

Dickinson College • Department of Earth Sciences • Carlisle, Pennsylvania, USA
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Education

- 2016 **Ph.D., Geophysics**, Crustal structure across the Central American Volcanic Arc, Seismic Waveform tomography in the Critical Zone, and Borehole Hydrogeophysics in the Laramie Range, Wyoming.
University of Wyoming, Laramie, Wyoming, Advisor: W. Steven Holbrook.
- 2007 **B.S., Geology, Minor: Mathematics, Concentration: Engineering**
Olivet Nazarene University, Bourbonnais, Illinois.

Professional Experience

- 2016 – present **Assistant Professor**, Department of Earth Sciences, Dickinson College, Carlisle, PA
- 2009-2015 **Research Assistant**, Wyoming Center for Hydrology and Geophysics (WyCEHG) and Department of Geology and Geophysics University of Wyoming, Laramie, WY
- 2007-2009 **Research and Teaching Assistant**, Department of Geology, The University of Alabama, Tuscaloosa, AL
- 2008 **Geophysics Intern**, ConocoPhillips, Midland, TX
- 2004-2007 **Teaching Assistant**, Departments of Geology and Mathematics, Olivet Nazarene University, Bourbonnais IL, Advisors: Max Reams / Dale Hathaway
- 2006 **Geophysics Intern**, ENSRIAECOM, Warrenville, IL, Advisor: Chris Buckman

Key Publications (*denotes mentored student)

- Liu, X., T. Zhu, **J.L. Hayes**, (2022), Critical zone structure by elastic full waveform inversion of seismic refractions in a sandstone catchment, central Pennsylvania, USA. *Journal of Geophysical Research: Solid Earth*, doi:10.1029/2021JB023321.
- Eppinger, B.J. *, **J.L. Hayes**, B.J. Carr, S. Moon, C.L. Cosans, W.S. Holbrook, C.J. Harman, Z.T. Plante, (2021), Depth dependent seismic anisotropy in the critical zone from weathering of a piedmont schist, *JGR-Earth Surface*, 26, 10, doi:10.1029/2021JF006289.
- Riebe, C.S., R.P. Callahan, S. Granke, B. Carr, **J.L. Hayes**, M. Schell, L. Sklar (2021), Anisovolumetric weathering in granitic saprolite controlled by climate and erosion rates, *Geology*, 49, doi:10.1130/G48191.1.
- Hayes, J.L.**, C.S. Riebe, W.S. Holbrook, B.A. Flinchum, and P.C. Hartsough, (2019), Porosity production in weathered rock: Where volumetric strain dominates over chemical mass loss, *Science Advances*.
- Gazel, E., A. Ulloa, **J.L. Hayes**, P. Madrigal, M. Caddick, M.J. Carr, and D. Coleman, (2019), The record of the transition from an oceanic arc to a young continent in the Talamanca Cordillera, Costa Rica, *Geochemistry, Geophysics, Geosystems*.
- Hayes, J.L.**, W.S. Holbrook, D. Lizarralde, H. Van Avendonk, A. Bullock, M.M. Mora, S. Harder, G.E. Alvarado, and C. Ramírez, (2013), Crustal structure across the Costa Rican Volcanic Arc, *Geochemistry, Geophysics, Geosystems*, doi:10.1002/ggge20079.

Research Interests

My interests are primarily in critical zone science, near-surface geophysics and seismology. I am interested in the transformation of rock at depth into a habitable substrate for life at the surface. I work in the field and lab combining indirect geophysical measurements that image the subsurface with direct measurements of samples from outcrops and boreholes. I am enthusiastic about mentoring students in science and research. Current projects include the Bedrock Critical Zone Network, GNOMES (Geophysics of the Near-surface: an Outdoor Motivational Experience for Students), and local archaeological projects including the Mt. Tabor Cemetery and the Fort Halifax Rediscovery Project.

Service

- 2016-present Reviewer for *Geology*, *JGR: Earth Surface*, *JGR Solid Earth*, *Frontiers*, *Earth Surface Processes and Landforms*, *Geophysics*, *Geoderma*
- 2016-2021 Judge, Outstanding Student Presentation Awards, AGU Fall Meeting
- 2018-2021 Sessions Convener, AGU Fall Meeting
- Current Advisory Board Member, Popel Shaw Center for Race and Ethnicity, Dickinson College
- 2018-2021 Faculty Representative to the EcoLeague Consortium
- Nov. 2016 Early Career Representative, Critical Zone Observatories, NSF Reverse Site Visit
- 2014-2015 Graduate student representative, Department of Geology and Geophysics faculty
- 2012-2013 Student Coordinator, Graduate Socials, Office of Academic Affairs, University of Wyoming
- 2010-2014 Co-President and Founding Member, University of Wyoming Geophysical Society
- 2008 Chapter Secretary and Founding Member, AAPG Student Chapter, University of Alabama
- 2005-2007 Vice President, Olivet Geological Society

Society Memberships

- American Geophysical Union (AGU)
Society of Exploration Geophysicists (SEG)
National Association of Geoscience Teachers (NAGT)
Environmental and Engineering Geophysics Society (EEGS)
Geological Society of America (GSA)