Greta E. M. Shum

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Education

Ph.D., University of Washington, Seattle 2021 – 2024
Atmospheric Sciences, Advisor: Abigail Swann; Graduate Certificate in Astrobiology

M.S., University of Washington, Seattle 2018 – 2021
Atmospheric Sciences, Advisor: Abigail Swann

B.A., Princeton University with High Honors 2010 – 2014
Comparative Literature, Advisor: Peter Brooks; Minor in Planets and Life (Astrobiology)

Professional Experience

Postdoctoral Scholar Water & Climate, Vrije Universiteit Brussel 2024 – present
Graduate Research Assistant Atmospheric and Climate Sciences, University of Washington 2018 – 2024
Communications Strategist Andlinger Center, Princeton University 2017 – 2018
Research Analyst/Multimedia Journalist Climate Central 2016 – 2017
Multimedia Journalism Fellow Climate Central 2014 – 2016

Research Projects

- **Modeling and emulating climate impacts for EU policy** October 2024 - present
  I am currently a postdoc on the EU Horizon project, SPARCCLE, advised by Prof. Wim Thiery. The project aims to build climate risk assessment tools to inform economic and social policy in the EU. I work on climate and impact modeling and emulation, which includes running the ISIMIP3 simulations in CTSM, the land component of CESM2 (funded the EU and UK Research & Innovation).

- **Assessed carbon cycle uncertainty in simple models** July 2023 - October 2024
  I assessed structural uncertainty and global carbon budgets by (1) coordinating a model intercomparison project (MIP) of net-zero pathways across simple climate models and emulators of the carbon cycle and (2) developing an explicit terrestrial and ocean carbon cycle model for FaIR (funded by UW PCC).

  - Publication: **Shum, G. E. M.**, O. J. Truax, J. Y. S. Yoon, D. M. W. Frierson, A. L. S. Swann: Simple models agree on everything but the carbon sink. *In preparation.*
  - Publication: **Shum, G. E. M.**, A. L. S. Swann: Compensating feedbacks in carbon cycling within the FaIR model. *In preparation.*

- **Modeled nearly-enclosed bays as refugia on Snowball Earth** July 2021 - January 2024
  I simulated the influence of land surface albedo and CO_2 on Snowball Earth refugia using CESM2 (CAM5, SLIM, CICE5) (funded by NSF).

  - Publication: **Shum, G. E. M.**, M. M. Laguë, A. L. S. Swann, C. M. Bitz, E. D. Waddington, S. G. Warren: Ocean bays surrounded by desert land could support life on Snowball Earth. *In review, JGR Atmospheres.* Preprint: doi:10.22541/au.171156551.19606238/v1.

- **Modeled impact of land-atmosphere interactions on forest expansion** Aug 2018 - June 2021
  I developed a novel, idealized experimental design in CESM2 to test the influence of forest establishment on forest expansion (funded by NSF).

  - Publication: **Shum, G. E. M.**, M. M. Laguë, S. S. Rushley, and A. L. S. Swann (2023): Beautiful Days in the Neighborhood: Land–Atmosphere Interactions as Drivers of Forest Expansion. *Earth Interact.*, 27, e220017, doi:10.1175/EI-D-22-0017.1.

Skills

- Proficiency in Python, NCO/CDO, Bash, FORTRAN, MATLAB, R, NetCDF, and Git.
- Running climate models in custom configurations (CESM, SLIM, FaIR, HECTOR, and MAGICC) and model development (CTSM, FaIR)
- Scientific research principles, statistical data analysis, academic and non-academic writing.
- Securing funding, proposal writing, project management, academic publication, teaching, and mentoring.
- Strong science communication (e.g. Shum Show); proficiency in French and German languages.

Teaching and Mentoring

Lab Teaching Assistant Vrije Universiteit Brussel	Autumn 2024, Autumn 2025
Research Advisor Esmeralda Chavelas, Undergraduate CICOES Summer intern at UW	2020
Grader Atmospheric Sciences, University of Washington	2022
Lead Graduate Teaching Assistant University of Washington	2020 – 2021
Graduate Teaching Assistant University of Washington	Autumn 2019, Winter 2024
Astrophysics Instructor Prison Teaching Initiative, Princeton University	2014 – 2015

Service Activities

Session Convener AGU 2021 Fall Meeting	2021
Co-Founder, Co-Lead, Researcher PCC ACORN Program on co-production of science	2020 – 2024
Co-Chair Graduate Climate Conference	2020
Organizer Graduate Climate Conference	2019, 2020, 2021
Graduate Student Representative (elected) Program on Climate Change, UW	2019 – 2021
Graduate Steering Committee Member Program on Climate Change, UW	2019 – 2021
Peer Reviewer *Nature Communications*, *Geophysical Research Letters*, *Journal of Climate*	2019 –

Non-Academic Publications

- Sean O'Leary, **Greta Shum**, Logan Arnold, Tyler Cox & Ben Hunkler (2021): Destined to Fail: Why the Appalachian Natural Gas Boom Failed to Deliver Jobs & Prosperity and What It Teaches Us *Ohio River Valley Institute*
- **Greta Shum** & Tamara Pico (2016): Does English Have to Be the Dominant Language of Science? *Scientific American*

Awards & Fellowships

Best Poster Award Overshoot Conference	2025
PCC Climate Research Accelerator Award University of Washington	2023 – 2024
High Meadows Fellowship High Meadows Foundation	2014 – 2016
ThinkSwiss Fellowship Swiss Embassy	2014
Dale Award Princeton University	2012
Scheide Scholarship Princeton University	2010 – 2014

Recent Conference Presentations (since 2023)

Overshoot Conference Vienna, Austria (poster)	2025
ISIMIP Workshop Potsdam, Germany (oral)	2025
EGU Annual Meeting Vienna, Austria (poster)	2025
CESM Land Model & BGC Working Group Meeting Boulder, CO (remote oral)	2024
AGU 2023 Fall Meeting San Francisco, CA (poster)	2023
CESM Working Group Meeting 2023 Boulder, CO (oral)	2023

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