

Lucas K. Zoet

University of Wisconsin-Madison
Department of Geoscience
Assistant Professor

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Research Interests

- Glaciology
- Glacial geomorphology
- Coastal geomorphology
- Sliding mechanics of glaciers and faults
- Passive seismics
- Ground Penetrating Radar Analysis
- Sediment mechanics
- Rock deformation and mechanics
- Computational modeling of geodynamic systems
- Geospatial analysis of glacial landforms

Appointments / Work Experience

2015 – Assistant Professor of Geoscience, University of Wisconsin-Madison
2012 – 2015 Postdoctoral Research Associate, Iowa State University
2006 – 2006 Summer Intern, Chevron Corporation
2005 – 2005 Summer Scholar, Lawrence Livermore National Laboratory
2003 – 2005 Research assistant, Michigan State University

Education

2012: PhD from The Pennsylvania State University (University Park)
Geosciences Department (focus geophysics)

2009: M.Sc. from The Pennsylvania State University (University Park)
Geosciences Department (focus geophysics)

2005: B.S. from Michigan State University
Geology Degree from Lyman Briggs School (focus geophysics)

Teaching Activities

2017: Assistant Professor: Glacial and Pleistocene Geology
2017: Assistant Professor: Geomorphology
2016: Assistant Professor: Matlab Seminar
2016: Assistant Professor: Glacial and Pleistocene Geology
2016: Assistant Professor: Glacial and Pleistocene Geology Seminar (twice)
2015: Assistant Professor: Glacier Mechanics
2014: Instructor: Surficial Processes
2014: Instructor: Independent study -- Geotechnical investigation of till strengthening
2013: Instructor: Computational Techniques for Geosciences
2013: Instructor: Independent study - Geophysical investigation of subglacial landforms
2013: Instructor: Graduate seminar for Glaciers, Glacial Landforms and Climate

2010: Teaching Assistant: Physical Processes in Geology
2009: Teaching Assistant: Geology of the National Parks

Awards / Grants

2016 NSF Geomorphology and Land Use Dynamics: Collaborative research: Development of sliding laws for glacier-flow and landscape-evolution models, Collaboration with Iowa State University. Total \$551K, UW portion \$199K

2016: NSF Antarctic Glaciology: NSFGEO-NERC: Collaborative Research: Two-Phase Dynamics of Temperate Ice: Collaboration with Iowa State University. Total \$553K, UW portion \$113K

2016: Wisconsin Sea Grant Institute, Monitoring Bluff Stability \$9,500.

2016: WARF foundation: Constraining the Contributions of Erosion to the Energy Balance of Glaciers \$40,000.

2016: Madison Teaching and Learning Excellence grant, \$4,000

2015: WARF foundation: Two phase mechanics of ice \$13,500.

2011: Second place presentation at graduate colloquium

2010: Sloan Award, Top poster at SCAR meeting, and Kynine award

2009: Top masters poster at graduate colloquium

2008: Kynine award

2005: Bunton Waller fellowship

2003: Thurman award

2001: Annii award

Field Experience

2015: Mulajokull Glacier, Iceland: Subglacial Landform Project

2014: Mulajokull Glacier, Iceland: Subglacial Landform Project

2013: Mulajokull Glacier, Iceland: Subglacial Landform Project

2011: Svartisen Subglacial Laboratory, Norway: Engabreen Seismic Project

2010: Byrd Camp and Union Glacier Camp, Antarctica: POLENET Project

2009: Thwaites Glacier, Antarctica: Thwaites Survey

2007: WAIS Divide and Thwaites Glacier, Antarctica: Thwaites Survey

2005: Siple Coast Ice streams, Antarctica: TIDES Project

2004: Wasatch-Unita Mountains, Utah: Field Techniques

Membership

American Geophysical Union

International Glaciological Society

Geological Society of America

Sault Ste. Marie band of Chippewa Indians

Professional Service

2016, 2015, Convener Fall AGU: Advances in Our Understanding of Processes at the Beds of Glaciers and Ice Sheets

2015, 2016: AGU Cryosphere Outstanding Student Presentation Award: Coordinator

2015, Convener Fall AGU: Ice Microstructures and Deformation Behavior: On Earth and Beyond

2015: Midwest Annual Postdoctoral Forum Meeting: Planning Committee

2010-2012: PSU Geodynamics Colloquium Coordinator

Reviewer for:

Journal of Geophysical Research - Earth Surface
Journal of Geophysical Research - Solid Earth
Reviews of scientific instruments
PNAS
Geology
Geomorphology
Journal of Physical Geography
Cold Regions and Science Technology
Geophysical Research Letters
Journal of Cave and Karst Geology
NSF proposals
Swiss funding institutions

Students Advised

Graduate

Ian McBrearty MS
Jacob Woodard MS

Undergraduate

Ian McBrearty
Christian Larson
Alex Horvath
Nolan Barrette

Publications

Zoet, L.K., and Iverson N.R., (2016), Rate-weakening drag during glacier sliding. *Journal of Geophysical Research - Earth Surface*

Ívar Örn Benediktsson, Sverrir A. Jónsson, Anders Schomacker, Mark D. Johnson, Ólafur Ingólfsson, Lucas **Zoet**, Neal R. Iverson, Johann Stötter. (2016), Progressive formation of modern drumlins at Múlajökull, Iceland: stratigraphic and morphological evidence, *Boreas*.

Reba G. McCracken, Neal R. Iverson, Ívar Ö. Benediktsson, Anders Schomacker, Lucas K. **Zoet**, Mark D. Johnson, Thomas S. Hooyer, (2016) Shear and consolidation patterns of basal tills at an active drumlin field, Múlajökull, Iceland, *Quaternary Science Reviews*

Iverson and **Zoet**, Experiments on the dynamics and sedimentary products of glacier slip. *Geomorphology* (2015)

Zoet, L. K., Iverson N. R., Experimental determination of a double-valued drag relationship for glacier sliding. *Journal of Glaciology* (2015)

Zoet, L. K., Carpenter, B., Scuderi, M., Alley, R. B., Anandakrishnan S., Marone, C., & Jackson, M. The effects of entrained debris on the basal sliding stability of a glacier. *Journal of Geophysical Research* 1-11 (2013). DOI: 10.1002/jgrf.20052

Zoet, L. K., Alley, R. B., Anandakrishnan, S. & Christianson, K. Accelerated subglacial erosion in response to stick-slip motion. *Geology* 1–21 (2013).doi:10.1130/G33624.1

Zoet, L. K., Anandakrishnan, S., Alley, R. B., Nyblade, A. A. & Wiens, D. A. Motion of an Antarctic

glacier by repeated tidally modulated earthquakes. *Nature Geoscience* **5**, 623–626 (2012).

In prep

Zoet, L. K., Scuderi, M., Carpenter, B., Alley, R. B., Anandakrishnan S., & Marone, C.. A laboratory study of unstable sliding at the base of glaciers

Zoet, L. K., Alley, R. B., & Anandakrishnan S. A new mechanism for seismicity of calving events at Thwaites Glacier, Antarctica

Zoet, L. K., and Iverson, N.R., Strengthening at the base of glaciers.

Technical Presentations

2016: Stanford Geophysics Colloquium

2016: Northern Illinois University Department Seminar, Geology

2016: Wais Meeting

2015: AGU - Glacial Sliding

2015: University of Wisconsin - Milwaukee Departmental Seminar

2015: Michigan State University Departmental Seminar

2015: NC- GSA

2014: Physics Seminar, Grinnell University

2014: Weeks lecture, University of Wisconsin

2013: Seminar, University of Nebraska Omaha

2013: AGU - Glacier Seismicity - Invited

2013: AGU - Modeling the Cryosphere

2012: Grad school Colloquium The Pennsylvania State University

2012: Seminar Iowa State University

2012: Colloquium Lamont Doherty Observatory, Columbia University

2012: Geodynamics Colloquium The Pennsylvania State University

2011: Rock Mechanics Colloquium Josef Fourier Institute, Grenoble, France

2011: Grad school Colloquium The Pennsylvania State University

2011: Annual Geosciences Colloquium The Pennsylvania State University

2011: Geodynamics Colloquium The Pennsylvania State University

2010: European Geophysical Union

2010: Annual Geosciences Colloquium The Pennsylvania State University

2010: Geodynamics Colloquium The Pennsylvania State University

2010: ALE field Lecture

2009: Guest Lecture for ENG 311 on Antarctic Research

2008: Annual Geosciences Colloquium The Pennsylvania State University

2005: Midwest Glaciological Meeting