

# Tyler B. Hampton, Ph.D.



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## EDUCATION

Ph.D., Earth Sciences - Water, University of Waterloo. Advisor: Dr. Nandita B. Basu	2023
M.S., Geological Sciences, Michigan State University. Advisor: Dr. Jay P. Zarnetske	2018
B.S., Environmental Sciences - Hydrology, University of New Hampshire	2016

## PEER-REVIEWED PUBLICATIONS (8 articles, 610 citations on [Google Scholar](https://scholar.google.com/))

	Citations
2022	
<b>Hampton TB</b> , Lin SGM & Basu NB. Forest effects on water quality at continental scales: a meta-analysis. <i>Environmental Research Letters</i> . <a href="https://doi.org/10.1088/1748-9326/ac6a6c">10.1088/1748-9326/ac6a6c</a>	26
<b>Hampton TB</b> & Basu NB. A novel Budyko-based approach to quantify post-forest-fire streamflow response and recovery timescales. <i>Journal of Hydrology</i> . <a href="https://doi.org/10.1016/j.jhydrol.2022.127685">10.1016/j.jhydrol.2022.127685</a>	16
2020	
<b>Hampton TB</b> , Zarnetske JP, Briggs MA, Singha K, Day-Lewis FDD, Harvey JW, Chowdhury SR, Dehkordy FMP & Lane JW. Experimental shifts of hydrologic residence time in a sandy urban stream sediment–water interface alter nitrate removal and nitrous oxide fluxes. <i>Biogeochemistry</i> . <a href="https://doi.org/10.1007/s10533-020-00674-7">10.1007/s10533-020-00674-7</a>	26
2019	
<b>Hampton TB</b> , Zarnetske JP, Briggs MA, Singha K, Harvey JW, Day-Lewis FD, Dehkordy FMP & Lane JW. Residence time controls on the fate of nitrogen in flow-through lakebed sediments. <i>Journal of Geophysical Research: Biogeosciences</i> . <a href="https://doi.org/10.1029/2018JG004741">10.1029/2018JG004741</a>	27
Dehkordy FMP, Briggs MA, Day-Lewis FD, Singha K, Krajnovich A, <b>Hampton TB</b> , Zarnetske JP, Scruggs C & Bagtzoglou A. Multi-scale preferential flow processes in an urban streambed under variable hydraulic conditions. <i>Journal of Hydrology</i> . <a href="https://doi.org/10.1029/2018WR022823">10.1029/2018WR022823</a>	17
Abbott BW, Bishop K, Zarnetske JP, Minaudo C, Chapin FS III, Krause S, Hannah D, Plont S, Marçais J, Ellison D, Godsey SE, Chowdhury SR, Kolbe T, Ursache O, <b>Hampton TB</b> , ... et al. Human domination of the global water cycle excluded from depictions and perceptions. <i>Nature Geoscience</i> . <a href="https://doi.org/10.1038/s41561-019-0374-y">10.1038/s41561-019-0374-y</a>	376
Abbott BW, Bishop K, Zarnetske JP, Hannah D, Frei R, Minaudo C, Chapin FS III, Krause S, Lafe C, Ellison D, Godsey S, Plont S, Marçais J, Kolbe T, ... <b>Hampton TB</b> , ... et al. A water cycle for the Anthropocene. <i>Hydrological Processes</i> . <a href="https://doi.org/10.1002/hyp.13544">10.1002/hyp.13544</a>	63
2018	
Briggs MA, Day-Lewis FD, Dehkordy FMP, <b>Hampton TB</b> , Zarnetske JP, Scruggs C, Singha K, Harvey JW & Lane JW. Direct observations of hydrologic exchange occurring with less-mobile porosity and the development of anoxic microzones in sandy lakebed sediments. <i>Water Resources Research</i> 54, 4714–4729. <a href="https://doi.org/10.1029/2018WR022823">10.1029/2018WR022823</a>	31
In Preparation	
<b>Hampton TB</b> , Rust A, Saxe S, Hogue T & Basu NB. Wildfire alters stream nutrient concentration-discharge relationships.	

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## THESES

**Hampton TB**, Forested Watersheds and Water Supply: Exploring Effects of Wildfires, Silviculture, and Climate Change on Downstream Waters. Ph.D. Dissertation, 2023, University of Waterloo.

**Hampton TB**, Exploring the role of hydrologic residence time and chemistry on the processing of nitrate at the sediment-water interface. M.S. Thesis, 2018, Michigan State University.

**Hampton TB**, Near stream groundwater table dynamics in two distinct hydro-pedologic units at the HBEF. B.S. Thesis, 2016, University of New Hampshire.

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## COMPETITIVE GRANTS, AWARDS AND HONORS

2019 Vanier Canada Graduate Scholarship

2018 Ontario Trillium International PhD Scholarship  
Excellence in MS Research Award, MSU Dept. of Earth and Environmental Sciences  
MSU Council of Graduate Students Certificate of Appreciation

2017 Geological Society of America Graduate Research Grant  
Kellogg Biological Station Summer Research Fellowship, MSU  
Mulholland Fund Travel Award, Society for Freshwater Science

2016 MSU Department of Geological Sciences Summer Research Fellowship  
Graduated from UNH Honors Program, Summa Cum Laude, Presidential Scholar  
Inducted into the Henry David Thoreau Society for the Environment

2015 NSF Research Experience for Undergraduates, Hubbard Brook Ecosystem Study  
UNH Honors Program Cogswell Scholarship

2014 National Groundwater Research and Educational Foundation Len Assante Scholarship

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## PRESENTATIONS (4 talks as primary presenter, 13 posters presented; 12 presentations co-authored)

2024

**Hampton TB**, Cheriegate E, Frankstone T, Basu NB, & Van Meter KJ, Using Remote Sensing to Quantify Wetland Restoration Potential in the Prairie Pothole Region. International Association for Great Lakes Research (IAGLR).

2023

**Hampton TB (talk, primary presenter)**, Cheriegate E, Frankstone T, Basu NB, & Van Meter KJ, Using Remote Sensing to Quantify Wetland Restoration Potential in the Prairie Pothole Region. American Geophysical Union Meeting (AGU).

**Hampton TB**, Rust A, Saxe S, Hogue T & Basu NB, Wildfire alters stream nutrient concentration-discharge relationships. AGU

Ury E, Cheng FY, Bhattacharya R, Singh N, Byrnes D, Malik L, **Hampton TB**, et al, Beyond flood control: Assessment of nutrient retention in urban stormwater best management practices. AGU.

2022

**Hampton TB (talk, primary presenter)**, Rust A, Saxe S, Hogue T & Basu NB, Wildfire alters stream nutrient concentration-discharge relationships. AGU. Online.

**Hampton TB**, Lin SGM & Basu NB, Wildfire effects on water quality at continental and global scales: A meta-analysis. Joint Aquatic Sciences Meeting (JASM).

2021

**Hampton TB (talk, primary presenter)**, Lin SGM & Basu NB, Wildfire effects on water quality at continental and global scales: A meta-analysis. AGU.

**Hampton TB**, Lin SGM & Basu NB, Wildfire effects on water quality at continental and global scales: A meta-analysis. Society for Freshwater Science Annual Meeting (SFS AM).

Arrumugan P, **Hampton TB** & Basu NB, Long term dissolved organic carbon concentration-discharge trends in streams and the effect of climate change factors. SFS AM.

2020

Lin SGM, **Hampton TB** & Basu NB, Water quality responses of wildfire-affected forest catchments. (AGU).

**Hampton TB**, Lin SGM & Basu NB, Wildfire effects on water quality at continental and global scales: A meta-analysis. Global Water Futures Annual Open Science Meeting.

**Hampton TB**, Lin SGM & Basu NB, Wildfire effects on water quality at continental and global scales: a meta-analysis. SFS AM.

2019

**Hampton TB** & Basu NB, Partitioning post-forest-fire hydrologic response into climate and catchment components using the Budyko framework, AGU.

**Hampton TB** & Basu NB, Flow changes at the annual versus seasonal scale following wildfire in the American West. European Geophysical Union Conference (EGU).

2018

**Hampton TB**, Zarnetske JP, Lee-Cullin JA & Geiger R, Exploring how carbon source and reactivity affect the fate of nitrate at the sediment-water interface. SFS AM.

Dreelin E, Ford C, **Hampton TB (talk, co-presenter)**, Stanton S & Youn S, Assessing Michigan's onsite wastewater codes. 67th Michigan Onsite Wastewater Conference.

Zarnetske JP, **Hampton TB (talk, primary presenter)**, Abbott BW, Bowden B, Parker S, Iannucci F & Beneš J, Using spatial variability in carbon and nutrient chemistry to identify drivers and detect change in arctic watersheds. SFS AM.

Bishop K, Abbott B, Zarnetske J, Hannah D, Minaudo C, Krause S, Conner LG, Ellison D, Godsey S, Plont S, Marçais J, Kolbe T, Huebner A, Josephine R, **Hampton TB**, Gu S, Human M, Ursache O, Henderson K & Pinay G, A water cycle for the Anthropocene. EGU.

Dehkordy FMP, Briggs MA, Day-Lewis FD, Scruggs C, Singha K, Krajnovich A, **Hampton TB**, Zarnetske JP & Bagtzoglou A., Observation of Less-mobile Porosity Dynamics in an Urban Stream. AGU.

Hannah D, Abbott BW, Bishop K, Zarnetske JP, Minaudo C, Chapin FS III, Krause S, Conner LG, Ellison D, Godsey SE, Plont S, Marçais J, Kolbe T, Huebner A, Frei RJ, **Hampton TB**, Gu S, Buhman M, Ursache O, Chapin M, Henderson KD, & Pinay G, A Water Cycle for the Anthropocene. AGU.

Briggs MA, Zarnetske JP, Dehkordy MPD, **Hampton TB**, Day-Lewis FDD, Singha K, Johnson Z, Hitt N, Snyder C, Hurley S, Harvey JW & Lane JW, Evaluating the ecological and biogeochemical consequences of preferential flow processes at sediment/water interfaces. SFS AM.

Lee-Cullin JA, Zarnetske JP, Geiger R, **Hampton TB**, Homogenization of dissolved organic carbon in the sediment-water interface of streams. SFS AM.

Geiger R, Zarnetske JP, Lee-Cullin JA, **Hampton TB**, Low bioreactivity of dissolved organic carbon from stream flocculent organic matter. SFS AM.

2017

**Hampton TB**, Zarnetske JP, Briggs MA, Singha K, Day-Lewis FD, Investigating the role of hydrologic residence time in nitrogen transformations at the sediment-water interface using controlled variable head experiments. AGU.

**Hampton TB**, Zarnetske JP, Briggs MA, Harvey JW, Singha K, Day-Lewis FD, Lane JW, Hydrologic residence time controls the fate of carbon and nitrogen at a lake-groundwater interface. SFS AM.

**Hampton TB**, Zarnetske JP, Briggs MA, Harvey JW, Singha K, Day-Lewis FD, Lane JW, Hydrologic residence time controls the fate of carbon and nitrogen at a lake-groundwater interface. Fate of the Earth Conference.

Lee-Cullin JA, Zarnetske JP, Wiewiora E, Ruhala S, **Hampton TB**, Catchment-scale sampling reveals the consistent function of the sediment-water interface to remove landscape scale dissolved organic carbon properties. AGU.

Lee-Cullin JA, Zarnetske JP, Wiewiora ER, Abbott BW, Ruhala SS, **Hampton TB**, Spatially-extensive sampling reveals consistent hyporheic-zone effects on dissolved organic matter quantity and quality at the watershed scale. *SFS AM*.

*2016*

**Hampton TB**, Near stream groundwater table dynamics in two distinct hydrogeologic units at the HBEF. University of New Hampshire Undergraduate Research Conference.

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## TEACHING EXPERIENCE

### Full Instruction:

	<u>Course</u>	<u>University</u>
2023	EARTH 691/692 - Data for Science: Management and Reproducible Analysis,	UW

### Teaching Assistance:

	<u>Course</u>	<u>Teaching Professor</u>	<u>University</u>
2021	WATER 601 - Water Resources Management,	Nandita Basu & Susan Elliott,	UW
2018	GLG 421 Geochemistry,	David Long,	MSU
2017	GLG 411 Hydrogeology,	Jay Zarnetske,	MSU

### Workshops:

	<u>Title</u>	<u>Audience</u>
2022	<i>Geospatial Analysis and Visualization in R</i>	OCTWS
2020	<i>R for Hydrology</i>	forWater
	<i>Geospatial Analysis and Visualization in R</i>	SWIGS, UW
2019	<i>Geospatial Analysis and Visualization in R</i>	SWIGS, UW
	<i>Introduction to R and R Studio</i>	SWIGS, UW
	<i>Intermediate R and ggplot</i>	SWIGS, UW
2017	<i>Learning R for Hydrogeology</i>	GLG 411, MSU
	<i>Applying to Graduate School in Environmental Science, MSU</i>	MSU Undergraduates

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## SERVICE

### Student Advising (6 undergraduates):

Theses and Research Projects:

2024: Lydia Feng, "Loss of small wetlands in Southern Ontario"

2021: Puvaanah Arrumugan, "Long term dissolved organic carbon concentration-discharge trends in streams and the effect of climate change factors"

2017: Rachel Geiger, "Low bioreactivity of dissolved organic carbon from stream flocculent organic matter", co-advised

Full-time Coop Supervision:

2024: Lucas Shumaker (yr-3 undergraduate)

2020: Puvaanah Arrumugan (yr-3 undergraduate)

2019: Abigail Shingler (yr-4 undergraduate)

Simon GM Lin (yr-3 undergraduate)

### Reviewer for Journals (11 independent reviews, 8 journals)

2024: Total = 1: Biogeochemistry (1)

2023: Total = 3: JGR Biogeosciences (1), HESS (1), Water Resources Research (1)

2022: Total = 2: PLOS Water (1), Advances in Environmental and Engineering Research (1)

2021: Total = 1: Water, Air, & Soil Pollution (1)

2020: Total = 3: Aquatic Sciences (1), Water Resources Research (2)

2019: Total = 1: Water Resources Research (1)

2017: Geophysical Research Letters (1\*), Biogeochemistry (1\*) (\*participated with advisor)

### Not-for Profit Experience:

University of Waterloo Graduate Student Association (GSA-UW)

Positions: Vice-President of Communications (AY 2021-2022)

### Elected Positions:

Graduate Student Association - University of Waterloo (GSA-UW)

Positions: Elected to the Board of Directors (AY 2019-21); Corporate Secretary (AY 2019-20)  
Elected as Speaker of the Student Council (AY 2021-2022)

Students of the Water Institute (SWIGS), University of Waterloo

Positions: Executive Chair (AY 2019-20), Vice-Chair of Social Planning (AY 2018-19)

Council of Graduate Students (COGS), Michigan State University

Department Representative for Earth and Environmental Science (AY 2017)

Committees: Graduate Welfare Committee, University Council on Graduate Studies

### **Open Data Contributions**

OpenStreetMap: Map changes: 57699 Top tags: natural (1489), landuse (1394), waterway (542)

### **Outreach:**

*2019-20:* Climate Change & You, grade 5 artwork judging

*2019:* Waterloo-Wellington Children's Groundwater Festival, presentations to youth

*2017-18:* MSU Science Festival, presentations to youth and adults.