

Kelly Revenaugh MacGregor
Assistant Professor, Macalester College
Curriculum Vitae

I. Education

- 1996-2002 Ph.D., Earth Sciences, University of California, Santa Cruz
Dissertation: Modeling and Field Constraints on Glacier Dynamics, Erosion, and Alpine Landscape Evolution
Advisor: Dr. Robert S. Anderson
- 1995-96 Post-baccalaureate studies, Baruch and Hunter Colleges, New York, New York
- 1989-93 B. A., Geology, with Highest Honors, Williams College, Williamstown, MA
Thesis: Late Pleistocene History of Glacial Lake Atwood, San Juan Mountains, Colorado
Advisor: Dr. David DeSimone

II. Related Experience

- 1-5/2007 Research Associate, Earth Sciences Department, UC Santa Cruz (sabbatical adjunct position)
- 9/2003-present Assistant Professor, Department of Geology, Macalester College, St. Paul, Minnesota
- 2002-2003 Mendenhall Postdoctoral Fellow, Coastal and Marine Geology Program, U.S. Geological Survey, Menlo Park, CA
Advisors: Dr. Guy Gelfenbaum, Dr. David Rubin
- 2002-2004 Research Fellow, Institute of Marine Sciences and The Center for the Dynamics and Evolution of the Land-Sea Interface (IMS/CDELSI), University of California, Santa Cruz
- 1996-2002 Graduate Student Researcher, Earth Sciences Department, UC Santa Cruz
Teaching Assistant, Earth Sciences Department, UC Santa Cruz
Courses: Field Methods in Geology, Geomorphology, Remote Sensing and GIS, Evolution of the Earth
- Spring 2001 Instructor, Remote Sensing and GIS, UC Santa Cruz
- 1995-96 Post-baccalaureate student, Hunter and Baruch Colleges, New York, New York
- 1993-96 Associate Consulting Geologist, Foster Wheeler Environmental Corporation, Lyndhurst, NJ

III. Scholarship and Professional Contributions

Peer-reviewed journal articles

MacGregor, K.R., Anderson, R.S., Anderson, S.P., and Waddington, E.D., (2000). Numerical simulations of glacial-valley longitudinal profile evolution. *Geology*, V. 28, No. 11, p. 1031-1034.

MacGregor, K.R., Anderson, R.S., Anderson, S.P., and Waddington, E.D., (2001). Numerical simulations of glacial-valley longitudinal profile evolution: Reply. *Geology*, V. 29, No. 8, p. 760.

Anderson, R.S., Anderson, S.P., **MacGregor, K.R.**, Waddington, E.D., O'Neel, S., Riihimaki, C.A., and Loso, M.G., (2004). Strong feedbacks between hydrology and sliding of a small alpine glacier. *Journal of Geophysical Research*, 109, F03005, doi:10.1029/2004JF000120.

MacGregor, K.R., Riihimaki, C.A., Anderson, R.S., (2005). Spatial and temporal evolution of rapid basal sliding on Bench Glacier, Alaska, USA. *Journal of Glaciology*, Vol. 51, No. 172, p. 49-63.

Riihimaki, C. A., **MacGregor, K. R.**, Anderson, R. S., and Anderson, S. P., Loso, M.G. (2005). Sediment evacuation and glacial erosion rates at a small alpine glacier. *Journal of Geophysical Research*, Vol. 110, No. F3, 10.1029/2004JF000189.

Anderson, R. S., Riihimaki, C. A., Safran, E. B., and **MacGregor, K. R.** (2006), Facing reality: Late Cenozoic evolution of smooth peaks, glacially ornamented valleys and deep river gorges of Colorado's Front Range, in Willett, S.D., Hovius, N., Brandon, M.T., and Fisher, D.M., eds., *Tectonics, Climate, and Landscape Evolution*:

Geological Society of America Special Paper 398, Penrose Conference Series, p. 397-418, doi: 10.1130/2006.2398(25).

Scholarly work submitted/in preparation

MacGregor, K.R., Gelfenbaum, G., Jay, D., Rubin, D., Sherwood, C. (in internal review). Sediment Transport in the Columbia River Basin. *Marine Geology*.

MacGregor, K.R., Waddington, E.D., Anderson, R.S. (in prep). Numerical modeling of the evolution of glacial longitudinal profiles: cirque development. *Geomorphology*

Riihimaki, C.A., **MacGregor, K.R.**, Catania, G., Copeland, E. (in prep). The disappearance of Grinnell Glacier, Glacier National Park, Montana. *Geophysical Research Letters*

IV. Presentations

Published abstracts related to conference presentations

MacGregor, K.C. (1993) Late Pleistocene History of Glacial Lake Atwood, San Juan Mountains, Colorado. Keck Research Symposium, Walla Walla, Washington, p. 194-7.

Leonard, E.M., Panfil, M.S., Merritts, D.J., Muriceak, D.R., Carson, R.J., **MacGregor, K.C.**, and McMillin, S.A., (1994) Late Pleistocene ice-dammed lakes, drainage diversion, and outburst flooding; upper Rio Grande drainage, San Juan Mountains, Colorado, Geological Society of America, Rocky Mountain Section, Abstracts with Programs: Durango, CO. v. 26, No. 6: p. 25-26.

MacGregor, K.C., Anderson, R.S., Anderson, S.P., Waddington, E.D., (1997). Erosion and Sediment Production by Valley Glaciers Through the Climate Cycle: Preliminary Model Results. *Eos, Transactions*, v. 78, No. 46, F228.

MacGregor, K.C., Anderson, R.S., Anderson, S.P., Waddington, E.D., (1998). Glacially Driven Evolution of Long Valley Profiles. Northwest Glaciology Meeting, University of Washington, Seattle, WA.

Anderson, S.P., Drever, J.I., **MacGregor, K.C.**, Anderson, R.S. (1998). Chemical Weathering Fluxes During Glacier Advance and Retreat. *Eos, Transactions*, v. 79, No. 45, F364.

Anderson, R.S., and **MacGregor, K.C.** (1998) The Role of Glacial Erosion in Mountain Range Evolution. *Eos, Transactions*, v. 79, No. 45, F337.

MacGregor, K.C., Anderson, R.S., Anderson, S.P., Waddington, E.D., (1998) Glacially Driven Evolution of Long Valley Profiles and Implications for Alpine Landscape Evolution. *Eos, Transactions*, v. 79, No. 45, F337

MacGregor, K.R., Anderson, R.S., Riihimaki, C.A., Anderson, S.P., Pollack, C., Lawrence, K.T., Harper, J.T., Waddington, E.D. (1999) Field Study of the Bench Glacier, Chugach Range, Alaska: An Overview. Northwest Glaciology meeting, University of British Columbia, Vancouver, B.C.

Riihimaki, C.A., **MacGregor, K.R.**, Anderson, R.S., Anderson, S.P. (1999). Sediment Yield of the Bench Glacier, Alaska, During the 1999 Summer Melt Season. *Eos, Transactions*, v. 80, No. 46, F426.

MacGregor, K.R., Anderson, R.S., Anderson, S.P., Riihimaki, C.A., and Harper, J.T. (1999). Spatial and Temporal Ice Velocities and Implications for Subglacial Erosion: Bench Glacier, Alaska. *Eos, Transactions*, v. 80, No. 46, F426.

MacGregor, K.R., Riihimaki, C.A., Anderson, R.S. (2000). Water inputs and basal sliding at the Bench Glacier, Alaska: Preliminary results and interpretations. Northwest Glaciology meeting, Portland State University, Portland, OR.

MacGregor, K.R., Riihimaki, C.A., Anderson, R.S., Anderson, S.P., and Waddington, E.D. (2000). Developing a linked glaciological and hydrological data set to understand valley-scale subglacial erosion over glacial-interglacial cycles. Geological Society of America Annual Meeting, Reno, NV.

MacGregor, K.R., Anderson, R.S., Waddington, E.D., (2001). Numerical Modeling of Glacial Valley and Cirque Evolution. Northwest Glaciology meeting, University of Washington, Seattle, WA. (oral presentation)

Howat, I., Tulaczyk, S., **MacGregor, K.R.**, Joughin, I. (2001). Spatial patterns of long-term erosion rates beneath the marine West Antarctic Ice Sheet: Insights into the physics of continental scale glacial erosion from a comparison with the ice velocity field. *Eos, Transactions*, v. 82, No. 47, F556.

MacGregor, K.R., Anderson, R.S., Waddington, E.D., and Anderson, S.P. (2001) Numerical Modeling of Glacial Erosion and Cirque Development: Preliminary Results. *Eos, Transactions*, v. 82, No. 47, F475.

Riihimaki, C.A., **MacGregor, K.R.**, Anderson, R.S., Anderson, S.P., Loso, M.G. (2003) Interpretation of fine and coarse sediment yield from Bench Glacier, Alaska. *Eos, Transactions*, v. 84, No. 46, H52A-1165.

MacGregor, K.R., Gelfenbaum, G., Rubin, D. (2003) Preliminary analysis of water discharge and suspended sediment data from the Columbia River Basin: shifting rating curves and diminishing sediment loads. *Eos, Transactions*, v. 84, No. 46, H52A-1162.

MacGregor, K.R., Anderson, R.S., and Waddington, E.D. Numerical Modeling of Glacial Valley Evolution. Midwest Glaciology Meeting, Minneapolis, MN, April 2004.

MacGregor, K.R., Hornbach, D., Hove, M., **Kushner, E.**, **Cox, M.**, **Hankin, E.**, and **Dickenson, B.** Preliminary Analyses of Bed and Suspended Sediment Data in the St. Croix River. St. Croix River Research Rendezvous, October 2004. **

MacGregor, K.R., Sanders, J.W., **Mathers, G.**, and **Dwyer, C.** (2004). Glaciology and Geomorphology at the Mountain Crest: Cirque Development. *Eos, Trans. AGU, 85(47)*, Fall Meet. Suppl., Abstract C34A-04. **

Mathers, G., and **MacGregor, K.R.** (2005). Erosion at the summit: unlocking the key to cirque formation. Geological Society of America *Abstracts with Programs*, Vol. 37, No. 5, paper 19-12. **

Cox, M., **Kushner, E.**, and **MacGregor, K.R.** (2005). Does low discharge from the dam at St. Croix Falls damn the mussels there?. Geological Society of America *Abstracts with Programs*, Vol. 37, No. 5, paper 43-16. **

MacGregor, K., and Hornbach, D. (2005). Preliminary analysis of bed and suspended sediment transport in a protected watershed, and the effect on native mussel populations. *Eos Trans. AGU, 86(18)*, Joint Assembly Supplement, Abstract NB33G-07. **

Kushner, E., **MacGregor, K.**, **Evans, E.**, Hornbach, D., Hove, M., **Cox, M.**, **Dickinson, B.** (2005). Analysis of suspended sediment data from the St. Croix River. St. Croix River Research Rendezvous, October 2005. **

Evans, E., **MacGregor, K.**, Hornbach, D., Hove, M., **Kushner, E.**, **Cox, M.**, **Dickinson, B.** (2005). Bedload sediment transport in the St. Croix River. St. Croix River Research Rendezvous, October 2005. **

Brocklehurst, S.H., and **MacGregor, K.R.** (2005). The role of wind in the evolution of glaciated mountain ranges: field observations and insights from numerical modeling, *Eos Transactions, AGU, 86(52)*, Fall Meeting Supplement, Abstract H51C-0390. **

Riihimaki, C.A., and **MacGregor, K.R.** (2005). Source-to-sink study of erosion at Grinnell Glacier, Glacier National Park, Montana. *Eos Transactions, AGU, 86(52)*, Fall Meeting Supplement, Abstract H51G-0441. **

Hornbach, D.J., Hove, M.C., **MacGregor, K.R.** (2006). Using hydraulic parameters to predict mussel density: a preliminary study. North American Benthological Society meeting, Abstract 735. **

Kushner, E., MacGregor, K., Hornbach, D. (2006). Analysis of sediment transport data and calculation of historical sediment load, St. Croix River, MN/WI. St. Croix River Research Rendezvous, October 17, 2006. **

Hornbach, D.J., Hove, M.C., **MacGregor, K.R.** (2006). Using hydraulic parameters to predict mussel density. St. Croix River Research Rendezvous, October 17, 2006. **

Jankowski, K., MacGregor, K., Riihimaki, C., Myrbo, A., Shapley, M. (2006). Preliminary limnogeological characterization of glacial erosion and environmental change from sediment cores, Swiftcurrent Lake, Glacier National Park, Montana. GSA Abstracts with Programs, Vol. 38, No. 7, Paper 28-14. **

Kushner, E., MacGregor, K., Hornbach, D. (2006). Analysis of sediment transport data and calculation of historical sediment load, St. Croix River, MN/WI. GSA Abstracts with Programs, Vol. 38, No. 7, Paper 143-34. **

Jones, L.C., Riihimaki, C.A., **MacGregor, K.R., Jankowski, K.,** Myrbo, A.E., Shapley, M. (2006). Coulometric analysis of a sediment core from Swiftcurrent Lake, Glacier National Park, Montana. GSA Abstracts with Programs, Vol. 38, No. 7, Paper 143-41. **

MacGregor, K.R., Riihimaki, C.A., Brocklehurst, S.H. (2006). Numerical modeling of glacial erosion in active orogens. *Eos Transactions, AGU, 87(52)*, Fall Meeting Supplement, Abstract T24B-03 (INVITED). **

Evans, E.G., MacGregor, K.R. (2006). Water discharge and sediment flux measurements in the proglacial zone of a cirque glacier: West Washmawapta/Helmet Mountain Glacier, British Columbia. *Eos Transactions, AGU, 87(52)*, Fall Meeting Supplement, Abstract C33A-1251. **

*red text denotes undergraduate authors, blue stars denote research initiated since my arrival at Macalester

Invited Lectures

- 1999 'Preliminary numerical modeling of glacial valley development', Glaciology Seminar, University of Washington, Seattle, WA.
- 2001 'Little Glaciers, Big Questions: Glacial Erosion and Landscape Evolution'. Department of Geology, Fort Lewis College, Durango, CO.
- 2001 'Modeling and field constraints on glacial erosion and landscape evolution'. Department of Geology, University of Illinois, Urbana-Champaign, IL.
- 2001 'Field studies of glacial processes and alpine landscape evolution'. Department of Earth Sciences, University of New Hampshire, Durham, NH
- 2001 'Field and modeling constraints on glacial erosion and alpine landscape evolution'. University of Minnesota, Minneapolis, MN
- 2001 'Numerical Modeling of Glacial Valley Evolution'. Department of Earth Sciences, Penn State University, State College, PA
- 2001 'Glacial Development of Alpine Landscapes: A field and modeling approach'. Department of Earth and Space Sciences, University of Washington, Seattle, WA
- 2001 'Field and modeling constraints on glacial erosion and alpine landscape evolution', Geology Department, Macalester College, St. Paul, MN
- 2002 'Modeling and field studies of glacial erosion and landscape evolution', Department of Geological Sciences, University of Michigan, Ann Arbor
- 2003 'Preliminary Tales of Historical Sediment and Water Transport in the Columbia River Basin: Dam It!', United States Geological Survey, Santa Cruz, CA
- 2003 'Preliminary Tales of Historical Sediment and Water Transport in the Columbia River Basin: Dam It!', Environmental Studies Seminar series, Macalester College, St. Paul, MN
- 2003 'Alpine landscapes and glacial erosion: a field and modeling perspective', Minnesota Geological Society, Minneapolis, MN
- 2004 'Glacial Erosion and Alpine Landscapes', American Women in Geosciences Meeting, St. Paul, MN
- 2004 'Grinnell Glacier: a study in progress', Glacier National Park, Many Glacier, MT
- 2004 'A Tale of Two Rivers', St. Anthony Falls Laboratory/NCED, Minneapolis, MN
- 2004 'Alpine Glacial Dynamics and Subglacial Erosion', Department of Geological Sciences, Iowa State University, Ames, IA

- 2005 'Grinnell Glacier: results and more!', Glacier National Park, Many Glacier, MT
- 2006 'Glaciers and lake cores: ongoing geomorphic research in Glacier National Park, MT', Quaternary Paleocology Group, University of Minnesota, St. Paul, MN.
- 2006 Constraints on erosion in alpine landscapes: a field and modeling approach', Woods Hole Oceanographic Institute, Woods Hole, MA
- 2006 'Numerical modeling of glacial erosion in active orogens', American Geophysical Society Meeting, San Francisco, CA
- 2006 'Flowing, sitting and frozen: water and the landscape', Macalester College Relations and Alumni talks, St. Paul, MN

V. Awards, Recognitions, and Grants

Awards

- 2002 Mendenhall Postdoctoral Fellowship, U.S. Geological Survey
- 2001 Outstanding Student Presentation, American Geophysical Union (Fall 2001 meeting)
- 2001 Outstanding Teaching Assistant, Honorable Mention, University of California, Santa Cruz
- 1998 NASA Earth Systems Science Graduate Student Fellowship
- 1998 Geological Society of America Graduate Student Research Grant
- 1997 National Science Foundation Graduate Student Fellowship, Honorable Mention
- 1997 Earl and Ethel Meyers Marine Trust Graduate Student Research Grant
- 1997 Outstanding Student Presentation, American Geophysical Union (Fall 1997 meeting)
- 1996 National Science Foundation Graduate Student Fellowship, Honorable Mention
- 1996 Outstanding Student Prize in Chemistry, Baruch College, New York City, NY
- 1996 Regents Fellowship, University of California, Santa Cruz, CA
- 1993 Magna Cum Laude, Williams College, Williamstown, MA

Grants: prior to Macalester

- 1997 Earl and Ethel Meyers Marine Trust Graduate Student Research Grant (**\$5000**)
- 1998 Geological Society of America Graduate Student Research Grant (**\$3000**)
- 1998 NASA Earth Systems Science Graduate Fellowship (**\$72,000 for 3 years**)

Grants: Internal (Macalester)

- 2004 Beltmann Research Grant (**\$2400**), summer support for undergraduate Anneli Terry (course development)
- 2004 Wallace Research Grant (**\$8000**), support for research on Grinnell Glacier in Glacier National Park, MT; GPS training in CO; student stipend for undergraduate Genevive Mathers.
- 2005 Beltmann Research Grant (**\$3850**), summer support for undergraduate Krista Jankowski (research project)
- 2005 Wallace Research Grant (**\$7500**), support for research on Grinnell Glacier in Glacier National Park, MT
- 2006 Quantitative Thinking Grant (**\$3000**), support for development of QT course for new College requirements
- 2006 Beltmann Research Grant (**\$3850**), summer support for undergraduate Emily Kushner (research project)

Grants: External

- 2004 Proposal to National Park Service (2004-present). *Glaciology and geomorphology in alpine landscapes: How to cirques form?* Request for permission to conduct scientific research and collect specimens in Glacier National Park, MT granted; no financial support requested.
- 2004 The Nuffield Foundation (UK grant awarded to Dr. Simon Brocklehurst, March 2004). *Cirque development on geological timescales: combining digital elevation model analysis, field observation, and landscape evolution modeling*. **Award: \$2,000** for collaborative travel/research during 2005.
- 2004 Proposal to National Park Service (December 2004), co-PI with Dan Hornbach, Macalester College, and St. Croix River National Scenic Riverway: *Sediment Dynamics in the St. Croix River: Impact on Aquatic Communities containing Federally Endangered Mussels*. **Total request: \$149,275**. (Ranked 4th nationally with top 3 receiving funding; resubmittal December 2006)
- 2005 Proposal to NSF, Geology and Paleontology (January 16, 2005), co-PI with Kurt Cuffey, UC Berkeley. *Collaborative Research: Ice and Rock Processes in Cirques*. **Award: \$190,000** (\$70,000 to Macalester) seed money for 2005-2007

- 2005 Proposal to American Philosophical Society by colleague Dr. Catherine Riihimaki to help fund collaborative research in Glacier National Park, summer 2005. **Award: \$4750**
- 2006 Proposal to NSF, Planning Grant (March 3, 2006), co-PI with Dan Hornbach, Michael Anderson, Holly Barcus, Jerald Dosch (Macalester). *A Strategic Development Plan for Macalester College's Katherine Ordway Natural History Study Area*. **Total Request: \$24,810** (proposal declined August 2006).
- 2006 Proposal to Luce Foundation (October 25, 2006), one of six key participants at Macalester. *Spanning Boundaries: Building Capacity for International Collaboration in Environmental Studies at Macalester College*. **Total Request: \$318,929**.
- 2006 Proposal to National Park Service (December 2006), co-PI with Dan Hornbach, Mark Hove (Macalester), and Jill Medland (St. Croix National Scenic Riverway): *Monitoring Sediment Dynamics in the St. Croix River and the Impact on Federally Endangered Mussels*. **Total request: \$149,174**. (as of 2/2007 proposal has made regional cut and has been advanced to national level to compete for funding).

VI. Professional Associations and Service

Professional Associations

- Member - American Geophysical Union (since 1996), Geological Society of America (since 1999), Sigma Xi (since 1993), International Glaciological Society (since 2000)

Service: Internal (Macalester)

- Member, Environmental Studies Program Steering Committee (2003-present)
- Member, search committee for tenure-track Environmental Historian, Environmental Studies Department, 2004-2005
- Member, Campus Entertainment Committee (2004-present)
- Member, Beckman Scholarship for undergraduate research in Chemistry and Biology, selection committee (2005)
- Faculty Advisor, 2004-present
- Faculty Advisor, Undergraduate internship, 2005
- Curator, Smail Gallery Art Exhibit, Olin-Rice Hall, 2004-2005 (Rivers of North America: Satellite Imagery)
- Panelist, New Faculty Orientation, 9/2004
- Judge, Lumberjack and Jill competition, sponsored by the GeoClub, 2004 & 2005 (charity fundraising event)
- Guest lecturer, Environmental Studies courses, 2004-present
- Alumni Fund letter and related alumni and College presentations, Fall 2006
- Member, search committee for associate/full professor in Environmental Science and department chair, Environmental Studies Department, 2006-2007
- Numerous student recommendation letters for study abroad, graduate school and post-graduate jobs (2004-present)

Service: External

- Faculty Mentor, University of Minnesota mentorship program, to U of M geology graduate student Laura Triplett, 2004-2005
- Faculty mentor and external committee member, UC Berkeley Ph.D. candidate John Sanders, 2004-present
- Panelist, 'Choosing a Path in the Geosciences', co-hosted by AWG and U of Minnesota Department of Geology and Geophysics, March 2004 and February 2006, Minneapolis, MN
- Judge, undergraduate posters and presentations, North-Central Geological Society of America meeting, May 2005, Minneapolis, MN
- Symposium co-convenor, Landscape Evolution, North-Central Geological Society of America meeting, May 2005, Minneapolis, MN
- Symposium co-convenor, American Geophysical Union Meeting, December 2006, San Francisco, CA
- Manuscript reviews – Geology, Journal of Glaciology, Journal of Geophysical Research, Quaternary Science Reviews. Geomorphology.
- Proposal reviews, National Science Foundation (NSF), Geology and Paleontology Programs and Polar Programs