

ANDREW I.L. WILLIAMS

Scripps Institution of Oceanography, UC San Diego

Email: andrewwilliams@ucsd.edu // Citizenship: Dual U.K. and U.S.A.

EDUCATION

University of Oxford

DPhil (PhD) in Climate Physics

October 2019 - July 2023

Advisor: Philip Stier

University of Oxford

Bachelors & Masters degrees in Physics

October 2015 - June 2019

Classification: 1st

EMPLOYMENT

Postdoctoral Scholar

Scripps Institution of Oceanography

October 2025 - present

Postdoctoral Research Associate

Princeton University & NOAA GFDL

August 2023 - August 2025

Visiting Researcher

TU Delft

June 2022 - July 2022

Visiting Researcher

Max Planck Institute for Meteorology

April 2022 - May 2022

Research Associate

Massachusetts Institute of Technology

June 2019 - January 2020

Summer Undergraduate Research Fellow

California Institute of Technology

Summer 2018

GRANTS & FUNDING

Scripps Institutional Postdoctoral Fellowship

Scripps Institution of Oceanography, UCSD ($\approx \$200,000$)

2026-2028

CIMES Postdoctoral Fellowship

Princeton University ($\approx \$200,000$)

2023-2025

NOAA Climate & Global Change Postdoctoral Fellowship

Yale University (declined) ($\approx \$200,000$)

2023-2025

NERC PhD Studentship

Fully funded doctoral fellowship at the University of Oxford. ($\approx £100,000$)

2019-2023

Laidlaw Research and Leadership Scholarship

Awarded to fund research at MIT with Prof. Paul O'Gorman. ($\approx £10,000$)

2019

Caltech Summer Undergraduate Research Fellowship

Awarded to fund research at Caltech with Prof. Tapio Schneider. ($\approx £8,000$)

2018

AWARDS

Outstanding Early Career Presentation Award	2023
CFMIP-GASS meeting, Paris	
Outstanding Student and PhD candidate Presentation Award	2022
EGU	
Outstanding Student Presentation Award	2022
AGU Fall Meeting	
Moritz-Heyman Scholarship	2015-2019
Scholarship for low-income students who won a place at Oxford University (£16,000 total).	
St. Hilda's College, 125th Anniversary Scholarship	2019
Prize for high grades in first year examinations at Oxford (£1,250 total)	

PUBLICATIONS

Manuscripts in preparation

- Risi, C. and co-authors including Williams, A. I. L.: Amplification of temperature changes with altitude in the tropics and subtropics
Reviews of Geophysics
- Williams, A. I. L.: Tropical circulation as the statistics of convection
Geophysical Research Letters (anticipated submission 2026)

2026

- Davenport, D., Madan, V. and co-authors including Williams, A. I. L., JCM v1.0: A Differentiable, Intermediate-Complexity Atmospheric Model
Geoscientific Model Development (submitted)
[10.5194/egusphere-2025-6266](https://doi.org/10.5194/egusphere-2025-6266)
- Williams, A. I. L., Bridging Clarity and Accuracy: A Simple Spectral Longwave Radiation Scheme for Idealized Climate Modeling
Journal of Advances in Modeling Earth System
[10.1029/2025MS005405](https://doi.org/10.1029/2025MS005405)
- Williams, A. I. L. & Merlis, T.M., State-dependence of polar amplification in an idealized GCM
Geophysical Research Letters
[10.1029/2025GL118423](https://doi.org/10.1029/2025GL118423)

2025

- Williams, A. I. L. & Jeevanjee, N., Sea-surface temperature patterns, radiative cooling, and hydrological sensitivity
Geophysical Research Letters
[10.1029/2025GL117734](https://doi.org/10.1029/2025GL117734)
- Williams, A. I. L. & Jeevanjee, N., A robust constraint on the response of convective mass fluxes to warming
Journal of Advances in Modeling Earth Systems
[10.1029/2024MS004695](https://doi.org/10.1029/2024MS004695)
- Watson-Parris, D. and co-authors including Williams, A. I. L., Weak surface temperature effects of recent reductions in shipping SO₂ emissions, with quantification confounded by internal variability
Atmospheric Chemistry & Physics
[10.5194/egusphere-2024-1946](https://doi.org/10.5194/egusphere-2024-1946)
- Mackie, A. , Byrne, M.P., van de Koot, E. & Williams, A. I. L., Circulation and cloud responses to patterned SST warming
Geophysical Research Letters
[10.22541/essoar.172736799.93094846](https://doi.org/10.22541/essoar.172736799.93094846)

- Herbert, R. J., Williams, A. I. L., Weiss, P., Klocke, D. & Stier, P., Isolating aerosol-climate interactions in global storm-resolving simulations
Atmospheric Chemistry & Physics
[10.5194/egusphere-2024-1689](https://doi.org/10.5194/egusphere-2024-1689)

2024

- Schmidt, H. & co-authors including Williams, A. I. L., Effects of vertical grid spacing on the climate simulated in the ICON-Sapphire global storm-resolving model
Geoscientific Model Development
[10.5194/gmd-17-1563-2024](https://doi.org/10.5194/gmd-17-1563-2024)
- Bloch-Johnson, J. and co-authors including Williams, A. I. L., The Green's Function Model Intercomparison Project (GFMIP) Protocol
Journal of Advances in Modeling Earth Systems
[10.1029/2023MS003700](https://doi.org/10.1029/2023MS003700)

2023

- Dagan, G., Yeheskel, N. & Williams, A. I. L., Enhanced radiative forcing from aerosol-cloud interactions due to large-scale circulation adjustments
Nature Geoscience
[10.1038/s41561-023-01319-8](https://doi.org/10.1038/s41561-023-01319-8)
- Williams, A. I. L., Watson-Parris, D., Dagan, G. & Stier, P., Dependence of fast changes in global and local precipitation on the geographical location of absorbing aerosol
Journal of Climate
[10.22541/au.167364749.93845737/v1](https://doi.org/10.22541/au.167364749.93845737/v1)
- Williams, A. I. L., Jeevanjee, N. & Bloch-Johnson, J., Circus Tents, Convective Thresholds and the Non-Linear Climate Response to Tropical SSTs
Geophysical Research Letters
(Editor's Highlight)
[10.1029/2022GL101499](https://doi.org/10.1029/2022GL101499)

2022

- Williams, A. I. L., Stier, P., Dagan, G. & Watson-Parris, D., Strong control of effective radiative forcing by the spatial pattern of absorbing aerosol
Nature Climate Change
(Press coverage)
[10.1038/s41558-022-01415-4](https://doi.org/10.1038/s41558-022-01415-4)
- Dagan, G., Stier, P., Dingley, B. & Williams, A. I. L., Examining the regional co-variability of the atmospheric water and energy imbalances in different model configurations - linking clouds and circulation
Journal of Advances in Modeling Earth Systems
[10.1029/2021MS002951](https://doi.org/10.1029/2021MS002951)
- Williams, A. I. L. & O'Gorman, P. A., Summer-Winter Contrast in the Response of Precipitation Extremes to Climate Change over Northern Hemisphere Land
Geophysical Research Letters
[10.1029/2021GL096531](https://doi.org/10.1029/2021GL096531)

2021

- Watson-Parris, D., Williams, A. I. L., Deaconou, L. & Stier, P., Model calibration using ESEm v1.0.0 - an open, scalable Earth System Emulator
Geoscientific Model Development
[10.5194/gmd-14-7659-2021](https://doi.org/10.5194/gmd-14-7659-2021)

PRESENTATIONS

2026

- **3rd Annual Pre-EGU Ice Cloud Workshop, Vienna (upcoming)** Invited talk
Tropical convection in a changing climate
- **Scripps Institution of Oceanography (upcoming)** Invited talk
Tales of climate dynamics & outreach
- **Colorado State University (upcoming)** Invited talk
Hierarchical Climate Dynamics: From the Tropics to the Poles
- **Lamont-Doherty Earth Observatory** Invited talk
Hierarchical Climate Dynamics: From the Tropics to the Poles

2025

- **Texas A&M University** Invited talk
Tales of climate dynamics & outreach
- **University of Exeter** Invited talk
State-dependence of polar amplification in an idealized, ice-free GCM
- **Gordon Research Conference on Radiation and Climate** Poster
A Simple Spectral Longwave Radiation Scheme for Idealized Climate Modeling
- **Florida State University** Invited talk
The physics of tropical convection and the large-scale circulation in a warming climate
- **ECS & Cloud Feedbacks Virtual Symposium** Talk
How do convective mass fluxes respond to global warming?
- **EGU General Assembly Meeting** Talk
A robust constraint on the response of convective mass fluxes to warming
- **University of Washington** Invited talk
A robust constraint on the response of convective mass fluxes to warming

2024

- **GFDL Lunchtime Seminar** Invited talk
A robust constraint on the response of convective mass fluxes to warming
- **CLIVAR TROPICS working group, Hamburg** Invited talk
Is there a “hydrological constraint” on tropical circulation weakening?
- **City College of New York** Invited talk
Physical constraints on the response of convective mass fluxes to warming
- **AOFD** Talk
A robust constraint on the response of convective mass fluxes to warming
- **CFMIP** Talk
A robust constraint on the response of convective mass fluxes to warming
- **Hebrew University of Jerusalem** Invited talk
A robust constraint on the response of convective mass fluxes to warming
- **Princeton University** Talk
A robust constraint on the response of convective mass fluxes to warming
- **Columbia University** Invited talk
A robust constraint on the response of convective mass fluxes to warming

2023

- **University of East Anglia** Invited talk
Non-linear climate response to tropical SSTs explained by a convective threshold
- **Center for Atmosphere Ocean Science, NYU** Invited talk
Non-linear climate response to tropical SSTs explained by a convective threshold

- **Reading University** Invited talk
Do convective mass fluxes constrain the tropical circulation response to warming?
- **Gordon Research Conference on Radiation and Climate** Poster
Circus tents, convective thresholds and the non-linear climate response to tropical SSTs
- **CFMIP-GASS meeting** Talk
Circus tents, convective thresholds and the non-linear climate response to tropical SSTs
(Winner of an Outstanding Early Career Presentation Award)
- **ECS & Cloud Feedbacks Virtual Symposium** Talk
Circus tents, convective thresholds and the non-linear climate response to tropical SSTs
- **4th biennial workshop on the regional climate response to aerosol** Talk
Understanding the dependence of fast changes in global and local precipitation on the geographical location of absorbing aerosol

2022

- **AGU Fall Meeting** Talk
Circus tents, convective thresholds, and the non-linear climate response to tropical SSTs
- **NOAA GFDL** Invited talk
Strong control of effective radiative forcing by the spatial pattern of absorbing aerosol
- **Princeton University** Invited talk
Circus tents, convective thresholds, and the non-linear climate response to tropical SSTs
- **Yale University** Invited talk
Non-linearities in the pattern effect explained by a convective threshold
- **3rd Pan-GASS Meeting, Monterey** Poster
Impact of warm-rain suppression on the climate of a mock-Walker circulation
- **TU Delft** Invited talk
Clouds, aerosols and the global circulation
- **2nd Workshop on Cloud Organization, Utrecht** Poster
Aerosol-cloud-circulation interactions in cloud-resolving simulations with an imposed SST gradient
- **CLIVAR Pattern Effect Workshop** Poster
SST Green's Functions for regional precipitation
- **EGU General Assembly Meeting** Invited talk
Strong control of effective radiative forcing and precipitation by the spatial pattern of absorbing aerosol
(Winner of an Outstanding Student Presentation Award)

2021

- **AGU Fall Meeting** Talk
Contrasting Seasonal Response of Northern Hemisphere Precipitation Extremes to Climate Change
(Winner of an Outstanding Student Presentation Award)
- **AGU Fall Meeting** Poster
Understanding the “pattern effect” of absorbing aerosol

2019

- **EGU General Assembly Meeting** Poster
Optimizing the number of convective plumes in EDMF cloud parameterization schemes using high-resolution LES simulations

TEACHING

- Mentoring of a GFDL summer intern** 2024-present
Training and mentoring of a student from University of Puerto Rico at Mayagüez, working on the response of rainfall extremes to CO₂. I have continued meeting with the student to support them as they progress through graduate school.

Guest Lecturer, Colorado State University	2024
<i>Gave a guest lecture on non-linear aspects of Earth's energy balance</i>	
Guest Lecturer, City University of New York	2023
<i>Gave a guest lecture on basic aspects of Earth's atmospheric circulation</i>	
Supervision of an Oxford Masters' student	2022-2023
<i>Day-to-day supervision of a Master's student studying the response of regional precipitation to SST anomalies</i>	
Teaching Assistant: Atmospheric Physics Master's Course	2020-2022
<i>Marked homework assignments and provided weekly feedback on students' work.</i>	
Lecturer / Course Lead	2020-2023
<i>Designed and delivered a course for first-year PhD students on modeling the global-mean climate using energy balance models. Delivered blackboard lectures and interactive Python coding demonstrations.</i>	

DIVERSITY & OUTREACH EFFORTS

Climate Up Close (climateupclose.org)	2024 – present
Small team of climate scientists committed to making the essentials of climate science accessible to a broad audience through public lectures, Q&A sessions and demos.	
Harlem StreetSquash volunteer	2023 – 2024
Providing weekly math and physics tuition to students and young adults in Harlem, with the aim to ensure all participants graduate from high school, enroll in and complete a post-secondary program, and gain meaningful employment. I also assist in running weekly squash training sessions for the students.	
GFDL Diversity, Equity, Inclusion & Accessibility Committee	2023 – 2025
Development and execution of DEIA efforts to monitor and enhance lab culture and community at GFDL. Activities included: outreach efforts with minority serving institutions, organizing community events to promote wellness and community within the lab and promoting diversity in hiring practices at all levels of the lab.	
AOPP Equality, Diversity & Inclusion Committee	2020 – 2023
Organized the department's first student-led EDI group, which aims to develop and sustain a diverse, inclusive, and equitable academic environment and community. Activities included: collecting demographic data on student applicants to inform access efforts, setting up a community EDI library and arranging accessible coffee breaks and social events for the department.	
PhD mentoring scheme	2021 – 2023
Developed a mentoring scheme which matches incoming PhD students with a postdoc or more senior PhD student who can provide advice on adjusting to graduate study at Oxford. Scheme was trialed at a small-scale before being rolled out across the entire Oxford Physics department.	
Oxford Sparks	2020 – 2021
Recorded an outreach video about clouds which has reached over 150,000 people across social media.	

Seren Hub	2016 – 2023
Provided interview practice and entrance exam help for Welsh students from disadvantaged backgrounds who want to study Physics or Mathematics at university.	

ACADEMIC SERVICE

Peer reviewer for *Nature*, *Nature Geoscience*, *Nature Climate Change*, *npj Climate and Atmospheric Science*, *Journal of Climate*, *Journal of Advances in Modeling Earth Systems*, *Scientific Reports*, *Atmospheric Chemistry and Physics*, *Geophysical Research Letters*, *Geoscientific Model Development*.

Proposal Reviewer for *NSF-AGS* and *Department of Energy*.

Session Convener 2025-present
“*Climate Sensitivity, Radiative Feedbacks and the Pattern Effect*” at the *EGU General Assembly Meeting*

Organizing Committee - CFMIP 2024 2024
CFMIP conference 2024, Boston College // [*website link*](#)

Organizing Committee 2023-present
GFDL’s Climate Sensitivity Journal Club

Steering Committee 2023-present
Climate Sensitivity & Cloud Feedback Virtual Symposium // [*website link*](#)

Session chair 2022
Chair of session on “Absorbing Aerosols: Experiments, Observations, and Modelling” at the EGU General Assembly Meeting 2022

Policy briefing Nov-Dec 2020
Commissioned by Shadow Secretary for Health and Social Care to research the intersection between ‘Pandemics and Climate Change’. Findings were written in a [*white paper*](#) *and presented to the Government.*