deformation in icy satellites", Expected graduation: 2020.

Shannon Conner, Master's student, School of the Environment, Washington State University, 2018-present.

Claire Puleio, Master's student, School of the Environment, Washington State University, 2018-present.

Rachel Wood, Master's student, School of the Environment, Washington State University, 2011-

2014, Project: “The decoupling and removal of dense material during lithospheric thickening as applied to craton formation”, Graduated: Spring 2014, now at Idaho National Laboratory.

Thesis Committee Member

Nolan Blackford, Ph.D., 2019-present.
Ross Salerno, Ph.D., 2018-present.
Jesslyn Starnes, Ph.D. candidate, 2017-present.
Jennifer Johnson, Ph.D. candidate, 2016-present.
McKensie Gelber, Ph.D. candidate, University of Houston, 2015-present.
Thomas Morrow, Ph.D. candidate, University of Idaho, 2019.
Chao Zhang, Ph.D., 2019.
Ryan Anderson, Ph.D., 2019.
Laura Pianowski, M.S., 2018.
Ashley Vanhooose, Ph.D. 2018.
Da Wang, Ph.D., 2018.
James Muirhead, Ph.D., University of Idaho, 2016.
Alex Patthoff, Ph.D., University of Idaho, 2013.
Thomas Johnson, M.S., 2017.
Brian Spall, M.S., 2015.
Da Wang, M.S., 2015.
Rachel Hoover, M.S., 2014.
Diane Wilford, M.S., 2013.
Molly Ramsey, M.S., 2013.
Mindy Morgan, M.S., 2013.
Vince Isakson, M.S., 2012.
Sandra Willman, M.S., 2012.
Andrew Jensen, M.S., 2012.
Dale Lambert, M.S., 2012.
Rochelle Dietz, M.S., 2012.
Jane Barnes, M.S., 2011.
Kamillah Fella, M.S., 2011.

UNDERGRADUATE STUDENT MENTORING

Tessa Czech, Washington State University, Project: “Supercontinent cycling during weak subduction”, 2018-present.

Jessica Hartman, Washington State University, Project: “Updating global hot spot catalog”, 2018-2019. Now pursuing an MS at Central Washington University.

Alexus Richardson, Washington State University, Project: “Two-dimensional thermal modeling of anomalous heating during plateau formation”, 2018-2019.

Hannah Fugman, Washington State University, Project: “Two-dimensional thermal modeling of anomalous heating during plateau formation”, 2018-2019.

Peter Sinclair, Physics Department, Washington State University, Project: “Plate tectonics on Europa”, 2015-2016.

Hannah Hiscox, School of the Environment, Washington State University, Project: “Investigation age versus thickness relationship in stable continental lithosphere”, 2015-2016.

Justin Mays, School of the Environment, Washington State University, Project: “Estimating Lithospheric Effective Viscosity from Rigid Body Rotations of the Colorado Plateau and Tarim Basin”, 2014-2016.

Drea Killingsworth, School of Earth & Environmental Science, Washington State University, Project: “Two-dimensional thermal modeling of heat transfer in the Yellowstone caldera region”, 2010-2011.

PUBLICATIONS

Cooper, C.M., Farrington, R. and M. S. Miller, “On the destructive tendencies of cratons”, (in review at *Nature Communications*).

Pathoff, A., S. Kattenhorn, **C.M. Cooper**, “Implications of nonsynchronous rotation on the deformational history and ice-shell properties in the south polar terrain of Enceladus”, *Icarus*, 321, 445-457, 2019.

Beall, A., L.-N. Moresi, and **C.M. Cooper**, “Formation of cratonic lithosphere during the initiation of plate tectonics”, *Geology*, <https://doi.org/10.1130/G39943.1>, 2018.

Hoover, R.H., D.R. Gaylord, and **C.M. Cooper**, “Dune Mobility in the St. Anthony Dune Field, Idaho, USA: Effects of Meteorological Variables and Lag Time”, *Geomorphology*, 309, 29-37, <https://doi.org/10.1016/j.geomorph.2018.02.018>, 2018.

Cooper, C.M., M.S. Miller, and L.-N. Moresi, “The structural evolution of deep continental lithosphere”, invited review for *Tectonophysics*, 696, 100-121, <http://dx.doi.org/10.1016/j.tecto.2016.12.004>, 2017.

Cooper, C.M., “Puzzling the pieces”, *Geology* 43.9, p. 847-848, 2015.

Cooper, C.M., E. Mittlestaedt, J. Van Wijk, C. Currie, L. Kellogg, L. Hwang, and R. Arrowsmith, “Moving Lithospheric Modeling Forward: Attributes of a community computer code”, *GSA Today*, vol. 25, 2015.

Cooper, C.M., and M. Miller, “Craton formation: Internal structure inherited from closing of the early oceans”, *Lithosphere*, v. 6; p. 35-42, doi: 10.1130/L321.1, 2014.

Baldwin, K. and **C. M. Cooper**, “Online and on-campus historical geology - Prior knowledge, beliefs and understanding of global change”, *Journal of Geoscience Education*, 2014.

- Cooper, C.M.**, L.-N. Moresi and A. Lenardic, "The effects of continental distribution on mantle heat transfer properties", *Geophysical Research Letters*, v. 40(10), p. 2647-2651, doi: 10.1002/grl.50547, 2013.
- Sharples, W., L. Moresi, **C.M. Cooper**, and P. Sunter, "Computational Psychology 101: The psychology behind high performance computing", *Lecture Notes in Electrical Engineering*, v. 2, 439-452, 2012.
- Lenardic, A, **C. M. Cooper**, and L. Moresi, "A Note on Continents and the Earth's Urey Ratio", *Physics of Earth and Planetary Interiors*, v. 188, p. 127-130, doi: 10.1016/j.pepi.2011.06.008, 2011.
- Lenardic, A., L. Moresi, M. Jellinek, C.J., O'Neill, **C. M. Cooper**, and C.-T. Lee, "Continents, Supercontinents, Mantle Thermal Mixing and Mantle Thermal Insolation I: Theory and Numerical Simulations", *Geochemistry, Geophysics and Geosystems*, v. 12(10), doi: 10.1029/2011GC003663, 2011.
- Sandu, C., A. Lenardic, C. J. O'Neill and **C.M. Cooper**, "Earth's evolving stress state and the past, present and future stability of cratonic lithosphere", *International Geology Review*, v. 53(11-12), p. 1392-1402, 2011.
- Cooper, C.M.** and Clinton P. Conrad. "Does the mantle control the maximum thickness of cratons?", *Lithosphere*, v. 1(2), p. 67-62, doi:10.1130/L40.1,2009.
- Cooper, C.M.**, A. Lenardic, and L. Moresi, "Effects of continental insulation and the partitioning of heat producing elements on the Earth's heat loss", *Geophysical Research Letters*, v. 33, doi:10.1029/2006GL026291, 2006.
- Cooper, C.M.**, A. Lenardic, A. Levander, and L. Moresi, "Creation and Preservation of Cratonic Lithosphere: Seismic Constraints and Geodynamic Models", *AGU Monograph Series: Archean Geodynamics and Environments*, p. 75-88, 2006.
- Lee, C.-T., A. Lenardic, **C.M. Cooper**, F. Niu and A. Levander, "The role of chemical boundary layers in regulating the thickness of continental and oceanic thermal boundary layers", *Earth and Planetary Science Letters*, v. 230, p. 379-395, 2005.
- Cooper, C.M.**, A. Lenardic, and L. Moresi, "The thermal structure of stable continental lithosphere within a dynamic mantle", *Earth and Planetary Science Letters*, v. 222, p. 807-817, 2004.
- Niu, F., A. Levander, **C.M. Cooper**, C.-T. Lee, A. Lenardic, and D.E. James, "Seismic Constraints on the Depth and Composition of the Mantle Keel beneath the Kaapvaal Craton", *Earth and Planetary Science Letters*, v. 224, p. 337-346, 2004.
- O'Neill, C., L.-N. Moresi, A. Lenardic, and **C.M. Cooper**, "Inferences on Australia's heat flow and thermal structure from mantle convection modelling results", *Australian Journal of Earth Science, Geological Society of Australia Special Publication*, v. 22, p. 163-178, 2003.

OTHER PUBLICATIONS

Cooper, C. M., Lightner, L. K., & Wells, L., “*President’s Commission on the Status of Women 2018 annual report*”, Washington State University Office of the President, 2018.

Neuilly, M.-A., Cooper, C. M., & Lightner, L. K., “*President’s Commission on the Status of Women 2017 annual report*”, Washington State University Office of the President, 2017.

PUBLICATIONS IN PREPARATION

Collins, Geoffrey C., Patterson, Wesley, Prockter, Louise M., Kattenhorn, Simon A., Rhoden, Alyssa R., and Cooper, C.M., Episodic plate tectonics on Europa: Evidence for widespread mobile-lid behavior in the antijovian hemisphere, in preparation for *Icarus*.

Green, Austin, Montesi L., and Cooper, C.M., Controls on the thickness of Europa’s ice shell, in preparation for *Icarus*.

ACTIVE/AWARDED PROJECTS

External Awarded Projects

Project Title: Plate Tectonics on Europa

Funding Agency: NASA Aeronautics and Space Administration

Amount/Duration/Role: \$62,138 over three years, August 1, 2015-July 31, 2018, co-PI

Project Title: The Formation and Stabilization of Thickened Lithosphere

Funding Agency: National Science Foundation

Amount/Duration/Role: \$206,372 for three years, July 1, 2011-June 30, 2015, single PI.

Project Title: Enhancing Understanding of Scientific Concepts and Practices with the Science Writing Heuristic Approach, Concept Mapping and Instructional Design

Funding Agency: Office of Superintendent of Public Instruction Awards Math Science Partnership, Washington State

Amount/Duration/Role: \$1.7 million (per year shared by six education organizations statewide), 2012-2015 (served as an Earth and Physical Science content advisor).

Project Title: A Continuation of 4D Continent Evolution – investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth and other planetary bodies

Funding Agency: XSEDE Research Allocation

Amount/Duration/Role: 223,634 computational hours on supercomputer for one year, 2016, single PI.

Project Title: A Continuation of 4D Continent Evolution – investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth

Funding Agency: XSEDE Research Allocation

Amount/Duration/Role: 602,697 computational hours supercomputer for one year, 2015, single PI.

Project Title: A Continuation of 4D Continent Evolution - investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth

Funding Agency: XSEDE Research Allocation

Amount/Duration/Role: 500,000 computational hours on supercomputer for one year, 2014, single PI.

Project Title: A Continuation of 4D Continent Evolution - investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth

Funding Agency: XSEDE Research Allocation

Amount/Duration/Role: 500,000 computational hours on supercomputer for one year, 2013, single PI.

Project Title: A Continuation of 4D Continent Evolution - investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth

Funding Agency: XSEDE Research Allocation

Amount/Duration/Role: 500,000 computational hours on ~63,000 processor machine for one year, 2012, single PI.

Project Title: 4D Continent Evolution - investigating the controls on large scale deformation, instabilities of the lithosphere & impacts on the thermal evolution of the Earth

Funding Agency: TeraGrid Research Allocation

Amount/Duration/Role: 400,000 computational hours on ~63,000 processor machine for one year, 2010 (extended through September 2011), single PI.

Project Title: The Initiation and 3D Evolution of Instabilities in the Deep Continental Lithosphere

Funding Agency: Australian Research Council, with Louis Moresi, Tim Stern & Sergio Zlotnick,

Amount/Duration/Role: 2009-2012 (served as a foreign, unfunded investigator).

Project Title: 3D Large Scale Lithospheric Deformation

Funding Agency: TeraGrid Development Allocation

Amount/Duration/Role: 150,000 computational hours on ~63,000 processor machine for six months, 2009, single PI.

Internal Awarded Projects

Project Title: Samuel and Patricia Smith Teaching and Learning Grant

Funding Agency: Washington State University

Amount/Duration/Role: \$3000 for one year, 2011, co-PI.

Project Title: External Mentor Grant,

Funding Agency: ADVANCE, Washington State University

Amount/Duration/Role: \$3000 for one year, 2011, single PI.

Project Title: 4D Continent Evolution Modeling

Funding Agency: Washington State University Seed Grant

Amount/Duration/Role: \$4500 for 1.5 years, 2010, single PI.

PENDING GRANT PROPOSALS

Project Title: Applying Near Surface Geophysical Methods to Household and Village Analysis on the Northwest Coast of North America*

Funding Agency: National Science Foundation

Amount/Duration/Role: \$192,078 over three years, 2019-2022, Co-I

**Informal notification of award received May 2019*

Project Title: MRI: Acquisition of gravimetry suite to close the groundwater data gap

Funding Agency: National Science Foundation

Amount/Duration/Role: \$417,029, co-I

INVITED PRESENTATIONS (abridged)

Cooper, C.M., “The Making and Breaking of Cratons”, Columbia Basin Geological Society, Spokane, WA, April 2019.

Cooper, C.M., “The Making and Breaking of Cratons”, keynote presentation, ATLAS Symposium, University of Alberta, Edmonton, Canada, April 2019.

Cooper, C.M., “Plate Tectonics & You”, public lecture, ATLAS Symposium, University of Alberta, Edmonton, Canada, April 2019.

Cooper, C.M., “The Geodynamics of Making Cratons: Where are We Now?”, American Geophysical Union, Fall Meeting, Washington, D.C., December 2018.

Cooper, C.M., “Computational Geodynamics: Why sometimes a rock hammer just won’t do”, Frontiers of Research Computing in Academic Environments, Center for Institutional Research Computing, Washington State University, Pullman, WA, October 2017.

Cooper, C.M., “Preliminary Results from Simulations Mapping Mobile Lid Convective Regimes in Icy Shells: Use the Force (to avoid stagnant lid)”, Geological Society of America Annual Meeting, Seattle, WA, October 2017.

Cooper, C.M., “Plate Tectonics and You”, Roots of Contemporary Issues Annual Interdisciplinary Lecture, Washington State University, Pullman, WA, September 2017.

Cooper, C.M., “Early Crust – Keep it or Lose it?”, Crust to Core Workshop, Matsuyama, Japan, July, 2017.

Cooper, C.M., “The Deep Structure of Continental Lithosphere”, Deep Carbon Observatory Workshop, Moscow, Russia, May 2017.

Cooper, C.M., “The Formation and Internal Structure of Cratons: or some of what I’ve been doing since I graduated a billion years ago”, Texas A&M University, College Station, Texas, April 2017.

Cooper, C.M., “Geodynamic Insights into Cratonic Lithosphere”, February 2016, Southern Methodist University, Dallas, Texas, 2016.

Cooper, C.M., “Insights into the Hadean from Cratons”, Toyko, Japan, March 2014.

Cooper, C.M., “The Effects of Size, Configuration and Distribution of Continents on the Efficiency of Heat Transport”, Oslo, Norway, April 2014.

Cooper, C.M., “The Effects of Size, Configuration and Distribution of Continents on the Efficiency of Heat Transport”, Boise State University, Boise, ID, Spring 2013.

Cooper, C.M., “The Effects of Size, Configuration and Distribution of Continents on the Efficiency of Heat Transport”, Joint Washington State University/University of Idaho Earth Science Seminar Series, Pullman, Washington, Spring 2012.

Cooper, C.M., “A Journey into Computational Geodynamics: How Fluid Dynamics + Numerical Simulations + Math = Geology”, University of Idaho Math Department Colloquium, Moscow, ID, Spring 2012.

Cooper, C.M., “Geodynamic Constraints on Craton Formation, Quiescence and Destruction”, Arizona State University, Tempe, Arizona, May 2011.

Cooper, C.M., “Geodynamic Constraints on Craton Formation”, Quiescence and Destruction, Gordon Research Conference, Mount Holyoke, Massachusetts, Summer 2011.

Cooper, C.M., “What are cratons made of?”, Goldschmidt Conference, Knoxville, TN, Summer 2010.

Cooper, C.M., “What are cratons made of (the unabridged version)?”, Central Washington University Seminar Series, Ellensburg, WA, Spring 2010.

Cooper, C.M., “Effects of continental insulation and the partitioning of heat producing elements on Earth’s heat loss”, Washington State University Physics Department, Pullman, WA, Fall 2010.

Cooper, C.M., “The dynamic limits of craton thickness”, Washington State University at Vancouver, Vancouver, WA, Spring 2009.

Cooper, C.M., “The dynamic limits of craton thickness”, University of British Columbia, Vancouver, Canada, Fall 2008.

OTHER PRESENTATIONS (abridged)

Cooper, C.M., Miller, M.S., & Farrington, R., “The Destructive Tendencies of Cratons”, Asia Oceania Geosciences Society Annual Meeting, Honolulu, HI, June 2018.

Cooper, C.M., Beall, A., & Moresi, L., “The Geodynamics of Making Cratons: Where are We Now?”, Asia Oceania Geosciences Society Annual Meeting, Honolulu, HI, June 2018.

Cooper, C.M., “Preliminary Results from Parameter Study”, NASA Project Update, Anchorage, AK, August 2017.

Neuilly, M.A., **Cooper, C. M.**, & Lightner, L. K., “Who we are, what we do, and how we lean in while being leaned on”, University of Idaho Women’s Leadership Conference, Moscow, ID, March 2017.

Cooper, C.M., “Preliminary Results from Simulations Mapping Mobile Lid Convection in Icy Shells”, Lunar and Planetary Science Conference, Houston, Texas, Spring 2017.

Cooper, C.M., Panel Moderator, Code Benchmarking in the Earth Sciences, Computational Infrastructure for Geodynamics, All Hands Meeting, Davis, CA, Summer 2016.

Collins, Cutler, B.B., Coto, J. P. B., Prockter, L., Pattenson, G.W., Rhoden, A. R., and **C.M. Cooper**, “Plate Motions on Europa from Castalia Macula to Falga Regio”, Lunar and Planetary Science Conference, Houston, Texas, March 2016.

Cutler, B.B., Collins, G., Prockter, L., Pattenson, G.W., Rhoden, A. R., and **C.M. Cooper**, “Reconstructing Plate Motions on Europa with GPLates”, American Geophysical Union, San Francisco, CA, December 2015.

Cooper, C.M. and M.S. Miller, “MLDs, LAB and Moho’s, Oh My!”, American Geophysical Union, San Francisco, CA, December 2014.

Baldwin, K., **C.M. Cooper**, A. Cavagnetto, J. Morrison and O. Adesope, “Big Outcrops and Big Ideas in K-8 Professional Development”, American Geophysical Union, San Francisco, CA, December 2014.

Menard, J. and **C.M. Cooper**, “Parameterized thermal history model of the Earth including continental growth”, American Geophysical Union, San Francisco, CA, December 2014.

Cooper, C.M. and M.S. Miller, “Craton Formation: What happens after oceans close”, American Geophysical Union, San Francisco, CA, December 2013.

Menard, J. and **C.M. Cooper**, “Parameterized thermal history model of the Earth including continental growth”, American Geophysical Union, San Francisco, CA, December 2013.

Wood, R.J., and **C.M. Cooper**, “Exploring the decoupling and removal of dense material during lithospheric thickening as applicable to craton formation”, American Geophysical Union, San Francisco, CA, December 2013.

Wood, R.J., and C.M. Cooper, “Exploring the decoupling and removal of dense material during lithospheric thickening as applicable to craton formation”, American Geophysical Union, San Francisco, CA, December 2012.

Cooper, C.M., L-N. Moresi and A. Lenardic, “The Effects of Continental Block Configuration on the Earth’s Heat Loss”, American Geophysical Union, San Francisco, CA, December 2012.

Cooper, C.M., L-N. Moresi and A. Lenardic, “The Effects of Size, Configuration and Distribution of

Continents on the Efficiency of Heat Transport”, Washington State University, Academic Showcase, Pullman WA, 2012.

Cooper, C.M., and K. Baldwin, “Incorporating global climate change exercises into historical geology courses”, Washington State University, Academic Showcase, Pullman, WA, 2012.

Patthoff, D.A., S.A. Kattenhorn and C.M. Cooper, “Effects of Nonsynchronous Rotation Stresses on the South Polar Terrain of Enceladus”, Lunar and Planetary Science Conference, Houston, TX, March 2012.

Cooper, C.M., L.-N. Moresi and A. Lenardic, “The Effects of Size, Configuration and Distribution of Continents on the Efficiency of Heat Transport”, American Geophysical Union, San Francisco, CA, December 2011.

Cooper, C.M., and K. Baldwin, “Incorporating global climate change exercises into historical geology courses”, American Geophysical Union, San Francisco, CA, December 2011.

Cooper, C.M., “Cratons and the Lithosphere-Asthenosphere Boundary”, EarthScope Workshop, Portland, OR, Fall 2011,.

Cooper, C.M., A. Lenardic, L.-N. Moresi and C.P. Conrad, “Cratons: Past, Present and Future”, Washington State University, Academic Showcase, Pullman, WA, 2011.

Cooper, C.M., A. Lenardic, L.-N. Moresi and C.P. Conrad, “Cratons: Past, Present and Future”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2010.

Moresi, L.-N., C.M. Cooper, A. Lenardic, “Heat flow partitioning between continents and oceans – from 2D to 3D”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2010.

Orr, C. and C.M. Cooper, “Earth Science 201: Shaping the Earth’s Surface (or tricking students into learning complex systems and non-linear behavior)”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2010.

Lenardic, A., L.-N. Moresi, M. Jellinek, C.J. O’Neill, C.M. Cooper, and C.-T. Lee, “Continents, Supercontinents, Mantle Thermal Mixing and Mantle Thermal Isolation”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2010.

Cooper, C.M., “Unlocking the Earth’s Deformation Secrets”, Washington State University, Academic Showcase, Pullman, WA, 2010.

Cooper, C.M. L. Moresi, “Scaling Underworld - building up from personal clusters to high performance centers”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2009.

Cooper, C.M. L. Moresi, “Working on Opposite Sides of the World”, American Geophysical Union, Fall Meeting, San Francisco, CA, December 2009.

Moresi, L., Cooper, C.M, and John Mansour, "Size and Scaling of small-scale instabilities beneath continental lithosphere", American Geophysical Union, Fall Meeting, San Francisco, CA, December 2009.

Cooper, C.M., and Clint Conrad, "Cratons, the Mantle and Time", American Geophysical Union, Fall Meeting, San Francisco, CA, December 2008.

TEACHING EXPERIENCE

Physics and Chemistry of the Earth, SOE 474, upper division undergraduate course, Washington State University, (co-taught with Jeff Vervoort), Spring 2019.

Geodynamics, a joint taught senior undergraduate and graduate level geology course, University of Idaho, (co-taught with Eric Mittelstaedt), Fall 2014, 2015, 2017, Spring 2019.

Geophysics, GEOL 405/505 - senior undergraduate and graduate level geology course, School of the Environment, Washington State University, Spring 2009, 2010, 2011, 2012, 2014, Fall 2015.

Earth's History and Evolution, GEOL 210 - sophomore undergraduate level geology course, School of the Environment, Washington State University, Fall 2009-2014, 2018, Spring 2017-2018, Summer 2010.

Introduction to Geology, GEOL 101 - undergraduate level geology course, School of the Environment, Washington State University, Summer 2011.

Introduction to Geology, GEOL 102 - undergraduate level geology course for engineering and honors students and science majors only, School of the Environment, Washington State University, Spring 2013, 2015, 2016.

Current Topics in Geosciences Reading Seminar, GEOL 597 - graduate level seminar geology course, School of the Environment, Washington State University, Fall 2012-2013, Spring 2013-2014.

The Classic Papers of Plate Tectonics, GEOL 597 - senior undergraduate and graduate level seminar geology course, School of the Environment, Washington State University, Fall 2011.

Near Surface Geophysics, GEOL 597 - graduate level seminar geology course, School of the Environment, Washington State University, Fall 2017.

SERVICE TO DISCIPLINE

Executive Committee Member: Computational Infrastructure for Geodynamics, 2019-present.

Science Steering Committee Member & Chair: Computational Infrastructure for Geodynamics, 2015-2018 2017-2018.

Executive Committee Ex-Officio Member: Computational Infrastructure for Geodynamics, 2017-2018.

Long Term Tectonics Working Group Member & Chair: Computational Infrastructure for Geodynamics, 2012-2019, 2014-2016 (chair).

Workshop Organizer:

Geodynamic modeling of lithosphere deformation: Advances and challenge,
Computational Infrastructure for Geodynamics, 2013,
All Hands Meeting, Computational Infrastructure for Geodynamics, 2016,
CTSP: Coupling of Tectonic and Surface Processes, 2017.

Program Committee Member: American Geophysical Union, Study of Earth's Deep Interior Focus Group, 2012-2014.

Reviewer:

Science.
Nature Geosciences.
Geology.
Physical of Earth and Planetary Interiors.
Journal of Geophysical Research.
Geophysical Research Letters.
Tectonophysics.
Geophysics, Geochemistry & Geosystems.
Physics of Fluids.

Reviewer & Panel Member: National Science Foundation, 2009-present, NASA, 2017-present, Swiss National Science Foundation, 2018-present.

Judge, student presentations: Tectonophysics & Study of Earth's Deep Interior, American Geophysical Union, Fall 2009-present.

Coordinator of the Study of Earth's Deep Interior's Outstanding Student Presentation Award for American Geophysical Union Fall Meeting, 2011.

Organizer and Session Chair: American Geophysical Union, Fall Meeting, 2009, 2013, 2016.

SERVICE TO UNIVERSITY

Member, College of Arts & Science Executive Advisory Committee, Washington State University, 2019 - present.

Executive Board Member, Past Chair (2018-present), Chair (2017-2018), Interim Co-Chair (2017), Chair Elect (2016), Reporter (2015-2016), & Voting Member of the President's Commission on the Status of Women, Washington State University, 2015 - present.

Liaison to the Provost, Association For Faculty Women, Washington State University, 2019-present.

Member, WSU's Diverse Faculty & Staff Working Group, Washington State University, 2018-present.

Faculty Advisor, LGBTQ+ Diversity in STEM Student Group (QSTEM), Washington State University, 2016-present.

Chair, Tenure & Mentoring Committee for Jen McIntyre, School of the Environment, Washington State University, 2018-present.

Member, Tenure & Mentoring Committee for Sarah Roley, School of the Environment, Washington State University, 2018-present.

Member, Seminar Series Committee, Center for Institutional Research Computing, Washington State University, Pullman, WA, 2017-present.

Member, Geology Revitalization Committee, School of the Environment, Washington State University, WA, 2017-present.

Member, Graduate Studies Committee, School of the Environment, Washington State University, 2018-2019.

Member, UI-WSU Women's Leadership Conference Planning Committee, Washington State University, 2018-2019.

Member, Executive Director of Office of Outreach Education Search Committee, Washington State University, 2019.

Member, College of Arts & Science Dean Search Committee, Washington State University, 2017-2018.

Member, WSU's Executive Policy #15 Working Group, Washington State University, 2017-2018.

Chair, WSU Women's Leadership Conference Task Force, Washington State University, 2017-2018.

Co-Chair of WSU-UI Women's Leadership Conference Planning Committee, Washington State University, 2017-2018.

Member, Women's Resource Center Directory Search Committee, Washington State University, 2017.

Member, WSU Women of Distinction Awards Committee, Washington State University, 2017.

Organizer, Frontiers of Research Computing in Academic Environments Workshop, Center for Institutional Research Computing, Washington State University, Pullman, WA, October 2017.

Chair, Awards and Scholarship Committee, School of the Environment, Washington State University, 2015-2016.

Member, School of the Environment Executive Committee, Washington State University, 2014-2016.

Chair & Member, Student Recruitment Committee, School of the Environment, Washington State University, 2010-2015 (member), 2013-2015 (chair).

Interviewer, College of Arts & Sciences Ambassador Program, 2014, 2018.

Member, High Performance Computing Committee (university wide faculty committee commissioned by VP of Research and VP of IT to guide purchase of a campus high performance computer), Washington State University, 2009-2013.

Faculty Advisor, Geology Club, Washington State University, 2012.

Chair, School of Environment Geology Seminar Series, Washington State University, 2009-2010, Fall 2017, Spring 2018.

Member, School of Environment Faculty & Staff Search Committees, Washington State University, 2009, 2012-2013, 2013-2015.

SERVICE TO COMMUNITY

City Council Member, City of Palouse, 2018-present.

Expert Consultant: LEGO League, Tri-Cities, 2018.

Presenter: Pullman Rotary Club, Pullman, WA, 2018.

Presenter: Libraries Rock!, Summer Reading Program, Palouse Library, Palouse, WA, 2018.

Presenter: Star Gazing Party, Dayton Library, Dayton, WA, 2018.

Planning Commission Member, City of Palouse, 2016-2018.

Geology Expert, Palouse Prairie Charter School, 2016-2018.

Film Committee Member, Kenworthy Performing Arts Centre, Moscow, Idaho, 2015-2018s.

Panel Member: National Oceanic Science Bowl, Washington, D.C., 2009, 2010.

Presenter: What is Geology?, Palouse Cub Scout Troop, Pullman, WA, 2015.

Presenter: Boom! Fizz! Read!, Summer Reading Program, Palouse Library, Palouse, WA, 2014.

Presenter: Great Explorations: a Science, Technology, Engineering and Math Adventure for 5th-8th grade girls, Walla Walla, WA, 2013.

Judge: Showcase for Undergraduate Research and Creative Activities, Washington State University,

2008-2014.

Guest Lecturer: Washington State University Honors Courses, 2010, 2013, 2014, 2018; Introduction to Geology, 2017; Introduction to your Environment, 2018.

FIELD EXPERIENCE

Participant: High Lava Plains Continental Dynamics seismic experiment, 2006-2009.

AWARDS/VISITING APPOINTMENTS

Thomas E. Lutz Teaching Excellence Award, College of Arts & Sciences, Washington State University, 2019.

ATLAS Symposium Keynote Speaker, University of Alberta, 2019.

Woman of Distinction, Washington State University, 2015.

Exceptional Reviewer, Geological Society of America, 2012.

Adjunct Senior Research Fellow, School of Mathematical Sciences, Monash University, 2010.

Visiting Research Scientist, Department of Terrestrial Magnetism, Carnegie Institute of Washington, 2009-2014.

Outstanding Student Presentation, American Geophysical Union, Tectonophysics Section, 2004.