

## Kristen L. Underwood

Research Assistant Professor, Civil & Environmental Engineering  
University of Vermont, 207 Mansfield, Burlington, VT 05405  
Phone: 802.656.4571 | email: Kristen.Underwood@uvm.edu

### EDUCATION

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Ph.D. Environmental Engineering, University of Vermont, Burlington, VT. *October 2018*  
M.S., Geosciences (Hydrogeology), Pennsylvania State University, University Park, PA. *May 1994*  
B.S., Aquatic Environments, Geology Minor, Allegheny College, Meadville, PA. *June 1988*

### LICENSES / CERTIFICATIONS

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Licensed Professional Geologist, State of New Hampshire, #598 *2002 - present*

### ACADEMIC AND PROFESSIONAL APPOINTMENTS

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#### Research Assistant Professor

*Civil & Environmental Engineering, UVM, Burlington, VT* *Sept 2018 – present*

#### Graduate Research Assistant

*Civil & Environmental Engineering, UVM, Burlington, VT* *Sept 2012 to Aug 2018*

#### Principal Hydrogeologist, President

*South Mountain Research & Consulting Services, Bristol, VT* *Nov 2000 to present*

#### Supervisor of Environmental Programs, Senior Hydrogeologist

*April 1996 to Nov 2000*

#### Staff Hydrogeologist

*Nov 1993 – April 1996*

*Griffin International, Inc., Williston, VT*

#### Research Assistant, Department of Entomology

*Sept 1991 – Nov 1993*

#### Teaching Assistant, Department of Geosciences

*Pennsylvania State University, University Park, PA*

#### Hydrogeologist

*June 1988 – Jan 1993*

*Nittany Geoscience, Inc., State College, PA*

#### Teaching Assistant / Research Assistant

*July 1987 – June 1988*

*Depts. of Geology & Environmental Sciences, Allegheny College, Meadville, PA*

### PEER-REVIEWED PUBLICATIONS

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**Underwood, K. L.**, Rizzo, D.M., Hanley, J.P., Sterle, G., Harpold, A., Adler, T., Wen, H., Li, L, Perdril, J. (2020). Long-term DOC monitoring data: an integrated, multi-scale approach to extract patterns using machine-learning. *Water Resources Research* (work in progress).

**Underwood, K. L.**, Rizzo, D.M., Dewoolkar, M.M., and Kline, M. (2020). Analysis of Reach-scale Sediment Process Domains in Glacially-conditioned Catchments Using Self-Organizing Maps. *Geomorphology* (Accepted).

- Sterle, G., Perdrial, J.N., Li, L., Adler, T., **Underwood, K.L.**, Rizzo, D., Wen, H., N. Addor, A. Newman, and Harpold, A. (2020). Augmenting CAMELS (Catchment Attributes and Meteorology for Large-sample Studies) with Atmospheric and Stream Water Chemistry Data. *Hydrol. Earth Syst. Sci. Discuss.* (work in progress).
- Adler, T., **Underwood, K.L.**, Rizzo, D., Harpold, A., Sterle, G., Li, L., Wen, H., Stinson, L., Bristol, C., Shanley, J., Lini, A., Perdrial, N., Perdrial, J. N.. (2020). Drivers of Dissolved Organic Carbon Mobilization From Forested Headwater Catchments: A Multi-Scaled Approach. *Frontiers in Water.* (In-Review)
- Wen, H., Perdrial, J., Bernal, S., Abbott, B. W., Bernal, S., Dupas, R., Godsey, S. E., Harpold, A., Rizzo, D., **Underwood, K.L.**, Adler, T., Sterle, G., and Li, L. (2020). Temperature controls production but hydrology controls export of dissolved organic carbon at the catchment scale, *Hydrol. Earth Syst. Sci. Discuss.*, 24: 945–966, doi: 10.5194/hess-24-945-2020.
- Armfield J., Perdrial J. N., Gagnon A., Ehrenkrantz, J., Perdrial, N., Cincotta, M., Ross, D., Shanley, J., **Underwood, K.L.**, Ryan, P. (2019). Does Stream Water Composition at Sleepers River in Vermont Reflect Dynamic Changes in Soils During Recovery From Acidification? *Frontiers in Earth Science*, 6: 246, doi: 10.3389/feart.2018.00246.
- Shakun, J. D., L. B. Corbett, P. R. Bierman, **K. Underwood**, D. M. Rizzo, S. R. Zimmerman, M. W. Caffee, T. Naish, N. R. Golledge, C. C. Hay. (2018). Minimal East Antarctic Ice Sheet retreat onto land during the past 8 million years. *Nature*, 558, 284- 287, doi:10.1038/s41586-018-0155-6.
- Ross, D. S., B. C. Wemple, L. J. Willson, C. Balling, **K. L. Underwood**, and S. D. Hamshaw. (2018). Impact of an Extreme Storm Event on River Corridor Bank Erosion and Phosphorus Mobilization in a Mountainous Watershed in the Northeastern USA. *J. Geophys. Res. – Biogeosciences*, doi:10.1029/2018JG004497.
- Underwood, K. L.**, D. M. Rizzo, A. W. Schroth, M. M. Dewoolkar. (2017). Evaluating Spatial Variability in Sediment and Phosphorus Concentration-Discharge Relationships Using Bayesian Inference and Self-Organizing Maps. *Water Resources Research*, 53, doi: 10.1002/2017WR021353.
- Howard, L. J., I. A. Anderson, **K. L. Underwood**, M. M. Dewoolkar, L. M. Deschaine, and D. M. Rizzo. (2016). Heuristic assessment of bridge scour sensitivity using differential evolution: case study for linking floodplain encroachment and bridge scour. *Environmental Systems Research*, 5(20), doi: 10.1186/s40068-016-0071-4.
- Galford , G. L., J. Nash, A. K. Betts, S. Carlson, S. Ford, A. Hoogenboom, D. Markowitz, A. Nash, E. Palchak, S. Pears, A. Thompson, **K. L. Underwood**. (2015). Bridging the climate information gap: a framework for engaging knowledge brokers and decision makers in state climate assessments. *Climatic Change*. doi:10.1007/s10584-016-1756-4.
- Pechenick, A., D. M. Rizzo, L. A. Morrissey, K. Garvey, **K. Underwood**, B. C. Wemple. (2014). A multi-scale approach to assess the hydrological connectivity of road and stream networks. *Earth Surface Processes and Landforms*, 39: 1538- 1549, doi:10.1002/esp.3611
- Besaw, L. E., D. M. Rizzo, M. Kline, **K. L. Underwood**, J. J. Doris, L. A. Morrissey and K. Pelletier. (2009). Stream classification using hierarchical artificial neural networks: A fluvial hazard management tool. *J. Hydrol.*, doi:10.1016/j.hydrol.2009.04.007.

## CONFERENCE PROCEEDINGS AND TECHNICAL PUBLICATIONS

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- Underwood, K.L.**, Worley, L., Drago, S., Dewoolkar, M.M., Rizzo, D.M., Bomblied, A., Wemple, B.C. (2020). *Evaluating Effectiveness of Floodplain Sites along the Lamoille Valley Rail Trail: A Blueprint for Future Rail-River Projects*. Vermont Department of Transportation Technical Report 2018-02.
- Schiff, R., J. C. Louisos, D. J. Osborne, **K. L. Underwood**, K. Watson, L. Thompson, R. Paul, S. Jaquith, and D. Farrell. (2020). *The Vermont Headwaters Sensitivity Coarse Screen*. Prepared by Milone & MacBroom and Collaborators for the Vermont Land Trust and The Nature Conservancy, Waterbury, VT.
- Hamshaw, S.D., **Underwood, K.L.**, Rizzo, D.M., O’Neil-Dunne, J., & Dewoolkar, M.M. (2019). *Unmanned Aircraft System (UAS) Photogrammetry for Tracking Streambank Erosion and Geomorphic Change Along a Protected River Corridor*. ASCE Geocongress, Eighth International Conference on Case Histories in Geotechnical Engineering, Philadelphia, PA, doi:10.1061/9780784482070.015.
- Galford, Gillian L. Ann Hoogenboom, Sam Carlson, Sarah Ford, Julie Nash, Elizabeth Palchak, Sarah Pears, **Kristen Underwood**, and Daniel V. Baker, Eds. (2014). *Considering Vermont’s Future in a Changing Climate: The First Vermont Climate Assessment*. Gund Institute for Ecological Economics, 219 pp.
- Springston, George E., **Kristen L. Underwood**, Keith Robinson, & Ned Swanberg. (2012). Tropical Storm Irene and the White River Watershed of Vermont: Flood Magnitude and Geomorphic Impacts. *Guidebook to Field Trips in Western New Hampshire and Adjacent Vermont and Massachusetts, New England Intercollegiate Geological Conference, October 12-14, 2012, Mount Sunapee Resort, Newbury, New Hampshire*. pp B1-1 to B1-41.
- Springston, G. E., R. K. Dunn, **K. L. Underwood**, R. Schiff, A. Sheldon, D. McKinley, N. Donahue, & S. Pytlík. (2011). Fluvial Geomorphology of the Middlebury River Watershed: Geologic Controls, Assessment of Stream Channel Stability, and River Corridor Restoration. *Guidebook for Field Trips in Vermont and Adjacent New York, New England Intercollegiate Geological Conference, Sept 30 – Oct 2, 2011, Middlebury College, Middlebury, VT*, pp B5-1 to B5-23.
- Doris, J. J., **K. Underwood**, and D. M. Rizzo. (2004). A Watershed Classification System using Hierarchical Artificial Neural Networks for Diagnosing Watershed Impairment at Multiple Scales. *ASCE 2004 World Water & Environmental Resources Congress, Salt Lake City, UT*.
- Underwood, K. L.** and D. Rizzo. (2003). Classification ANNs to Support Modeling of Sediment Transport in Geomorphically Unstable Alluvial Channels. *ASCE Proceedings of the 2003 World Water & Environmental Congress, Philadelphia, PA*.

## DISSERTATION/ THESES

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- Underwood, K.L.** (2018). Smart Classifiers and Bayesian Inference for Evaluating River Sensitivity to Natural and Human Disturbances: A Data Science Approach. *Graduate College Dissertations and Theses*. 988. <https://scholarworks.uvm.edu/graddis/988>
- Underwood, K.** (1994). *Evaluation of Pesticide and Nitrate Mobility in a Conduit-Flow Dominated Karst Basin*. M.S. Thesis, Pennsylvania State University, University Park, PA.
- Underwood, K.**, (1988). *A Study of the Potential for Contamination Throughout the Losing Reach of a Tributary to Cassadaga Creek, Chautauqua County, New York*. B.S. Thesis, Allegheny College, Meadville, PA.

## POSTERS

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† mentored or advised student

†Wiegman, A., †Augustin, I., Kubow, M.L., Fein-Cole M., Harrison Meyers, G., Diehl, R., Wemple, B., Rizzo, D., Ross, D., **Underwood, K.L.**, Bowden, W., Roy, E. (2020). *Predicting post-restoration risk of soil legacy phosphorus release in historically drained and farmed riparian wetlands*. Abstract H092-07 presented at 2020 AGU Fall Meeting, 1-17 Dec (Virtual).

Diehl, R.M., Wemple, B., †Drago, S., Gourevitch, J., **Underwood, K.L.**, Ross, D. (2020). *Building an understanding of floodplain functioning to inform effective management in the Lake Champlain Basin*. Abstract H154-04 presented at 2020 AGU Fall Meeting, 1-17 Dec (Virtual).

†Worley, L. C., **Underwood, K.L.**, †Vartanian, N., Eppstein, M.J., †Seigel, R.M., Rizzo, D.M. (2020). *A Hydraulic Model Wrapper to Optimize Floodplain Reconnection Scenarios*. Abstract H168-0002 presented at 2020 AGU Fall Meeting, 1-17 Dec (Virtual).

†Matt, J., **Underwood, K.L.**, Gourevitch, J., Diehl, R.M., †Seigel, R.M., †Worley, L. C., Wemple, B.C., Rizzo, D.M. (2020). *An enhanced low-complexity hydraulic model for assessment of floodplain rehabilitation alternatives*. Abstract H168-0004 presented at 2020 AGU Fall Meeting, 1-17 Dec (Virtual).

Stewart, B. Wen, H., Shanley, J.B., Norris, D., Kirchner, J.W., Perdrial, J.N., Adler, T., Harpold, A., Sterle, G., Rizzo, D.M., **Underwood, K.L.**, Li, L. (2020). *From soil to stream: reading subsurface structure from stream chemistry*. Abstract H055-02 presented at 2020 AGU Fall Meeting, 1-17 Dec (Virtual).

**Underwood, K.L.**, Hanley, J., Rizzo, D., †Sterle, G., Harpold, A., †Adler, T., Li, L., Wen, H., Perdrial, J.N. (2020). *Use of machine learning to extract patterns from long-term monitoring data across the US*. Ecological Society of America Annual Meeting, Salt Lake City, UT, 3-6 Aug (Virtual).

†Wiegman, A.R.H., Augustine, I.C., Kubow, M.L., Meyers, H., **Underwood, K.L.**, Bowden, W.B., Roy, E.D. (2019). *Parameterizing Functions of Soil-Water Soluble Reactive Phosphorus Flux for an Ecohydrological Model of Formerly Drained Riparian Wetlands in the Lake Champlain Basin*. 2019 AGU Fall Meeting, San Francisco, CA, 9-13 Dec.

**Underwood, K. L.**, Rizzo, D. M., Perdrial, J. N., Li, L., Wen, H., †Adler, T., Harpold, A., †Sterle, G. Hanley, J. (2019). *Application of machine-learning tools to extract patterns in long-term DOC monitoring data: an integrated, multi-scale approach*. Gordon Research Conference, Catchment Science: Interactions of Hydrology, Biology, and Geochemistry. Proctor Academy, Andover, NH.

†Jobin-Davis, E., Dewoolkar, M.M., Rizzo, D.M. Garcia, L.A. Hamshaw, S.D., **Underwood, K. L.** (2018). *Educational Applications of an Enhanced Augmented Reality Sandbox*. 2018 American Geophysical Union Fall Meeting, Washington, D.C., 10-14 Dec.

**Underwood, K. L.**, D. M. Rizzo, M. M. Dewoolkar. (Dec 2016). *Application of a Kohonen Network to Evaluate Spatial Variability in Concentration-Discharge Relationships in the Lake Champlain Basin*. American Geophysical Union Fall Meeting, San Francisco, CA.

**Underwood, K. L.**, D. M. Rizzo, M. M. Dewoolkar. (Dec 2016). *Application of a Kohonen Network to Evaluate Spatial Variability in Concentration-Discharge Relationships in the Lake Champlain Basin*. American Geophysical Union Fall Meeting, San Francisco, CA.

Hamshaw, S. D., Dewoolkar, M. M., Rizzo, D. M., O'Neil-Dunne, J., Rizzo, D. M., Frolik, J., **Underwood, K. L.**, Bryce, T., Engel, T., & Waldron, A. (2015). *Quantifying streambank erosion: a comparative study using*

*an unmanned aerial system (UAS) and a terrestrial laser scanner.* American Geophysical Union 2015 Fall Meeting, San Francisco, CA.

Hamshaw, S. D., **K. L. Underwood**, M. M. Dewoolkar, D. M. Rizzo. (2015, May 26). *Sediment Loading and Sources in the Mad River Implications for Sediment-bound Nutrient Management.* IAGLR 58<sup>th</sup> Annual Conference on Great Lakes Research, UVM Davis Center, Burlington, VT.

Hamshaw, S. D., Rizzo, D. M., **Underwood, K. L.**, Wemple, B. C., & Dewoolkar, M. (2014, March 26). *Suspended Sediment Prediction Using Artificial Neural Networks and Local Hydrometeorological Data.* 2014 NEAEB Conference, Burlington, VT.

Hamshaw, S. D., **Underwood, K. L.**, Rizzo, D. M., Wemple, B. C., & Dewoolkar, M. (2013, December 11). *Prediction of suspended sediment in rivers using artificial neural networks: Implications for development of sediment budgets.* AGU Fall 2013 Meeting, San Francisco, CA.

Anderson, H. V., Hamshaw, S. D., **Underwood, K. L.**, Rizzo, D. M., Dewoolkar, M., Bomblies, A., & Wemple, B. C. (2013, December 9). *Terrestrial LiDAR Used to Quantify Streambank Erosion.* AGU Fall 2013 Meeting, San Francisco, CA.

## CONFERENCE PRESENTATIONS

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**Underwood, K. L.**, Schiff, R., Fitzgerald, E., Stryker, J., Diehl, R.M., Roy, E.D., Wemple, B.C., Rizzo, D. M., Kline, M., (2020, Dec 15), *Functioning Floodplain Initiative for Improved Flood Resiliency, Restored Water Quality, and Enhanced Habitat in Vermont USA*, [H181-04] presented at 2020 Fall Meeting, AGU (Virtual).

**Underwood, K. L.**, Hamshaw, S.D., Dewoolkar, M.M., Rizzo, D.M. (2019, Feb 2) –*A Bayesian Un-mixing Model to Define Sources of Suspended Sediments in the Mad River Watershed*, Vermont Geological Society winter meeting, Norwich University, Northfield, VT.

**Underwood, K. L.**, Rizzo, D. M., Perdrial, J. N., Li, L., Wen, H., Adler, T., Harpold, A., Sterle, G., (2018, Dec 10), *Application of machine-learning tools to extract patterns in long-term DOC monitoring data: an integrated, multi-scale approach*, [411757] presented at 2018 Fall Meeting, AGU, Washington, D.C.

**Underwood, K. L.**, D. M. Rizzo, M. M. Dewoolkar, A. Schroth, (2018, Jan 8), *Use of Bayesian regression models to discern spatial patterns in sediment and nutrient export to Lake Champlain*, Lake Champlain Research Conference, Burlington, VT.

**Underwood, K. L.**, D. M. Rizzo, M. Dewoolkar, (2017, Feb 1), *Examining Spatial Variability in Concentration-Discharge Patterns in the Lake Champlain Basin*, Presentation to LCBP Technical Advisory Committee, Grand Isle, Vermont.

**Underwood, K. L.**, D. M. Rizzo, C. Miller, M. Witten, (2016, December 2), *The Role of Forests in Maintaining Water Quality in the Lake Champlain Basin*, Vermont Monitoring Cooperative Conference, Davis Center, University of Vermont.

**Underwood, K. L.**, C. Alves, D. S. Ross, M. M. Dewoolkar, D. M. Rizzo (2016, March 23), *Influence of geomorphic setting on distribution of nutrient stocks in Lake Champlain basin floodplains*, 51<sup>st</sup> Annual Northeast Section Geological Society of America Conference, Albany, NY.

**Underwood, K. L.**, and G. Springston, (2015, March 23), *Landslide and Alluvial Fan Activity Due to Tropical Storm Irene: Examples from Money Brook, Black River Watershed, VT.* GSA Northeastern Section 50<sup>th</sup> Annual Meeting Bretton Woods, New Hampshire.

**Underwood, K.**, Libby, S., Pytlik, S., Jaquith, S., Smith, C., & McKinley, D., (2014, March 26). *A Conservation Partnership to Restore Ecosystem Services along the New Haven River*. 38th Annual New England Association of Environmental Biologists conference, Burlington, VT.

Alves, C., **Underwood, K.**, & Ross, D. (2014, March 26). *Where Rivers Meet Soils*. 38th Annual New England Association of Environmental Biologists conference, Burlington, VT.

**Underwood, K. L.**, and Swift, E. (co-presenters) (2013, May). *Integration of Geomorphic, Flow and Water Quality Data to Prioritize NPS Management Strategies in Vermont Watersheds: A Tactical Basin Planning Approach*. 24th Annual Nonpoint Source Pollution Conference, Burlington, VT.

**Underwood, K. L.** and D. Rizzo (2003), *Classification ANNs to Support Modeling of Sediment Transport in Geomorphically Unstable Alluvial Channels*. ASCE Proceedings of the 2003 World Water & Environmental Congress, Philadelphia, PA.

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### **INVITED PRESENTATIONS / SEMINARS**

**Underwood, K.L.**, Kline, M., Springston, G., (2020, October 15), Invited Panelists, *Riverfront Views vs. Functional Floodplains*, Center for Global Resilience and Security, Simon Parish moderator, Norwich University, Northfield, VT (virtual).

Gourevitch, J., **Underwood, K.**, Wemple, B., (2019, Dec 19), Report on Floodplain Research, VTEPSCoR BREE Policy and Technical Advisory Committee Meeting, UVM Alumni House, Burlington, VT.

**Underwood, K.**, (2019, March 12). *Working Toward Flood Resilience in our Communities*, Invited presentation to Mount Ascutney Local River Subcommittee meeting of the Connecticut River Joint Commission, Windsor, VT.

Galford, Gillian, **Kristen Underwood**, Sam Carlson, Elizabeth Palchak, Julie Nash and Ann Hoogenboom (2014, June 10). *VCA Science Panel Discussion: Specific Findings in the Vermont Climate Assessment*. Gund Institute for Ecological Economics Event Highlighting the Release of the Vermont Climate Assessment. Davis Center, University of Vermont.

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### **GRANTS**

#### *CURRENT*

Collaborative Research: Network Cluster: Using Big Data approaches to assess ecohydrological resilience across scales. *National Science Foundation – Division of Earth Sciences*. K. Underwood (co-PI); J. Perdrial (Lead PI). 2020-2025. \$3,416,989.

NSF2026: EAGER: An Ecologically Inspired Human-Machine Intelligence Approach to Recognizing Similitude in Multi-Scale Watershed Research. *National Science Foundation*. K. Underwood (co-PI); S. Hamshaw (PI). 2020-2022. \$299,971.

Functioning Floodplain Assessment, Mapping, Valuation and Tracking to Support Floodplain Restoration and Protection in the Lake Champlain Basin: Translation of Research to Phase 2 of Vermont's Functioning Floodplain Initiative. *Vermont Department of Environmental Conservation*. K. Underwood (PI, UVM portion of team led by Milone & MacBroom, Inc.). 2020-2022. \$257,637.

Visualization Tools to Communicate River Erosion Hazards and Improve Flood Resiliency in Headwater Communities of the Lake Champlain Basin. *Lake Champlain Sea Grant Program (NOAA)*. K. Underwood (PI); D. Rizzo (co-PI). 2019-2021. \$150,000.

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Leveraging High-Resolution LiDAR and Stream Geomorphic Assessment Datasets to Expand Regional Hydraulic Geometry Curves for Vermont: A Blueprint for New England States. *U. S. DOT Region 1 UTC: Transportation Infrastructure Durability Center*. K. Underwood (PI); D. Rizzo, A. Bomblies (co-PIs). 2019–2021. \$146,244.

#### PAST

U. S. Geological Survey National Institutes of Water Resources (to Vermont Lake Studies and Water Resources Center). Graduate Research Award. 2017. \$10,000.

Vermont EPSCoR SBIR Phase 0 Award. Modelling of Sediment Transport in Geomorphically Unstable Alluvial Channels Using ANNs. K. Underwood (PI), D. Rizzo (co-I). 2002. \$9,160.

## TEACHING

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### COURSES DEVELOPED AND TAUGHT

CE 263 – Applied River Engineering, Civil & Environmental Engineering, UVM  
Spring 2020 (2 GRAD, 21 UG)  
Spring 2018 (4 GRAD, 32 UG)  
Fall 2018 (6 GRAD, 24 UG)

CE 369 – Applied Geostatistics, Civil & Environmental Engineering, UVM  
Fall 2019, Secondary instructor, co-taught with Donna M. Rizzo (26 GRAD, 1 UG)

CE 395A – Environmental Site Characterization, Civil & Environmental Engineering, UVM  
Spring 2019, Primary instructor, co-taught with Donna M. Rizzo (9 GRAD, 4 UG, 1 CE)

### GUEST LECTURES / FIELD TRIPS

*Land Use and Water-quality in the New Haven River*, Middlebury College ENVS 401: Community-Engaged Practicum, Chris McGrory-Klyza, professor; Diane Munroe, coordinator. Invited field trip leader, October 1, 2019.

*Keep Calm and Do Geology: The Role of Geologists in a Changing Climate* – GEOL 0112: Environmental Geology, Dept of Geology, Middlebury College, William Amidon, professor. November 10, 2017.

*Introduction to GIS*, CE 10: Geomatics, Civil & Environmental Engineering, University of Vermont. Scott Hamshaw, lecturer. October 14, 2016.

*The Vermont Climate Assessment (Water sector)* - with co-presenters, Sarah Ford (Forest sector) and Elizabeth Palchak (Energy sector), Introduction to Environmental Science, Rubenstein School of Environment and Natural Resources, UVM, Nico Perdrial, professor. April 16, 2015.

*Strategies to Preserve Water-related Forest Services in the Face of Increasing Pressure to Harvest Biomass*, Forestry 81: Conservation Forestry Seminar, Rubenstein School of Environment and Natural Resources, UVM, David Brynn, lecturer. February 14, 2013 and February 13, 2014.

*River Corridor Conservation and Restoration on the New Haven River watershed*, ENSC 201: Recovery & Restoration of Altered Ecosystems, Rubenstein School of Environment and Natural Resources, UVM, Steve Libby, lecturer. April 5, 2013.

## STUDENT MENTORING & ADVISING

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Graduates, Civil & Environmental Engineering, University of Vermont	
<i>Lindsay Worley, Ph.D., (Advisor, Studies Committee., member)</i>	2019-2021
<i>Rachel Seigel, M.S., (Studies Committee, member)</i>	2020-2021
<i>Zachary Streeter, M.S. accel (Advisor, Studies Committee, member)</i>	2020-2021
<i>Sienna Roberge, M.S. accel (Advisor, Studies Committee, member)</i>	2019-2020
<i>Christian Boisvert, M.S. accel (Advisor, Studies Committee, member)</i>	2019-2020
<i>Bijay K-C, Ph.D., (Comprehensive Comm., member)</i>	2019
<i>Maziar Foroutan, Ph.D., (Comprehensive Comm., member)</i>	2019
<i>Yuxiang Shen, Ph.D., (Comprehensive Comm., member)</i>	2019
<i>Andrea Elhaji, M.S. (Independent Study)</i>	2019
<i>Jordan Duffy, B.S., M.S.accel (Studies Committee, member)</i>	2016
<i>Baxter Miatke, B.S., M.S. (Studies Committee, member)</i>	2016
<i>Lucas Howard, M.S.</i>	2016
Graduates, other Schools/Departments, University of Vermont	
<i>Shayla Triantafillou, M.S., Geography (Studies Committee, Member)</i>	2020-2021
<i>Caitlin Drasher, M.S., Rubenstein School (Studies Committee, Chair)</i>	2020-2021
<i>Steve Bartlett, M.S., Rubenstein School (Studies Committee, Member)</i>	2020-2021
<i>Caitlin Bristol, M.S., Geology (Studies Committee, Member)</i>	2020-2021
<i>Emily Lincoln, M.S., Geology (Studies Committee, Chair)</i>	2020-2021
<i>Stephanie Drago, M.S. Geography (Studies Committee, Chair)</i>	2019-2020
<i>Adrian Wiegman, Ph.D. Rubenstein School (Studies Committee, Member)</i>	2019-2021
<i>Thomas Adler, M.S. Geology (Studies Committee, Chair)</i>	2018-2020
<i>Doug Denu, M.S. Computer Science (Studies Committee, Chair)</i>	2018
Undergraduate REU, Civil & Environmental Engineering, University of Vermont	
<i>Nicholas Vartanian, B.S.</i>	2020
<i>Bridger Banco, B.S.</i>	2019-2020
<i>Eliza Jobin-Davis, B.S., Honors College</i>	2018-2019
<i>Thomas Adler, B.S.</i>	2016-2017
Undergraduate REU, Ecohydrology, University of Nevada, Reno	
<i>Gary Sterle, B. S.</i>	2018-2019
Undergraduate VT EPSCoR Internships, University of Vermont	
<i>Baxter Miatke</i>	2015-2016
<i>Wimara Rubia Sa Gomes</i>	2015
<i>Nathalie Simoes</i>	2015
<i>Alex Morton</i>	2014-2015
<i>Hanna Anderson</i>	2014
<i>Nate Callas</i>	2014
<i>Lindsay Jordan</i>	2013
<i>Elizabeth Oliver</i>	2013
Undergraduate Barrett Internships, University of Vermont	
<i>Bridger Banco</i>	2019
<i>Jordan Duffy</i>	2015-2016
<i>Kira Kelley</i>	2015-2016



## **SELECTED SERVICE ACTIVITIES**

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### *SERVICE TO PROFESSIONAL ORGANIZATIONS*

2019	NSF Science Across Virtual Institutes (SAVI) <i>Andover, NH: convening of 12 catchment scientists including 3 European scholars</i>	Workshop co-organizer (with J. Perdrial, UVM Geol)
2019	Chesapeake Bay Trust, Restoration Research program	Grant Reviewer
2019	Vermont Geological Society <i>Focus on Water Quality and Quantity Challenges in the Mad River Valley, Norwich University, VT – Feb 2, 2019</i>	Meeting co-chair
2018	Geological Society of America, Northeast Section Meeting, <i>Stories of Resilience: River Restoration and Recovery in the Northeast, Burlington, VT – March 2018</i>	Session Chair

### *SERVICE TO PROFESSIONAL PUBLICATIONS*

2020	NSF Hydrology (ad hoc)	Proposal review
2020	Water Resources Research	Manuscript reviews (3)
2019	J. Geophysical Research: Oceans	Manuscript review (1)

### *COMMUNITY SERVICE*

Addison County River Watch Collaborative, Board, 2009 - present  
Bristol Conservation Commission, 2007 – present  
Vermont Master Naturalist Program, Instructor, 2018-present  
Vermont Geological Society, Board of Directors, 1997 – 2003; 2013 – present  
Vermont Geological Society, Treasurer, 1999 - 2002  
Lewis Creek Association, Board, 2001 – 2005

## **AWARDS**

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Richard W. Carbin Community Conservation Award, Vermont Land Trust, 2019  
Aquatic Environments Senior Comprehensive Thesis Award, Allegheny College, 1988  
Environmental Science Department Prize for Outstanding Junior Student, Allegheny College, 1987  
Marantz Music Award, Allegheny College, 1986

## **AFFILIATIONS / PROFESSIONAL MEMBERSHIPS**

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GUND Institute for Environment, Affiliate, 2020 -  
GUND Institute for Environment, Graduate Fellow, 2017 - 2018  
Association of Ground Water Scientists and Engineers  
American Geophysical Union  
UVM Extension Program, Master Gardner, 2001

## **SKILLS**

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Methods: Self-Organizing Maps, Hierarchical Clustering, Bayesian Inference, Markov Chain Monte Carlo, Geostatistics (semivariograms, kriging, co-kriging), evolutionary algorithms, Inductively Coupled Plasma - AES

Software: R, R Studio, JAGS, Matlab, Python, HEC-RAS, HydroCAD, TR-55, JMP, ArcGIS