

**Curriculum Vitae**  
Gerard H. Roe  
*Professor, Associate Chair*  
*Dept. of Earth and Space Sciences,*  
*University of Washington, Seattle, WA.*

**ADDRESS**

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Seattle, WA 98103  
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**EDUCATION AND EMPLOYMENT**

Massachusetts Institute of Technology, Cambridge, MA  
Ph.D. in Atmospheric Science, June 1999. Dissertation under Prof. Richard Lindzen:  
“The mutual interaction between the great continental ice sheets and atmospheric  
stationary waves”.

Oriel College, University of Oxford, Oxford, UK  
Bachelor of Arts degree in Physics. First Class Honors, June 1992.

September 2012 to present: Full Professor, Seattle, WA  
September 2007 to 2012: Associate Professor,  
January 2003 to 2007: Assistant Professor  
University of Washington, Department of Earth and Space Sciences,  
Adjunct Associate Professor, Dept. of Atmospheric Sciences

September 1999 to December, 2002: Postdoctoral Researcher, Seattle, WA  
University of Washington, Quaternary Research Center/Joint Institute for The Study of  
the Atmosphere and Ocean.

September 1993 – March 1999: Graduate Research Assistant, Cambridge, MA  
March 1999 – July 1999: Post-doctoral Associate, Massachusetts Institute of  
Technology, Program in Atmospheres, Oceans, and Climate.

**PROFESSIONAL OFFICES/AWARDS/SERVICE**

ESS excellence in teaching award, 2012.  
Distinguished Public Lecturer, Cooperative Institute for Research in Environmental  
Sciences. October '08.  
Flint Visiting Professor, Yale University, April to June, 2007  
ESS teaching award, honorable mention, 2006, 2007.  
UW distinguished mentor award, nomination 2009.  
Carl-Gustav Rossby Award for ‘Most Outstanding Thesis’ submitted to the Program in  
Atmospheres, Oceans, and Climate, 1998-99.  
Oxford University Exhibition, June 1990.  
Associate Editor, Quaternary Research, 2004 to 2011.

Session organizer, IUGG Cryosphere, Davos, June 2013  
Session organizer, Tectonic and Climates, Gordon Conference, June 2011  
Session Co-chair: Orographic Precipitation and Landscapes, AGU Dec, 2009, 2011  
Session organizer, Rapid Climate Change, Leverhulme Symposium, Cambridge University, Royal Society, London, U.K, March, '08.  
Organizer NSF workshop "Climate over Landscapes", Sept '07  
Reviewer (~1 to 2 per month) for NSF, and major journals.

### **UW SERVICE/DUTIES/COMMITTEES**

ESS Associate Chair, July 15 to present  
ESS undergraduate advisor. Jun 06 to present;  
ESS curriculum committee, 2011-present  
ESS executive committee. 2013-2015, 2016 to present  
ESS MESSAGE review panel, 2014.  
ESS computer committee (chair, 2007); ESS curriculum committee; ESS prelims exam committee Fall 04, 05, 06, 08; ESS graduate admissions Spr '05; ESS glaciology research faculty search committee, Fall '04; Seminar organizer (ESS, QRC, PCC).  
Co-chair Environmental Institute, 2009  
UW Program on climate change: governing board Jan 03 to present; executive committee 2005 to 2010; director search committee, June 06; postdoc hiring committee, Sept '03; organizer summer retreat Sept'03.  
UW Program on the Environment, member advisory board  
UW College of the Environment, Institute committee, Co-Chair, 2010  
Math and Science Field Committee to the Provost's Advisory Council on Teacher Preparation

### **CLASSES TAUGHT**

ESS310: Mathematical methods in Earth Sciences, Spring, 2013, 2014, 2015, 2016, (2017, 5 credits, 11 students, 100% responsibility)  
ESS590/OCN589/ATM586: Climate dynamics (Winter 2017, 10 students, 50% (co-taught with K. Armour)  
ESS418: Communications (Winter 2017, 5 credit, 37 students, 100% responsibility)  
ESS/ATM/OCN586: Everything you always wanted to know about climate (but were afraid to ask), Fall 2012  
ESS 414/514: Geophysics - fluids, Spring, 2012; Winter, 2013, Winter 2015, Winter 2016, Fall 2017  
ESS/ATM/OCN 589: Paleoclimate, Spring, 2011  
ESS 201: The Earth system and climate, Winter, 2009, 2010  
ESS exploration seminar Denmark and Greenland, August, 2008  
ESS 590: Landscapes and Climate, Spring 2009  
ESS 590: Climate feedbacks, Fall 2014  
ENVIR 511 512: Graduate certificate in environmental management, City of Bellevue action plan for community greenhouse gas reduction, Winter, Spring 09  
ESS 314: Geophysics: expedition to planet Earth, Winter 2004, Fall, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2013.  
PCC/ATM/OCN/ESS 587: Climate dynamics, Fall 2003, 2004, 2005, 2006, 2007, 2008

ESS 416/516: Geophysics: the atmosphere, Spring 2003, 2004, 2005, 2006.  
ESS 590: Special topics in climate: Heinrich events (seminar). Fall 2003, Winter, Spring 2004. Centennial variability (seminar), Winter 2005; African aridity (seminar), Winter, '06; The Holocene Express, Winter 2007, Glaciology, Fall 2015.  
ESS/ATM 590: Knowability and no ability in climate and earth sciences (seminar), Spring '06, '08, '09, Winter 2014  
PCC 586: That sinking feeling: the thermohaline circulation (seminar). Spring, 2005.  
ESS 534/ATM 514: Ice and climate modeling, Winter 2001.  
ESS 431: Principles of glaciology (5 lecture module ice dynamics), Since Fall 2003.

## **INVITED SEMINARS, TALKS, AND COURSES**

### **2017:**

**California Institute of Technology, Nov 2017.** Glacier retreat as categorical evidence of regional climate change. Division colloquium.  
**Institute of Earth Environment, Chinese Academy of Sciences, Xian, China, Jun 2017:** The dynamics of the Asian monsoon over geologic time.  
**University of Texas, Austin, Institute of Technology, Feb 17:** Glacier retreat as categorical evidence of regional climate change. Institute Colloquium.  
**University of Washington, Mar 2017:** Climate Impacts Group. Glacier retreat in the Pacific Northwest.

### **2016:**

**American Geophysical Union Fall Meeting, December 2016:** The response of the Asian monsoon to the geologic extremes of the past 50 million years  
**Massachusetts Institute of Technology, March 16:** A formal attribution of glacier retreat to climate change. MASS seminar series.  
**Georgia Institute of Technology, Mar 2016:** A formal attribution of glacier retreat to climate change. School of Earth and Atmospheric Sciences, Dept. Seminar.

### **2015:**

**NSF summer school, climate and tectonics, August 2015** Lectures on basic atmospheric science, and glacier variability.  
**University of Washington, April 2015:** Glacier variability and the global mass-balance inventory. Dept. Atmospheric Sciences dynamics seminar  
**Brigham Young University, April 2015.** The impact on Asian climate of the largest geologic changes of the past 50 Ma., Geology colloquium.  
**California Institute of Technology, Feb 2015.** The natural variability of glacier: was there a little ice age? Division colloquium.  
**California Institute of Technology, Feb 2015.** Humpty Dumpty and regional climate prediction. Planetary Science Seminar.

### **2014:**

**American Geophysical Union Fall Meeting, December 2014:** Regional predictability from regional feedbacks.

**National Center for Atmospheric Research, Nov 2014:** Humpty Dumpty and regional climate predictability., Lab seminar

**Institute for Arctic and Alpine Research, Nov, 2014:** The natural variability of glaciers, Institute seminar.

**Woods Hole, Massachusetts, Summer 2014.** Woods Hole summer school in geophysical fluid dynamics.

**Friday Harbor, San Juan Islands, 2014.** Program on climate change, Summer institute.

**Disko Island, Greenland, August 2014.** Advanced climate dynamics summer course, lecturer

**Columbia University, Feb 2014:** Humpty Dumpty and regional climate predictability. Dept Applied Math Seminar, New York.

**Massachusetts Institute of Technology, Lorenz Center, Feb 2014:** Regional climate predictability from regional patterns of feedbacks. 1st Lorenz Center workshop, Endicott House, Cambridge Ma

**University of Washington, Feb 2014:** Humpty Dumpty and regional climate predictability. Dept. Atmospheric Sciences, Dept. Seminar, Seattle.

## 2013

**Massachusetts Institute of Technology, Cambridge, MA, Nov 2013:** Humpty Dumpty and regional climate variability. MASS seminar series.

**Massachusetts Institute of Technology, Cambridge, MA, Nov 2013:** The natural variability of glaciers. Oceanography Seminar series

**NSF Himalaya-Karakoram-Tibet Workshop, Tübingen, Germany, June 2013:** The influence of Tibet on the climate of Asia.

## 2012

**American Geophysical Union Fall Meeting:** The case for regional feedbacks, December, 2012

**American Geophysical Union Fall Meeting:** Knowability and no ability in climate projections, December, 2012

**European Geophysical Union, April 2012:** Glacier long profiles in regions of active uplift, and their role in orogen dynamics.

**Kaplan Workshop on Environmental Geochemistry, March 2012:** The climate of Asia and Tibet and its relationship to paleoclimate proxies. Ein Gedy, Israel.

**Kaplan Workshop on Environmental Geochemistry, March 2012:** The natural variability of glaciers. Ein Gedy, Israel.

## 2011

**American Geophysical Union Fall Meeting:** What do glaciers tell us about climate variability and climate change?, December, 2011.

**Imperial College London, Dept. Seminar, The role of the tectonic governor in mountain belt dynamics, London, January, 2011.**

**University College London, Was there a little ice age? Dept. Seminar, London, February, 2011.**

**Stockholm University, Dept. of Meteorology**, Was there a little ice age? Dept. Seminar, May 2011.

**ICDP Workshop, Lake Issy-kul, Kyrgyzstan**, The climate of Central Asia, June, 2011

**International Association of Cryospheric Sciences**, What do glaciers tell us about climate variability and climate change? Melbourne, July 2011.

**Camp Davis, Wyoming**: Short course on mountain ranges and climate, 6 lectures. August 2011.

**Friday Harbor, Washington**: Short course on warm climates, 1 lecture. September, 2011.

## 2010

**Environmental Protection Agency**, Climate Damages Workshop, Washington D.C., Knowability and no ability in climate projections. Nov. 2010

**Graduate Climate Conference**, Pack Forest, Oct. 2010, Keynote speaker

**Yale University**, Directions in Crustal Geosciences Workshop: Geodynamics principles, not first principles are the principal route to progress, October, 2010

**NSF Himalaya-Karakoram-Tibet Workshop**, San Francisco, June 2010: Climate over Asia and Tibet, not just a simple monsoon.

**American Institute for Chemical Engineers**, First sustainability institute Seattle, May 2010: Climate change: certainties and uncertainties

**Penn State University**, Earth Science department colloquium, March, 2009: Was there a little ice age?

## 2009

**Gilbert Club**, University of California at Berkeley, December 2009: The tectonic governor and the downsizing of the Alps.

**American Geophysical Union Fall Meeting**, December 2009: The interpretation of Chinese Loess as a paleoclimate proxy.

**American Geophysical Union Fall Meeting**, December 2009: Notes on a catastrophe: the descent into a snowball Earth.

**Brown University**, Geology department colloquium, October 2009. Department colloquium. The shape of things to come: what are the potentials and potential limits to global climate predictions?

**Brown University**, Geology department seminar, October 2009. Natural variability of glaciers in a constant climate.

**University of Delaware**, Geography department colloquium, April, 2009. The shape of things to come: what are the potentials and potential limits to global climate predictions?

**University of Delaware**, Geography department seminar, April, 2009. Was there a little ice age?

**Yale University**, Dept. seminar, April, 2009: Extreme weather and the downsizing of the Alps.

**University of Edinburgh**, School of Geosciences seminar, March 2009: Was there a little ice age?

**University of Washington**, Seattle, WA, February, 2009: Dept. Atmospheric Sciences colloquium: What do glaciers tell us about climate variability and change?

**California Institute of Technology**, Pasadena, CA, Environmental Science and Engineering colloquium January, 09: The shape of things to come: what are the limits to global climate predictions?

## 2008

**Cooperative Institute for Research in Environmental Science**, Distinguished Public Lecture, Boulder, Oct, 2008: The shape of things to come: what are the limits to global climate predictions?

**University of Colorado**, Boulder, Oct, 2008: Dept. Geological Sciences colloquium: What do glaciers tell us about climate change?

**University of Colorado**, Boulder, Oct, 2008: Dept. Geological Sciences seminar: The tectonic governor and the downsizing of the Alps.

**University of Washington**, Seattle, WA, Oct, 2008: Dept. Earth and Space Sciences colloquium: The tectonic governor and the downsizing of the Alps.

**Stochastic Climate Modeling Workshop**, Victoria, July 2008: Stochastic Ice.

**West coast climate initiative workshop**, Univ. Southern California, LA, Jun, 2008: Decadal climate variability in the Pacific.

**Environmental Protection Agency**, Washington D.C., April 2008: The shape of things to come: why is climate sensitivity so unpredictable (and who cares anyway?)

**University of Michigan**, Dept. of Geological Sciences, April 2008: The tectonic governor: critical form and feedbacks in mountain-belt dynamics.

**University of Michigan**, Dept. of Applied Math Colloquium, April 2008: Knowability and no ability in climate prediction.

**Yale University**, Dept. seminar, February, 2008: Glaciers and climate: regional variability vs. change.

**Massachusetts Institute of Technology**, Earth, Atmospheric, and Planetary Sciences Dept. Colloquium, February, 2008. The shape of things to come: why is climate sensitivity so unpredictable (and who cares anyway?).

**Harvard University**, Dept. seminar, February, 2008: Glaciers and climate: regional variability vs. change.

**University of California, Berkeley**, Dept. Colloquium, January, 2008: Why is climate sensitivity so unpredictable? Berkeley, CA.

**American Mathematical Society**, Annual meeting, January, 2008: Why is climate sensitivity so unpredictable? San Diego, CA.

## 2007

**NASA CERES workshop**. Victoria, B.C., November 2007: Why is climate sensitivity so unpredictable? Berkeley, CA.

**University of Washington**, Program on Climate Change lecture series, October, 2007. "Glaciers and climate"

**Brigham Young University**, Geology dept. seminar, October, 2007. "Why is climate sensitivity so unpredictable?"

**University of Washington**, Atmospheric Science dept. colloquium, September, 2007. "Why is climate sensitivity so unpredictable?"

**Thun, Switzerland, June, 2007. Climate and surface processes workshop** "Knowability and no ability in climate and surface processes"

**Yale University**, Flint Visiting Professor, May 2007: “Mountain-belt dynamics: climate feedbacks and critical topographic form”

**National university of Mexico**, Mexico City, May 2007: Colloquium: “Mountain-belt dynamics: climate feedbacks and critical topographic form”

**American Geophysical Union**, Spring meeting, Acapulco, Mexico, May 2007 “On the interpretation of Chinese loess as a paleoclimate proxy”.

**Arizona State University**, School of Earth Sciences and Space exploration, department colloquium, March, 2007: “Mountain belt dynamics: climate feedbacks and critical topographic form”; research seminar: “Reconciling glacier changes and climate”

**Sanya, China NSF/CNSF workshop on Tibet and climate**, January, 2007: “On the interpretation of Chinese loess as a paleoclimate proxy”

## 2006

**University of Edinburgh**, School of Geosciences, October, '06. “Reconciling glacier changes and climate”

**University of Bergen**, Bjerknes Centre for Climate Research. Summer school on Multidecadal climate variability and teleconnection dynamics. Lecturer, Sept'06.

**University of Colorado**, workshop on Milankovitch and climate, Jul, '06. What does ‘Milankovitch and climate’ really mean?

**University of Edinburgh**, Earth Sciences department, Hutton Club lecture, June 2006, Rocks, rivers, and rain: feedbacks between climate, erosion and tectonics in mountain belt evolution. Department seminar, June 2006: In defense of Milankovitch.

**University of Delaware**, Geography department colloquium, April, 2006. In defense of Milankovitch.

## 2005

**American Geophysical Union** Fall Meeting, December, 2005: Rocks and rain: orographic precipitation and the form of mountain ranges. Roe, G H, Anders, A.M., Durran, D.R., Montgomery, DR., Hallet, B.

**Massachusetts Institute of Technology**, Earth, Atmospheric, and Planetary Sciences. Oceanography seminar. March 2005. In defense of Milankovitch.

**University of Washington, Earth and Space Sciences**, February, 2005. The drumbeat of tiny raindrops: exhumation, erosion, and the sculpting of mountain ranges.

## 2004

**University of Washington**, Program on climate change Fall seminar series, November, 2004. Rocks, rivers, and rain: the interplay between climate, erosion, and tectonics.

**University of Washington**, Department of Atmospheric Sciences Colloquium, October, 2004. In defense of Milankovitch.

**Massachusetts Institute of Technology**, Earth, Atmospheric, and Planetary Sciences department colloquium, September, 2004. Rocks, rivers, and rain: the interplay between tectonics, erosion, and climate.

**International Geophysical Congress**, August, 2004: Climatic and tectonic controls on orogen evolution.

**University of Washington Quaternary Research center** seminar series, June 2004: Dust storms in Asia: at a loess for words.

**European Geophysical Union**, Annual meeting, April, 2004: The mutual interaction between continental-scale ice sheets and atmospheric stationary waves

**University of Maryland**, Department of Meteorology colloquium, April, 2004: On the characterization of millennial-scale climate variability.

**National Center for Atmospheric Research**, joint meeting of the climate variability and paleoclimate working groups, February, 2004: On the characterization of millennial-scale climate variability.

## 2003

**American Geophysical Union** Fall Meeting, December, 2003: On the characterization of millennial scale climate variability (with Eric Steig).

**Harvard University**, Earth and Planetary Sciences department colloquium, November, **Massachusetts Institute of Technology**, Rocks, rivers, and rain: interactions between tectonics, climate, and erosion. Oceanography seminar, November, 2003: On the characterization of millennial-scale climate variability.

**University of California Santa Cruz**, Earth Sciences department colloquium, May, 2003: Orographic precipitation and the form of mountain ranges. Department seminar: On the characterization of millennial-scale climate variability.

**University of Washington**, Atmospheric Sciences department, Clouds and precipitation seminar. April, 2003: A simple model of orographic precipitation for use in landscape evolution.

**University of Washington**, Earth and Space Sciences department colloquium, March, 2003: On the characterization of millennial-scale climate variability.

**University of Washington**, Atmospheric Sciences department colloquium, February, On the characterization of millennial-scale climate variability (with Eric Steig).

**University of Washington, Quaternary Research Center** Seminar, February, 2003: Rain-on-snow events impact soil temperatures and affect ungulate survival (with Jaakko Putkonen).

## 2002

**Yale University**, Geology and Geophysics department colloquium, November, 2002: The interaction between orographic precipitation and the form of mountain ranges

**Western Washington University**, Geology department seminar, June, 2002: climate feedbacks on the evolution of mountain belts.

**University of Washington**, Earth and Space Sciences, two department seminars, June, 2002: 1. Feedbacks between orographic precipitation and the form of mountain ranges. 2. Do we understand the physics of the ice ages?

**University of Chicago**, Geophysical Sciences department seminar, April, 2002: Feedbacks between orographic precipitation and the form of mountain ranges.

**University of Colorado**, Institute for Arctic and Alpine Research, two department seminars 1. Feedbacks between orographic precipitation and the form of mountain ranges. 2. Do we understand the physics of the ice ages?

**Purdue University**, Earth and Atmospheric Sciences department seminar, January, 2002: Feedbacks between orographic precipitation and the form of mountain ranges.



**University of Alaska**, Fairbanks, March, 2002. Chapman lecturer. Short course ice sheet climate interactions: 1. Milankovitch forcing of ice age cycles 2. Climate -ice sheet interactions on ice age time scales.

## 2001

**Applied Physics Laboratory**, University of Washington, laboratory seminar. May, 2001. The mutual interaction between continental-scale ice sheets and atmospheric stationary waves.

**California Institute of Technology**, Division of Geological and Planetary Sciences, department seminar, March, 2001: Climate feedbacks on the evolution of ice sheets and mountain ranges.

**University of California at Berkeley**, Geography department seminar, February, 2001: Climate feedbacks on the evolution of ice sheets and mountain ranges.

**University of Wisconsin at Madison**, Atmospheric Sciences department seminar, March, 2001: Climate feedbacks on the evolution of ice sheets and mountain ranges.

## 2000

**University of Washington**, Atmospheric Science department, April, 2000: Let it snow: modeling precipitation over ice sheets: an assessment for Greenland.

## 1999

**University of Toronto**, Physics department seminar, April, 1999: The mutual interaction between continental-scale ice sheets and atmospheric stationary waves.

**University of Chicago**, Geophysical Sciences department seminar, February, 1999: The mutual interaction between continental-scale ice sheets and atmospheric stationary waves.

**University of Washington**, Quaternary Research Center seminar, February, 1999: The mutual interaction between continental-scale ice sheets and atmospheric stationary waves

## OUTREACH

- Schools outreach : science-night presentations on glacier dynamics and atmospheric pressure.
- Media commentary for science-in-the-news items.
- Several research papers have garnered press over the years. Some examples:-
  - Putkonen and Roe, GRL, (2003) [Science](#), [NPR](#), others
  - Roe and Baker, Science, (2007) ([NPR Science Friday](#), BBC Science in Action, [National Bureau of Economic Research](#), many others)
  - Rupper et al., (2009) [NSF](#), [phys.org](#), others
  - Feldl and Roe (2011) [New York Times](#)
  - Armour and Roe (2011) [ScienceDaily](#),
  - Medwedeff and Roe, Climate Dynamics (2017), ([Nature Climate Change](#))
  - Roe et al., Nature Geoscience, 2017 ([Washington Post](#), [AGU press conference](#), [KUOW](#), [ScienceNews](#), [Climate Central](#), and more than 40 others)

Shugar et al., Nature Geoscience, 2017 ([New York Times](#), [NYT op-ed](#), [Guardian](#), [Wash Post](#), [CBC](#), [BBC](#), [Seattle Times](#), [Associated Press](#), and more than 140 others)

## ADVISEES

### *Postdocs:*

Cristi Proistosescu (PhD Harvard, Jan17)

### *Graduate Students:*

Alison Anders (ESS, PhD, 2005, Assoc. Prof., U. Illinois)!

Michael O'Neal (ESS, PhD, 2005, Assoc. Prof, U. Delaware)!

Drew Stolar (ESS, PhD, 2006, Ballard Power Systems, Vancouver)!

Noah Finnegan (ESS, PhD, 2006, Assoc. Prof., UCSC)!

Summer Rupper (ESS, MSc, 2004; ESS, PhD, 2007, Assoc. Prof., U. Utah)\*,

Camille Li (ATM, PhD, 2007, Asst. Prof., U. Bergen)#,

Kevin Rennert (ATM PhD 2007, Deputy Administrator, EPA)!

Kat Huybers (ESS, MSc 2007, PhD 2014, Assist. Prof., Pacific Lutheran U.)\*,

Robert Sheerer (ESS, MSc 2008)#,

Eric Buer (ESS, MSc 2008, Consultant, Ridolfi Inc.)#,

Justin Minder (ATM PhD , 2010, Asst. Prof. Suny Albany)\*,

Kevin Wood (ESS PhD, 2010, scientist NOAA PMEL),

Sandra Penny (ATM PhD 2013, Lecturer, Sage College)\*,

Rachel Headley (ESS, PhD 2011, Asst. Prof. UWisc Parkside)!,

Erin Burke (ESS MSc, 2012, Deschutes Public Library)\*,

Nichole Feldl (At. Sci. PhD 2013, Asst. Prof UC Santa Cruz)\*,

Angela Pendergrass (PhD 2013, postdoc NOAA)\*,

Kyle Armour (Physics, PhD 2012, Asst. Prof., UW)!,

Leif Anderson (UColorado, PhD 2014, Postdoc, Simon Fraser)!,

Nicholas Siler (At. Sci, PhD 2015, Postdoc Scripps)\*,

Nathan Steiger (At. Sci., PhD 2106, Postdoc Lamont Doherty)\*,

Derya Dilmen (PhD, 2016, Engineer)!

Bradley Markle (PhD candidate)!

Xiaojuan Liu (At. Sci., PhD candidate)\*,

John Christian (ESS, PhD candidate)

\*formal advisor or co-advisor, !major research advisor, #committee member (some research input)

### *Undergraduates (& next step):*

Sally Zhang (PhD candidate, Caltech), William Medwedeff (PhD candidate, U.Mich.),

Joel Simon (PhD candidate, Princeton), Florian Herla (U. Innsbruck)

### *Other thesis committees (partial list):*

Jane Locke (PhD, 2007), Hans Schweiger (PhD, 2007), Jennifer Adams (PhD, 2007),

Eric Buer (MSc, 2007), Robert Sheerer, (MSc,2007), Jim Lutz (CivE, PhD, 2008),

Michelle Koutnik (PhD, 2009) Peter Neff (MSc, 2011), Xiaogang Xie (CivE, PhD, 2012),

A Donohoe (AtSci., PhD, 2012), Brian Smoliak (AtSci., PhD, 2013), Dan Nelson (OCN,

PhD, 2013), Ted Bohn (CivE, PhD, 2013), Vivian Leung (ESS, PhD), Jack Scheff (AtSci, PhD, 2014), Emily Newsom (PhD, 2016) Mike Hay (PhD, 2017), Landon Burgener (PhD candidate), Alyssa Atwood (OCN, PhD, 2015), Brian Henn (CivE, PhD, 2016), Emma Kahle (PhD candidate), Hannah Barnes (AtSci, PhD, 2016), Brian Green (MIT, PhD, 2017), Julia Kelson (ESS, PhD candidate), Casey Wall (AtSci, PhD candidate)

## GRANTS

### *Past:*

NSF 6312293 DIVISION OF EARTH SCIENCES, CONTINENTAL DYNAMICS PROGRAM July'05 to June'10, \$270,125 (U. Wash. portion). Upward and Outward: Tibetan Plateau growth and climatic consequences. Gerard Roe (UW PIs).

NSF 0409884 DIVISION OF EARTH SCIENCES, CONTINENTAL DYNAMICS PROGRAM Aug'04 to Jul'010 \$408,616 (U. Wash. portion). Collaborative research: St. Elias Erosion/ tectonics Project (STEEP) Bernard Hallet, Gerard H Roe (UW PIs).

NSF 0314710. DIVISION OF ATMOSPHERIC SCIENCES, CLIMATE DYNAMICS PROGRAM Sep'03 to Aug'05, \$249,521. Understanding the role of rain-on-snow events in high latitude climates: soil temperatures and ecosystems. Jaakko Putkonen, Cecilia Bitz, Gerard Roe (PIs).

NSF DIVISION OF EARTH SCIENCES, GEOMORPHOLOGY AND LAND USE DYNAMICS PROGRAM. Workshop: Climate over Landscapes; Boulder, Colorado; September 19-21, 2007 \$73,570. PIs Gerard Roe, Joe Galewsky.

PCC seed grant. September '03 to August '04., \$26,000. Peaks, precipitation, and their co-evolution. Gerard Roe, Dale Durran, Bernard Hallet (PIs).

UW Royalty Research Fund, Aug '05 to Jul '06, \$18, 649. Patterns of precipitation in mountainous regions. Gerard Roe, Dale Durran (PIs).

NSF DIVISION OF ATMOSPHERIC SCIENCES, GEOMORPHOLOGY AND LAND USE DYNAMICS PROGRAM. Patterns of precipitation and their control on landscape dynamics Jan '07 to May'11, \$311,410. PIs Gerard Roe, Dale Durran, David Montgomery.

NSF DIVISION OF EARTH SCIENCES, PALEOCLIMATE PROGRAM. Dynamical Climate Reconstruction Using Paleoclimate Data and Ensemble State Estimation. May '09 to April '12. \$370,000. PIs Greg Hakim, David Battisti, Gerard Roe.

NSF DIVISION OF EARTH SCIENCES, CONTINENTAL DYNAMICS PROGRAM. Collaborative Research: Growth of the Tibetan Plateau and Eastern Asia Climate: Clues to Understanding the Hydrological Cycle. May '10 to Apr '15. \$650,000 (UW portion) PIs(UW) Gerard Roe, David Battisti.

NSF DIVISION OF EARTH SCIENCES, PALEOCLIMATE PROGRAM. Paleoclimate Data Assimilation Jul '13 to June'16. \$422,000. PIs Greg Hakim, David Battisti, Gerard Roe, Eric Steig.

*Current:*

NSF DIVISION OF EARTH SCIENCES, ANTARCTIC GLACIOLOGY PROGRAM.  
Collaborative Research: Feedbacks between Orographic Precipitation and Ice Dynamics.  
Jun '17 to Jun '20. \$100,949. PI Gerard Roe

*Pending:*

NSF DIVISION OF EARTH SCIENCES, Project MONCAFE: investigating Asian monsoons and carbon cycle feedbacks throughout the varying Greenhouse - Icehouse conditions of the late Paleogene, \$566,000. PIs Licht, coPI Roe, Huntington

## **OTHER CONFERENCE PRESENTATIONS (partial list)**

### **2017:**

Armour, K.C., C. Proistosescu, G.H. Roe, and P.J. Huybers. When will we be committed to crossing 1.5 and 2 °C temperature thresholds? AGU Fall meeting.

Shugar, D.H., J.J. Clague, J. Best, C. Schoof, M.J. Willis, L. Copland, and G.H. Roe. A river (used to) run through it: piracy in the Yukon. AGU Fall meeting.

Rupper, S., J.M. Maurer, J.M. Schaeffer, G.H. Roe, and K.M. Huybers. Response of Debris-Covered and Clean-Ice Glaciers to Climate Change from Observations and Modeling. AGU Fall meeting.

Proistosescu, C., A Donohoe, K. Armour, G.H. Roe, M.F Stuecker, and C.M Bitz. Estimating radiative feedbacks from stochastic fluctuations in surface temperature and energy imbalance. AGU Fall meeting.

Christian, J.E., M.R. Koutnik, and G.H.Roe. Estimating glacier response times and disequilibrium in a changing climate. AGU Fall meeting.

### **2016:**

Armour, KC., Roe, G.H. Donohoe, A., Siler, S. Markle, B.R., Liu, X., Feldl, N. A new paradigm for predicting zonal-mean climate and climate change. AGU Fall Meeting.

Liu, X., D.S. Battisti, G.H. Roe. What Determines the Meridional Heat Transport? Insights from Varying Rotation Rate Experiments. AGU Fall Meeting.

Christian, J.E., M.R. Koutnik, G.H. Roe. Examining model hierarchies of glacier response to climate. AGU Fall Meeting.

Roe, G.H., M.B. Baker, and F. Herla. A formal attribution of glacier retreat to climate change. AGU Fall Meeting.

Markle, B.R., E.J. Steig, G. Roe, G. Winckler, J. McConnell. A coherent understanding of water-isotope and ice-impurity variability in Antarctica at millennial to orbital time scales. AGU Fall Meeting.

### **2015:**

Roe, G.H., and M.B. Baker. Glacier response to climate perturbations: an accurate linear geometric model, Pacific Northwest Glaciology.

Siler, N., G.H. Roe, K. Armour, Energetic constraints on the magnitude and pattern of changes in the hydrological cycle under anthropogenic climate forcing, AGU, Fall Meeting.

Medwedeff, W., G.H. Roe, A Statistical Analysis of Glacial Mass Balance Data, AGU, Fall Meeting.

Cristian, J., N. Siler, M. Koutnik, G.H. Roe, Identifying dynamically induced variability in glacier mass balance records. AGU Fall Meeting.

#### **2014:**

Roe, G.H., and M.B. Baker. Glacier response to climate perturbations: an accurate linear geometric model, AGU, Fall Meeting.

Steiger, N., G. Hakim, G. Roe., D Battisti, E. Steig, Reconstruction of Dynamical Fields of the Common Era, Fall AGU Meeting.

Siler, N., Durran, G.H. Roe, 2014. Assessing the influence of the tropopause on mountain waves and orographic precipitation using linear theory and numerical simulations. 16th Conference on Mountain Meteorology, San Diego, CA, August 2014. (winner, best presentation)

Siler, N., G.H. Roe, D.R. Durran, 2014. How will orographic precipitation respond to surface warming? An idealized thermodynamic perspective. 16th Conference on Mountain Meteorology, San Diego, CA, August 2014.

#### **2013:**

Huybers, K., Rupper, S., and Roe, G. The timing and magnitude of lake-level variability, in response to interannual climate variability, AGU, Fall Meeting.

Steiger, N.J., G.J. Hakim, E.J. Steig, D.S. Battisti, G.H. Roe, 2013: A data-assimilation based multiproxy reconstruction of the past 2000 years. AGU Fall Meeting

Steiger, N.J., G.J. Hakim, E.J. Steig, D.S. Battisti, G.H. Roe, 2013: Assimilation of time averaged pseudoproxies for climate reconstruction. PAGES Open Science Meeting Goa, India, February 2013.

Anderson, L.S., G.H. Roe and R.S. Anderson, 2013: The effects of interannual climate variability on the extraction of climate estimates from glacial moraines: A case study from the Colorado Front Range, in Abstracts with Programs Annual Meeting, Geological Society of America Rocky Mountain Section, Gunnison, CO.

Anderson, L.S., G.H. Roe and R.S. Anderson, 2013: The effect of interannual variability on the moraine record: A new perspective on paleoclimate estimation in glacial landscapes, in Abstracts with Programs Annual Meeting, American Geophysical Union, San Francisco, CA.

Anderson, L.S., G.H. Roe and R.S. Anderson, 2013: The effect of interannual variability forced glacial advances on the moraine record: A case study from the Colorado Front Range during the Last Glacial Maximum, Annual Meeting, Geological Society of America, Denver, CO.

#### **2012:**

Siler N.S, G.H. Roe, D.R. Durran, 2012: On the dynamical causes of variability in the rain-shadow effect: a case study of the Washington Cascades. American

Meteorological Society, Mountain Meteorology Conference. (winner, best presentation)

Steiger, N.J., G.J. Hakim, E.J. Steig, D.S. Battisti, G.H. Roe, 2012: Climate Field Reconstruction via Data Assimilation., AGU Fall meeting, San Francisco

Armour, K., C.M. Bitz; G.H. Roe, 2012: Time-varying climate sensitivity from regional feedbacks., AGU Fall meeting, San Francisco.

Feldl, N., G.H. Roe , 2012: Nonlinear and Nonlocal Feedbacks in an Aquaplanet., AGU Fall meeting, San Francisco.

D.S. Battisti, Q. Ding, X. Liu, Gerard Roe, 2012: The impact of Tibet and the Andes on the climate and isotopic composition of precipitation (Invited), AGU Fall meeting, San Francisco.

Huybers, K.M., G.H. Roe, H. Conway, G. Balco, C.E. Todd, 2012: Linkage between Grounding Line Dynamics and Geological Observations in the Weddell Sea Sector of Antarctica AGU Fall meeting, San Francisco.

K.F. Ma, G.H. Roe, M.T. Brandon, 2012: Perennial ice cap glaciation and progressive valley incision beginning by ~6 Ma in Patagonia, AGU Fall meeting, San Francisco.

Huybers, K.M., G.H. Roe, H. Conway, G. Balco, C.E. Todd, 2012: Linkage between Grounding Line Dynamics and Geological Observations in the Weddell Sea Sector of Antarctica. WAIS meeting, Pack Forest.

#### **2011:**

Battisti, D.S., Q. Ding, and G.H. Roe, 2012. The relative importance of orbital and glacial boundary conditions on the climate and isotopic composition of precipitation, AGU, Fall meeting, San Francisco.

Feldl, N.; G.H. Roe, 2011: Regional predictability and the linearity of climate feedbacks. AGU Fall meeting, San Francisco

Headley, R.M., B. Hallet; G.H. Roe; E.D. Waddington, 2011: Spatial variation of glacial erosion rates in the St. Elias range, Alaska, inferred from a realistic model of glacier dynamics, AGU Fall meeting, San Francisco

Feldl, N., and G.H. Roe, 2011: Reengineering climate sensitivity, World Climate Research Programme, Boulder CO. (*Winner outstanding poster*)

#### **2010:**

Roe, G.H., 2010: What do glaciers tell us about climate variability and climate change? AGU Fall Meeting, San Francisco, CA.

Feldl, N. and G.H. Roe, 2010: Circulation variability and intense precipitation: A case study of ENSO and the American West, Pacific Northwest Weather Workshop, NOAA, Seattle, 2010.

#### **2009:**

Feldl, N., and G.H. Roe, 2009: Intense precipitation events during La Niña in the southwestern United States, AGU Fall Meeting, San Francisco, CA.

Huntington, K.W., Battisti, D.S., Roe, G., Wernicke, B.P., and Eiler, J.M., 2009. Terrestrial climate reconstructions from carbonate clumped-isotope thermometry, Invited, AGU Fall Meeting, San Francisco, CA.

Burke, E.E., and G.H. Roe, 2009: The relative importance of interannual vs. persistent climate fluctuations in driving glacier variability at decadal and centennial timescales. AGU Fall Meeting, San Francisco, CA.

**2008:**

Minder, J.U., G.H. Roe, and D.R. Durran, 2008: Pacific Northwest Snowpack. , Geophysical Union Fall meeting, San Francisco, December 2008

Rupper, S.B., K. Huybers, and G.H. Roe, 2008: Intrinsic variability of lake levels, Geophysical Union Fall meeting, San Francisco, December 2007

**2007:**

Roe, G.H. and M.B. Baker, 2007: Why is climate sensitivity so unpredictable? American Geophysical Union Fall meeting, San Francisco, December 2007.

Rupper, S.B., and G.H. Roe, 2007: Glaciers and climate in central Asia. American Geophysical Union Fall meeting, San Francisco, December 2007.

Minder, J., G.H. Roe, D.R. Durran, A.M Anders, D.R. Montgomery. Understanding small-scale patterns of mountain precipitation and their impacts: Pacific Northwest Weather Workshop, March 2007.

Dayem, K.E., D.S. Battisti, G.H. Roe, 2007: Lessons Learned From the Modern Monsoon Applied to Interpretation of Paleoclimate Records, Geophysical Union Fall meeting, San Francisco, December 2007

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Roe, G.H, and M.T. Brandon, 2006: Critical form and mountain belt dynamics, American Geophysical Union Fall meeting, San Francisco.

Huybers, K., and G.H. Roe, 2006: Understanding glaciers as an indicator of regional climate variability, American Geophysical Union Fall meeting, San Francisco, October, 2006.

Minder, J., G.H. Roe, D.R. Durran, A.M Anders, D.R. Montgomery, 2006: Understanding the climatology of small-scale orographic precipitation patterns: progress from the Olympic mountains. San Antonio, Texas, Sept 2006

Huybers, K., and G.H. Roe, 2006: Understanding glaciers as an indicator of regional climate variability, Northwest Glaciology meeting. Fairbanks, Alaska

Tomkin, J.T.; Roe, G.H., 2006: Glaciated orogenic wedges: sensitivity of tectonics to climate change, European Geophysical Union annual meeting, EGU06-A-05185; Vienna.

**2005:**

Tomkin, J.T., Roe, G.H., 2005 The response of a steady state, glaciated critical wedge orogen to changes in climate. Eos Trans. AGU, 86(47), Fall Meet. Suppl., Abstract, H53I-05, San Francisco

Whipple, K.X., Roe, G.H., Meade, B., 2005: Coupled evolution of orographic precipitation and orogenic wedges. Geological Society of America Abstracts with Programs, Earth System Processes 2, p. 13-1, Calgary.

- Roe, G.H., Whipple, K.X., Fletcher, J.K., 2005: Climate feedbacks and critical wedge orogens. Geological Society of America Abstracts with Programs, Earth System Processes 2, p. 13-3, Calgary.
- Stolar, D.B., Roe, G.H., and Willett, S.D., 2005. Tectonic and climatic control of non-uniform rock uplift in the Olympic Mountains of Washington State, European Geosciences Union, Abstract TS10-1FR3O-004.
- Stolar, D.B., Roe, G.H., and Willett, S.D., 2005: Reconciling observations and theory of erosion rate patterns in the Olympic Mountains of Washington State, AGU Fall meeting, T12A-02, San Francisco.
- Stolar, D.B., Roe, G.H., and Willett, S.D., 2005. Tectonic and climatic control of non-uniform rock uplift in the Olympic Mountains of Washington State, Geological Society of America Abstracts with Programs, Earth System Processes 2, p. 13-2., Calgary.
- Huybers, K., Roe, G.H., and O'Neal, M. Glacier Response to Intrinsic Climate Variability in the Pacific Northwest. Eos Trans. AGU, 86(47), Fall Meet. Suppl., Abstract, C23-1162., San Francisco
- (Invited) Durrán, D.R., Minder, J.U., Anders, A.M., Roe, G.H., 2005: Patterns and mechanisms of orographic precipitation in the Olympic Mountains, Washington State. Eos Trans. AGU, 86(47), Fall Meet. Suppl., Abstract, H53-J02., San Francisco.
- Steig, E; Schilla, A; White, J; Roe, G; Brook, E., 2005: Statistical properties of Antarctic ice cores: an update, with the latest data from Siple Dome and a revised Taylor Dome timescale. European Geophysical Union Annual meeting, EGU05-A-08875, Vienna, Austria.
- Steig, E.; Roe, G.; Battisti, D., 2005: Is millennial-scale climate variability statistical "red noise"? European Geophysical Union Annual meeting, EGU05-A-08934, Vienna, Austria.
- Stolar, D.B., G.H. Roe, S.D. Willett, 2005: Tectonic and climatic control of non-uniform rock uplift in the Olympic Mountains of Washington State. European Geophysical Union Annual meeting, EGU05-A-10459, Vienna, Austria.

#### **2004:**

- Bitz, C.M., G.H. Roe, 2004: A Mechanism for the High Rate of Sea-Ice Thinning in the Arctic Ocean. Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract, C51C-07, San Francisco.
- Roe, G.H., C.M. Bitz, P. Molnar, 2004: Chinese loess as a paleoenvironmental indicator of tectonics or climate: the role of the Arctic, cold air outbreaks, and lee cyclogenesis? Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract, T33D-06, San Francisco.
- Anders, A.M., G.H. Roe, D.R. Durrán, D.R. Montgomery, B. Hallet, 2004: Co-evolution of spatial patterns of precipitation and topography. Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract T33D-02, San Francisco.
- Finnegan, N J, G.H. Roe, D.R. Montgomery, B. Hallet, 2004: A New Approach to Scaling Channel Width in Bedrock Rivers and its Implications for Modeling Fluvial Incision. Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract, T31B-1291, San Francisco.
- Rennert, K.J., G.H. Roe, J. Putkonen, C.M. Bitz, D.E. Russell, J.M. Wallace, 2004: Terrestrial and Ecological Impacts of Rain-on-Snow and Melt-Freeze Events in the



Circumpolar Arctic. *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract C41A-0193, San Francisco.

Stolar, D.B., G.H. Roe, S.D. Willett, 2004: Rocks, Rivers, and Rain: Controls on Exhumation in Orogenic Belts? *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract, T33D-07, San Francisco.

Anders, A.M., G.H. Roe, D.R. Durran, D.R. Montgomery, B. Hallet, 2004: The coevolution of spatial patterns of precipitation and landscape. International Geological Congress, Florence, Italy

Anders, A.M., G.H. Roe, and D.R. Durran, Orographic precipitation and the form of mountain ranges, 11th Conference on Mountain Meteorology and the Annual Mesoscale Alpine Program (MAP), Mount Washington Valley, New Hampshire

Rennert, K.J., G.H. Roe, J. Putkonen, C.M. Bitz, D.E. Russell, J.M. Wallace, 2004: Terrestrial and Ecological Impacts of Rain-on-Snow and Melt-Freeze Events in the Circumpolar Arctic. Bjerknes Centenary conference: Climate change in High Latitudes, S2-15.

Rupper, S.; Steig, E.J.; and Roe, G. 2004. The relationship between snow accumulation at Mt. Logan, Yukon, and climate variability in the North Pacific. *Eos Transactions. Joint Assembly of the CGU, AGU, SEG and EEGS*, Montreal, Canada, May 17-21,

Rennert, K. G.H. Roe, D. Russell, C.M. Bitz, and J.P Putkonen, 2004: a comparison of rain-on-snow and thaw-freeze events in the circumpolar region: impacts for caribou. 10th North American Caribou Workshop, Girdwood, Alaska.

Roe, G.H, A.M. Anders, D.R. Durran, 2004. Orographic precipitation and the form of mountain ranges. American Meteorological Society mountain meteorology conference, New Hampshire.

### **2003:**

Stolar, D.B., G.H. Roe, and S.D. Willett, 2003: Response of an orogenic wedge to climatic and tectonic forcing. American Geophysical Union, Fall meeting, San Francisco.

Anders, A.M., G.H. Roe., D.R. Durran, D.R. Montgomery, B. Hallet, 2003: Orographic precipitation and the form of mountain ranges. American Meteorological Society annual meeting, Seattle

Steig, E.J., and G.H. Roe, 2003: Characterization of climate variability and interhemispheric linkages on millennial time scales. Geological Society of America annual meeting, Seattle.

Anders A.M., G.H. Roe, D.R. Durran, D.R. Montgomery, B. Hallet, 2003: Orographic precipitation over the Olympic mountains of Washington State. Geological Society of America annual meeting, Seattle.

Ehlers, T.A., Reiners, P.W., G.H. Roe, Gran-Mitchell, S., D.R. Montgomery, 2003: Climate, tectonics, and topographic evolution of the Washington Cascades: insights from coupled process models and thermochronometry. Geological Society of America annual meeting, Seattle.

Rupper, S.B., Gillespie, A., and G.H. Roe, 2003: Climatic Interpretation from mountain glaciation in central Asia. Geological Society of America annual meeting, Seattle.

Willett, S.D., D. Stolar., and G.H. Roe., 2003: Transient response of landscapes to tectonic and climatic forcing. Geological Society of America annual meeting, Seattle.

- Putkonen, J.P, and G.H. Roe, 2003: Rain-on-snow events impact soil temperatures and affect ungulate survival. SEARCH meeting, Seattle.
- Gillespie, A., S.B. Rupper, and G.H. Roe, 2003: Climatic Interpretation from mountain glaciation in central Asia. International Union for Quaternary Research Congress, Reno.
- Anders, A.M., G.H. Roe, D.R. Durran, D.R. Montgomery, and B. Hallet, 2003: Orographic precipitation and the form of mountain ranges. International Conference on Alpine Meteorology.

**2002:**

- Anders, A.M., G.H. Roe, D.R. Montgomery, B. Hallet, 2002. Geomorphologic Applications of Precipitation Estimates from TRMM Satellite Data. American Geophysical Union Fall meeting, San Francisco.
- Roe., G.H., and M.R. Allen, 2002: A comparison of competing theories of the ice ages. European Geophysical Union Annual meeting, Nice, France.

**2001:**

- Roe, G.H., D.R. Montgomery, and T.A.Ehlers, 2001: The impact of orographic precipitation on the relief of mountain ranges, American Geophysical Union Fall meeting, San Francisco
- Roe, G.H., D.R. Montomgery, B. Hallet, 2001: The effect of orographic precipitation variations on mountain river profiles. American Geophysical Union, Spring meeting, Boston.

**PUBLICATIONS** (97, student advisee/postdoc underlined)

***In preparation:-***

- Roe, G.H., K. Armour, M. Baker, D.S. Battisti, A. Donohoe, N. Feldl, X. Liu, B. Markle, and N. Siler, 2017. Energetic and heat-engine constraints on the spatial patterns of the mean and perturbed climate. *In preparation*.
- Siler, N., K.C. Armour, and G. Roe, 2017: Energetic constraints on the magnitude and pattern of changes in the hydrologic cycle under global warming. *In preparation*.
- Armour, K.C., G. Roe, N. Siler, and N. Feldl, 2017: The relative roles of feedbacks, forcing and ocean heat uptake in the spatial pattern of climate change. *In preparation*.
- Roe, G.H., and D.S. Battisti, 2017: Knowability and no ability in climate and earth sciences. *In preparation*.
- Markle, B., E.J. Steig, G.H. Roe, 2017: The great atmospheric washing machine: reconciling isotopes and dust in ice-core records. *In preparation*.
- Proistosescu, C., K.C. Armour, A. Donohoe, M. Stuecker, C. Bitz, and G.H. Roe, 2017: Coupling of stochastic interannual fluctuations in temperature and radiation. *In preparation*.

***In review:-***

Christian, J.E., G.H. Roe, M.R. Koutnik, 2017: Committed retreat: controls on glacier disequilibrium in a warming climate. *In review*.

Robel, A.A., G.H. Roe, M. Hasselhoff, 2017: Response of marine-terminating glaciers to forcing: time scales, sensitivities, instabilities and stochastic dynamics. *In review*.

Siler, N., G.H. Roe, K.C. Armour, and N. Feldl, 2017: Surface energetics as a primary control on hydrologic sensitivity to global warming. *In review*.

Dilmen, D., G.H. Roe., Y. Wei., and V.V. Titov, 2017: The role of near-shore bathymetry during tsunami inundation in a reef-island setting: a case study of Tutuila Island. *In review*.

***Published/in press (peer-reviewed):-***

**2017:**

Barth, A.M., P.U. Clark, J. Clark, G.H. Roe, S.A. Marcott, A.M. McCabe, M.W. Caffee, F. He, J.K. Cuzzone, and P. Dunlop, 2017: Persistent millennial-scale glacier fluctuations in Ireland between 24,000 and 10,000 years ago. *Geology*, accepted.

Liu, X., D.S. Battisti, and G.H. Roe, 2017: What determines the meridional heat transport: insights from varying rotation rate experiments. *J. Climate*, doi:10.1175/JCLI-D-16-0745.1.

Huybers, K.M., G.H. Roe, H. Conway, 2017: Differential stability of the West Antarctic Ice Sheet. *Annals of Glaciology*. doi:10.1017/aog.2017.9.

Herla, F., G.H. Roe., and B. Marzeion, 2017: Ensemble statistics of a geometric glacier length model. *Annals of Glaciology*. doi: 10.1017/aog.2017.15.

Shugar, D.H., J.J. Clague, J.L. Best, C. Schoof, M.J. Willis, L. Copeland, G.H. Roe, 2017: River piracy and drainage basin reorganization led by climate-driven glacier retreat. *Nature Geoscience*, doi 10.1038/ngeo2932.

White, R.H., D.S. Battisti, and G.H. Roe, 2017: Mongolian mountains matter most: implications of the latitude and shape of Asian orography on the winter Pacific jet stream. *J. Climate*, doi:10.1175/JCLI-D-16-0401.1

Roe, G.H., M.B. Baker, F. Herla, 2017: Centennial glacier retreat as categorical evidence of regional climate change. *Nature Geoscience*, doi:10.1038/ngeo2863.

Steiger, N.J., E.J. Steig, S.G. Dee, G.H. Roe, and G.J. Hakim, 2017: Climate reconstruction using data assimilation of water-isotope ratios from ice cores. *J. Geophys. Res: Atmospheres*, doi:10.1002/2016JD026011.

Medwedeff, W., and G.H. Roe, 2017: Trends and variability in the global dataset of glacier mass balance. *Clim Dyn*. DOI 10.1007/s00382-016-3253-x. (highlighted research in Nature Climate Change)

**2016:**

Christian, J., N. Siler , G. Roe, and M. Koutnik, 2016: Identifying dynamically induced variability in glacier mass balance records. *J Climate*, doi:10.1175/JCLI-D-16-0128.1.

Roe, G.H., Q. Ding, and D.S. Battisti, P. Molnar, M.K. Clark, and C.N. Garzione, 2016: The response of Asian summertime climate to the largest geologic changes of the past 50 Ma. *J. Geophys. Res.*, **121**, 5453-5470.

Roe, G.H., and M.B. Baker, 2016: The response of glaciers to climatic persistence. *J. Glaciology.*, 62, 440-450.

Huybers, K.M., S.B. Rupper, and G.H. Roe, 2015: Lake level response to natural and forced variability, a case study of Great Salt Lake. *Climate Dynamics*. 10.1007/s00382-015-2798-4.

#### **2015:**

Dilmen, D.I., V.V. Titov, and G.H. Roe, 2015: Evaluation of the relationship between coral damage and tsunami dynamics; a case study for the 2009 Samoa Tsunami. *Pure and Appl. Geophys.*, DOI 10.1007/s00024-015-1158-y.

Roe, G.H., N. Feldl, K.C. Armour, Y.-T. Hwang, and D.M.W. Frierson, 2015: Regional climate predictability from regional feedbacks. *Nature Geoscience*, doi:10.1038/ngeo2346.

#### **2014:**

Battisti, D.S, Q. Ding, and G.H. Roe, 2014: A coherent pan-Asian climate and isotopic response to precessional forcing. *J. Geophys. Res.*, **119(21)**, 11,997-12,020.

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Siler, N., and G.H. Roe, 2014: How will orographic precipitation respond to surface warming? An idealized thermodynamic perspective. *Geophys. Res. Lett.* DOI: 10.1002/2013GL059095.

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Burke, E.E., and G.H. Roe, 2014: The persistence of memory in the climatic forcing of glaciers, *Climate Dynamics*, DOI 10.1007/s00382-013-1758-0.

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#### **2013:**

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Armour, K.C., C.M. Bitz, and G.H. Roe, 2013: Time-varying climate sensitivity from regional feedbacks. *Journal of Climate*, **26**, 4518-4534.

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Yuan, D.-Y., Ge, W.-P., Chen, Z.-W., Li, C.-Y., Wang, Z.-C., Zhang, H.-P., Zhang, P.-Z., Zheng, D.-W., Zheng, W.-J., Craddock, W.H., Dayem, K.E., Duvall, A.R., Hough, B.G., Lease, R.O., Champagnac, J.-D., Burbank, D.W., Clark, M.K., Farley, K.A., Garzzone, C.N., Kirby, E., Molnar, P., and Roe, G.H., 2013, The growth of

northeastern Tibet and its relevance to large-scale continental geodynamics: A review of recent studies: *Tectonics*, **32**, 1358-1370

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Headley, R., B. Hallet, G.H. Roe, E.D. Waddington, and E. Rignot, 2012: Comparing observed and modeled velocities in Seward throat: implications for erosion beneath fast-moving ice streams, *J. Geophys. Res.*, **117**, doi:10.1029/2011JF002291.

Siler, N., G.H. Roe., and D.R. Durran, 2012: On the dynamical causes of variability in the rain-shadow effect: a case study of the Washington Cascades. *Monthly Weather Review*, **14**, 122-139.

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## 2010:

Roe, G.H., 2010: Knowability and no ability in climate projections. *Report prepared for the Environmental Protection Agency. National center for environmental economics report no. 0564. Available at <http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0564-117.pdf>.*

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Dayem, K., D.S. Battisti, G.H. Roe, P. Molnar, 2010: Lessons learned from the modern monsoon applied to the interpretation of paleoclimate records. *Earth. Plan. Sci. Lett.*, **295**, 219–230.

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Huybers, K.M., and G.H. Roe, 2009: Glacier response to regional patterns of climate variability. *J. Climate*, **22**, 4606-4620.

Baker, M.B., and G.H. Roe, 2009: The shape of things to come: why is climate change so predictable? *J. Climate*, **22**, 4574-4589.

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