

Zachary J. Lundeen, Ph.D.

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Education

- Ph.D.** Geography, University of Utah (2012)
Dissertation Title: *Paleoecological and Isotopic Records of Climate Change and Variability from Lakes and Speleothems, Bear River Range, Southeast Idaho*
- M.S.** Geosciences, University of Massachusetts Amherst (2005)
Thesis Title: *Elemental and Isotopic Constraints on the Late Glacial-Holocene Transgression and Paleoceanography of the Chukchi Sea*
- B.A.** Geology, Idaho State University (2001)
Minors: Anthropology, History

Current Positions

- 2012-Present** **Director**, Bonderman Field Station at Rio Mesa, University of Utah
- 2012-Present** **Research Assistant Professor**, Department of Geography, University of Utah
- 2012-Present** **Affiliate Faculty**, Global Change and Sustainability Center, University of Utah
- 2020-Present** **Advanced Placement (AP) Environmental Science Exam Development Committee Member**, College Board
- 2009-Present** **Advanced Placement (AP) Environmental Science Exam Reader/Table Leader/Question Leader**, Educational Testing Services (ETS)

Past Positions

- 2011-2012** **Associate Instructor**, University of Utah, Department of Geography
- 2011- 2012** **Adjunct Instructor**, Columbia College-Salt Lake City
- 2006-2010** **Graduate Instructor/ Research Assistant**, University of Utah, Department of Geography
- 2005- 2006** **Geologist**, Parsons Corporation, South Jordan, UT
- 2005** **Information Analyst**, State of Utah, Department of Environmental Quality

Courses Taught

University of Utah Courses

- *Geomorphology: Mountains, Rivers, & Deserts*
- *Introduction to Environmental and Sustainability Studies*
- *GeoExcursions in Utah*
- *Ocean Environments*
- *The Oceans and Us: Contemporary Marine Environmental Issues*
- *Earth Environments and Global Change: Intro to Physical Geography*
- *Water & Sustainability- Block U Learning Community (co-taught w/ Philosophy faculty)*
- *Resource Conservation and Environmental Management*
- *Water in Utah*
- *Pyrogeography: Fire, Humans, and the Environment*
- *World Regional Geography*

Columbia College, Salt Lake City Courses

- *Introduction to Physical Geology*

University of Massachusetts-Amherst Courses

- *Experiencing Geology*
- *Introduction to Oceanography (Teaching Assistant)*

Academic Service

- Committee Member- Joshua Heyer, Ph.D (2020), University of Utah
- University of Utah- University Research Committee (2018-2019)
- University of Utah- Interdisciplinary Teaching Programs Faculty Appointments Advisory Committee (2017-2018)
- University of Utah- Environmental and Sustainability Studies Undergraduate Scholarship Review Committee (2017)
- Reviewer - *The Holocene* (2017)
- Reviewer - *Ecosphere* (2017)
- Reviewer - National Science Foundation, Division of Earth Sciences, P2C2 (2015)
- Reviewer - *Quaternary Science Reviews* (2015)
- Reviewer - U of Alaska Center for Global Change Student Research Grant (2013, 2014)
- U of Utah Global Change and Sustainability Center Graduate Fellowship (2013)/ College of Social and Behavioral Sciences Faculty Committee

- Graduate representative for Herbarium Curator/Biogeography faculty hire- University of Utah, Department of Geography (2008)
- Graduate representative for Biogeography/Climatology faculty hire- University of Utah, Department of Geography (2007)
- Undergraduate representative for faculty promotion review committee- Idaho State University, Department of Geology (2000)
- President- Idaho State University Geology Club (2000-2001)

Funding History

- University of Utah-Global Change and Sustainability Center Interdisciplinary Research Grant, *Landscape Legacy Influence on Riparian Plant Communities in a Changing Environment* (2018). Awarded \$5000 (Co-PI with Jennifer Follstad Shah).
- Bureau of Land Management, *Colorado Plateau Native Plant Evaluation, Development, and Research Garden at Rio Mesa Center* (2011-2017). Cooperative Agreement. Awarded \$130,000 since taking over as PI in 2012. (Total Award \$145,000).
- U.S. Fish and Wildlife, *Rio Mesa Center Riparian Habitat and Enhancement Project* (2013-2018). Cooperative Agreement. Awarded \$34,000.
- University of Utah Graduate School- Graduate Research Fellowship (2010-2011). *Holocene paleoclimate and paleoecology of the Bear River Range, Southeast Idaho, from lakes and speleothems*. Awarded \$15,000.
- NSF, Geography and Regional Science Program, Dissertation Improvement Grant- *Doctoral Dissertation Research: A Long-Term Paleoclimate Perspective on the Changing Hydroclimatology of the Bear River Basin and Likely Impacts* (2009-2010). Awarded: \$8875 (Co-PI with Andrea Brunelle).
- University of Utah, Funding Incentive Seed Grant- *Using Cave and Lake Sediment Records to Resolve the Climate History of the Bear Lake Region* (2008-2009). Awarded: \$27,000. (Primary author and co-investigator, Andrea Brunelle-PI).
- U.S. Forest Service- *Reconstruction of Northern Great Basin Paleoenvironments from Close-Proximity Lakes and Speleothems in the Bear River Range, Southeast Idaho* (2007). Awarded: \$9000 (Primary author and co-investigator, Andrea Brunelle-PI).
- Geological Society of America, Graduate Student Research Grant (2002). *Use of carbon and nitrogen isotopes in sedimentary organic matter to augment sea level reconstruction from Chukchi Sea sediments*. Awarded: \$2000

Other Grants, Awards & Scholarships

- Student Travel Grant (\$135), Geological Society of America (2010)
- Travel Award (\$360), University of Utah, Department of Geography (2009)

- Donald Lewon Honor Roll Scholarship (\$3500), University of Utah, College of Social and Behavioral Sciences (2006)
- Outstanding Senior Award, Idaho Association of Geoscientists (2001)
- Outstanding Senior Award, Idaho State University Department of Geology (2001)
- Questar Scholarship (\$1200), Westminster College (1996)
- Eccles Scholarship (\$3600), Westminster College (1995-1997)
- Trustee Scholarship (\$6800), Westminster College (1995-1997)

Peer-Reviewed Publications

Groves, M., Brunelle, A. R., Power, M. J., Petersen, K. L., & **Lundeen, Z. J.** (2020). Late-Holocene seasonal moisture variability: Range Creek Canyon, Utah, USA. *The Holocene*, 0959683620972769.

Heyer, J., Brewer, S., Brunelle, A., Leys, B., **Lundeen, Z.**, Rittenour, T., & Power, M. (2020). Age control for the Lake Bottom oxbow in the Dolores River watershed of eastern Utah, USA. *Quaternary International*.

Carter, V.A., Power, M.J., **Lundeen, Z.J.**, Morris, J., Petersen, K.L., Brunelle, A., Anderson, R.S., Shinker, J.J., Turney, L., Koll, R., Bartlein, P. (2018) A 1,500-year synthesis of wildfire activity stratified by elevation from the U.S. Rocky Mountains. *Quaternary International*, v. 488, p. 107-119.

Lundeen, Z. J., & Brunelle, A. (2016). A 14,000-year record of fire, climate, and vegetation from the Bear River Range, southeast Idaho, USA. *The Holocene*, v. 26 (6), p. 833-842.

Lundeen, Z., Brunelle, A., Burns, S.J., Asmerom, Y., Polyak, V., (2013) A Speleothem Record of Holocene Paleoclimate from the Northern Wasatch Mountains, Southeast Idaho, USA. *Quaternary International*, v. 310, p. 83-95.

Morris, J.L., le Roux, P.C., Macharia, A.N., Brunelle' A., Hebertson, E.G., **Lundeen, Z.J.**, (2012) Organic, elemental, and geochemical contributions to lake sediment deposits during severe spruce beetle (*Dendroctonus rufipennis*) disturbances. *Forest Ecology and Management*, v. 289, p. 78-89.

Nicoll, K. and **Lundeen, Z.J.**, (2010) A Case Study on the Geomorphic Effects of Fire: the 2009 Big Pole Fire, Skull Valley, UT. Vignettes –Key Concepts in Geomorphology. Online vignette supporting textbook :Bierman, P. and Montgomery, D. (Eds.) Key concepts in Geomorphology.W.H. Freeman, Vermont. Online at <http://serc.carleton.edu/47063>.

Other Publications/Manuscripts

Lundeen, Z.J., Brigham-Grette, J., Petsch, S.T., Burns, S.J. (2015) A Holocene Record of Primary Productivity in the Chukchi Sea and Possible Evidence for Bering Strait flow reversal ~8.5ka. DOI: 10.13140/RG.2.1.4190.1606

Lundeen, Z.J. (2012) *Paleoecological and Isotopic Records of Climate Change and Variability from Lakes and Speleothems, Bear River Range, Southeastern Idaho. Ph.D. Dissertation. University of Utah.*

Lundeen, Z.J. (2005) *Elemental and Isotopic Constraints on the Late Glacial-Holocene Transgression and Paleoceanography of the Chukchi Sea. M.S. Thesis. University of Massachusetts Amherst.*

Conference Presentations

Lundeen, Z. (2018) *Bonderman Field Station at Rio Mesa: Laboratory for Research and Education and CPNPP partner. BLM Colorado Plateau Native Plant Program Annual Meeting, Grand Junction, CO.*

Lundeen, Z., Brunelle, A., (2013) *Complementary seasonal bias in records of Holocene paleoclimate, Bear River Range, southeast Idaho. 26th Pacific Climate Workshop (PACLIM), Pacific Grove, CA.*

Lundeen, Z., Brunelle, A., Burns, S.J., Asmerom, Y., and Polyak, V. (2011) *A Season-Specific Paleoclimate Record From A Northern Wasatch Mountains Speleothem and Linkages To The Pacific. 25th Pacific Climate Workshop (PACLIM), Pacific Grove, CA.*

Morris, Jesse L., Mock, Cary J., **Lundeen, Zachary**, and Brunelle, Andrea, (2010) *Modern Perspectives on High Resolution Paleoclimate Data from the Eastern Great Basin, USA Geological Society of America Abstracts with Programs Vol. 42, No. 5, October 31-Nov 3, Denver.*

Lundeen, Z., Brunelle, A., Burns, S.J., Asmerom, Y., Polyak, V., (2010) *Paired Speleothem and Lacustrine Paleoclimate Records From The Bear River Range, Southeast Idaho. Geological Society of America Abstracts with Programs Vol. 42, No. 5, October 31-Nov 3, Denver.*

Lundeen, Z., Brunelle, A., Burns, S.J., Asmerom, Y., Polyak, V., (2009) *A speleothem record of climate variability over the last millennium from the northern Wasatch Mountains, Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract PP41B-1515.*

Lundeen, Z. and Brunelle, A., (2009) *Records of Holocene Hydroclimatology from the Bear River Range, Southeastern Idaho. 24th Pacific Climate Workshop (PACLIM), Pacific Grove, CA, April 19-22.*

Lundeen, Z. and Brunelle, A., (2009) *A Paleoclimatic Perspective on Water Resources of the Bear River Basin, Annual Meeting of the Association of American Geographers, Las Vegas, Nevada, March 22-29.*

Lundeen, Z., Brigham-Grette, J., Petsch, S., Burns, S., (2004) *Elemental and Isotopic Constraints on the Late Glacial-Holocene Transgression and Paleoceanography of the Chukchi Sea, American Geophysical Union Abstracts, EOS Transactions, 85 (47).*

Brigham-Grette, J., and **Lundeen, Z.**, (2004) Déjà vu: Paleoenvironmental Look at Sea ice Extent during earlier warm periods, Arctic Research Consortium of the United States, 16th Annual Meeting Abstract and Program. May 14-15, Washington D.C.

Lundeen, Z., Brigham-Grette, J., Driscoll, N., Keigwin, S., Burns, S., Petsch, S., (2003) Organic Matter Isotopic Analyses from Chukchi Sea Sediments: New Constraints on the Late Quaternary Sea Level History of Beringia, American Geophysical Union Abstracts, EOS Transactions, 84 (46)

Hill, J.C., Driscoll, N.W., Brigham-Grette, J., **Lundeen, Z.**, (2003) Large incised channels on the Chukchi Shelf provide new constraints on onshore drainage: Implications for tectonic and climatic evolution of NW Alaska, American Geophysical Union Abstracts, EOS Transactions, 84 (46)

Brigham-Grette, J, Neal Driscoll, Lloyd Keigwin, **Zach Lundeen**, Jenna Hill, Mea Cook, Jeff Donnely, (2003) Beringian Sea Level and Marine Climate History: Investigations into Regional & Global Impacts, American Geophysical Union Abstracts, EOS Transactions, 84 (46)

Lundeen, Z., Brigham-Grette, J., Keigwin, L., Driscoll, N., and Donnely, J., (2002) Marine Climate and Relative Sea Level Across Central Beringia. NSF Arctic Systems Science (ARCSS) All Hands Workshop Meeting Abstract and Program. February 20-23, Seattle

Professional Affiliations

- Geological Society of America (GSA)
- American Geophysical Union (AGU)
- American Quaternary Association (AMQUA)
- American Association for the Advancement of Science (AAAS)