MATHILDE RITMAN

University of Oxford, Department of Physics
Email: mathilde.ritman@physics.ox.ac.uk — **Citizenship:** Australia

EDUCATION

University of Oxford Oct 2023 – Present
DPhil (PhD) in Atmospheric, Oceanic and Planetary Physics *Advisor: Philip Stier*

Monash University 2022
Bachelor of Science (Honours) in Applied Mathematics *First Class Honours*

University of Melbourne 2021
Bachelor of Science in Atmospheric Sciences *First Class Honours*

University of Melbourne 2021
Diploma in Mathematical Sciences *First Class Honours*

PROFESSIONAL EXPERIENCE

Australian Bureau of Meteorology Mar 2021 – Jul 2023
Climate and Data Scientist (Public Service Level 5) *Dec 2022 – Jul 2023*

— Conducted and translated climate risk research into regional climate change assessments, in-country development workshops, training for meteorologists, parliamentary briefings, factsheets, and a short video.
— Developed deep learning models to forecast solar irradiance, for the Australian Energy Market Operator.

Climate Scientist (Public Service Level 4) *Jul 2021 – Dec 2022*

— Led assessment of past and projected future flood risk in 11 Pacific Small Island Developing States.

Climate Science Internship *Mar – Jul 2021*

— Collaborated with the Tuvalu and Cook Islands' meteorological agencies to assess changing flood risk.

Commonwealth Scientific and Industrial Research Organisation Nov 2020 – Mar 2021
Undergraduate Studentship

— Technical lead on AI-driven satellite assessments of forest fire risk, to replace manual methods.

RESEARCH EXPERIENCE

Colorado State University Oct – Nov 2025 & Aug 2026
Visiting Researcher — Assessed representation of convective clouds in different models. *Advisor: Susan van den Heever*

Oxford Sustainable Development Goals Impact Lab Jan – Jun 2025
Research Fellow — Developed Oxford City Football Club's sustainability agenda.

Monash University Dec 2022 – Jul 2023
Research Assistant — Improved remote sensing of clouds using AI. *Advisor: Steven Siems & Caroline Poulsen*

University of Melbourne Mar 2021 – Feb 2022
Research Assistant — Studied changes in regional drought. *Advisor: Linden Ashcroft*

University of Melbourne Mar – Jul 2020
Undergraduate Research Project — Mathematics for novel theories in data assimilation. *Advisor: Craig Bishop*

Australian Research Council (ARC) Centre of Excellence for Climate Extremes Jun – Dec 2019
Undergraduate Research Scholar — Studied causes of a past extreme drought. *Advisor: Linden Ashcroft*

GRANTS & FUNDING

MAJOR AWARDS

General Sir John Monash Scholarship ($230,000 AUD) 2023–2026
General Sir John Monash Foundation

Oxford-Richards Graduate Scholarship (£62,155) 2023–2026
Wadham College, University of Oxford

Australian Rhodes Scholarship Finalist 2023
Rhodes Trust

MINOR AWARDS

Rupert Ford Travel Award (£2,000) 2026
Royal Meteorological Society

Pollard Grant for Research Activities (£1,000 total of three awards) 2024, 2025 & 2026
Wadham College, University of Oxford

Keeley Senior Scholar (£500) 2023/24
Wadham College, University of Oxford

Graduate Research Scholarship ($7,500 AUD) 2022
ARC Centre of Excellence for Climate Extremes

Undergraduate Research Scholarship ($2,000 AUD) 2019
Australian Mathematical Society Institute (declined)

Undergraduate Research Scholarship ($3,800 AUD) 2019
ARC Centre of Excellence for Climate Extremes

ACHIEVEMENT AWARDS

Highly Commended, Vice-Chancellor's Research Culture Award 2026
University of Oxford

Best Student Paper Award 2022
Journal of Southern Hemisphere Earth System Science

Dean's Honours List 2021
University of Melbourne

PUBLICATIONS

SUBMITTED

— M. Ritman, W. Jones, G. Leung, F. Senf, S. van den Heever, and P. Stier (2026). "Does greater convective mass flux lead to thicker or thinner anvil clouds?"
Geophysical Research Letters

— M. Sela, M. Ritman, S. De, and P. Stier (2026). "Aerosols perturb mixed-phase microphysics and anvil radiative effects in deep convection"
Atmospheric Chemistry and Physics

PUBLISHED

— M. Ritman, W. Jones, and P. Stier (2026). "Convective controls on anvil cloud evolution in the ICON km-scale global climate model"
Atmospheric Chemistry and Physics
10.5194/egusphere-2026-580

— L. Ashcroft, M. Ritman, H. Bridgman, K. Thornton, G. Di Gravio, W. Oates, R. Belfield, and E. Belfield (2025). "A climatology of meteorological droughts in New England, Australia, 1880–2022"
Journal of Southern Hemisphere Earth Systems Science
10.1071/ES25013

— S. McGree, G. Smith, E. Chandler, N. Harold, Z. Begg, Y. Kuleshov, P. Malsale, and M. Ritman (2023). Climate change in the Pacific 2022: historical and recent variability, extremes and change

— M. Ritman, B. Hague, T. Katea, T. Vaaia, A. Ngari, G. Smith, D. Jones, and L. Tolu (2022). "Past and future coastal flooding in Pacific Small-Island Nations: insights from the Pacific Sea Level and Geodetic Monitoring (PSLGM) Project tide gauges"
Journal of Southern Hemisphere Earth Systems Science
10.1071/ES22023

— M. Ritman and L. Ashcroft (2020). "Revisiting the 1888 Centennial Drought"
Proceedings of the Royal Society of Victoria
10.1071/RS20004

LEADERSHIP, CULTURE, & CHANGE

Founder and Interim Lead 2026
EarthCARE Early Career Scientist Network — visit webpage

Founder and 2026 Co-Chair 2026
UK Early Career Cloud Physics Group — visit webpage

Founder and 2026 Co-Convener Oxford, 19–20 March 2026
UK Early Career Cloud Physics Group Symposium (inaugural)

Outreach Presenter 2026
Wadham College, University of Oxford

Co-Founder and 2024/25 President 2024/25
Atmospheric, Oceanic and Planetary Physics Postgraduate and Postdoctoral Society

Regular Contributor 2023 – present
Equality, Diversity and Inclusion Committee, sub-department of Atmospheric, Oceanic and Planetary Physics

Creator and 2023 Facilitator 2023
Australian Meteorological and Oceanographic Society Peer Mentoring Program

Mentor and Invited Speaker 2022
Gender Equity in Mathematics, Monash University

TEACHING

Tutorial Facilitator 2026
Vice-Chancellor's Colloquium on Climate, University of Oxford

Graduate Study Advisor 2024/25
Wadham College, University of Oxford

Tutorial Facilitator and Creator Invited, 2023
Monash 1st Workshop on Deep Learning Algorithms for Space Research and Data Imaging

SERVICE

Reviewer
Atmospheric Chemistry and Physics, Nature Geoscience

Professional Memberships
European Geophysical Union, Royal Meteorological Society, Australian Meteorological and Oceanographic Society

Discussion Moderator Vienna, April 2026
Pre-EGU Ice Cloud Workshop

Discussion Moderator Colorado, US, November 2025
INCUS 2025 Science Team Meeting

Student Representative 2024/25
Sub-department of Atmospheric, Oceanic and Planetary Physics

Committee Member 2022–2023
Australian Meteorological and Oceanographic Society Victorian Chapter

Committee Member 2021
Earth Sciences Postgraduate Group, University of Melbourne

Elected Committee Member 2019
Student Union Environment Department, University of Melbourne

Elected President 2018
Animal Protection Society, University of Melbourne

PRESENTATIONS

SEMINARS

— **Imperial College London** Invited, 2026
Understanding cloud-climate feedbacks using next-generation models and observations

— **AfriClimate AI** Invited, 2026
Understanding cloud-climate feedbacks using next-generation models and observations

— **Monash University** 2026
Understanding cloud-climate feedbacks using next-generation models and observations

— **Colorado State University** 2025
Convective controls on anvil area and thickness in analytical and km-scale models

— **Monash University** 2024
Convective controls on anvil cloud evolution
— **University of Melbourne** 2024
Convective controls on anvil cloud evolution

CONFERENCE PRESENTATIONS

— **INCUS 2026 Science Team Meeting** Invited Talk, 2026
How early convective development shapes anvil cloud properties as seen by EarthCARE
— **EarthCARE 2026 Science and Validation Workshop** Talk, 2026
Linking anvil spreading and opacity to convection in EarthCARE
— **EGU General Assembly** Talk, 2026
Convective controls on anvil area and thickness in analytical and km-scale models
— **INCUS 2025 Science Team Meeting** Talk, 2025
Convective controls on anvil area and thickness in analytical and km-scale models
— **Gordon Research Conference (GRC) on Radiation and Climate** Invited Talk, 2025
Convective controls on anvil area and thickness in analytical and km-scale models
— **Gordon Research Seminar (GRS) on Radiation and Climate** Talk, 2025
Convective controls on anvil area and thickness in analytical and km-scale models
— **Climate Feedback Model Intercomparison Project (CFMIP)** Poster, 2025
Convective controls on anvil cloud evolution
— **EGU General Assembly** Poster, 2025
Convective controls on anvil cloud evolution
— **ESA-ECMWF Workshop on AI for Earth Observation and Prediction** Talk, 2024
Detecting Multi-layer Cloud Systems in Himawari-8/9 Using Deep Learning
— **Australian Meteorological and Oceanographic Society Conference** Talk, 2022
Detecting Multi-layer Cloud Systems in Himawari-8/9 Using Deep Learning
— **Australasian Fire and Emergency Services Conference** Talk, 2022
Towards affordable, dynamic and large-scale fuel hazard assessment in Australia using space-borne LiDAR
— **Australasian Fire and Emergency Services Conference** Poster, 2022
Swimming in the street: the emergence of “sunny-day” flooding in Pacific Small-Island Nations