

# Jeffrey Wade

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## EDUCATION

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### Ph.D., Earth Sciences

*Syracuse University (Syracuse, NY)*

2023

Dissertation title: *Stream Temperature as a Tracer of Interactions Amongst Hydrological Processes, Atmospheric Exchange, and Human Activity*

- Advisor: Dr. Christa Kelleher

### B.S., Geology and Geophysics

*University of Wisconsin-Madison (Madison, WI)*

2019

- Honors in the Liberal Arts, Dean's List (x7)

## PUBLICATIONS

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- **Wade, J.**, Kelleher, C., Kurylyk, B. (In Review), Incorporating physically-based river water temperature predictions into the National Water Model framework. *Environmental Modeling and Software*.
- **Wade, J.**, Kelleher, C., Hannah, D.M. (2023), Machine learning unravels controls on river water temperature regime dynamics. *Journal of Hydrology*, 63(129821), DOI: [10.1016/j.jhydrol.2023.129821](https://doi.org/10.1016/j.jhydrol.2023.129821)
- Ward, A.S., **Wade, J.**, Kelleher, C., Schewe, R.L. (2023), Clarify Jurisdiction of US Clean Water Act. *Science*, 379(6628), 148-148. DOI: [10.1126/science.adf7391](https://doi.org/10.1126/science.adf7391)
- **Wade, J.**, Kelleher, C., Ward, A. S., Schewe, R. L. (2022), The fluid definition of the 'waters of the United States': Non-uniform effects of regulation on US wetland protections. *Hydrological Processes*, 36(11), e14747. DOI: [10.1002/hyp.1474](https://doi.org/10.1002/hyp.1474)
- **Wade, J.**, Lautz, L., Kelleher, C., Vidon, P., Davis, J., Beltran, J., Pearce, C. (2020), Beaver dam analogues drive heterogeneous groundwater–surface water interactions. *Hydrological Processes*, 34, 5340–5353. DOI: [10.1002/hyp.13947](https://doi.org/10.1002/hyp.13947)
- Orio, M., Luna, G. J., Kotulla, R., Gallager, J. S., Zampieri, L., **Wade, J.** . . . Zemko, P., (2017), CXO J004318.8 412016, a steady supersoft X-ray source in M 31. *Monthly Notices of the Royal Astronomical Society*, 470(2), 2212-2224. DOI: [10.1093/mnras/stx1355](https://doi.org/10.1093/mnras/stx1355)

## COMMENTARIES

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- **Wade, J.**, Kelleher, C., Ward, A. S., Schewe, R. L. (2023). Which wetlands are vulnerable? Mapping recent shifts in protection under US federal wetland law. Global Water Forum, <https://www.globalwaterforum.org/2023/02/02/which-wetlands-are-vulnerable-mapping-recent-shifts-in-protection-under-us-federal-law/>, UNESCO Chair in Water Economics and Transboundary Water Governance.

## PRESENTATIONS

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- **Wade, J.**, Ogden, F., Kelleher, C. (2022). Incorporating Physics-Based Temperature Predictions into the National Water Model Framework, H45I-1484, American Geophysical Union 2022 Fall Meeting, Chicago, IL.

- **Wade, J.** (2022). Can the National Water Model be used to predict river water temperatures?: A continental-scale perspective, Waggoner Geology Graduate Seminar, Syracuse University.
- **Wade, J.**, Ogden, F. (2022). Incorporating Physics-based Water Temperature Predictions into the National Water Model, 2022 William M. Lapenta Professional Conference.
- **Wade, J.**, Kelleher, C., Hannah D.M. (2022). Untangling nested spatiotemporal controls on stream thermal regimes using machine learning methods, 2022 Central New York Earth Science Student Symposium.
- **Wade, J.**, Kelleher, C., Hannah D.M. (2021). Exploring continental-scale relationships between stream temperature signatures and watershed characteristics, H25X-1295, American Geophysical Union 2021 Fall Meeting, New Orleans, LA.
- Ndlovu, W., **Wade, J.**, Kelleher, C., Gannon, J., Zimmer, M. (2021). Examining streamflow flashiness trends across the northeastern USA, H45C-1195, American Geophysical Union 2021 Fall Meeting, New Orleans, LA.
- Hurst, C., Kelleher, C., Shaw, S., Jones, H., Davis, J., **Wade, J.**, Cero, A.D., Vidon, P. (2021) Assessing Changes in Channel Morphology Three Years Following Beaver Dam Analogue Installation, EP25B-1310, American Geophysical Union 2021 Fall Meeting, New Orleans, LA.
- Jones, H., Kelleher, C., Shaw, S., Hurst, E., Larson, C., Coffman, J., Cero, A.D., **Wade, J.** (2021). Effects of Beaver Dam Analogues on Late-summer In-stream Water Level Variability, EP25B-1311, American Geophysical Union 2021 Fall Meeting, New Orleans, LA.
- **Wade, J.**, Kelleher, C. (2021). Continental-scale relationships between watersheds characteristics and stream temperature signatures: An ensemble learning approach, Waggoner Geology Graduate Seminar, Syracuse University.
- **Wade, J.**, Kelleher, C. (2020). Wetlands and WOTUS: Regulating New York's Vulnerable Waters, Waggoner Geology Graduate Seminar, Syracuse University.
- Kelleher, C., Vidon, P., **Wade, J.** (2020). A multidisciplinary approach to assess the impact of beaver dam analogues on stream and floodplain hydrology and geomorphology. Red Canyon Ranch Scientific Brief to The Nature Conservancy.
- Jones, A., Goodwin, L., Brown, P., **Wade, J.** (2018). Do small faults in the Baraboo Syncline preserve evidence of episodic tremor and slip (ETS)?, Geological Society of America 2018 Fall Meeting, Indianapolis, IN.

## RESEARCH EXPERIENCE

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### Syracuse University, Department of Earth and Environmental Sciences

#### Graduate Researcher

08/2019 - Present

- Collaborated with key stakeholders to design and implement a multi-year monitoring campaign to assess the hyporheic effects of stream restoration structures, informing land management practices in the Western US (*published in Hydrologic Processes*)
- Trained and interpreted machine learning algorithms in R to predict river water temperatures at 400+ US streams, providing insight into effective approaches for regulating river thermal regimes in a changing climate (*manuscript in prep.*)
- Translated redefinitions of federal wetland policy into quantitative impact assessments at 253,000+ wetlands in New York State using a computationally-intensive ArcGIS Pro

workflow (*published in Hydrologic Processes, commentaries accepted in Science and Global Water Forum*)

- Devised novel research concepts and authored a grant proposal with a detailed timeline, resulting in an NSF Graduate Research Fellowship Program Honorable Mention
- Catalogued and published 250+ files containing code, scientific data, and research workflows to GitHub

### **University of Wisconsin-Madison, Department of Geoscience**

Undergraduate Research Assistant

04/2018 – 05/2019

- Characterized the behavior of quartz fluid inclusions using laboratory thermobarometry
- Organized geologic samples and maintained detailed records of laboratory experiments and results
- Interpreted sample temperature and pressure results in relation to modern seismic activity, leading to a presentation at the Geological Society of America 2018 Fall meeting

### **University of Wisconsin-Madison, Department of Astronomy**

Undergraduate Research Assistant

11/2015 – 05/2016

- Performed data acquisition for a published study (Orio et al., 2017) examining supersoft X-rays emissions from a binary system in the Andromeda Galaxy
- Developed a workflow to identify and extract spectra from XMM-Newton telescope observations
- Demonstrated proficiency with Linux research computing

## **PROFESSIONAL EXPERIENCE**

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### **NASA's Jet Propulsion Laboratory**

Postdoctoral Fellow

8/2023 - current

- Aimed to assess how observations of river storage and variability from the newly-launched SWOT mission compare to predictions from state-of-the-art global hydrologic models

### **NOAA, Office of Water Prediction, National Water Center**

William M. Lapenta Intern

6/2022 – 8/2022

- Independently led the conceptualization and development of a physics-based river temperature model within the framework of the National Water Model
- Developed and version-controlled a reproducible modeling workflow consisting of ~20,000 lines of Python code
- Authored a 25-page preliminary report detailing the methodology and scientific implications of modeling results, which were presented at the 2022 William M. Lapenta Professional Conference and the 2022 AGU Fall Meeting

### **US Geological Survey, New England Water Science Center**

NAGT-USGS Cooperative Summer Fellowship Intern - Hydrologist

05/2019 – 08/2019

- Budgeted, planned and directed a water sampling field campaign to assess urban nitrate and PFAS flux to coastal embayments in Cape Cod, MA
- Processed groundwater chemistry data and produced scientific data visualizations for multiple USGS Scientific Investigations Reports
- Visualized spatial-temporal trends in urban water table level using ArcGIS and Adobe Illustrator

## **TEACHING AND MENTORING**

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### **Syracuse University, Department of Earth and Environmental Sciences**

#### Graduate Teaching Assistant

*Spring 2022*

- Taught discussion sections for undergraduate-level hydrology and atmospheric science course (Water and Our Environment: 100 students)

### **Syracuse University, Department of Earth and Environmental Sciences**

*2021*

#### Undergraduate Research Mentor

- Mentored a visiting undergraduate researcher in computational hydrology, leading to a poster presentation at the 2021 American Geophysical Union Fall Meeting
- Advised student in research methods, data organization, coding, and hydrological principles

### **Syracuse University, Department of Earth and Environmental Sciences**

#### Graduate Teaching Assistant

*Fall 2020*

- Taught discussion sections for undergraduate-level hydrology and atmospheric science course (Water and Our Environment: 100 students)

## **AWARDS AND HONORS**

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Newton E. Chute Award, Syracuse University, \$1,000	<i>2023</i>
Publication Award, Syracuse University, \$250	<i>2023</i>
Research Excellence Doctoral Funding Fellowship, Syracuse University, \$23,590	<i>2022</i>
Chair's Award, Syracuse University, \$400	<i>2022</i>
NSF Graduate Research Fellowships Program (GRFP) Honorable Mention	<i>2021</i>
Vincent E. McKelvey Scholarship Award, Syracuse University, \$350	<i>2021</i>
NSF Grant, American Meteorological Society Science Policy Colloquium, \$5,600	<i>2020</i>
NSF NRT Fellowship, Energy Model Program on Water-Energy, \$32,000	<i>2019-2020</i>
Mack C. Lake Distinguished Geoscience Undergraduate, UW-Madison	<i>2019</i>
NAGT-USGS Cooperative Field Training Program Nominee	<i>2019</i>
Dexter Environmental Scholarship, UW-Madison, \$1,000	<i>2018</i>
William F. Vilas Scholarship, UW-Madison, \$400	<i>2018</i>
Wasatch-Uinta Field Camp Scholarship, UW-Madison, \$1,500	<i>2018</i>
L.R. Ingersoll Prize for Excellence in Physics, UW-Madison	<i>2017</i>
Schoenleber Scholarship, UW-Madison, \$32,000	<i>2015-2019</i>
Academic Excellence Scholarship, UW-Madison, \$10,000	<i>2015-2019</i>
Letters and Science Honors College, UW-Madison	<i>2015-2019</i>

## **SERVICE**

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### **Faculty Search Committee Student Representative**

*01/2022 – 03/2022*

*Syracuse University*

- Served as the graduate student representative on the faculty search committee for the Department of Earth and Environmental Sciences
- Conducted 15 detailed interviews with applicants and evaluated candidate resumes, cover letters, and publications

**Manuscript Reviewer** *09/2021*

- Provided peer review feedback for manuscripts submitted to the Journal of the American Water Resources Association (JAWRA)

**Unlearning Racism in Geoscience** *01/2021 – 05/2021*

- Participated in a geoscience community-wide program designed to oppose inequitable policies in academic institutions
- Drafted and refined inclusive policies that were presented to academic department leaders

**Department of Earth and Environmental Sciences Graduate Officer** *08/2020 – 05/2021*  
*Syracuse University*

- Served as the Treasurer Secretary for an organization representing the interest of Syracuse University Earth and Environmental Science graduate students
- Audited past organization financial records, developed an annual budget, and disbursed funds for organization events
- Prepared leadership meeting agendas and maintained public records of meeting minutes

**PROFESSIONAL TRAINING**

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**American Meteorological Society Summer Policy Colloquium** *07/2020*

- Applied for and received an NSF grant to fully fund attendance to the Summer Policy Colloquium
- Attended 4 weeks of discussions with members of Congress, Congressional staff, and industry leaders on topics related to federal science and environmental policy
- Received instruction on the federal R&D budget and the respective roles of the legislative and executive branches in the science-policy process

**Education Model Program on Water Energy Research Fellow** *08/2019 – 12/2021*

- Engaged in a selective interdisciplinary graduate program that provided training in policy, communication, management, and law at the water-energy nexus
- Contributed to weekly student seminars that emphasized scientific and professional collaboration across research disciplines
- Completed a 2-week summer field course and a capstone research project on water quality concerns in Western US lakes

**Alan Alda Center for Communicating Science Workshop** *01/2020*

- Expanded science communication through instruction in improvisation and message-development
- Applied storytelling skills to communicate academic research to broader audiences

**Kathy Lambert Science Communication Workshop** *10/2019*

- Developed plain language translations of academic research and received training on effectively communicating science to public media

**Wasatch-Uinta Summer Field Camp** *06/2018 – 07/2018*

- Completed a 6-week geology field course consisting of geologic mapping, subsurface structural inference, and rock classification
- Received a nomination to the NAGT-USGS Cooperative Field Training Program as a top student in the program