

Luke McGuire
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Work Address

Department of Geosciences
1040 E. 4th Street
Tucson, AZ 85721

Education

University of Arizona, Tucson, AZ (*August 2008-May 2013*)

- PhD, Applied Mathematics (*May 2013*)
- MS, Applied Mathematics (*December 2009*)

Bucknell University, Lewisburg, PA (*June 2004-May 2008*)

- BS, Mathematics, Magna Cum Laude (*May 2008*)

Experience

- Assistant Professor, Department of Geosciences, University of Arizona (August 2016-Present)
- Mendenhall Postdoctoral Researcher, U.S.G.S., Golden, CO (*August 2014-August 2016*)
- Postdoctoral Researcher, Department of Geosciences, University of Arizona (*June 2013-August 2014*)
- Research Assistant, Department of Geosciences, University of Arizona (*Jan 2010-May 2010, August 2011-August 2012, Jan 2013-May 2013*)
- Teaching Assistant, Department of Mathematics, University of Arizona (*August 2009-Dec 2009, August 2010-Dec 2010, August 2012-Dec 2012*)

Honors/Awards

- NSF XSEDE Start-Up Proposal: ‘High-resolution modeling of sediment transport and debris flow initiation’, awarded 12,500 hours of supercomputing resources
- University of Arizona: VIGRE Research Fellowship (*Spring 2011*)
- University of Arizona: Graduate Fellowship (*August 2008-August 2009*)

Invited Talks

- What gives? Unraveling the runoff to debris flow transition. Tucson, AZ (*January, 2016*)
- Symmetry and asymmetry: A study of sediment transport in disequilibrium landscapes. Tucson, AZ (*January, 2016*)
- Initiation mechanisms and sediment sources for runoff-generated debris flows: Insights from numerical modeling of sediment transport. Tokyo, Japan (*October, 2015*)

Presentations at Conferences/Meetings

- AGU Annual Meeting, San Francisco, CA (*December 2015*)
- Community Surface Dynamics Modeling System Annual Meeting, Boulder, CO (*May 2015*)
- AGU Annual Meeting, San Francisco, CA (*December 2014*)
- AGU Annual Meeting, San Francisco, CA (*December 2013*)
- AGU Annual Meeting, San Francisco, CA (*December 2012*)
- Stochastic Transport and Emergent Scaling in Earth-surface Processes Workshop, Glenbrook, NV. (*November 2011*)
- AGU Chapman Conference on Source to Sink Systems Around the World and Through Time, Oxnard, CA (*January 2011*)

Service Activities/ Professional Organizations

- Tucson Math Circle (middle school/high school outreach) (*Fall 2013*)
- American Geophysical Union (AGU), Member (*2011-present*)
- Reviewer: *Journal of Geophysical Research: Earth Surface, Water Resources Research, Earth Surface Processes and Landforms, Advances in Water Resources, Geomorphology, Journal of Hydrology, Earth Science Reviews, Natural Hazards and Earth System Sciences*
- Proposal Review: NSF Partnerships for International Research and Education (PIRE) program

Publications

- **McGuire, L.A.**, F.K. Rengers, J.W. Kean, J.A. Coe, R.L. Baum, and J.W. Godt, Elucidating the role of vegetation in the initiation of rainfall-induced shallow landslides: Insights from an extreme rainfall event in the Colorado Front Range, *Geophysical Research Letters*, 2016.
- Rengers, F.K., **L.A. McGuire**, J.A. Coe, J.W. Kean, R.L. Baum, and J.W. Godt, Debris flow density during a record flood in the northern Colorado Front Range: Is hillslope aspect or vegetation cover to blame?, *Geology*, 2016.
- Kean, J.W., **L.A. McGuire**, F.K. Rengers, J.B. Smith, and D.M. Staley, Amplification of post-wildfire peak flow by debris, *Geophysical Research Letters*, doi:10.1002/2016GL069661, 2016.
- Rengers, F.K., **L.A. McGuire**, J.W. Kean, and D.M. Staley, Model simulations of flood and debris flow timing in steep catchments after wildfire, *Water Resources Research*, doi:10.1002/2015WR018176, 2016.
- **McGuire, L.A.**, and J.D. Pelletier, Controls on valley spacing in landscapes subject to rapid base-level fall, *Earth Surface Processes and Landforms*, doi: 10.1002/esp.3837, 2015.
- Hayakawa, Y.S., T. Oguchi, H. Saito, A. Kobayashi, V.R. Baker, J.D. Pelletier, **L.A. McGuire**, G. Komatsu, and K. Goto, Geomorphic imprints of repeated tsunami waves in a coastal valley in northeastern Japan, *Geomorphology*, 242, 2015.
- **McGuire, L. A.**, J. D. Pelletier, and J.J. Roering, Development of topographic asymmetry: Insights from dated cinder cones in the western United States, *Journal of Geophysical Research*, doi:10.1002/2014JF003081, 2014.
- Komatsu, G., Goto, K., Baker, V.R., Oguchi, T., Yuichi S. Hayakawa, Y.S., Hitoshi, Saito, H., Jon D. Pelletier, J.D., **McGuire, L.**, and Iijima, Y., 2014, Effects of tsunami wave erosion on natural landscapes: Examples from the 2011 Tohoku-oki Tsunami, in Kontar, Y., Santiago-Fandio, V., and Takahashi, T., editors, *Tsunami Events and Lessons Learned; Environmental and Societal Significance*. Springer, Heidelberg, p. 243-253.
- **McGuire, L. A.**, and J. D. Pelletier, Relationships between debris fan morphology and flow rheology for wet and dry flows on Earth and Mars: A numerical modeling investigation, *Geomorphology*, 197, 2013.
- **McGuire, L. A.**, J. D. Pelletier, J. A. Gomez, and M. A. Nearing, Controls on the spacing and geometry of rill networks on hillslopes: Rain splash detachment, initial hillslope roughness, and the competition between fluvial and colluvial transport, *Journal of Geophysical Research*, doi:10.1002/jgrf.20028, 2013.
- Pelletier, J. D., DeLong, S. B., C. Orem, P. Becerra, K. Compton, K. Gressett, J. Lyons-Baral, **L. A. McGuire**, J. L. Molaro, and J. C. Spinler, How do vegetation bands form in drylands? Insights from numerical modeling and field studies in southern Nevada, U.S.A., *Journal of Geophysical Research*, doi:10.1029/2012JF002465, 2012.
- Pelletier, J. D., **L. McGuire**, J. Ash, T. M. Engelder, L. Hill, K. Leroy, C. Orem, S. Rosenthal, M. Trees, C. Rasmussen, and J. D. Chorover, Calibration and testing of upland hillslope evolution models in a dated landscape: Banco Bonito,

New Mexico, USA, *Journal of Geophysical Research*, doi:10.1029/2011JF001976, 2011.