Benjamin Aaron Storer

Department of Mechanical Engineering
University of Rochester
Rochester, New York
U.S.A

Webpage: bastorer.github.io
Email: benjamin.storer@uwaterloo.ca
benjamin.storer@rochester.edu
ORCID: orcid.org/0000-0001-5955-2158

Education

2013–2018	Ph. D., Applied Mathematics, University of Waterloo Thesis: *Development and Application of Models and Diagnostics for Geophysical Fluid Flows* Supervisor: Francis Poulin
2008–2013	B. Math, Honours Pure Mathematics with distinction Co-operative Program, Applied Mathematics Minor University of Waterloo

Teaching

2019-2024	ME201, Applied Boundary Value Problems	Univ. of Rochester	Co-instructor
2016	MATH127, Calculus 1 for the Sciences	Univ. of Waterloo	Instructor
2011	TMAT100, Technical Mathematics	Humber College	Instructor

Academic Positions

Feb 2023 - Present	Research Associate	University of Rochester Mentor: Hussein Aluie
Feb 2019 - Jan 2022	Postdoctoral Research Associate	University of Rochester Mentor: Hussein Aluie

Software Development

FlowSieve

Role : primary developer

Description: Highly parallelized HPC codebase for analysing multi-scale energetics of oceanic flows, and is broadly applicable to flows in other spherical settings (atmospheric, stellar, etc). Works in spherical geometries and has built-in diagnostics for extracting metrics of energy and enstrophy cascades. Includes Helmholtz decomposition tools for analysing general flow fields.

Links: Documentation, Github Repository, JOSS Article

Grants / Funding

[1] **ACCESS Maximize Computing Grant (EES220052)** Role: P.I.

- 6-month preliminary, awarded 8 million core hours. Estimated value of $33,280.00 USD.
- 12-month renewal, awarded 58 million core hours. Estimated value of $268,885.00 USD.

Conference Organization

Session Organizer	*"`AI006` - Oceanic and Atmospheric Interactions and Drivers: Their Scale-Dependence and Climate Impacts"*
	Chairs : **Storer, B.**, O'Neill, L, Buzzicotti, M, Kido, S., and Hayden, E.
	Biennial Ocean Sciences Meeting, New Orleans, Louisiana, USA, February 2024.
Tutorial Session	*"Coarse-graining: blurring complex oceanic flows for insight"*
	Chairs : Aluie, H., **Storer, B.**
	Biennial Ocean Sciences Meeting, Honolulu, Hawaii, February 2022.

Community Engagement and Outreach

Flower City Pride Band	An LGBTQ+ community band based in Rochester, NY
	501(c)(3) registered charitable organization
	Role: Assistant Artistic Director (2022 - present)
	Board of Directors (Secretary) (2022 - present)
	Member (2019 - present)

Invited Presentations

Invited Keynote Speaker	2024 DRAKKAR Ocean Modelling Workshop
	29-31 January 2024 Grenoble, France

Publications

[1] Kouhen, S., **Storer, B. A.**, Aluie, H., Marhsall, D. P., & Christensen, H. M. (2024) *Convective and orographic origins of the mesoscale kinetic energy spectrum.* Geophysical Research Letters, [Accepted].

[2] Xue, S., **Storer, B. A.**, Glade, R. C., & Aluie (2024). *Surface Variability Mapping and Roughness Analysis of the Moon Using a Coarse-Graining Decomposition*. Journal of Geophysical Reserach: Planets, 129(10).

[3] Khatri, H., Griffies, S. M., **Storer, B. A.**, Buzzicotti, M., Aluie, H., Sonnewald, M., Dussin, R., & Shao, A. E. (2024). *A scale-dependent analysis of the barotropic vorticity budget in a global ocean simulation*. Journal of Advances in Modeling Earth Systems, 16, 1–29.

[4] **Storer, B. A.**, Buzzicotti, M., Khatri, H., Griffies, S. M., & Aluie, H. (2023). *Global cascade of kinetic energy in the ocean and the atmospheric imprint*. Science Advances, 9(51).

[5] Buzzicotti, M., **Storer, B. A.**, Khatri, H., Griffies, S. M., & Aluie, H. (2023). *Spatio-Temporal Coarse-Graining Decomposition of the Global Ocean Geostrophic Kinetic Energy*. Journal of Advances in Modeling Earth Systems, 15(6).

[6] **Storer, B. A.** & Aluie, H. (2023). *FlowSieve: A Coarse-Graining Utility for Geophysical Flows on the Sphere*. Journal of Open Source Software, 8(84), 4277

[7] **Storer, B. A.**, Buzzicotti, M., Khatri, H., Griffies, S. M., & Aluie, H. (2022). *Global energy spectrum of the general oceanic circulation*. Nature Communications, 13(1), 5314.

[8] Magill M., Coutino A., **Storer, B. A.**, Stastna, M., & Poulin, F. J. (2019). *Dynamics of nonlinear Alfvén waves in the shallow water magnetohydrodynamic equations.* Physical Review Fluids, 4(5), 053701.

[9] **Storer, B. A.**, Poulin, F. J., & Ménesguen, C. (2018). *The Dynamics of Quasigeostrophic Lens-Shaped Vortices*. Journal of Physical Oceanography, 48, 937–957.

[10] Poulin, F. J., Borrisov, A., **Storer, B. A.**, & Stastna, M. (2018). *A shallow water model of the solar tachocline: A numerical approach to determine wave structure.* Dynamics of Continuous, Discrete and Impulsive Systems Series B: Applications and Algorithms, 25(3–4), 219–231.

[11] Willick, K., **Storer, B. A.**, & Wesolkowski, S. (2013). *A new principal curve algorithm and standard deviation clouds for non-parametric ordered data analysis.* In 2013 IEEE Congress on Evolutionary Computation, CEC 2013 (pp. 1459–1466).