Craig B. Brinkerhoff (He/him)

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EDUCATION

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

HONORS & AWARDS

2021 AGU Fall Meeting 2021 Hydrology Remote Sensing Technical Committee Student Award
2021 NASA FINESST (Future Investigators in Earth & Space Science) Award
2020 AGU Fall Meeting 2020 OSPA (Outstanding Student Presentation) Award
2020 NSF GRFP (Graduate Research Fellowship Program) Honorable Mention
2018 McGill University Undergraduate First-Class Honours
2017 McGill University Science Undergraduate Research Award

SCHOLARSHIP

Published

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 46*(16) 9637-9647. https://doi.org/10.1029/2019GL084529.

2. Andreadis, K. M., **Brinkerhoff, C. B.**, & Gleason, C. J. (2020). Constraining the Assimilation of SWOT Observations With Hydraulic Geometry Relations. *Water Resources Research, 56(5)*, e2019WR026611. https://doi.org/10.1029/2019WR026611.

3. **Brinkerhoff, C. B.**, Gleason, C.J., Feng, D., Lin, P. (2020). Constraining Remote River Discharge Estimation Using Reach-Scale Geomorphology. *Water Resources Research, 56(11), e2020WR027949.* https://doi.org/10.1029/2020WR027949.

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_2. *Geophysical Research Letters, 48(1), e2020GL090068.* https://doi.org/10.1029/2020GL090068.

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, 57(6), e2020WR028519.* https://doi.org/10.1029/2020WR028519

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, 126(7), e2021JG006402.* https://doi.org/10.1029/2021JG006402.

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, 119(11), e2106322119.* https://doi.org/10.1073/pnas.2106322119.
    a. Nature Press Release: The world's rivers exhale a massive amount of carbon

b. Yale University Press Release: New Study Aims at Calculating Terrestrial Carbon's Role in River and Stream Emissions

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*, 36, e2021GB007278. https://doi.org/10.1029/2021GB007278.

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* https://doi.org/10.1029/2022GB007419.

SPONSORED RESEARCH

2021-2024 "A First Global Analysis of Daily Riverine Gas Exchange Using the SWOT Satellite, Bayesian Remote Sensing, and Carbon Transport Modeling"
-NASA FINESST (Future Investigators in Earth & Space Science) fellowship
-$135,000 USD

CONFERENCE PRESENTATIONS

**Oral Presentation* ***Invited* ±Accepted and upcoming ¥Accepted but withdrawn due to illness

2022± **Brinkerhoff, C.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_2 Modeling? In *AGU Fall Meeting* 2022.

2022± **Maavara, T., **Brinkerhoff, C.B.**, Hosen, J., Aho, K.S., Logozzo, L., Saiers, J., Stubbins, A., Raymond, P.A. (2022, December). Watershed DOC Uptake Occurs Almost Entirely in Lakes and Reservoirs: A New Model for Connected River, Lake and Reservoir DOC Cycling. In *AGU Fall Meeting* 2022.

2022± Saccardi, B., **Brinkerhoff, C.B.**, Gleason, C.J., Winnick, M. Upscaling a High-Resolution Reactive Transport Model for Predicting Inland Water CO_2 Concentrations and Fluxes Across the Continental United States. In *AGU Fall Meeting* 2022.

2022± *Durand, M.T., Gleason, C.J., Pavelsky, T., Frasson, R.P.M., Turmon, T., David, C.H., Altenau, E.H., Tebaldi, N., Larnier, K., Monnier, J., Malaterre, P.O., Oubanas, H., Allen, G.H., Bates, P.D., Bjerklie, D.M., **Brinkerhoff, C.B.**, Coss, S.P., Dudley, R.W., Fenoglio-Marc, L., Garambois, P.A., Getirana, A., Lin, P., Margulis, S., Minear, J.T., Muhebwa, A., Riggs, R., Tarpanelli, A., Schulze, K., Safat Sikder, M., Stuurman, C., Taneja, J., Tourian, M.J. A global framework for SWOT discharge with examples from the Ohio River. In *AGU Fall Meeting* 2022.

2022± Flores, J.A., Gleason, C.J., **Brinkerhoff, C.B.**, Feng, D., Harlan, M.E. Assessing the flow variability of headwater streams in High Mountain Asia using satellite remote sensing. In *AGU Fall Meeting* 2022.

2022 *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. The importance of hydrology in routing terrestrial carbon to the atmosphere via global streams and rivers. In Goldschmidt Conference.

2022 ¥***Brinkerhoff, C.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. In *Frontiers in Hydrology*.

2022 Flores, J.A., Gleason, C.J., **Brinkerhoff, C.B.**, Harlan, M.H., Feng, D. Multi-temporal high resolution mapping of small streams in High Mountain Asia. In *Frontiers in Hydrology*.

2021 ***Brinkerhoff, C.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. In *AGU Fall Meeting*.
-Won AGU Fall Meeting 2021 Hydrology Remote Sensing Technical Committee Student Award

2021 ****Brinkerhoff, C.B.,** Saccardi, B., Winnick, M., Gleason, C.J. Towards continental-scale transport modeling of drainage network CO2 evasion. In *AGU Fall Meeting*.

2021 *Maavara, T., Logozzo, L., Stubbins, A., Aho, K.S., **Brinkerhoff, C.B.**, Hosen, J., Raymond, P.A. Does photomineralization of dissolved organics matter in temperate inland waters? In *AGU Fall Meeting*.

2021 Lummus, M., Stearns, L.A., van der Keen, C.J., Gleason, C.J., Brown, C., Wi, S., **Brinkerhoff, C.B**. Classification of glaciers in Koshi River Basin, Nepal using machine learning algorithms and clustering techniques. In *AGU Fall Meeting*.

2021 Ward Jones, M.K., Dai, C., Pollard W., Liljedahl, A., van der Sluijs, J., **Brinkerhoff, C.B.**, Howat, I., Freymueller, J. Using ArcticDEM and shallow boreholes to quantify mass wasting sediment loss of retrogressive thaw slumps in the Eureka Sound Lowlands, Canadian high Arctic. In *Regional Conference on Permafrost*.

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_2 and implications for remote sensing of network scale CO2 emissions. In *AGU Fall Meeting.*
-Won AGU Fall Meeting 2020 OSPA Award (Outstanding Student Presentation Award)

2020 Lin, P., Pan, M., Wood, E.F., Feng, D., Gleason, C.J., **Brinkerhoff, C.B.**, Yang, X., Pavelsky, T.M. Scaling up the assessment of the SWOT discharge inversion algorithm to thousands of gauges globally. In *EGU General Assembly*.

2019 ***Brinkerhoff, C. B.**, Gleason, C. J., Lin, P., & Andreadis, K. Constraining Remotely-Sensed River Discharge Estimation Using Reach-Scale Geomorphology. In *AGU Fall Meeting*.

TEACHING EXPEREINCE

2019 **Teaching Assistant**
GIS for Engineers (undergraduate/graduate), University of Massachusetts, Amherst

PROFESSIONAL SERVICE

Reviewer: Journal of Hydrology (1)
Nature Scientific Reports (1)
Biogeosciences (1)
Journal of Hydraulic Engineering (1)

Outreach Talks: May 2021: Rivers' role in the carbon cycle (Wooster Society of Friends)
Member: American Geophysical Union (AGU)