

# Tyler H. Doane | Curriculum Vitae

Earth and Atmospheric Sciences, 1001 10th St. – Bloomington, IN 47408

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**Indiana University**  
*Postdoctoral Scholar*

**2020-present**  
*Bloomington, IN*

## Education

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**Vanderbilt University**  
*Ph.D. in Earth and Environmental Sciences*

**2014 – 2018**  
*Nashville, TN*

**Vanderbilt University**  
*M.Sc. in Earth and Environmental Sciences*

**2012 - 2014**  
*Nashville, TN*

**Colorado College**  
*B.A. in Geology*

**2006 – 2010**  
*Colorado Springs, CO*

## Work

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**University of Arizona**  
*Postdoctoral Researcher*

**2018-2020**  
*Tucson, AZ*

## Publications

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### Dissertation

Theory and Application of Nonlocal Hillslope Sediment Transport (2018)  
Vanderbilt University, Nashville, TN

### Articles

**Doane, Tyler H.**, J.D. Pelletier, and M. Nichols (In review), How Hack distributions of rill networks contribute to nonlinear slope length-soil loss relationships *Earth Surface Dynamics*

Furbish D.J., Roering, J.J., **Doane, T.H.**, Roth D.L., and S.G. Williams, (In Review) Rarefied particle motion on hillslopes: 1. Theory, *Earth Surface Dynamics*

Furbish, D.J., Williams, S.G., Roth, D.L., **Doane, T.H.**, and J.J. Roering (In Review), Rarefied particle motion on hillslopes: 2. Analysis, *Earth Surface Dynamics*

Furbish, D.J., **Doane, T.H.**, and Williams, S.G., (In Review) Rarefied particle motions on hillslopes: 3. Entropy, *Earth Surface Dynamics*

Furbish, D.J and **T.H. Doane**, (In Review), Rarefied particle motions on hillslopes: 4. Philosophy, *Earth Surface Dynamics*

Roth, D.L., **T.H. Doane**, D.J. Furbish, and J.J. Roering (Accepted), Particle motion on burned and

vegetated hillslopes, *Proceedings of the National Academy of Sciences*

**Doane, Tyler H.**, D.L. Roth, J.J. Roering, and D.J. Furbish, (2019), Compression and decay of hillslope topographic variance in wavenumber domain, *Journal of Geophysical Research – Earth Surface*.

**Doane, Tyler H.**, D.J. Furbish, J.J. Roering, R. Schumer, and D.M Morgan, (2018), Nonlocal transport on steep lateral moraines, eastern Sierra Nevada, California, USA, *Journal of Geophysical Research – Earth Surface*.

Furbish, D.J., J.J. Roering, P. Almond, **Doane, T.H.**, (2018), Soil particle transport and mixing near a hillslope crest: 1. Particle ages and residence times, *Journal of Geophysical Research – Earth Surface*.

Furbish, D.J., A. Keen-Zebert, P. Almond, **Doane, T.H.**, and R. Schumer, (2018), Soil particle transport and mixing near a hillslope crest: 2. Cosmogenic nuclide and optically stimulated luminescence tracers, *Journal of Geophysical Research – Earth Surface*

### Conference Abstracts.....

#### First Author (7)

**Doane, Tyler H.**, and J. Pelletier, A probabilistic and numerical approach to explore how hillslope length controls sediment yield, Abstract EP51F-2179 presented at 2019 Fall Meeting, AGU, San Francisco, CA

**Doane, Tyler H.**, and D.J. Furbish, Sediment capacitors as sources of stochastic sediment transport, Abstract EP23G-2409 presented at 2018 Fall Meeting, AGU, Washington, D.C.

**Doane, Tyler H.**, D.L. Roth, J.J. Roering, and D.J. Furbish (Dec. 2017), Compression and decay of hillslope topographic variance in wavenumber domain, Abstract EP31F-04, presented at 2017 Fall Meeting, AGU, New Orleans, LA.

**Doane, Tyler H.**, D.J. Furbish, D.J. Morgan and J.J. Roering (Dec. 2016), Characteristics and evaluation of nonlocal hillslope sediment transport, Abstract EP32C-02 presented at 2016 Fall Meeting, AGU, San Francisco, CA.

**Doane, Tyler H.** and D.J. Furbish, (Dec. 2015), Disturbance-driven hillslope diffusion scales and values clarified by extant surface roughness, Abstract EP41C-0937 presented at 2015 Fall Meeting, AGU, San Francisco, CA.

**Doane, Tyler H.** and D.J. Furbish, (Dec. 2014), Exploring a two-dimensional nonlocal description of the hillslope sediment flux, Abstract EP33B-3637 presented at 2014 Fall Meeting, AGU, San Francisco, CA.

**Doane, Tyler H.** and David Furbish, (Dec. 2013), Exploring nonlocal transport on soil-mantled hillslopes and its effect on topographic roughness and soil thickness, Abstract EP53B-0811 presented at 2013 Fall Meeting, AGU, San Francisco, CA.

#### Contributing Author (4)

Williams, S.G., D.J. Furbish, D.L. Roth, **T.H. Doane**, and J.J. Roering, Demonstration and analysis of rarefied particle motions on hillslopes, Abstract EP51F-2176, presented at 2019 Fall Meeting, AGU, San Francisco, CA

Roth, D.L., **T.H. Doane**, J.J. Roering, D.J. Furbish, and A. Zettler-Mann, Slope, roughness, and grain size control on particle motion on burned and vegetated hillslopes, Abstract EP51B-09, presented at 2019 Fall Meeting, AGU, San Francisco, CA

Roth, Danica L., J.J. Roering, **T.H. Doane**, and D.J. Furbish, (Dec. 2017) Topographic roughness and steep hillslopes: effects of vegetation and fire on nonlocal sediment transport and surface morphology, Abstract EP31F-03, to be presented at 2017 Fall Meeting, AGU, New Orleans, LA.

Watkins, T., Furbish, D., and **T.H. Doane**, (Dec. 2015), Numerical and physical experiments to clarify the role of vegetation as sediment capacitors in modulating changes in hillslope form Abstract EP53B-1026 presented at 2015 Fall Meeting, AGU, San Francisco, CA.

## Teaching Experience

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### University of Arizona

*Guest Lecture for Numerical Methods*

**Tucson, AZ**

*Tucson, AZ*

### Vanderbilt University

*Teaching Assistant*

**2012 – 2018**

*Nashville, TN*

- o 8 courses
- o Courses taught: Structural Geology, Dynamic Earth, Geomorphology, Sedimentology

### Colorado College

*Paraprofessional*

**Colorado Springs, CO**

*2010–2011*

- o 6 courses
- o Courses taught: Sedimentology, Rocky Mountains as a Physical System, Rocky Mountains as a Chemical System, Metamorphic Petrology, Advanced Structural Geology, Physical Geology

## Research Experience

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### University of Arizona

*Postdoctoral Research Associate*

**2018 - current**

*Tucson, AZ*

- o Supervisor: Professor Jon Pelletier, Ph.D. (University of Arizona); Mary Nichols, Ph.D. (USDA-ARS)
- o Developing theory that explains how topographic roughness, ecology, and climate influence hillslope length
- o Exploring the signals of stochastic sediment transport on arid hillslopes.
- o Developing probabilistic descriptions of rill networks and sediment transport
- o Developed and deployed a field-installed laser that collects a high spatial and temporal resolution topographic dataset to reveal detailed statistics of sediment transport

### Vanderbilt University

*Research Assistant*

**2012 – 2018**

*Nashville, TN*

- o Supervisor: Professor David Jon Furbish, Ph.D.
- o Application and Clarification of Nonlocal Hillslope Sediment Transport
- o Key Findings: Demonstrated nonlocal transport at the hillslope scale, identified values of parameters that reflect the magnitude of natural transport processes, mathematically identified underlying similarities between various formulations, identified diagnostic behaviors of transport style that are contained in land-surface form, identified the theoretical distribution of particle rest times on hillslopes.

### McGill University

*Research Assistant*

**2011 – 2012**

*Montréal, QC, Canada*

- o Supervisor: Assistant Professor, Sarah Hall, Ph.D
- o Studied glacial chronology and uplift history of Cordillera Blanca, Peru

## Service

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**Committee Member:** University of Arizona Postdoctoral Association, 2018-2020

**Reviewer:** Reviewer for Journal of Geophysical Research – Earth Surface (2)

**Session Convener:** American Geophysical Union Fall Meeting, 2018, 2020

## Professional Development

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- 2017:** Evidence Based Teaching Workshop *Short course on challenge-based learning, course design, assessment, classroom management, classroom technology, and scholarly resources*
- 2016:** Earth Educator's Rendezvous *Conference aimed at undergraduate Earth science education*
- 2016:** Preparing for an Academic Career *Short course detailing approaches to academic jobs, teaching techniques, and academic requirements*
- 2016:** Summer Institute for Earth Surface Dynamics *Coupled hydro-eco-geomorphologic processes in human dominated landscapes: cascade of changes and the use of modeling for management and decision making*

## Professional Memberships

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- American Geophysical Union:** *2012 – present*
- National Association of Geoscience Teachers:** *2016 – present*
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