

# ANDREW I.L. WILLIAMS

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## EDUCATION

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<b>University of Oxford</b> DPhil (PhD) in Climate Physics	<i>October 2019 - July 2023</i> Advisor: Philip Stier
<b>University of Oxford</b> Masters degree in Physics	<i>October 2015 - June 2019</i> Classification: 1 <sup>st</sup>

## EMPLOYMENT

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<b>Postdoctoral Research Associate</b> Princeton University & NOAA GFDL	August 2023 - present
<b>Visiting Researcher</b> TU Delft	June 2022 - July 2022
<b>Visiting Researcher</b> Max Planck Institute for Meteorology	April 2022 - May 2022
<b>Research Associate</b> Massachusetts Institute of Technology	June 2019 - January 2020
<b>Summer Undergraduate Research Fellow</b> California Institute of Technology	Summer 2018

## AWARDS

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<b>Outstanding Early Career Presentation Award</b> CFMIP-GASS meeting, Paris	2023
<b>CIMES Postdoctoral Fellowship</b> Princeton University	2023-2025
<b>NOAA Climate &amp; Global Change Postdoctoral Fellowship (declined)</b> Yale University	2023-2025
<b>Outstanding Student and PhD candidate Presentation Award</b> EGU	2022
<b>Outstanding Student Presentation Award</b> AGU Fall Meeting	2022
<b>NERC PhD Studentship</b> Awarded fully funded place on NERC Environmental Research Doctoral Programme at the University of Oxford, covering tuition, stipend and research grant (Approx. £100,000).	2019-2023
<b>Laidlaw Research and Leadership Scholarship</b> Awarded £10,000 to fund research at MIT with Prof. Paul O’Gorman.	2019
<b>Caltech Summer Undergraduate Research Fellowship</b> Awarded \$8,000 to fund research at Caltech with Prof. Tapio Schneider.	2018

**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**

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**in preparation**

Risi, C. & co-authors including Williams, A. I. L.: Temperature lapse rate in the tropical and subtropical troposphere and along mountain slopes: present, past, future

Herbert, R. J., Williams, A. I. L., Weiss, P., Klocke, D. & Stier, P.: Isolating aerosol-climate interactions in global storm-resolving simulations

Williams, A. I. L., Wang, J. & Watson-Parris, D.: Exploring the sensitivity of regional precipitation to SSTs using a linear Green's function approach

Williams, A. I. L. & Gregory, J. M.: Sea-surface warming patterns capture inter-model spread in atmospheric radiative cooling, but not hydrological sensitivity

**submitted/in review**

Dagan, G., Yeheskel, N. & Williams, A. I. L.: Enhanced radiative forcing from aerosol-cloud interactions due to large-scale circulation adjustments  
*Nature Geoscience*

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*

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*

**2023**

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*  
[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

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### 2024

**Hebrew University of Jerusalem (upcoming)** **Invited 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

## DIVERSITY & OUTREACH EFFORTS

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**Climate Up Close ([climateupclose.org](https://climateupclose.org))** 2024 – present  
Part of a 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.

**Outreach lecture - CUNY Graduate Centre** 2023  
'A brief introduction to atmospheric circulation - what does it look like, and why?'

**Harlem StreetSquash volunteer** 2023 – present  
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 – present  
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

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

**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  
*ECS & cloud feedback virtual symposia* // [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.*

## TEACHING

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**Co-supervision of a Masters Thesis** 2022-2023  
*Day-to-day supervision of a Master's student studying the response of regional precipitation to SST anomalies*

**Teaching Assistant: Atmospheric Physics Master's Course** 2020-2022  
*Marked homework assignments and provided feedback on students' work*

**Workshop lead**

2020-2023

*Leader of a yearly workshop for first-year PhD students on modelling the global-mean climate using energy balance models.*

**HOBBIES**

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**Music**

Self-taught, grade eight-level guitarist with a speciality in rock and blues.

**Sports**

Squash / long-distance cycling / running