Luke A. McGuire

Department of Geosciences
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CHRONOLOGY OF EMPLOYMENT

2022-present	Associate Professor, Department of Geosciences, University of Arizona
2016-present	Affiliate Member, Program in Applied Mathematics, University of Arizona
2016-2022	Assistant Professor, Department of Geosciences, University of Arizona
2014-2016	Mendenhall Postdoctoral Fellow, U.S. Geological Survey, Golden, CO
2013-2014	Postdoctoral Researcher, Department of Geosciences, University of Arizona
2008-2013	Graduate Instructor and Researcher, Department of Mathematics, University of Arizona

CHRONOLOGY OF EDUCATION

2013	Ph.D., Applied Mathematics, University of Arizona Advisor: Jon Pelletier Dissertation: Modeling the evolution of rill networks, debris fans, and cinder cones: connections between sediment transport processes and landscape development
2009	M.S., Applied Mathematics, University of Arizona
2008	B.S., Mathematics, Bucknell University

HONORS AND AWARDS

Geosciences 2020 Outstanding Reviewer Award (2020)
Bisgrove Scholar Award, Science Foundation Arizona (2017)

SERVICE/OUTREACH

Local/State Outreach

- Panelist for a "Sustainable Tucson" meeting on "Climate, Forests, and Fire in Southern Arizona," (May 2021)
- Guest lecturer for 5 sections of AP Environmental Science at University High School (Fall 2017)
- Public Presentation at the Osher Lifelong Learning Institute (OLLI), Tucson, AZ (Spring 2017)
- Participated in the 2021 Bighorn Fire Partners Meeting run by the National Weather Service Forecast Office in Tucson to discuss ongoing hazards related to flooding and debris flows following the Bighorn Fire, May 2021.
- Participated in several meetings hosted by the National Weather Service forecast office in Phoenix to provide input on debris-flow and flash-flood hazards following the 2020 Sawtooth Fire and 2020 Bush Fire.

National/International Outreach

- Geological Society of America (GSA) Environmental and Engineering Geology Division (EEGD) management board member, Second Vice-Chair, 2024-2025.
- Geological Society of America (GSA) Environmental and Engineering Geology Division (EEGD) management board member, Secretary/Treasurer, 2023-2024.
- Panelist for "Natural and Prescribed Wildland Fire Impacts on Soil Health: Fall Event of the National Academy of Sciences Board on Earth Sciences and Resources", hosted by the National Academy of Sciences Board on Earth Sciences and Resources, 2 November 2021.
- Panelist for "May 2021 Drought Update and Wildfire Outlook Webinar for California and the Southwest", hosted by National Integrated Drought Information System (NIDIS), 24 May 2021.
- Webinar presentation (via Zoom) for U.S. Forest Service (USFS) Region 3 Burned Area Emergency Response (BAER) team personnel, "Research efforts in USFS Region 3 Towards Improving Post-Wildfire Debris Flow Predictions", 8 April 2021.
- Panelist for the AGU EPSP Connects Special Event titled "A Community Discussion of Typical Wildfire Effects on Earth Surface Processes," September 2020, https://connect.agu.org/epsp/discussion/epsp-connects
- Contributed to a 2-page summary of post-fire hazards geared to public audiences that was distributed by through the National Integrated Drought Information System: "Drought Influences on Post-Wildfire Flooding and Debris Flow Hazards," by Luke McGuire, Ben Hatchett, Ann Youberg, https://www.drought.gov/sites/default/files/2020-09/Drought-Influences-Post-Wildfire-Flooding.pdf
- E-Magazine of the Arizona Geological Survey, "After a wildfire, how intense does rainfall need to be to cause a debris flow?", July 2020, https://blog.azgs.arizona.edu/blog/2020-07/after-wildfire-how-intense-does-rainfall-need-be-cause-debris-flow
- E-Magazine of the Arizona Geological Survey, "USGS, AZGS, and UArizona Geosciences collaborate on post-wildfire debris flow research in the southwest", Dec 2020, https://blog.azgs.arizona.edu/blog/2020-12/usgs-azgs-uarizona-geosciences-collaborate-post-wildfire-debris-flow-research

Departmental Committees

- Member, Promotion and Tenure Committee, Department of Geosciences (2023, 2024-2025)
- Member, Department of Geosciences Graduate Admissions Committee (2016-2019, 2024-2025)
- Member, Graduate Policy Committee, Department of Geosciences (2019-2025)
- Member, Diversity, Equity, and Inclusion Committee, Department of Geosciences (2020-2022)
- Member, Masters Thesis Committee, Emily Fule, SNRE (2022)
- Member, Arizona Computational Geosciences Center Committee, Department of Geosciences (2019-2022)
- Member, Dissertation Committee, Nate Abramson, Department of Geosciences (2025)
- Member, Masters Thesis Committee, Beckie Fulton, Department of Geosciences (2025)
- Chair, Dissertation Committee, Alex Gorr, Department of Geosciences (2024)
- Chair, Masters Thesis Committee, Joseph Ramirez, Department of Geosciences (2024)
- Member, Diagnostic Exam Committee, Nate Abramson, Department of Geosciences (2021)
- Chair, Comprehensive Exam Committee, Alex Gorr, Department of Geosciences (2021)
- Chair, Masters Thesis Committee, Olivia Hoch, Department of Geosciences (2021)
- Member, Comprehensive Exam Committee, Indujaa Ganesh, Department of Planetary Sciences (2020)
- Member, Undergraduate Advisory/Policy Committee, Department of Geosciences (2019-2020)
- Member, Dissertation Committee, Li Li, School of Natural Resources and the Environment (2019)
- Chair, Masters Thesis Committee, Carissa Raymond, Department of Geosciences (2019)
- Member, Shaping our Vision Committee, Department of Geosciences (2018)
- Member, Department Head Search Committee, Department of Geosciences (2018)

- Member, Comprehensive Exam Committee, Li Li, School of Natural Resources and the Environment (2018)
- Member, Comprehensive Exam Committee, Alexander Prescott, Department of Geosciences (2018)
- Organizer, Department of Geosciences Colloquium Series (2016-2017)

Community

- **Session Convener**, American Geophysical Union Annual Meeting (2024), 'Geomorphic response to extreme events'
- **Session Convener**, American Geophysical Union Annual Meeting (2024), 'Breaking Barriers in Sediment Transport Research Across Science and Engineering'
- **Session Convener**, Geological Society of America Annual Meeting (2024), 'Environmental and Engineering Geology Division Session'
- **Session Convener**, American Geophysical Union Annual Meeting (2023), 'Breaking Barriers in Sediment Transport Research Across Science and Engineering'
- **Session Convener**, Geological Society of America Annual Meeting (2022), 'Advances in the science of wildfire-related Earth surface processes'
- **Session Convener**, Geological Society of America Annual Meeting (2021), 'Advances in wildfire-related Earth surface processes'
- **Session Chair**, Los Alamos - Arizona Days Conference 2021 (2021), Geosciences Session
- **Session Convener**, American Geophysical Union Annual Meeting (2020), 'Point- to catchment-scale effects of Wildfire on Hydrology, Water Resources, and Ecosystems'
- **Session Convener**, American Geophysical Union Annual Meeting (2019), 'Wildfire effects on water resources, natural hazards, and ecosystems'
- **Session Convener**, Geological Society of America Annual Meeting (2019), 'Geomorphic and hydrologic processes in post wildfire environments: drivers, impacts, and hazards'
- **Session Convener**, American Geophysical Union Annual Meeting (2018), 'Post-wildfire hydrologic, geomorphic, and biogeochemical responses'
- **Session Convener**, Geological Society of America Section Meeting (2018), 'Post-wildfire hazards: From new research to assessments, prediction, and mitigation'
- **Session Convener**, American Geophysical Union Annual Meeting (2017), 'Response of Earth surface and subsurface processes to rare, extreme events'
- **Session Convener**, Geological Society of America Annual Meeting (2016), 'Geomorphology and Hydrology of Wildland Fires'

Refereeing

- **Manuscript Review**: Nature Geoscience, Communications Earth and Environment, Geology, Journal of Geophysical Research: Earth Surface, Wiley Interdisciplinary Reviews: Water, Science Advances, Earth Surface Dynamics, Water Resources Research, Landslides, Earth Surface Processes and Landforms, Ecosphere, Advances in Water Resources, Geomorphology, Hydrological Processes, Journal of Hydrology, International Journal of Wildland Fire, Natural Hazards and Earth System Sciences, Geosciences, Environmental and Engineering Geosciences, Geomatics, Natural Hazards, and Risk, Hydrology and Earth System Sciences, International Journal of Disaster Risk Reduction
- **Proposal Review**: NSF, DOE, UArizona Faculty Seed Grant Proposals

PUBLICATIONS/CREATIVE ACTIVITY

** substantially based as work done as a graduate student*
[o] co-authors who are undergraduate and graduate student advisees or postdoctoral mentees

CHAPTERS IN SCHOLARLY BOOKS AND MONOGRAPHS

1. *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-Fandiño, V., and Takahashi, T., editors, Tsunami Events and Lessons Learned; Environmental and Societal Significance. Springer, Heidelberg, p. 243-253.

REFEREED JOURNAL ARTICLES

54. Cavagnaro, D.B., S.M. McCoy, D.N. Lindsay, **L.A. McGuire**, J. W. Kean, D.T. Trugman, Rainfall thresholds for postfire debris-flow initiation vary with hydroclimate, *Journal of Geophysical Research: Earth Surface*, 2025.

53. [o] Martinez, J., **McGuire, L.A.**, A.M. Youberg. Insights into temporal changes in debris flow susceptibility following fire in the southwest USA from monitoring and repeat estimates of soil hydraulic and physical properties. *Earth Surface Processes and Landforms,* 2025.

52. [o] Barra, C., M. Fule, R. Beers, **L.A. McGuire**, A.M. Youberg, D. Falk, C. Rasmussen. Soil biogeochemical and hydraulic property response to wildfire across forested ecosystems of the Santa Catalina Mountains, Arizona, USA. *Catena,* 2025.

51. Pelletier, J.D., R.G. Hayes, O. Hoch, B. Fenerty, **L.A. McGuire**. Geometric constraints on tributary fluvial network junction angles. *Earth Surface Dynamics,* 2024.

50. [o] Gorr, A.N., **McGuire, L.A.**, A.M. Youberg. Empirical models for posture debris-flow volume in the southwest United States. *Journal of Geophysical Research: Earth Surface,* 2024.

49. **McGuire, L.A.**, F.K. Rengers, A.M. Youberg, A.N. Gorr, O.J. Hoch, R. Beers, R. Porter. Characteristics of debris flow prone watersheds and triggering rainstorms following the Tadpole Fire, New Mexico, USA. *Natural Hazards and Earth System Sciences,* 2024.

48. **McGuire, L.A.**, B.A. Ebel, F.K. Rengers, D.C.S. Vieira, and P Nyman. Fire effects on Earth surface processes. *Nature Reviews: Earth and Environment*, 2024.

47. [o] Liu, T., **L.A. McGuire**, A.M. Youberg, A.B. Prescott, A.N. Gorr, W.T. Struble, and R. Beers. A prefire approach for probabilistic assessments of postfire debris-flow inundation. *Earth's Future,* 2024.

46. [o] Prescott, A.B., **L.A. McGuire**, K.-S. Jun, K.R. Barnhart, and N.S. Oakley. Probabilistic assessment of postfire debris-flow inundation in response to forecast rainfall. *Natural Hazards and Earth System Sciences,* 2024.

45. [o] Gorr, A.N., **L.A. McGuire**, A.M. Youberg, R. Beers, and T. Liu. Inundation and flow properties of a runoff-generated debris flow following successive high-severity wildfires in northern Arizona, USA. *Earth Surface Processes and Landforms,* 2024.

44. Yu, G., T. Liu, **L.A. McGuire**, D.B. Wright, B.J. Hatchett, J.J. Miller, M. Berli, J. Giovando, and M. Bartles. Process-based quantification of the role of wildfire in shaping flood frequency. *Water Resources Research,* 2023.

43. [o] Liu, T., **L.A. McGuire**, A.M. Youberg, A.N. Gorr, and F.K. Rengers. Parameterizing post-fire hydrologic models with minidisk infiltration measurements to assess debris-flow potential. *Earth Surface Processes and Landforms, 2023.*

42. [o] Struble, W.T., **L.A. McGuire**, S.W. McCoy, and K.R. Barnhart. Debris-flow process controls on steepland morphology in the San Gabriel Mountains, California. *Journal of Geophysical Research: Earth Surface*, 2023.

41. **McGuire, L.A.**, S.W. McCoy, O. Marc, W.T. Struble, and K.R. Barnhart. Steady-state forms of channel profiles shaped by debris-flow and fluvial processes. *Earth Surface Dynamics*, 2023.

40. Rengers, F.K., **L.A. McGuire**, K.R. Barnhart, A.M. Youberg, D. Cadol, [o] A.N. Gorr, O. Hoch, R. Beers, and J.W. Kean. The Influence of Large Woody Debris on Post-Wildfire Debris Flow Sediment Storage. *Natural Hazards and Earth System Sciences*, 2023.

39. [o] Gorr, A.N., **L.A. McGuire**, R. Beers, and O. Hoch. Triggering conditions, runout, and downstream impacts of debris flows following the 2021 Flag Fire, AZ, USA. *Natural Hazards,* 2023.

38. Oakley, N.S., [o] T. Liu, **L.A. McGuire**, M. Simpson, B.J. Hatchett, A. Tardy, J.W. Kean, C. Castellano, J.L. Laber, J.L. and D. Steinhoff. Toward probabilistic post-fire debris-flow hazard decision support. *Bulletin of the American Meteorological Society,* 2023.

37. [o] Gorr, A.N., **L.A. McGuire**, A.M. Youberg, F.K. Rengers, A progressive flow-routing model for rapid assessment of debris-flow inundation, *Landslides*, *2022*.

36. [o] Liu, T., **L.A. McGuire**, N. Oakley, F. Cannon, Temporal changes in rainfall intensity-duration thresholds for post-wildfire flash floods and sensitivity to spatiotemporal distributions of rainfall, *Natural Hazards and Earth System Sciences*, *2022*.

35. [o] Hoch, O. J., **L.A. McGuire**, A.M. Youberg, F.K. Rengers, Hydrogeomorphic recovery and temporal changes in rainfall thresholds for debris flows following wildfire, *Journal of Geophysical Research: Earth Surface*, 2021.

34. [o] Ganesh, I., **L.A. McGuire**, L.M. Carter, Modeling the dynamics of dense pyroclastic flows on Venus: Insights into pyroclastic eruptions, *Journal of Geophysical Research: Planets*, 2021.

33. Rengers, F.K., **L.A. McGuire**, J.W. Kean, D.M. Staley, M. Dobre, P.R. Robichaud, T. Swetnam. Movement of Sediment through a Burned Landscape: Sediment Volume Observations and Model Comparisons in the San Gabriel Mountains, California, USA, *Journal of Geophysical Research: Earth Surface*, 2021.

32. **McGuire, L.A.**, C. Rasmussen, A.M. Youberg, J. Sanderman, and B. Fenerty, Controls on the spatial distribution of near-surface pyrogenic carbon on hillslopes one year following wildfire, *Journal of Geophysical Research: Earth Surface*, 2021c.

31. [o] Liu, T., **L.A. McGuire**, H.Wei, F.K. Rengers, H. Gupta, L. Ji, D.C. Goodrich, The timing and magnitude of changes to Hortonian overland flow at the watershed scale during the post-fire recovery process, *Hydrological Processes*, 2021.

30. Thomas, M.A., F.K. Rengers, J.W. Kean, **L.A. McGuire**, D.M. Staley, K.R. Barnhart, B.A. Ebel, Postwildfire soil-hydraulic recovery and the persistence of debris flow hazards, *Journal of Geophysical Research: Earth Surface*, 2021.

29. **McGuire, L.A.**, A.M. Youberg, F.K. Rengers, N.S. Abramson, I. Ganesh, [o] A.N. Gorr, [o] O. Hoch, J.C. Johnson, P. Lamom, A.B. Prescott, J. Zanetell, and B. Fenerty, Extreme precipitation across adjacent burned and unburned watersheds reveals impacts of low severity wildfire on debris-flow processes, *Journal of Geophysical Research: Earth Surface*, 2021b.

28. **McGuire, L.A.**, F.K. Rengers, J.W. Kean, D.M. Staley, N. Oakley, M. Orla-Barile, H. Tang, A.M. Youberg, Time since burning and rainfall characteristics influence post-fire debris flow initiation and magnitude, *Environmental and Engineering Geoscience,* 2021a.

27. Rengers, F.K.**, L.A. McGuire**, N. Oakley, [o] H. Tang, J.W. Kean, D.M. Staley, Landslides after wildfire: initiation, magnitude, and mobility, *Landslides*, 2020b**.**

26. **McGuire, L.A.**, A.M. Youberg, What drives spatial variability in rainfall intensity-duration thresholds for post-wildfire debris flows? Insights from the 2018 Buzzard Fire, NM, USA, *Landslides*, 2020**.**

25. [o] Tang, H., **L.A. McGuire**, J.W. Kean, J.B. Smith, The impact of sediment supply on the initiation and magnitude of runoff-generated debris flows, *Geophysical Research Letters,* 2020.

24. Rengers, F.K., J.W. Kean, N.G. Reitman, J. Smith, J.A. Coe, **L.A. McGuire**, The Influence of Frost Weathering on Debris Flow Sediment Supply in an Alpine Basin, *Journal of Geophysical Research: Earth Surface,* 2020a.

23. [o] Raymond, C.A., **L.A. McGuire**, A.M. Youberg, J.W. Kean, D.M. Staley, Thresholds for post-wildfire debris flows: Insights from the Pinal Fire, Arizona, USA**,** *Earth Surface Processes and Landforms*, 2019, DOI: 10.1002/esp.4805.

22. [o] Tang, H., **L.A. McGuire**, J.W. Kean, D.M. Staley, and J.B. Smith, Developing and testing physically-based triggering thresholds for runoff-generated debris flows, *Geophysical Research Letters*, 2019b, DOI: 10.1029/2019GL083623.

21. Rengers, F.K., **L.A. McGuire**, J.W. Kean, D.M. Staley, and A.M. Youberg, Progress in simplifying hydrologic model parameterization for broad applications to post-wildfire flooding and debris flow hazards, *Earth Surface Processes and Landforms*, 2019, DOI: 10.1002/esp.4697.

20. **McGuire, L.A.**, A.M. Youberg, Impacts of successive wildfire on soil hydraulic properties: Implications for debris flow hazards and system resilience, *Earth Surface Processes and Landforms*, 2019, DOI: 10.1002/esp.4632.

19. [o] Tang, H., **L.A. McGuire**, F.K. Rengers, J.W. Kean, D.M. Staley, and J.B. Smith, Evolution of debris flow initiation mechanisms and sediment sources during a sequence of post-wildfire rainstorms, *Journal of Geophysical Research: Earth Surface*, 2019a, DOI is 10.1029/2018JF004837.

18. Staley, D.M., J.W. Kean, **L.A. McGuire**, H.E. Pauling, F.K. Rengers, J.B. Smith, A.C. Tillery, Estimating post-fire debris-flow hazards in the western United States prior to wildfire, *International Journal of Wildland Fire*, 2018.

17. **McGuire, L.A.**, F.K. Rengers, J.W. Kean, D.M. Staley, and B.B. Mirus, Incorporating spatially heterogeneous infiltration capacity into hydrologic models with applications for simulating post-wildfire debris flow initiation, *Hydrological Processes*, 2018.

16. Rengers, F.K, **L.A. McGuire**, B.A. Ebel, and G.E. Tucker, The evolution of a colluvial hollow to a fluvial channel with periodic steps following two transformational disturbances: a wildfire and a historic flood, *Geomorphology*, 2018.

15. Pelletier, J.D., G.A. Barron-Gafford, H. Guttierez-Jurado, E.S. Hinckley, E. Istanbulluoglu, **L.A. McGuire**, G.Y. Niu, M.J. Poulos, C. Rasmussen, P. Richardson, T.L. Swetnam, and G.E. Tucker, Which way do you lean? Using slope aspect variations to understand Critical Zone processes and feedbacks, *Earth Surface Processes and Landforms*, DOI: 10.1002/esp.4306, 2017.

14. **McGuire, L.A.**, F.K. Rengers, J.W. Kean, and D.M. Staley, Debris flow initiation by runoff in a recently burned basin: Is grain-by-grain sediment bulking or en masse failure to blame?, *Geophysical Research Letters*, DOI: 10.1002/2017GL074243, 2017.

13. Rasmussen, C., **L.A. McGuire**, P. Dhakal, and J.D. Pelletier, Coevolution of soil and topography across a semiarid cinder cone chronosequence, *Catena*, 2017.

12. 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.

11. **McGuire, L.A.**, J.W. Kean, F.K. Rengers, D.M. Staley, and T.A. Wasklewicz, Constraining the relative importance of raindrop- and flow-driven sediment transport mechanisms in post-wildfire environments and implications for recovery time scales, *Journal of Geophysical Research: Earth Surface*, 2016b.

10. 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, 2016b.

9. **McGuire, L.A.**, F.K. Rengers, J.W. Kean, J.A. Coe, B.B. Mirus, 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*, 2016a.

8. Rengers, F.K., **McGuire, L.A.**, J.A. Coe, J.W. Kean, R.L. Baum, D.M. Staley, and J.W. Godt, The influence of vegetation on debris-flow initiation during extreme rainfall in the northern Colorado Front Range, *Geology*, 2016a.

7. **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.

6. * 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*, 2015.

5. * **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.

4. * **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.

3. * **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.

2. * 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., J*ournal of Geophysical Research*, doi: 10.1029/2012JF002465, 2012.

1. * 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.

OTHER PEER-REVIEWED PUBLICATIONS

7. Oakley, N., **L.A. McGuire**, and J. Lancaster. Integration of meteorology and geomorphology for enhanced understanding of post-fire debris flow hazards, Vol 415, EDP Sciences. 2023.

6. Gorr, A.N., **L.A. McGuire**, and A.M. Youberg. Constraining post-fire debris flow volumes in the southwestern United States, Vol 415, EDP Sciences. 2023.

5. Tang, H., **L.A. McGuire**, and A.M. Youberg. Objective definition of discharge thresholds for post-fire debris flows, In E3S Web of Conferences, Vol 415, EDP Sciences. 2023.

4. **McGuire, L.A.**, A. Youberg, A. Gorr, and R. Beers. Triggering rainfall intensities for post-wildfire debris flows in the Sonoran Desertscrub plant community, In E3S Web of Conferences, Vol 415, EDP Sciences. 2023.

3. **McGuire, L.A.**, F.K. Rengers, J.W. Kean, D.M. Staley, [0]H. Tang, A.M. Youberg, Looking through the window of disturbance at post-wildfire debris flow hazards, in *Debris-Flow Hazards Mitigation: Mechanics, Monitoring, Modeling, and Assessment*, edited by Kean, J.W., Coe, J.A., Santi, P.M., and Guillen, B.K., Association of Environmental and Engineering Geologists, Special Publication #28, p. 516-523, 2019.

2. Youberg, A.M., **L.A. McGuire**, Comparison of an empirical and a process-based model for simulating debris-flow inundation following the 2010 Schultz Fire in Coconino County, Arizona,USA**,** in *Debris-Flow Hazards Mitigation: Mechanics, Monitoring, Modeling, and Assessment*, edited by Kean, J.W., Coe, J.A., Santi, P.M., and Guillen, B.K., Association of Environmental and Engineering Geologists, Special Publication #28, p. 467-474 2019.

1. Mirus, B.B., Staley, D.M., Kean, J.W., Smith, J.B., Wooten, R., **McGuire, L.A.**, Ebel, B.A., Conceptual Framework for Assessing disturbance impacts on debris-flow initiation thresholds across hydroclimatic settings, in *Debris-Flow Hazards Mitigation: Mechanics, Monitoring, Modeling, and Assessment*, edited by Kean, J.W., Coe, J.A., Santi, P.M., and Guillen, B.K., Association of Environmental and Engineering Geologists, Special Publication #28, p. 524-531, 2019.

COMMENTARY ARTICLES

1. Rengers, F.K.**, L.A. McGuire**, Wildfire and Earth Surface Processes, *Earth Surface Processes and Landforms*, 2020**,** https://doi.org/10.1002/esp.5054.

OTHER

1. Youberg, A.M.**, L.A. McGuire**, N. Oakley, F.K. Rengers, A. Shafer, Confronting debris flow hazards after wildfire, *Eos*, 2025**,** https://doi.org/10.1029/2025EO250069.

AWARDED GRANTS AND CONTRACTS

FEDERAL

Title: Flooding frequency and severity across the wildfire continuum throughout the western United States
Sponsor: U.S. Geological Survey
Project Period: 2025-2027
Total Budget: $56,550
PI: Luke McGuire

Title: Planning: CHIRRP: Increasing resilience to fire through prefire assessments of posture flow hazards: Co-producing solutions with communities
Sponsor: NSF (Geomorphology and Land-use Dynamics)
Project Period: 2025-2026
Total Budget: $197,844

PI: Luke McGuire
CO-PIs: Ann Youberg (UA), Catrin Edgeley (NAU), Elaine Spiller (Marquette), Abani Patra (Tufts)

Title: Improving post-wildfire debris-flow predictions for Arizona
Sponsor: Department of Emergency and Military Affairs (DEMA)
Project Period: 2023-2025
Total Budget: $252,706
PI: Ann Youberg (UA)
CO-PIs: Luke McGuire

Title: Forecasting post-fire debris flow hazards in the southwestern US
Sponsor: U.S. Geological Survey
Project Period: 2023-2026
Total Budget: $140,000
PI: Luke McGuire
CO-PIs: Ann Youberg (UA), Rebecca Beers (UA)

Title: Mentoring Institute for Sediment Transport (MIST) for Early Career Professionals at the 2023 EWRI World Environmental and Water Resources Congress and the AGU Fall Meeting
Sponsor: NSF (Geomorphology and Land-use Dynamics)
Project Period: 2023-2024
Total Budget: $34,485
PI: Jennifer Duan (UA)
CO-PIs: Luke McGuire, Xiaofeng Liu (PSU), Kimberly Hill (UNM), Kyle Strom (VTU)

Title: Monitoring post-fire debris flows in the southwestern US
Sponsor: U.S. Geological Survey
Project Period: 2022
Total Budget: $25,116
PI: Luke McGuire (100% credit, 0% effort)

Title: Expanding monitoring and modeling to assess the role of drought in the persistence of post-fire debris-flow and flood hazards in the western US
Sponsor: NOAA-NIDIS (National Integrated Drought Information System)
Project Period: 2021-2023
Total Budget: UA portion: $92,508
PI: Ben Hatchett (DRI)
CO-PIs: Luke McGuire (70% credit, 0% effort), Ann Youberg (UA), Scott McCoy (UNR)

Title: Desert Southwest CESU: Impacts of wildfire on the ecologic, hydrologic and geomorphic resiliency of forest soils in the Southwestern US
Sponsor: Natural Resources Conservation Service
Project Period: 2021-2023
Total Budget: $227,853
PI: Craig Rasmussen (UA)
CO-PIs: Luke McGuire (20% credit, 0% effort), Don Falk (UA), Ann Youberg (UA)

Title: Improving debris flow inundation modeling to support post-fire flash flood and debris flow warning operations
Sponsor: National Oceanic and Atmospheric Administration (NOAA) via UCAR COMET Program
Project Period: 2021-2022
Total Budget: $14,828
PI: Luke McGuire (75% credit, 0% effort)
CO-PIs: Ann Youberg (UA), Mike Schaffner (National Weather Service), Katherine Rowden (National Weather Service), Larry Hopper (National Weather Service)

Title: Collaborative Research: Steepland dynamics and steady-state forms resulting from debris flows
Sponsor: NSF (Geomorphology and Land-use Dynamics)
Project Period: 2020-2023
Total Budget: $521,363 (UA portion: $315,387)
PI: Luke McGuire (100% credit, 0% effort)
CO-PIs: Scott McCoy (UNR), Katy Barnhart (CU)

Title: Collaborative Research: Steepland dynamics and steady-state forms resulting from debris flows (Supplement)
Sponsor: NSF (Geomorphology and Land-use Dynamics)
Project Period: 2022
Total Budget: $35,250
PI: Luke McGuire
CO-PIs: Scott McCoy (UNR), Katy Barnhart (CU)

Title: Monitoring debris flow and flood activity following wildfire: How do drought and vegetation recovery influence post-wildfire hazards?
Sponsor: NOAA-NIDIS (National Integrated Drought Information System)
Project Period: 2020-2021
Total Budget: $138,908 (UA portion: $112,299)
PI: Nina Oakley (DRI)
CO-PIs: Luke McGuire (85% credit, 0% effort), Ann Youberg (UA)

Title: A regional model for rapid assessment of post-fire debris flow inundation
Sponsor: U.S. Geological Survey
Project Period: 2020-2021
Total Budget: $139,950
PI: Luke McGuire (100% credit, 0% effort)

Title: Integrating post-wildfire debris-flow and flood risk assessments and value change metrics with QRA
Sponsor: Joint Fire Sciences Program
Project Period: 2020-2023
Total Budget: $417,706 (UA portion: $281,805)
PI: Ann Youberg (UA)
CO-PIs: Luke McGuire (50% credit, 7.5% effort), Ryan Fitch (NAU), Christopher O'Connor (USFS), Joe Loverich (JE Fuller Consulting)

Title: Emergency post-fire debris flow inundation hazards: Identifying who is at risk in the immediate aftermath of a fire
Sponsor: Department of Emergency and Military Affairs (DEMA)
Project Period: 2019-2022
Total Budget: $53,977
PI: Ann Youberg (UA)
CO-PIs: Luke McGuire (50% credit, 1.7% effort)

Title: Improving situational awareness of impactful post-fire debris flows
Sponsor: National Oceanic and Atmospheric Administration/National Weather Service (NOAA/NWS) Collaborative Science Technology and Applied Research (CSTAR) Program
Project Period: 2019-2022
Total Budget: $358,363 (UA portion: $144,356)
PI: Nina Oakley (DRI, now at Scripps)
CO-PIs: Luke McGuire (100% credit, 6.25% effort), Forrest Cannon (Scripps)

STATE

Title: Atmospheric River Program Phase V
Sponsor: UC San Diego, sub CADWR (California Department of Water Resources)
Project Period: 2024-2027
Total Budget: $600,000
PI: Luke McGuire (50% credit, 0% effort)
CO-PIs: Xubin Zheng (UA)

Title: Atmospheric River Program Phase IV
Sponsor: UC San Diego, sub CADWR (California Department of Water Resources)
Project Period: 2023-2024
Total Budget: $200,000
PI: Luke McGuire (50% credit, 0% effort)
CO-PIs: Xubin Zheng (UA)

Title: Wildland Urban Interface Fire-Fuel Mitigation
Sponsor: Arizona Board of Regents
Project Period: 2023-2026
Total Budget: $900,000 (UA portion: $122,228)
PI: Tyson Swetnam (UA)
CO-PIs: Luke McGuire, Ann Youberg (UA)

Title: Model Evaluations and Improvements for the DWR Atmospheric River Program
Sponsor: UC San Diego, sub CADWR (California Department of Water Resources)
Project Period: 2021-2022
Total Budget: $175,360
PI: Luke McGuire (43% credit, 0% effort)
CO-PIs: Xubin Zheng (UA)

Title: Improving post-wildfire hazard assessments: Integrating emerging unmanned aerial systems technology with high resolution numerical models
Sponsor: Science Foundation Arizona

Project Period: 2017-2019
Total Budget: $200,000 (100% credit, 0% effort)
PI: Luke McGuire

COUNTY

Title: Ongoing effects of wildfire on post-fire hydrologic and ecological processes in the Santa Catalina Mountains
Sponsor: Pima County Regional Flood Control District
Project Period: 2023-2024
Total Budget: $77,458
PI: Rebecca Beers
CO-PIs: Luke McGuire (10% credit, 0% effort), Ann Youberg (UA), Craig Rasmussen (UA), Don Falk (UA)

Title: Estimating post-wildfire sediments yields in the Santa Catalina Mountains following the 2020 Bighorn Fire, a University of Arizona partnership with Pima County Regional Flood Control District
Sponsor: Pima County Regional Flood Control District
Project Period: 2020-2022
Total Budget: $25,004
PI: Ann Youberg (UA)
CO-PIs: Luke McGuire (50% credit, 2.5% effort)

INDUSTRY

Title: Post-fire watershed impacts in low desert areas - Phase 2
Sponsor: Salt River Project
Project Period: 2022-2023
Total Budget: $81,846
PI: Luke McGuire (70% credit, 0% effort)
CO-PIs: Ann Youberg (UA)

Title: Post-fire watershed impacts in low desert areas
Sponsor: Salt River Project
Project Period: 2021-2022
Total Budget: $81,883
PI: Luke McGuire (70% credit, 0% effort)
CO-PIs: Ann Youberg (UA)

INTERNAL (FROM UARIZONA)

Title: Can we reduce the impacts of post-wildfire floods to protect downstream communities? Evaluating the effectiveness of a new mitigation strategy
Sponsor: University of Arizona, National Labs Partnerships Grant
Project Period: 2024-2025
Total Budget: $41,605
PI: Rebecca Beers (UA)
CO-PI: Luke McGuire (UA), Ann Youberg (UA)

Title: Can we reduce the impacts of post-wildfire floods to protect downstream communities? Evaluating the effectiveness of a new mitigation strategy
Sponsor: University of Arizona, Research Discovery and Innovative Research Advancement Grants
Project Period: 2022
Total Budget: $49,407
PI: Rebecca Beers (UA)
CO-PI: Luke McGuire (UA), Ann Youberg (UA)

Title: Data-driven risk assessment and mitigation for post-fire debris flows
Sponsor: University of Arizona, Data Science Academy Initiative
Project Period: 2022
Total Budget: $28,521
PI: Kwang-Sun Jun
CO-PI: Luke McGuire

Title: Impacts of successive wildfires on the ecologic, hydrologic and geomorphic resiliency of the Sky Islands
Sponsor: University of Arizona, Research Discovery and Innovative Research Advancement Grants
Project Period: 2021
Total Budget: $82,457
PI: Luke McGuire (0% effort)
CO-PIs: Don Falk (UA), Craig Rasmussen (UA), Ann Youberg (UA)

Title: From source to sink: Identifying hot spots for debris flow hazards and soil carbon sequestration
Sponsor: University of Arizona, Research Discovery and Innovative Research Advancement Grants
Project Period: 2018
Total Budget: $42,117
PI: Luke McGuire (0% effort)
CO-PIs: Ann Youberg (UA), Craig Rasmussen (UA)

Title: Improving post-wildfire hazard assessments: Integrating emerging unmanned aerial systems technology with high resolution numerical models
Sponsor: University of Arizona, Industry Engagement and Interdisciplinary Link Student Team Award
Project Period: 2017-2019
Total Budget: $44,976
PI: Luke McGuire (0% effort)
CO-PIs: Ann Youberg (UA)

SUBMITTED GRANTS AND CONTRACTS (CURRENTLY UNDER REVIEW)

FEDERAL

Title: Parameterizing models for post-fire flood and debris flow hazard assessments throughout the recovery process
Sponsor: Department of Emergency and Military Affairs (DEMA)
Project Period: 2024-2027
Total Budget: $336,302
PI: Rebecca Beers (UA)
CO-PIs: Luke McGuire

Title: Collaborative Research: Leveraging seismic data to unravel postfire debris flow dynamics
Sponsor: NSF
Project Period: 2025-2028
Total Budget: $680,000 (UA portion: $218,764)
PI: Ryan Porter
CO-PIs: Luke McGuire, Taylor Joyal (NAU), Victor Tsai (Brown)

CONFERENCES/SCHOLARLY PRESENTATIONS

COLLOQUIA

INVITED

- Department of Earth and Planetary Sciences, Northwestern University, Evanston, IL. *Wildfire impacts on flash-flood and debris-flow hazards*. **2023**.
- Department of Mathematical and Statistical Sciences, Marquette University, Milwaukee, WI (conducted via Zoom). *Post-wildfire debris flow hazards*. **2021**.
- Department of Geosciences, University of Arizona, Tucson, AZ (conducted via Zoom). *Fires, Floods, and Debris Flows: Geomorphic Impacts of an Increasingly Disturbed World*. **2020**.
- Department of Hydrology and Atmospheric Sciences, University of Arizona, Tucson, AZ. *Hydrologic Impacts of wildfire and implications for debris-flow hazards*. **2020**.

SEMINARS

INVITED

- U.S. Geological Survey Landslide Hazard Program Seminar, Golden, CO (conducted via Zoom). *Post-wildfire debris flow hazards: Insights from recovering burned areas in the Southwestern U.S*. **2020**.
- GFZ German Research Centre for Geosciences, Potsdam, Germany. *The geomorphic impact of wildfire: from hazards to landscape evolution*. **2019**.

OTHER

- U.S. Army Research and Development Center (conducted via Zoom). *Hydrologic thresholds for debris flow initiation in recently burned watersheds*. **2021**.
- Desert Research Institute, Reno, NV. *Initiation mechanisms and triggering thresholds associated with post-wildfire debris flows in the western U.S*. **2018**.
- Department of Mathematics Modeling and Computation Seminar, University of Arizona, Tucson, AZ. *Using Numerical Modeling to Unravel the Post-Wildfire Debris-Flow Initiation Process*. **2016**.

SYMPOSIA

[o] co-authors who are undergraduate and graduate student advisees or postdoctoral mentees

SUBMITTED

- [o] Santiago, J., R. Beers, L.A. McGuire, Quantifying changes in particle size distribution on sediment retention structures downstream of a recently burned area, 53rd Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2025)**

- [o] Martinez, J., L.A. McGuire, A.M. Youberg, Insights into temporal changes in debris flow susceptibility following fire in the southwest USA from monitoring and repeat estimates of soil hydraulic and physical properties, 52nd Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2024)**
- [o] Johnson, T., L.A. McGuire, Prefire Assessment of Postfire Debris Flow Hazards near Flagstaff, Arizona: Insights from Debris Flow Runout Modeling and Climate Change Implications, 52nd Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2024)**
- [o] Williams, M.R., L.A. McGuire, Influences of soil burn severity in the Sonoran Desert on soil hydraulic properties and vegetation recovery, 51st Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2023)**
- [o] Johnson, T., [o] Martinez, J., L.A. McGuire, Modeling the flash flood potential changes over time following the Contreras Fire with the HEC-HMS software, 51st Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2023)**
- [o] Martinez, J., L.A. McGuire, Impacts of multiple fires on soil properties in the southern Arizona Sky Islands, 49th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2022)**
- [o] Ridlinghafer, J., L.A. McGuire, Relating pyrogenic carbon accumulation to modern and historic fire regimes: Using estimates of peak flow rate and USLE to predict erosion, El Dia del Agua y la Atmosfera Virtual Conference, University of Arizona, Tucson, AZ **(2020)**
- [o] Hoch, O., L.A. McGuire, A.M. Youberg, Modeling Post-Wildfire Landscape Recovery and Debris-Flow Potential, 48th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2020)**
- [o] Gorr, A., L.A. McGuire, A.M. Youberg, Modeling regional scale post-wildfire debris flow inundation, 48th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2020)**
- [o] Liu, T., L.A. McGuire, H.Wei, F.K. Rengers, H. Gupta, L. Ji, D.C. Goodrich, An emerging path of hydrological recovery after a severe wildfire on a chaparral dominant mountainous watershed, 48th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2020)**
- [o] Raymond, C., L.A. McGuire, A.M. Youberg, Rainfall intensity-duration thresholds for post-wildfire debris flows in Arizona, 47th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2019)**
- [o] Lizarazu, I., [o] J. Ridlinghafer, L.A. McGuire, A.M. Youberg, Quantifying the effects of wildfire regime and landscape position on soil properties in the Pinaleno Mountains, 47th Annual Geosciences Symposium, Geodaze, University of Arizona, Tucson, AZ **(2019)**

CONFERENCES

[o] co-authors who are undergraduate and graduate student advisees or postdoctoral mentees

INVITED

- Community Surface Dynamics Modeling System (CSDMS) Annual Meeting, Boulder, CO. *Modeling the transient effects of fire on runoff and erosion: Implications for debris-flow hazards* **(2022)**
- American Geophysical Union 2021 Fall Meeting, New Orleans, LA. *Hydrologic and geomorphic impacts of increasing wildfire activity in the Sonoran Desert* **(2021)**
- McGuire, L.A., F.K. Rengers, J.W. Kean, D.M. Staley, [o]H. Tang, A.M. Youberg, Looking through the window of disturbance at post-wildfire debris flow hazards, 7th International Conference on Debris-Flow Hazards and Mitigation, Golden, CO **(2019)**

SUBMITTED

- McGuire, L., Rengers, F.K. and Youberg, A.M., **2024**. Effects of recent disturbance history on postfire debris-flow activity and sediment yield. AGU24.
- Patra, A., Patel, P., and McGuire, L.A., **2024**. Spectral Clustering Of Digital Elevation Models To Enable Reliable Fast Modeling Of Postfire Debris Flows At New Sites Using Pretrained Covolutional Neural Network Models. AGU24.
- Beers, R., Barra, C., Fule, M., Rasmussen, C., Youberg, A.M. and McGuire, L., **2024**. Exploring Interactions Between Post-Fire Vegetation and Soil Recovery Following the 2020 Bighorn Fire in the Santa Catalina Mountains, Arizona. In Geological Society of America Abstracts (Vol. 56, p. 405297).
- Youberg, A.M., McGuire, L., Gorr, A. and Beers, R., **2024**. An Overview of Postfire Debris Flows in the Southwest us. In Geological Society of America Abstracts (Vol. 56, p. 403510).
- McGuire, L., Youberg, A.M. and Gorr, A., **2024**. Effects of Recent Disturbance History on Postfire Debris Flow Activity. In Geological Society of America Abstracts (Vol. 56, p. 401876).
- [o] Gorr, A., McGuire, L. and Youberg, A.M., 2**024**. Constraining Postfire Debris-Flow Volume in the Southwestern United States. In Geological Society of America Abstracts (Vol. 56, p. 405604).
- Rengers, F.K. and McGuire, L., **2023**, December. Two decades of erosion and deposition research in the emerging field of Pyrogeomorphology. In AGU Fall Meeting Abstracts (Vol. 2023, pp. EP13B-07).
- [o] Struble, W., McGuire, L., McCoy, S.W., Barnhart, K.R. and Marc, O., **2023**, December. Modeled Debris Flows Reproduce Steepland Topographic Signatures in the San Gabriel Mountains, California. In AGU Fall Meeting Abstracts (Vol. 2023, pp. EP51B-07).
- [o] Liu, T., McGuire, L., Youberg, A.M., Gorr, A. and Rengers, F.K., **2023**, December. Guidance for parameterizing post-fire hydrologic models within situ infiltration measurements. In AGU Fall Meeting Abstracts (Vol. 2023, No. 655, pp. NH21B-0655).
- [o] Gorr, A., McGuire, L. and Youberg, A.M., **2023**, December. A Method for the Pre-Fire Assessment of Post-Fire Debris-Flow Hazards in the Western United States. In AGU Fall Meeting Abstracts (Vol. 2023, No. 643, pp. NH21B-0643).
- [o] Barra, C., Rasmussen, C., McGuire, L., Youberg, A., Falk, D., Beers, R. and Fule, M., 2023. Wildfires Effects on Soil Physical, Chemical and Hydraulic Properties in the Santa Catalina Mountains, Arizona, USA. In Geological Society of America Abstracts (Vol. 55, p. 389162).
- McGuire, L., Youberg, A.M., Gorr, A. and Rebecca, B., **2023**, December. Fire-driven changes to soil hydraulic properties in the southwest USA. In AGU Fall Meeting Abstracts (Vol. 2023, No. 1748, pp. EP11C-1748).
- Duan, J.G., McGuire, L., Hill, K.M., Liu, X. and Strom, K., 2023, December. Research Highlights of 2023 MIST Mentees. In AGU Fall Meeting Abstracts (Vol. 2023, pp. EP14A-08).
- L. McGuire, F. Rengers, A. Youberg, A. Gorr, O. Hoch, Characteristics of debris-flow triggering rainstorms following wildfire in western New Mexico, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- Youberg, A. L. McGuire, A. Gorr, F. Rengers, O. Hoch, R. Beers, P. Pearthree, Two decades of post-fire debris-flow research in Arizona and New Mexico: Lessons learned provide a roadmap for future research, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- Beers, R., L. McGuire, A. Youberg, A. Gorr, T. Joyal, M. Miller, Can we reduce the impacts of post-wildfire floods to protect downstream communities? Evaluating the effectiveness of a new mitigation strategy on the museum fire floodplain, Flagstaff, Arizona, Geological Society of America Annual Meeting, Denver, CO **(2022)**

- [o] Liu, T., L. McGuire, A. Youberg, A. Gorr, F. Rengers, Parameterizing post-fire hydrologic models with minidisk infiltration measurements to assess debris-flow hazards, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- Rengers, F., L. McGuire, A. Youberg, D. Cadol, A. Gorr, O. Hoch, K. Barnhart, J. Kean, R. Beers, The influence of large woody debris on post-wildfire debris-flow sediment storage, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- [o] Gorr, A., L. McGuire, A. Youberg, Assessing the controls on post-wildfire debris-flow volume in the southwestern United States, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- [o] Prescott, A., L. McGuire, N. Oakley, J. Kwang-Sun, B. Gales, M. Simpson, Integrating precipitation estimates from an atmospheric model ensemble with debris-flow models to assess post-fire debris-flow inundation hazards, Geological Society of America Annual Meeting, Denver, CO **(2022)**
- [o] Struble, W., L. McGuire, S.W. McCoy, and K. Barnhart, Steepland Morphology Predicts Erosion Rate: Comparison of Debris-Flow Metrics with Established Hillslope and Fluvial Counterparts in the Oregon Coast Range. American Geophysical Union Fall Meeting, Chicago, IL **(2022)**
- [o] Struble, W., L. McGuire, S. McCoy, K. Barnhart, Quantifying the role of debris flows on steep land evolution, American Geophysical Union Fall Meeting, New Orleans, LA **(2021)**
- Thomas, M., F. Rengers, J. Kean, L. McGuire, D. Staley, K. Barnhart, B. Ebel, Post-wildfire soil-hydraulic recovery and the persistence of debris flow hazards, Geological Society of America Annual Meeting, Portland, Oregon, **(2021)**
- Rengers, F., L. McGuire, A. Youberg, [o] A. Gorr, [o] O. Hoch, D. Cadol, K Barnhart, R. Beers, Where post-fire debris flows stop, Geological Society of America Annual Meeting, Portland, Oregon, **(2021)**
- McGuire, L.A., A. Youberg, [o] O. Hoch, [o] A. Gorr, R. Beers, Geomorphic and hydrologic impacts of successive wildfires: insights from the 2021 Telegraph Fire in Central Arizona, Geological Society of America Annual Meeting, Portland, Oregon **(2021)**
- [o] Liu, T., L. McGuire, N. Oakley, F. Cannon, Modeling changes in rainfall intensity-duration thresholds for flash floods in a southern California watershed over five years of post-fire recovery, Geological Society of America Annual Meeting, Portland, Oregon, **(2021)**
- [o] Gorr, A., L.A. McGuire, A. Youberg, F. Rengers, ProDF: A reduced-complexity model for post-wildfire debris-flow inundation, Geological Society of America Annual Meeting, Portland, Oregon, **(2021)**
- Youberg, A., L.A. McGuire, R. Beers, O. Hoch, A. Gorr, Hydro-geomorphic impacts of successive wildfires in areas with different fire exposure: lessons learned from the Santa Catalina Mountains, Tucson, AZ, Geological Society of America Annual Meeting, Portland, Oregon, **(2021).**
- McGuire, L.A., S. McCoy, O. Marc, K. Barnhart, A numerical modeling investigation of steady state channel profiles incised by debris flow and fluvial processes, Geological Society of America Annual Meeting, Portland, Oregon **(2021)**
- [o] Ganesh, I., L.A. McGuire, L.M. Carter, Dynamics of Dense Pyroclastic Flows on Venus – Insights into Pyroclastic Eruptions, 52nd Lunar and Planetary Science Conference **(2021)**
- Youberg, A.M., L.A. McGuire, F.K. Rengers, [o] A.N. Gorr, [o] O. Hoch, Post-wildfire Debris-flow Research in Arizona and New Mexico, Arizona Floodplain Managers Association Virtual Conference **(2021)**
- McGuire, L. A., A. M. Youberg, F.K. Rengers, N.S. Abramson, [o] I. Ganesh, [o] A.N. Gorr, [o] O. Hoch, J.C. Johnson, P. Lamom, [o] A.B. Prescott, and J. Zanetell, Extreme precipitation reveals impacts of a low severity wildfire on debris-flow processes, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**

- [o] Hoch, O., L.A McGuire, A.M. Youberg, Rainfall Intensity-Duration Thresholds for Debris-Flow Initiation in Recovering Burned Areas in the Southwestern United States, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**
- [o] Liu, T., L.A McGuire, H.Wei, F.K. Rengers, H. Gupta, L. Ji, D.C. Goodrich, Hydrological recovery after a severe wildfire in a chaparral dominated, mountainous watershed, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**
- [o] Gorr, A., L.A. McGuire, A.M. Youberg, F.K. Rengers, Modelling post-wildfire debris-flow inundation in the Southwestern United States, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**
- Youberg, A.M., L.A. McGuire, [o] C.A. Raymond, [o] O. Hoch, [o] A. Gorr, Debris-flow timing and occurrence 1 to 3 years after wildfire provides insights into how peak and triggering rainfall intensity-duration thresholds differ and change with time since fire, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**
- Cavagnaro, D., N. Delgado, S.W. McCoy, D. Lindsay, L.A. McGuire, N. Oakley, J. Lancaster, Rainfall-intensity thresholds for post-wildfire debris-flow initiation vary with climatology of extreme rainfall, American Geophysical Union Annual Meeting, San Francisco, USA **(2020)**
- Ganesh, I., L.A. McGuire, L.M. Carter, Modeling Deposition from Dense Pyroclastic Density Currents on Venus, 18th Meeting of the Venus Exploration and Analysis Group **(2020)**
- [o] Tang, H., L.A. McGuire, J.W. Kean, J. Smith, The impact of sediment supply on rainfall intensity-duration thresholds and debris flow surge properties, American Geophysical Union Annual Meeting, San Francisco, USA **(2019)**
- [o] Tang, H., L.A. McGuire, F.K. Rengers, J.W. Kean, D.M. Staley, M. Bernard, C. Gregoretti, J. Smith, Deriving discharge thresholds for runoff-generated debris flow initiation using process-based modeling and machine learning methods, American Geophysical Union Annual Meeting, San Francisco, USA **(2019)**
- Rengers, F.K., J.W. Kean, L.A. McGuire, D.M. Staley, Using field data to parameterize post-wildfire flow models, American Geophysical Union Annual Meeting, San Francisco, USA **(2019)**
- McGuire, L.A., Rengers, F.K., and Tang, H. Evolving thresholds for mass movement following wildfire, American Geophysical Union Annual Meeting, San Francisco, USA **(2019)**
- McGuire, L.A., Youberg, A.M., and [o] Tang, H. Relating hydrologic recovery to changes in post-wildfire debris flow activity as a function of time since burning, European Geophysical Union Annual Meeting, Vienna, Austria **(2019)**
- McGuire, L.A., Youberg, A.M. Refining thresholds for runoff-generated debris flows: Insights from a recently burned area in the Gila National Forest, New Mexico, USA, Geological Society of America Annual Meeting, Phoenix, USA **(2019)**
- Rengers, F.K., L.A. McGuire, A.M. Youberg, Distinguishing post-fire debris flow erosional and depositional zones in a burned watershed, Geological Society of America Annual Meeting, Phoenix, USA **(2019)**
- **[o]** Fenerty, B., **[o]** J. Ridlinghafer, **[o]** I. Lizarazu, L.A. McGuire, C. Rasmussen, A.M. Youberg, Quantifying the spatial distribution of pyrogenic carbon following the 2018 Buzzard Fire in the Gila National Forest, New Mexico, Geological Society of America Annual Meeting, Phoenix, USA **(2019)**
- Mirus, B.B., D.M. Staley, J.W. Kean, J.B. Smith, R. Wooten, L.A. McGuire, B.A. Ebel, Conceptual framework for assessing disturbance impacts on debris-flow initiation thresholds across hydroclimatic settings, 7th International Conference on Debris-Flow Hazards and Mitigation, Golden, CO **(2019)**
- Youberg, A.M., L.A. McGuire, Comparison of an empirical and a process-based model for simulating debris-flow inundation following the 2010 Schultz Fire in Coconino County, Arizona, USA, 7th International Conference on Debris-Flow Hazards and Mitigation, Golden, CO **(2019)**

- McGuire, L.A., Rengers, F.K., Kean, J.W., Staley, D.M., Youberg, A.M., Initiation mechanisms and triggering thresholds associated with runoff-generated debris flows in the western U.S., European Geophysical Union Annual Meeting, Vienna, Austria **(2018)**
- Harig, C., L.A. McGuire, Developing an Introductory Data Analysis Class Using MATLAB at the Undergraduate Sophomore Level to Support Programming Skills in Higher Level Courses, American Geophysical Union Annual Meeting, Washington DC, USA **(2018)**
- Rengers, F.K., J.W. Kean, L.A. McGuire, D.M. Staley, Modeling post-wildfire hydrology and debris flow timing using a regionally generalizable approach, American Geophysical Union Annual Meeting, Washington DC, USA **(2018)**
- [o] Tang, H., L.A. McGuire, F.K. Rengers, J.W. Kean, D.M. Staley, A.M. Youberg, J. Smith, A physically-based approach for estimating post-wildfire debris flow initiation thresholds, American Geophysical Union Annual Meeting, Washington DC, USA **(2018)**
- McGuire, L.A., A.M. Youberg, Quantifying the Impact of Successive Wildfires on Soil Hydraulic Properties and Debris Flow Hazards, American Geophysical Union Annual Meeting, Washington DC, USA **(2018)**
- [o] Raymond, C.A., L.A. McGuire, A.M. Youberg, Rainfall intensity-duration thresholds for post-wildfire debris flows in Arizona, Geological Society of America Section Meeting, Flagstaff, AZ **(2018)**
- [o] Tang, H., L.A. McGuire, F.K. Rengers, J.W. Kean, D.M. Staley, Temporal changes in debris flow source material and initiation mechanisms following the 2016 Fish Fire in the San Gabriel Mountains, CA, USA, Geological Society of America Section Meeting, Flagstaff, AZ **(2018)**
- Youberg, A.M., L.A. McGuire, Preliminary Thoughts on Changes to Hydrologic Properties of Soils Following Multiple Uncharacteristic Fires, Society of American Foresters Southwestern Section Meeting, Safford, Arizona, USA **(2018)**.
- McGuire, L.A., McCoy, S.M., Kean, J.W., Exploring the topographic signature of debris flows with a landscape evolution model, American Geophysical Union Annual Meeting, New Orleans, LA **(2017)**
- [o] Tang, H., L.A. McGuire, F.K. Rengers, J.W. Kean, D.M. Staley, A numerical modeling investigation of erosion and debris flows following the 2016 Fish Fire in the San Gabriel Mountains, CA, USA, American Geophysical Union Annual Meeting, Washington DC, USA **(2017)**
- Rengers, F.K., L.A. McGuire, D.M. Staley, Using lidar to monitor post-wildfire hillslope erosion, American Geophysical Union Annual Meeting, Washington DC, USA **(2017)**
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TEACHING EXPERIENCE (UNIVERSITY OF ARIZONA)

Primary Instructor

- Geologic Hazards, GEOS 415 (Fall 2022, Fall 2024)
- Earth Surface Processes, GEOS 300 (Spring 2019, Spring 2021, Spring 2023, Spring 2025)
- Geomorphology and Quaternary Geology, GEOS 596C (Spring 2021, Fall 2022, Fall 2024)
- Field Studies in Geomorphology, GEOS 650 (Spring 2018, Spring 2020)
- STEM Outreach and Science Communication, GEOS 596H (Spring 2020)
- Programming and Data Analysis in the Earth Sciences, GEOS 280, (Fall 2017, Fall 2018, Fall 2019, Fall 2020)
- Geomorphology and Landscape Evolution, GEOS 450/550 (Spring 2017, Spring 2022)
- Topics in Geosciences, GEOS 595 (Fall 2016, Spring 2017)

Guest Lecturer

- National Parks: A Window Through Earth’s Geological Processes, GEOS 240 (Fall 2017)
- Analytical and Numerical Modeling in Geosciences, GEOS 502 (Fall 2017, Fall 2019)
- Case Studies in Applied Mathematics, MATH 586 (Spring 2017, Spring 2018)

2024 TEACHING EXPERIENCE

- Spring 2024: Sabbatical Leave
- Fall 2024: Geologic Hazards (GEOS 415) and Geomorphology and Quaternary Geology (GEOS 596C)

POSTDOCTORAL MENTORING

Hui Tang (2017-2019)
Tao Liu (2019-2024)
Will Struble (2021-2024)

GRADUATE STUDENT ADVISING

PhD: Corey Crowder (2023-present), Brendan Fenerty (2023-present), Ana Fernandez-Sirgo (2023-present), Rebecca Beers (2024-present), Alex Gorr (2019-2024)
MS: Joseph Martinez (2022-2024); Olivia Hoch (2019-2021); Carissa Raymond (2017-2019)

UNDERGRADUATE STUDENT ADVISING

Jorge Santiago (2024-2025)
Tanner Johnson (2022-2024)
Madeline Williams (2022-2023)
Joseph Martinez (2021-2022)
Iaos Lizarazu (2018-2019)
Jake Ridlinghafer (2018-2020)