

# Craig B. Brinkerhoff

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978-905-1371

## EDUCATION

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2023 (expected) PhD Civil Engineering, University of Massachusetts, Amherst, MA  
2018 Ba&Sc Honours Interfaculty Environment, McGill University, Montreal, QC

## HONORS & AWARDS

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2021 AGU Hydrology Remote Sensing Technical Committee Student Awardee  
2021-2024 NASA Future Investigators in Earth & Space Science & Technology Awardee  
2020 AGU Outstanding Student Presentation Awardee  
2020 NSF Graduate Research Fellowship Honorable Mention  
2018 McGill Undergraduate First-Class Honours  
2017 McGill Science Undergraduate Research Awardee

## SCHOLARSHIP

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2023

11. Lin, P., Feng, D., Gleason, C.J., Pan, M., **Brinkerhoff, C.B.**, Yang, X., Beck, H.E., Frasson, R.P.M. (2023). Inversion of river discharge from remotely sensed river widths: a critical assessment at three-thousand global river gauges. *Remote Sensing of Environment*. [doi.org/10.1016/j.rse.2023.113489](https://doi.org/10.1016/j.rse.2023.113489).
10. Maavara, T., **Brinkerhoff, C.B.**, Hosen, J., Aho, K.S., Logozzo, L., Sakers, J., Stubbins, A., Raymond, P.A. (2023). Watershed DOC uptake occurs mostly in lakes in the summer and in rivers in the winter. *Limnology & Oceanography*. [doi.org/10.1002/lno.12306](https://doi.org/10.1002/lno.12306).

2022

9. **Brinkerhoff, C.B.**, Gleason, C.J., Zappa, C.J., Raymond, P.A., Harlan, M.E. (2022). Remotely sensing river greenhouse gas exchange velocity using the SWOT satellite. *Global Biogeochemical Cycles*. [doi.org/10.1029/2022GB007419](https://doi.org/10.1029/2022GB007419).
8. Liu, S., Maavara, T., **Brinkerhoff, C.B.**, Raymond, P.A. (2022). Global controls on DOC reaction versus export in watersheds: A Damköhler number analysis. *Global Biogeochemical Cycles*. [doi.org/10.1029/2021GB007278](https://doi.org/10.1029/2021GB007278).
7. Liu, S., Kuhn, C., Amatulli, G., Aho, K.S., Butman, D., Allen G.H., Lin, P., Pan, M., Yamazaki, D., **Brinkerhoff, C.B.**, Gleason, C.J., Xia, X., Raymond, P.A. (2022). The importance of hydrology in routing terrestrial carbon to the atmosphere via global streams and rivers. *Proceedings of the National Academy of Sciences*. [doi.org/10.1073/pnas.2106322119](https://doi.org/10.1073/pnas.2106322119).
- Nature Press Release: [The world's rivers exhale a massive amount of carbon](#)
  - Yale University Press Release: [New Study Aims at Calculating Terrestrial Carbon's Role in River and Stream Emissions](#)

2021

6. Maavara, T., Logozzo, L., Stubbins, A., Aho, K.A., **Brinkerhoff, C.B.**, Hosen, J., Raymond, P.A. (2021) Does photomineralization of dissolved organics matter in temperate rivers? *Journal of Geophysical Research- Biogeosciences*. [doi.org/10.1029/2021JG006402](https://doi.org/10.1029/2021JG006402).
5. Frasson, R.P.M., Durand, M.T., Larnier, K., Gleason, C.J., Andreadis, K.M., Hagemann, M.H., Dudley, R.W., Bjerklie, D.M., Oubanas, H., Garambois, P.A., Malaterre, P.O., Lin, P.,

- Pavelsky, T.M., Monnier, J., **Brinkerhoff, C.B.**, David, C.H. (2021). Exploring the factors controlling the error characteristics of the Surface Water and Ocean Topography mission discharge estimates. *Water Resources Research*. [doi.org/10.1029/2020WR028519](https://doi.org/10.1029/2020WR028519).
4. **Brinkerhoff, C.B.**, Raymond, P.A., Maavara, T., Ishitsuka, I., Aho, K.S., Gleason, C.J. (2021). Lake Morphometry and River Network Controls on Evasion of Terrestrially Sourced Headwater CO<sub>2</sub>. *Geophysical Research Letters*. [doi.org/10.1029/2020GL090068](https://doi.org/10.1029/2020GL090068).

2020

3. **Brinkerhoff, C. B.**, Gleason, C.J., Feng, D., Lin, P. (2020). Constraining Remote River Discharge Estimation Using Reach-Scale Geomorphology. *Water Resources Research*. [doi.org/10.1029/2020WR027949](https://doi.org/10.1029/2020WR027949).
2. Andreadis, K. M., **Brinkerhoff, C. B.**, & Gleason, C. J. (2020). Constraining the Assimilation of SWOT Observations With Hydraulic Geometry Relations. *Water Resources Research*. [doi.org/10.1029/2019WR026611](https://doi.org/10.1029/2019WR026611).

2019

1. **Brinkerhoff, C. B.**, Gleason, C. J., & Ostendorf, D. W. (2019). Reconciling At-a-Station and At Many Stations Hydraulic Geometry through River-Wide Geomorphology. *Geophysical Research Letters*. [doi.org/10.1029/2019GL084529](https://doi.org/10.1029/2019GL084529).

## GRANTS & FELLOWSHIPS

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| 2021-2024 | A First Global Analysis of Daily Riverine Gas Exchange Using the SWOT Satellite, Bayesian Remote Sensing, and Carbon Transport Modeling <ul style="list-style-type: none"> <li>○ NASA Future Investigators in Earth &amp; Space Science &amp; Technology</li> <li>○ \$135,000 USD</li> </ul> |
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## SELECTED PRESENTATIONS

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| * Oral    **Invited    ¥Accepted but withdrawn due to illness |   |
| 2022  | <b>Brinkerhoff, C.B.</b> , Gleason, C.J., Ishitsuka, I., Sosa, J., Bates, P.D., Liu, S. Anticipated Continental-Scale River Gas Exchange Dynamics: How will SWOT Inform River CO <sub>2</sub> Modeling? <i>AGU Fall Meeting, Chicago, Illinois</i>  |
| 2022*   | <b>Brinkerhoff, C.B.</b> , Gleason, C.J., Zappa, C.J., Saccardi, B., Raymond, P.A., Winnick, M., Harlan, M.E. Informing global river CO <sub>2</sub> models with SWOT. <i>SWOT Science Team Meeting, Chapel Hill, North Carolina</i>  |
| 2022*¥  | <b>Brinkerhoff, C.B.</b> , Gleason, C.J., Zappa, C.J., Raymond, P.A., Harlan, M.E. Towards global scale remote sensing of river gas exchange velocity via the SWOT satellite and hydraulic geometry. <i>Frontiers in Hydrology, San Juan, Puerto Rico</i>   |
| 2021*   | <b>Brinkerhoff, C.B.</b> , Gleason, C.J., Raymond, P.A., Zappa, C.J., Harlan, M.E. Gas Exchange in Large Rivers Controlled By Largest Turbulent Eddies: Implications for Remotely Sensing Gas Exchange via SWOT. <i>AGU Fall Meeting, New Orleans, Louisiana</i> <ul style="list-style-type: none"> <li>○ Won AGU Hydrology Remote Sensing Technical Committee Student Award</li> </ul> |
| 2021**  | <b>Brinkerhoff, C.B.</b> , Saccardi, B., Winnick, M., Gleason, C.J. Towards continental-scale transport modeling of drainage network CO <sub>2</sub> evasion. <i>AGU Fall Meeting, New Orleans, Louisiana</i>   |

- 2020\* **Brinkerhoff, C.B.**, Raymond, P.A., Maavara, T., Ishitsuka, I., Aho, K.S., Shaoda, L. Gleason, C.J. Lake/reservoir controls on evasion of inland water CO<sub>2</sub> and implications for remote sensing of network scale CO<sub>2</sub> emissions. *AGU Fall Meeting (virtual)*  
 ○ Won AGU Outstanding Student Presentation Award
- 2019\* **Brinkerhoff, C. B.**, Gleason, C. J., Lin, P., & Andreadis, K. Constraining Remotely-Sensed River Discharge estimation Using Reach-Scale Geomorphology. *AGU Fall Meeting, San Francisco, California*

## INVITED TALKS

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- Mar 2023 **Northeastern University**, “A holistic approach to global river science”, Stubbins and Beighley labs seminar, Departments of Marine and Environmental Sciences & Civil and Environmental Engineering, Boston, MA
- May 2021 **Wooster Society of Friends**, “Rivers’ role in the carbon cycle”, Wooster, OH
- Feb 2020 **University of Massachusetts**, “Constraining Remotely-Sensed River Discharge Estimation Using Reach-Scale Geomorphology”, Seminar, Department of Civil & Environmental Engineering, Amherst, MA

## TEACHING & ADVISING

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- 2022-Present Advising/Mentoring: Wenwen Wang (University of Massachusetts, Amherst)
- 2019 Teaching Assistant: CE-ENGIN 470/570: GIS for Engineers (University of Massachusetts, Amherst)

## PROFESSIONAL ACTIVITIES & SERVICE

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- Reviewer:* Journal of Hydrology (1)  
 Nature Scientific Reports (1)  
 Biogeosciences (1)  
 Journal of Hydraulic Engineering (1)
- Affiliations:* American Geophysical Union
- Member:* NASA/CNES SWOT Mission Discharge Algorithm Working Group
- Outreach:* Rivers’ role in the carbon cycle (Wooster Society of Friends- May 2021)