

David G. Litwin

Assistant Professor

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Education

- 8/2018 – 8/2023 **Ph.D. Geography and Environmental Eng.** Johns Hopkins University, Baltimore, MD
Concentration in Landscape Hydrology
Thesis: *The coevolution of topography and runoff generation in humid landscapes*
- 8/2013 – 8/2018 **B.S. Civil Eng. (University Honors)** University of Illinois at Urbana-Champaign, Urbana, IL
Concentration in Hydrology and Hydraulic Engineering
- 8/2013 – 8/2018 **B.M. Music Performance** University of Illinois at Urbana-Champaign, Urbana, IL
Concentration in Double Bass Performance

Employment

- 7/2026 – Present **Assistant Professor** Temple University, Philadelphia, PA
Department of Earth and Environmental Science
- 7/2025 – 6/2026 **Assistant Professor of Instruction** Temple University, Philadelphia, PA
Department of Earth and Environmental Science
- 8/2023 – 6/2025 **Postdoctoral Researcher** GFZ Helmholtz Center for Geosciences, Germany
Earth Surface Process Modeling Section
- 8/2018 – 8/2023 **Doctoral Researcher** Johns Hopkins University, Baltimore, MD
Department of Environmental Health and Engineering

Teaching Experience

Temple

EES3021 Groundwater Hydrology. Spring 2026.

SCTC1013 Elements of Data Science for the Physical and Life Sciences. Fall 2025, Spring 2026.

ENVS4198 Environmental Sciences Senior Seminar. Fall 2025.

Johns Hopkins University

Gateway Computing: Python. Lead Course Assistant. Spring 2021.

Hydrology. Teaching Assistant. Fall 2018, Spring 2020.

Seminar on Critical Zone Science. Co-leader. Spring 2019.

Mentorship

GFZ

- 10/2023 – 12/2023 Mingyue Yuan, masters student at ETH Zurich. Supervised internship project on karst effects on landscape evolution.

Johns Hopkins University

- 6/2022 – 7/2022 Samantha Motz, undergraduate at Georgia Tech. Co-supervised UNAVCO internship on critical zone structure and water table dynamics at Panola Mountain Research Watershed.

- 9/2021 – 5/2022 Joseph Stanley, undergraduate at Johns Hopkins. Co-supervised project on saturated areas and runoff generation.

Publications

Journal Publications

1. Houssais, M., **Litwin, D. G.** (2026). Modeling hillslope sediment creep dynamics triggered by seepage events. *Submitted*.
2. **Litwin, D. G.**, Malatesta, L. M. (2025). Slower erosion in carbonate landscapes due to partitioning of energy between surface and groundwater flow. *Geology*. *In Review*.
3. Haendel, A., Pilz, M., Malatesta, L. M., **Litwin, D. G.**, Cotton, F. (2025). Detecting seasonal differences in high-frequency site response using $\kappa 0$. *Seismica*, 4(1). <https://doi.org/10.26443/seismica.v4i1.1425>.
4. **Litwin, D. G.** Malatesta, L. M., Sklar, L. S. (2025). Hillslope diffusion and channel steepness in landscape evolution models. *Earth Surface Dynamics*, 13(2), 277–293. <https://doi.org/10.5194/esurf-13-277-2025>.
5. **Litwin, D. G.**, Harman, C. J. (2024). Evidence of subsurface control on the coevolution of hillslope morphology and runoff generation. *Water Resources Research*, 60(10), e2024WR037301. <https://doi.org/10.1029/2024WR037301>.
6. **Litwin, D. G.**, Tucker, G. E., Barnhart, K. R., Harman, C. J. (2024). Catchment coevolution and the geomorphic origins of variable source area hydrology. *Water Resources Research*, 60(6), e2023WR034647. <https://doi.org/10.1029/2023WR034647>.
7. **Litwin, D. G.**, Tucker, G. E., Barnhart, K. B., Harman, C. J. (2022). Groundwater affects the geomorphic and hydrologic properties of coevolved landscapes. *Journal of Geophysical Research: Earth Surface*, 127, e2021JF006239. <https://doi.org/10.1029/2021JF006239>.
8. **Litwin, D. G.**, Tucker, G. E., Barnhart, K. B., Harman, C. J. (2020). GroundwaterDupuitPercolator: A Landlab component for groundwater flow. *Journal of Open Source Software*, 5(46), 1935. <https://doi.org/10.21105/joss.01935>.

Selected Conference Presentations and Posters

*Presenting author

9. **Litwin, D. G.*** Malatesta, L. C. (2025). Slower erosion in carbonate landscapes due to partitioning of energy between surface and groundwater flow. Poster. *American Geophysical Union Fall Meeting*.
10. Harman, C. J., Sire, Y., **Litwin, D. G.** (2025). Where do channels begin? An exact answer for a class of landscape evolution models using Riemannian metrics, and their implications. Poster. *American Geophysical Union Fall Meeting*.
11. Houssais, M., Orescanin, M., **Litwin, D. G.** (2025). Predicting failure events and long-term evolution in landscapes by modeling sediment creep dynamics under groundwater flow forcing. Poster. *American Geophysical Union Fall Meeting*.
12. **Litwin, D. G.*** (2025). The past, present, and future of coevolution in hydrology. Poster. *Catchment Science: Interactions of Hydrology, Biology and Geochemistry Gordon Research Conference*.
13. **Litwin, D. G.***, Sklar, L. S., Malatesta, L. C. (2024). EGU24-15831: Right for the wrong reasons? On hillslope sediment and the streampower model. Poster. *European Geosciences Union General Assembly*.
14. **Litwin, D. G.***, Harman, C. J., Tucker, G.E., Barnhart, K. R. (2024). EGU24-7612: Catchment coevolution and the geomorphic origins of variable source area hydrology (Invited). Oral. *European Geosciences Union General Assembly*.

15. **Litwin, D. G.***, Harman, C. J. (2023). EP42C-07: Testing hypotheses linking hillslope morphology to variable source area runoff generation: a natural experiment (Invited). Oral. *American Geophysical Union Fall Meeting*.
16. Alley, C.*, Lewis, K., Kimble-Holls, N., Cambeiro, J., Keating, K., Hayes, J. L., Donaldson, Y. Y., Moore, J., Harman, C. J., **Litwin, D. G.** (2023). H33N-1970: Using seismic refraction tomography to compare critical zone structure within first-order basins in two distinct lithologies in Baltimore County, MD. Poster. *American Geophysical Union Fall Meeting*.
17. Marbles, A.*, Thomas, A., Dasher, J., Galatioto, M., Avelar, A., Estrada, J., Keating, K., Hayes, J. L., Donaldson, Y. Y., Moore, J., **Litwin, D. G.**, Harman, C. J. (2023). H33N-1973: Uncovering the Critical Zone Structure at Two Catchments in the Baltimore Piedmont Using Ground Penetrating Radar. Poster. *American Geophysical Union Fall Meeting*.
18. **Litwin, D. G.***, Harman, C. J., Tucker, G.E., Barnhart, K. R. (2022). EP25D-1431: DupuitLEM and the Search for Fundamental Insights into the Coevolution of Landscape Hydrology and Geomorphology (Invited). Poster. *American Geophysical Union Fall Meeting*.
19. **Litwin, D. G.**, Harman, C. J.*, Tucker, G.E., Barnhart, K. R. (2022). H43D-07: The Geomorphic Origins of Variable Source Area Hydrology. Oral. *American Geophysical Union Fall Meeting*.
20. Motz, S.*, **Litwin, D. G.**, Chiaviello, A., Flinchum, B., Harman, C. J. (2022). NS32B-0369: Looking for the Fill-and-Spill Mechanism with Ground Penetrating Radar—Panola Mountain, Georgia. Poster. *American Geophysical Union Fall Meeting*.
21. Chiaviello, A.*, Flinchum, B., Harman, C. J., Hayes, J. L., Motz, S., **Litwin, D. G.**, Holbrook, H. (2022). NS32B-0367: Defining Spatial Heterogeneity: Using Ground Penetrating Radar to Map the Boundaries between Soil, Saprolite, and Bedrock in the Critical Zone. Poster. *American Geophysical Union Fall Meeting*.
22. **Litwin, D. G.***, C. J. Harman, Tucker, G.E., Barnhart, K. R. (2021). EP45G-1574: The Hydrogeomorphic Evolution of Variable Source Areas. Poster. *American Geophysical Union Fall Meeting*.
23. Sklar, L. S.*, Callahan, R. P., Carr, B., Chiaviello, A., Cist, N., Davis, E., Flinchum, B., Harman, C. J., Hayes, J. L., Holbrook, H., **Litwin, D. G.**, Moon, S., Neely, A., Plante, Z., Richter Jr, D. B., Riebe, C. S., Singha, K., Weinheimer, N. (2021). EP45G-1573: Variation in Hillslope Sediment Size Controlled by Differences in Subsurface Weathering in a Transient Piedmont Landscape, South Carolina, USA. Poster. *American Geophysical Union Fall Meeting*.
24. Harman, C. J.*, Bemis, S. P., Callahan, R. P., Carr, B., Eppinger, B., Flinchum, B., Hayes, J. L., Holbrook, H., **Litwin, D. G.**, Moon, S., Riebe, C. S., Singha, Sklar, L. S. (2021). H41B-06: Panola Mountain revisited: intensive geophysical and geochemical studies reveal the structure of the deep critical zone at a classic hydrologic study site. Oral. *American Geophysical Union Fall Meeting*.
25. **Litwin, D. G.***, Harman, C. J., Tucker, G.E., Barnhart, K. R. (2021). EGU21-5863: A hydrogeomorphic perspective on emergent topographic properties at landscape equilibrium. Virtual. *European Geosciences Union General Assembly*.
26. **Litwin, D. G.***, Harman, C. J., Tucker, G.E., Barnhart, K. R. (2020). EP040-03: Groundwater affects geomorphic and hydrologic properties of coevolved landscapes. Oral. *American Geophysical Union Fall Meeting*.
27. **Litwin, D. G.***, Harman, C. J., Tucker, G.E., Barnhart, K. R. (2019). H310-1954: A Numerical Exploration of Coevolution Between Runoff Pathways, Climate, and Landscape Morphology. Poster. *American Geophysical Union Fall Meeting*.

28. **Litwin, D. G.***, Meira Neto, A., Troch, P. A. (2017). 304919: Evaluating the effectiveness of ERT for assessing subsurface structure at the landscape evolution observatory. Poster. *Geological Society of America Annual Meeting*.

Invited Presentations

2026

Department of Earth and Environmental Science, Temple University, USA

2025

Department of Earth and Environmental Science, Temple University, USA
Critical Zone Geochemistry Section, Institut de physique du globe de Paris, France

2024

Department of Physics, Clark University, USA
Department of Earth and Planetary Sciences, Rutgers University, USA
6th Cargese school: Flow and transport in porous and fractured media, France
Department of Geosciences, University of Tübingen, Germany
Geosciences Rennes, University of Rennes, France

2023

Department of Environmental Sciences, University of Virginia, USA

2022

Earth Surface Process Modelling, GFZ Helmholtz Center for Geosciences, Germany

2021

Center for Environmental and Applied Fluid Mechanics, Johns Hopkins University, USA

Honors and Scholarships

11/2024	EOS Editor's Highlight	American Geophysical Union
1/2019 – 1/2020	Horton Research Grant	American Geophysical Union
8/2018 – 8/2019	M. Gordon Wolman Fellowship	Johns Hopkins University
8/2018	Lee and Albert H. Halff Doctoral Student Award	Johns Hopkins University
5/2018	Melih T. Dural Undergraduate Research Prize	University of Illinois
8/2017	Engineering Achievement Scholarship	University of Illinois
8/2017	Vernon Lucy III/SUEZ Scholarship	American Water Works Association
8/2017	Clean Drinking Water Scholarship	Illinois Water Environment Association
8/2017	Safe Water Scholarship	Illinois Section American Water Works Association
8/2013 – 5/2017	Edward Krolick Music Performance Scholarship	University of Illinois

Service

Service to University

8/2025 – Present	Committee Member Earth and Environmental Science AI Committee	Temple University
6/2022 – 7/2023	Founding Leader Environmental Physics, Chemistry, and Biology Seminar (ePCBs)	Johns Hopkins University
1/2019 – 8/2021	Department Representative Graduate Representative Org. (GRO)	Johns Hopkins University
8/2019 – 8/2020	Department Representative Environmental Health and Engineering Student Org. (EHESO)	Johns Hopkins University
8/2015 – 5/2017	Executive Board Water Environment Federation - American Water Works Association (WEF-AWWA) Student Chapter	University of Illinois

Service to Community

- 3/2024 – Present **Conference Session Convener**
American Geophysical Union, European Geosciences Union
- 1/2020 – Present **Journal Peer Review**
Geophysical Research Letters, Water Resources Research, Hydrological Processes, Earth Surface Dynamics, Natural Hazards and Earth System Science
- 6/2023 **Scientific Advisor** GNOMES Program
Geophysics of the Near-surface an Outdoor Motivational Experience for Students (GNOMES)
scientific advisor for field season in Baltimore, Maryland
- 1/2020 – 12/2021 **Committee Member** American Geophysical Union
Member and co-leader of the blog and website for the Hydrological Sciences Student Subcommittee (H3S)
- 15 May 2020 **Invited panelist** CUAHSI
Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Virtual Forum: Transitioning to Online Education, Graduate Student Panel.

Science Communication and Outreach

- 1/2022 – 12/2023 **Editorial Team** Water Underground Blog
Blog posts about groundwater science, teaching, and community.
- 6/2020 – 6/2022 **Contributing Author** Geobites.org
Short features of hydrology and geomorphology papers for science-curious audiences.
- 28 March 2019 **Invited Speaker** Living Classrooms Foundation
Presentation on hydrology and geologic history of the Chesapeake Bay for educators.
- 10 March 2018 **Engineering Open House Presenter** University of Illinois
Demonstration of groundwater contaminant transport with WEF-AWWA student group.
- 8 July 2017 **'What if...' Presenter** Biosphere 2
Presentation on the Landscape Evolution Observatory for Biosphere 2 visitors.