Greta E. M. Shum

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Education

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

M.A., 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)

Research Projects

- **Assessing carbon cycle uncertainty in simple models, July 2023 - May 2024 (current)**
  Assessing structural uncertainty and global carbon budgets by (1) coordinating inter-model comparison project (MIP) of net-zero pathways across simple climate models and emulators of the carbon cycle and (2) progressively increasing model complexity within one model, FaIR (funded by UW PCC).
- **Modeled nearly-enclosed bays as refugia on Snowball Earth, July 2021 - January 2024**
  Simulated influence of land surface albedo and CO2 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 (submitted): Ocean bays surrounded by desert land could support life on Snowball Earth.
- **Modeled impact of forest-atmosphere interactions on forest expansion, Aug 2018 - June 2021**
  Developed novel, idealized experimental design in CESM2 to test 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.

Professional Experience

Graduate Research Assistant University of Washington	2018 – 2020
Graduate Student Volunteer ACORN, University of Washington	
Communications Strategist School of Engineering, Princeton University	2017 – 2018
Research Analyst/Multimedia Journalist Climate Central	2016 – 2017
Multimedia Journalism Fellow Climate Central	2014 – 2016
Media Services Student Technician Princeton University	2010 – 2014
Scientific Affairs Intern AAMC	2013

Skills

- Proficiency with coding languages and tools Python, R, FORTRAN, MATLAB, Git, and GitHub.
- Experience with scientific research principles, statistical data analysis.
- Experience with securing funding, proposal writing, project management, teaching, and mentoring.
- Experience with running climate models in custom configurations (CESM, SLIM, FaIR, and HECTOR).
- Strong science communication (e.g. Shum Show); proficiency in French and German languages.

Awards & Fellowships

PCC Climate Research Accelerator Award University of Washington	2023 –
High Meadows Fellowship High Meadows Foundation	2014 – 2016
ThinkSwiss Fellowship Swiss Embassy	2014
Dale Award Princeton University	2012
German Book Award Princeton University	2011, 2012, 2013
Scheide Scholarship Princeton University	2010 – 2014
Helzberg Kansas City Symphony Scholarship Shirley and Barnett Helzberg Foundation	2007 – 2014

Conference Presentations

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
AbSciCon 2022 Atlanta, GA (virtual poster)	2022
AGU 2022 Fall Meeting Chicago, IL (oral)	2022
CESM Paleoclimate Working Group Meeting Virtual (oral)	2022
CESM Land Model Working Group Meeting Virtual (oral)	2021
Graduate Climate Conference Virtual (poster)	2021
Graduate Climate Conference Virtual (oral)	2020
Ocean Observers Workshop Brest, France (oral, *invited speaker*)	2017

Non-Academic Publications

- **Shum, Greta** & Tamara Pico (2016): Does English Have to Be the Dominant Language of Science? *Scientific American Blog* URL

Teaching Experience

Graduate Teaching Assistant University of Washington	Autumn 2019, Winter 2024
Grader Atmospheric Sciences, University of Washington	2022
Lead Teaching Assistant University of Washington	2020 – 2021
Astrophysics Instructor Prison Teaching Initiative, Princeton University	2014 – 2015

Research Advising

Esmeralda Chavelas co-advised CICOES Summer Internship at University of Washington	2020

Service Activities

Peer reviewer *Geophysical Research Letters* and *Journal of Climate*	2022 –
Session convener AGU 2021 Fall Meeting	2021
Co-Founder, Co-Lead PCC ACORN Program on co-production of science	2020
Co-Chair Graduate Climate Conference	2020
Co-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

References

1. **Dr. Abigail L. S. Swann** (aswann@uw.edu)
   Professor of Atmospheric Sciences & Biology, University of Washington (Ph.D. advisor)

2. **Dr. Stephen G. Warren** (sgw@uw.edu)
   Professor of Atmospheric Sciences & Earth and Space Sciences, University of Washington (Collaborator)

3. **Dr. Dargan M. W. Frierson** (dargan@uw.edu)
   Professor of Atmospheric Sciences, University of Washington (Collaborator)

4. **Dr. Cecilia M. Bitz** (bitz@uw.edu)
   Professor of Atmospheric Sciences, University of Washington (Collaborator)

5. **Dr. Marysa M. Laguë** (marysa.lague@utah.edu)
   Professor of Atmospheric Sciences, University of Utah (Collaborator)

Last Updated March 22, 2024.