

SARA GRAN MITCHELL

Curriculum Vitae

Department of Biology

M.Sc., 2000, Department of Geology, University of

B.A., 1996, Department of Geology, *magna cum laude*

RESEARCH AND TEACHING INTERESTS

I am a broadly-trained geomorphologist with expertise in geographic information systems (GIS) analysis, numerical modeling, fluvial field work, and geochemical and isotopic dating methods. My research currently has two directions. The first is using GIS to analyze the evolution and controls on landscape development, particularly the effects of glaciers and climate on the topography of mountain ranges. The second is using field and laboratory methods to analyze the morphology, sediment transport, and microplastics content of local rivers, with an emphasis on human impacts.

My teaching interests include geomorphology, introductory geology, geohazards, hydrology, and paleoclimatology.

EXPERIENCE

2013-present:

TEACHING

COURSES TAUGHT

Department of Biology, College of the Holy Cross, Worcester, MA 10610

- Geohazards (GEOS 120)
- Environmental Geology (GEOS 140)
- Introduction to Geology with lab (GEOS 150)
- Geomorphology with lab (GEOS 210)
- Watershed Hydrology with lab (GEOS 270)
- Paleoclimatology (GEOS 310)
- Independent Research (GEOS 401)
- College Honors (GEOS 407, 408)
- Directed Reading (GEOS 407)

Department of Geology, Carleton College, Northfield, MN 55057

Geomorphology (GEOL 210), Fall 2003

Introduction to Geology (GEOL 101), Spring 2004

UNDERGRADUATE RESEARCH ADVISOR

FUNDING

FUNDED PROPOSALS

- x Hewlett Mellon Discretionary Fund award for 1 day ENVS faculty retreat, 2018 (\$2900).
- x Hewlett Mellon Discretionary Fund award for 1.5 day ENVS faculty retreat, 2017 (\$5082).
- x Batchelor Faculty Summer Research Fellowship, College of the Holy Cross, 2016 (\$3500).
- x Travel awards (funded by Dean's office and Center for Teaching) to attend geology conferences and teachi(en)-4.16 Tn4 (y):(n)2 (oor)3 (e)4 (t326aH50 (e)4 (ofp74n006TJ()-j-42004 Tc 0.004 Tw 9.12 0 Tc

- Reiners, P.W., T.A. Ehlers, **S.G. Mitchell**, D.R. Montgomery, 2003. Coupled spatial variations in precipitation and long-term erosion rates across the Washington Cascades, *Nature*, v. 426, p. 645-647.
- Reiners, P.W., T.A. Ehlers, J.I. Garver, **S.G. Mitchell**, D.R. Montgomery, J.A. Vance, and S. Nicolescu, 2002. Late Miocene exhumation and uplift of the Washington Cascade Range, *Geology*, v. 30, no. 9, p. 767-770.
- Mitchell, S.G.**, A. Matmon, P. R. Bierman, Y. Enzel, and M. Caffee, D. Rizzo, 2001. Displacement history of the Nahef East fault, northern Israel, using cosmogenic ^{36}Cl , *Journal of Geophysical Research*, v. 106, no. B3, p. 4247-4264.
- Gran, S.E.**, K. K. Nichols and P. R. Bierman, 1999. Teaching winter geohydrology in Vermont using frozen lakes and snowy mountains. *Journal of Geoscience Education*, v. 47, no. 5, p. 420-437.

SELECTED ABSTRACTS

- *Nazzaro, A., Mitchell, S., Behar, H., Burgeson, E., Dumke, J., Dymond S., Gran, K., and Teasley, R., 2021. Impact of beaver dams on stream temperature in the Knife River Watershed, Minnesota USA. *Geological Society of America Abstracts with Programs*. Vol. 53, No. 3. doi: 10.1130/abs/2021NC-362695
- *Zeng, X. and Mitchell, S.G., 2016. Preliminary GIS-based analysis of the presence and distribution of ice-filled cirques. *Geological Society of America Abstracts with Programs*. Vol. 48, No. 7. doi: 10.1130/abs/2016AM-285647
- *Yeates, H.K. and Mitchell, S.G., 2016. Locating the source of suspended sediment in the upper Blackstone River watershed, Worcester, MA. *Geological Society of America Abstracts with Programs*, v. 48, no. 2, doi: 10.1130/abs/2016NE-272312.
- *Bradley, N., and Mitchell, S.G., 2015. Changes in suspended sediment concentrations in the urbanized Blackstone River watershed during rainfall events, Millbury, Massachusetts. *Geological Society of America Abstracts with Programs*, v. 47, no. 3, p. 58.
- Mitchell, S.G. and *Humphries, E.E., 2013. Global trends in glacial cirque floor altitudes and their relationships with climate, equilibrium line altitudes, and mountain range heights. *Eos Transactions, AGU*, v. 94, Fall Meeting Supplement.
- Mitchell, S.G. and Ober, K.A., 2012. Role of climate and topography in the evolution of *Scaphinotus petersi* in the Sky Islands of Coronado National Forest, Arizona. *Geological Society of America Abstracts with Programs*, v. 44, no. 7, p. 92.
- Mitchell, S.G. and Sobczak, W.V., 2012. "Urban stream syndrome" in the headwaters of the Blackstone River. *Geological Society of America, Abstracts with Programs*, v. 44, no. 2, p. 107.
- *Humphries, E.E. and Mitchell, S.G., 2011. Latitudinal variation in glacial cirque altitudes. *Geological Society of America, Abstracts with Programs*, v. 43, no. 5, p. 474.
- Mitchell, S.G. and Kelley, J.A., 2011. Mars Rocks! Using laser-induced breakdown spectroscopy (LIBS) in an introductory geology course. *Geological Society of America, Abstracts with Programs*, v. 43, no. 5, p. 134.
- Mitchell, S.G. and *Harkins, R.H., 2010. Paired watershed investigation of suspended sediment and particulate organic carbon in central Massachusetts: Implications for storm runoff and export of organic carbon. *Geological Society of America, Abstracts with Programs*, v. 42, no. 7.
- *Harkins, R.H. and Mitchell, S.G., 2010. Dirty Water: A paired watershed study of the impact of urbanization on suspended sediment concentrations in central Massachusetts. Harvard Forest Symposium Abstracts.

- *Harkins, R.H and Mitchell, S.G., 2010. Dirty Water: A paired watershed study of the impact of urbanization on suspended sediment concentrations in central Massachusetts. 2nd Annual Northeast Undergraduate Research and Development Symposium (NURDS).
- *Harkins, R.H and Mitchell, S.G., 2009. Grain size characteristics and potential mobility of road traction sand in Worcester, Massachusetts. *Geological Society of America, Abstracts with Programs*, v. 41, no. 7, p. 673.
- Mitchell, S.G. and Riihimaki, C.A., 2009. Goals and challenges of establishing a successful geoscience curriculum in a biology department. *Geological Society of America, Abstracts with Programs*, v. 41, no. 7, p. 537.
- *Shea, N.S. and Mitchell, S.G., 2009. No glacial buzzsaw at Glacier National Park, Montana USA. *Geological Society of America, Abstracts with Programs*, v. 41, no. 3, p. 25.
- Tomkin, J.H., Mitchell, S.G., Anders, A.M., *Reynout, S., 2008. Spatial gradients of precipitation and erosion in the Swiss Alps: Direct evidence and mechanistic explanation for the glacial buzzsaw. *Eos Transactions, AGU*, v. 89, Fall Meeting Supplement.
- Mitchell, S.G. and *Dagley, V., 2008. Sediment transport in a cobble- and boulder-bed urban headwater channel, preliminary results from Worcester, MA. *Geological Society of America, Abstracts with Programs*, v. 40, no. 2, p. 58.

INVITED TALKS

- x Worcester State University, Earth Sciences Department seminar, October 20, 2014.
- x University of Illinois Urbana-Champaign, Department of Geology Seminar, “How the formation of glacial cirques might control mountain height,” January 30, 2014.
- x Lafayette College, Department of Geology seminar series, “Mountains vs. Glaciers: The role of climate and erosion in limiting the height of mountain ranges,” March 15, 2013
- x Holy Cross Faculty Scholarship Lunch Series, “Mountains vs. Glaciers: The role of climate and ice in limiting the height of mountain ranges,” Nov. 15, 2012
- x Harvard Forest Long Term Ecological Research Site speaker series, October 2010
- x

- x Chaired department Assessment Committee, 2012-2013.
- x Hosted Dr. David Montgomery (University of Washington, Department of Earth and Space Sciences) for a well-attended evening seminar on soil erosion and society (“Dirt: The Erosion of Civilizations”). February 2012.
- x Search committee c

