

# Professor Paul D. Williams

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## Employment

- 2023– **Athena Research Center, Greece**
- Adjunct Professor, Environmental and Networking Technologies and Applications (ENTA) Unit (2023–)
- 2003– **University of Reading, UK**
- Weather Research Division Leader; responsible for leading a division of 30 weather researchers (2019–25)
  - Professor of Atmospheric Science (2017–)
  - Associate Professor (2011–17)
  - Royal Society University Research Fellow (2009–17)
  - Natural Environment Research Council (NERC) Fellow (2006–09)
  - Post-Doctoral Research Associate (2003–06)
- 1999–03 **University of Oxford, UK**
- Senior Graduate Warden, Brasenose College; responsible for student welfare and enforcement of rules (2002–03)
  - Lodge Porter, Lincoln College; responsible for security, medical and fire emergencies, assisting visitors (1999–00)
  - Receptionist, Mitre Hotel; responsible for room bookings, assisting guests, handling check-in and check-out (1999)

## Education and Qualifications

- 1999–03 **Balliol College, University of Oxford**
- DPhil in Atmospheric, Oceanic and Planetary Physics (2003)
  - Thesis title: *Nonlinear interactions of fast and slow modes in rotating, stratified fluid flows*
  - Supervisors: Peter L. Read and Thomas W. N. Haine
- 1995–99 **Lincoln College, University of Oxford**
- First-class MPhys in Physics (1999); ranked in top 5% of university cohort in Prelims and top 10% in Finals
  - Major options in *Physics of Atmospheres and Oceans* and *Theoretical Physics*; minor option in *Chaos*
  - *Learning Physics* module, Department of Educational Studies (1997)
- 1993–95 **Durham Johnston Comprehensive School**
- A-levels with grade A in Physics, Mathematics, and Further Mathematics (1995)
  - A-level Special Papers with distinctions in Physics and Mathematics (1995)
- 1988–93 **Shotton Hall Comprehensive School**
- 10 GCSEs (1993)
  - Deputy Head Boy (1992–93)

## Academic Prizes

- 2022 Times Higher Education Awards: STEM Research Project of the Year (winner)
- 2019 Advances in Atmospheric Sciences (AAS) Esteemed Paper Prize (first prize; ¥6,000)
- 2018 NERC Impact Awards: Societal Impact Award (runner-up; £5,000)
- 2018 University of Reading: Research Engagement and Impact Awards (winner of “influence” category)
- 2018 UK Fluids Network: Photo and Video Competition #4 (photo competition winner; £200)
- 2018 Reading University Students’ Union (RUSU) Excellence Awards: Teaching Excellence Award (Science) (nominated)
- 2014 Times Higher Education Awards: Research Project of the Year (short-listed)
- 2014 University of Reading: Inaugural M. A. Ward Memorial Fund Public Communications Prize (first prize; £1,000)
- 2013 Institute of Mathematics and its Applications: 50th anniversary essay competition (overall winner; iPad)
- 2013 NCAS Staff Meeting: Best poster competition (overall winner out of 84 posters presented; £40)
- 2012 Leverhulme Trust: Philip Leverhulme Prize in Earth, Ocean and Atmospheric Sciences (£70,000)
- 2012 Royal Meteorological Society: Michael Hunt Award for excellence in science communication (£600)

- 2010 The Sunday Times: named as one of “the best young scientists working in Britain today”
- 2009 Royal Meteorological Society: IBM Award for Meteorological Innovation that Matters (highly commended)
- 2008 British Science Association: Perspectives competition (finalist)
- 2008 The Observer: named as one of the “greatest talents in the UK”
- 2007 National Endowment for Science, Technology and the Arts (NESTA): Crucible Fellowship
- 2005 Royal Meteorological Society: Rupert Ford Travel Award (for “outstanding young scientists”; £2,760)
- 2004 Royal Astronomical Society: Blackwell Prize for the best UK doctoral thesis in atmospheric physics (£1,000)
- 2003 Daily Telegraph: Science Writer Awards (highly commended)
- 2002 University of Oxford: Vice-Chancellors’ Fund Award (£500)
- 2002 New Scientist: Science Essay Competition (finalist)
- 1998–99 Lincoln College, University of Oxford: elected to a Scholarship (£200)
- 1997–98 Lincoln College, University of Oxford: elected to a Scholarship (£200)
- 1996–97 Lincoln College, University of Oxford: elected to an Exhibition (£100)
- 1995 Durham Johnston Comprehensive School: J. J. Egglshaw Prize for Mathematics
- 1993 Shotton Hall Comprehensive School: Sutherland Trophy for Music

## Editorships

- 2022–24 Founding Advisory Board Member, F1000Research Climate Gateway
- 2021–25 Founding Editor-in-Chief, *Meteorology*
- 2021–23 Editorial Board Member, *Atmosphere*
- 2019–24 Editor, Royal Meteorological Society (RMetS) Book Series, *Developments in Weather and Climate Science*
- 2010–18 Editor, *Geophysical Research Letters* (handling over 400 papers annually in atmospheric science and climate)
- 2011–16 Editorial Board Member, *Philosophical Transactions of the Royal Society A*
- 2016–18 Founding Advisory Board Member, *Dynamics and Statistics of the Climate System* (OUP)

## Research Funding Awarded

- 2023–26 Co-I, Leverhulme Research Project Grant: *A new diagnostic for fluid flow instability and turbulence generation* (£292,795)
- 2023–26 Co-I, EU Horizon Europe Single European Sky ATM Research (SESAR) 3 Joint Undertaking: *AEROPLANE* (€1,144,545)
- 2022–25 Co-I, NERC Standard Grant: *Improving understanding and diagnosis of jet-stream turbulence* (£770,486)
- 2019–20 PI, Heathrow Airport Centre of Excellence: *Airport infrastructure requirements for electrical propulsion systems* (£43,200)
- 2014–17 PI, Royal Society URF renewal: *Numerical and parametric errors in weather and climate models* (£343,588)
- 2016–17 Co-I, NERC Technology Proof of Concept: *Volcanic balloon-borne laboratory* (£168,029)
- 2014–15 Co-I, NERC Impact Accelerator Award: Knowledge Exchange Fellowship (£20,586)
- 2009–14 PI, Royal Society URF: *Improving predictive climate models through stochastic parameterization* (£555,926)
- 2011–13 PI, Royal Society Research Grant: *New insights into atmospheric turbulence* (£49,050)
- 2013 PI, RAS Tomkins Instrumentation Grant: *Balloon-borne measurements of thunderstorm electricity* (£300)
- 2006–09 PI, NERC Fellowship: *The role of unresolved processes in climate and climate change* (£256,190)
- 2009 PI, Nuffield Foundation Undergraduate Bursary: *Atmospheric flow transitions under the influence of noise* (£1,440)

## Teaching

- 2006–2024 Convenor, BSc Part II module *Numerical Methods for Environmental Science*, Reading (lectures, classes, assessment)
- 2024 Guest lecture, *Atmospheric Hazards* undergraduate class, Department of Geography, University of Georgia, USA
- 2023 Guest lecture, *Aviation Meteorology* undergraduate class, State University of New York (SUNY) at Oswego, USA
- 2022 Guest lecture, *Atmospheric Hazards* undergraduate class, Department of Geography, University of Georgia, USA
- 2022–23 MSc Team Project Supervisor, *Atmospheric turbulence and aviation*
- 2022–23 Academic Tutor to two MSc students
- 2021–22 MSc Team Project Supervisor, *Why was 2021 not very windy in Europe?*
- 2021 My PhD student Cathie Wells featured as “Research Success” in University of Reading Postgraduate Prospectus 2022
- 2021–22 Academic Tutor to four MSc students
- 2021 Provided video content for International Study and Language Institute (ISLI) Pre-Sessional English (PSE) course
- 2020 Guest lecture, MSc module *Climate Services and Climate Impact Modelling*, Reading
- 2020 Featured in the SMPCS *Teaching and Learning Good Practice Guide*, after receiving very high student feedback
- 2019 Invited speaker, Short Course, *Science communication on hard mode*, EGU General Assembly, Vienna
- 2018–19 Academic Tutor to four MSc students
- 2017–19 Co-presenter, Weather and Climate Discussion (WCD), BSc Part III and MSc module *General Studies*, Reading
- 2007 private tuition in A-level Physics (30 contact hours)
- 2002 BA/MPhys first-year tutorials in electromagnetism and mathematics, Lincoln College Oxford

2000 BA/MPhys third-year tutorials in condensed-matter physics, Lincoln College Oxford  
 1997 Part-time physics teacher, Wesley Green Middle School, Blackbird Leys, Oxford

## Supervision

2024 Chaoyue Lin (MSc): *Evaluating climate-induced changes in lightning properties*  
 2023 Hilary Yu (MSc): *The influence of wind speed on aircraft flight times*  
 2022–25 Isabelle (Izzi) Ariail (PhD): *Climate change and energy system reliability*  
 2022 Kuan Li (MSc): *Is there clear-air turbulence on Mars?*  
 2022 Philippe Veerabadren (MSc): *How important is horizontal wind shear as a source of clear-air turbulence?*  
 2021–22 Beining Guo (BSc): *Is horizontal wind shear an important source of clear-air turbulence?*  
 2020–23 Isabel Smith (PhD): *Using high-resolution climate models to predict increases in atmospheric turbulence*  
 2020–21 Lu Jiang (BSc): *A new Richardson number diagnostic for clear-air turbulence*  
 2018–22 Cathie Wells (MRes/PhD): *Reformulating aircraft routing algorithms to improve flight routes*  
 2018–21 Mark Prosser (PhD): *Using aviation meteorology to improve aircraft safety*  
 2018–21 Niraj Agarwal (PhD): *Data-driven reduced order modelling of multiscale oceanic variability*  
 2019–20 Rachel Cheyne (BSc): *Does ENSO affect global clear-air turbulence?*  
 2019 Caitlin Rixey (MSc): *Trends in the Northern Hemisphere jet stream at aircraft cruising altitudes*  
 2018 Lauren Hopkinson (MSc): *Aviation impacts of African smoke emissions over the tropical Atlantic*  
 2017–21 Rhys Thompson (MRes/PhD): *Diffusion models of Earth's outer radiation belt using stochastic parameterisations*  
 2017–18 Leonardo Ripoli (MRes): *Constructing parameterisations for GFD systems: a comparative approach*  
 2017–18 Simon Lee (MMet): *Jet stream trends in the upper atmosphere*  
 2016–17 Martin Airey (PDRA): *Volcanic balloon-borne laboratory*  
 2016–17 Treve Nicol (BSc): *Vibrating wire collector for in-cloud sampling*  
 2016 Hannifer Ha (MSc): *An investigation of turbulent coherent structures at Hong Kong International Airport*  
 2015–18 Luke Storer (PhD): *Multi-model ensemble predictions of atmospheric turbulence*  
 2014–17 Alastair Gregory (PhD): *Multilevel ensemble prediction of weather and climate*  
 2013–15 Nicola Howe (PDRA): *Stochastic parameterisation in physical oceanography*  
 2012–15 Graeme Marlton (PhD): *Comparison of radiosonde observations of turbulence with model predictions*  
 2010–13 Julie Chenery (MPhil): *Stochastic eddy mixing schemes in ocean models*  
 2011 Christopher Kelsall (MSc): *Organised jet formation in rotating fluids*  
 2006–11 Tom Jacoby (DPhil): *Inertia-gravity wave generation by boundary layer instabilities*  
 2006–10 Judy Simpson (DPhil): *Finite dimensional dynamics in baroclinic chaos*  
 2010 Rob Smith (MSc): *Minimising time-stepping errors in numerical models of the atmosphere and ocean*  
 2009 Luke Boxall (BSc vacation project): *Atmospheric flow transitions under the influence of noise*

## Doctoral Theses Examined

2024 Mohamed Foudad, U. Toulouse: *Impact du changement climatique sur la turbulence en ciel clair pour l'aviation* (external)  
 2019 Muhamad Najib Zakaria, U. Leeds: *Staggered finite-difference wave solutions in domains with boundaries* (external)  
 2019 Holly Turner, U. Reading: *Wind profile and boundary layer effects on orographic gravity wave drag* (internal)  
 2018 Kashyapa Naren Athreyas, NTU Singapore: *Gravity waves generated by thunderstorms* (external)  
 2018 Eoghan Harney, University College Dublin: *Laplace transform integration scheme in atmospheric models* (external)  
 2018 James Shaw, U. Reading: *Numerical representation of mountains in atmospheric models* (internal)  
 2017 Maria Vittoria Guarino, U. Reading: *Mountain wave breaking in atmospheric flows with directional wind shear* (internal)  
 2015 Simon Thomas, U. Reading: *On the heliospheric modulation of galactic cosmic rays* (internal)  
 2014 Angus Ferraro, U. Reading: *Atmospheric responses to geoengineering in the stratosphere* (internal)  
 2012 Flora MacTavish, Imperial College London: *The application of adaptive mesh techniques in oceanography* (external)

## PhD Monitoring Committees

2023–26 Karan Ruparell: *Improving river streamflow forecasts using deep learning techniques* (chair)  
 2022–25 Vibha Selvaratnam: *Utilising higher-resolution NWP data to drive atmospheric dispersion models*  
 2020–23 Mohamed Foudad: *The impact of climate change on clear-air turbulence for aviation* (CERFACS, Toulouse, France)  
 2020–23 Blair McGinness: *Venus ionised droplet investigations* (chair)  
 2019–22 Shammi Akhter: *Controls on the track and intensity of tropical cyclones in the Bay of Bengal*  
 2016–19 Andrea Gabrielski: *Diabatic heating and tropical circulation* (chair)  
 2015–18 Holly Turner: *Wind profile effects on gravity wave drag and their impact on the global atmospheric circulation*  
 2014–17 James Shaw: *Numerical representation of mountains in atmospheric models* (chair)  
 2013–16 Maria Vittoria Guarino: *Mountain wave breaking in atmospheric flows*

- 2011–14 Simon Thomas: *Long-term solar variability inferred from cosmic ray records* (chair)  
 2010–13 Angus Ferraro: *The impact of potential geo-engineering schemes*

### Learned Societies

- 2011– Fellow of the Institute of Mathematics and its Applications (FIMA)  
 2011– Fellow of the Higher Education Academy (FHEA)  
 2010– Fellow of the Institute of Physics (FInstP)  
 2008– Fellow of the Royal Meteorological Society (FRMetS)  
 2004–23 Fellow of the Royal Astronomical Society (FRAS)  
 2009– Member of the American Meteorological Society  
 2004– Member of the American Geophysical Union  
 2004– Member of the European Geosciences Union

### Committee Membership

- 2024–25 Member, Selection Committee, AGU Athelstan Spilhaus Award for Public Engagement with Earth and Space Sciences  
 2023– Nominated delegate, EASA European Network on the Impact of Climate Change on Aviation (EN-ICCA)  
 2023–24 Chair, UoR Committee for Research in the Walker Institute, Meteorology, Environmental Sciences, NCAS, and NCEO  
 2023–25 Member, UoR Met Office Academic Partnership (MOAP) Advisory Group  
 2023– Member, UoR Department of Meteorology Hub for Applied Weather and Climate Research (HAWCR) Steering Group  
 2024–28 School Governor, The Palmer Primary Academy, Reading  
 2021–22 Member, UoR SMPCS Personal Titles committee  
 2021– Member, UoR Committee for Research in the Walker Institute, Meteorology, Environmental Sciences, NCAS, and NCEO  
 2021– Member, UoR SMPCS Wellbeing, Inclusion, Diversity, and Equality (WIDE) Committee  
 2021– Member, UoR SMPCS Athena SWAN Self-Assessment Team  
 2019–23 Senator, University of Reading Senate  
 2018– Member, American Geophysical Union (AGU) Nonlinear Geophysics Focus Group (NG) Executive Committee  
 2018–21 Member, Selection Committee, AGU Robert C. Cowen Award for Sustained Achievement in Science Journalism  
 2017 Member, American Physical Society (APS) Topical Group on the Physics of Climate (GPC) Nominating Committee  
 2016 Member, Research Fellowship Internal Review Panel, University of Reading  
 2013–14 Member, Royal Society Equality and Diversity Advisory Network (EDAN) Research Fellows Panel  
 2011–13 Expert Reviewer, Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5)  
 2012– Member, RMetS Weather And Music Special Interest Group (2012–) and Steering Committee (2015–)  
 2012 Invited participant, roundtable discussion for Royal Society report on Science as an Open Enterprise  
 2009–12 Honorary Secretary, Institute of Physics Environmental Physics Group  
 2004–09 Ordinary Member, Institute of Physics Environmental Physics Group  
 2008–10 Member, American Geophysical Union Books Board  
 1998–99 Environment Officer, Junior Common Room, Lincoln College, University of Oxford

### Advisory Board Membership for Major Research Programmes

- 2019–22 External Advisory Board member, NEANIAS project, a €5.6m Horizon 2020 consortium of 20 partners from 9 countries

### Funding Agency Panel Membership

- 2018–21 Member, European Science Foundation (ESF) College of Expert Reviewers  
 2017–19 Member, UK National Academies' Global Challenges Research Fund (GCRF) Networking Grants Review Panel  
 2013–18 Member, Royal Society Newton International Fellowship Panel

### Grant Applications Reviewed

- 2022 Swiss National Science Foundation (SNSF) grant  
 2021 French National Research Agency (ANR) grant  
 2021 ETH Zurich Research Grant  
 2020 Engineering and Physical Sciences Research Council (EPSRC) Standard Grant  
 2020 German Academic Exchange Service (DAAD) Short-Term Research Grant  
 2019 External Evaluator, European Research Council (ERC) Earth System Science Panel (PE10) Starting Grant  
 2019 Netherlands Organisation for Scientific Research (NWO) Veni Grant

2019 Belgian public research council (FWO) Postdoctoral Fellowship  
 2010 US National Science Foundation (NSF) Collaborative Proposal  
 2007 Royal Society of New Zealand (RSNZ) Marsden Fund Standard Grant  
 2006 Natural Environment Research Council (NERC) Knowledge Transfer Grant

### Book Proposals Reviewed

2021 A Course on Turbulence Dynamics in Real Flows (Wiley)  
 2020 Long-term Changes of the Earth's Climate (Elsevier)  
 2020 Hydroclimatic Extremes in the Middle East and North Africa (Elsevier)  
 2017 GeoMath: Vital Mathematical Methods for Earth Sciences (IOP Publishing)  
 2011 Mathematics and Climate (Society for Industrial and Applied Mathematics; SIAM)  
 2010 Principles of Environmental Physics (4th edition; Elsevier)

### Independent External Assessor for Promotion Applications

2024 Promotion to Associate Professor, Murdoch University, Australia  
 2021 Promotion to Associate Professor, University of Colorado, Boulder  
 2021 Promotion to Full Professor, University of Bristol  
 2019 Promotion to Full Professor, University of Pittsburgh

### Scientific Meetings Organised

2024 Co-convenor and chair, Aviation Meteorology and the use of UAS for Atmospheric Sciences, EGU General Assembly, Vienna  
 2022–23 Scientific Committee, RMetS/NCAS Atmospheric Science Conference, Manchester and online  
 2022 Convenor, Stochastic Approaches to Predicting and Understanding the Earth System, AGU Fall Meeting, Chicago  
 2022 Scientific Advisory Committee, Isaac Newton Institute satellite programme on Geophysical Fluid Dynamics, Reading  
 2022 Co-convenor, Nonlinear Dynamics and Tipping Points in the Earth System, EGU General Assembly, Vienna  
 2021 Convenor, Stochastic Approaches, Machine Learning, and Data Assimilation, AGU Fall Meeting (online)  
 2021 Co-convenor, Nonlinear Multiscale and Stochastic Dynamics of the Earth System, EGU General Assembly (online)  
 2021 Co-convenor, Aviation Meteorology And Nowcasting: Observations and Models, EGU General Assembly (online)  
 2020 Convenor, When We Don't Know Everything: Stochastic Approaches and Complexity, AGU Fall Meeting (online)  
 2020 Co-convenor, Nonlinear and Stochastic Dynamics of the Earth System, EGU General Assembly (online)  
 2019 Primary convenor, Numerical and Analytic Techniques for Modeling Multiscale Systems, AGU Fall Meeting, San Francisco  
 2019 Co-convenor, Nonlinear and Stochastic Dynamics of the Earth System, EGU General Assembly, Vienna  
 2018 Organising committee, Sixth Annual Meeting of CliMathNet, University of Reading  
 2018 Organiser and chair, RMetS Evening Lecture, Ancient Skies: The Music of Weather from the Geologic Past, Reading  
 2018 Co-convenor, New model and data-based approaches to study climate behavior, EGU General Assembly, Vienna  
 2017 Primary convenor, Music and the Geosciences, AGU Fall Meeting, New Orleans  
 2017 Primary convenor, Stochastic Modeling in Atmosphere, Ocean, and Climate Dynamics, AGU Fall Meeting, New Orleans  
 2017 Organising committee, Fifth Annual Meeting of CliMathNet, University of Reading  
 2017 Co-convenor, Complexity in Geosciences, EGU General Assembly, Vienna  
 2017 Local organiser, two-day NAG Fortran Modernization Workshop, University of Reading  
 2016 Co-convenor, Stochastic Modeling in Atmosphere, Ocean, and Climate Dynamics, AGU Fall Meeting, San Francisco  
 2016 Co-convenor, Chaotic and Stochastic Geosciences, EGU General Assembly, Vienna  
 2016 Organising committee, Royal Society UK–Canada Frontiers of Science meeting, Whistler, Canada  
 2015 Co-convenor, Stochastic Modeling in Atmosphere, Ocean, and Climate Dynamics, AGU Fall Meeting, San Francisco  
 2015 Program committee, Interdisciplinary Symposium on Complex Systems, Grenoble, France  
 2015 Co-convenor, Chaotic and Stochastic Geosciences, EGU General Assembly, Vienna  
 2014 Co-convenor, Stochastic Approaches to Nonlinear Geophysical Systems, AGU Fall Meeting, San Francisco  
 2014 Co-convenor, Chaotic and Stochastic Geosciences, EGU General Assembly, Vienna  
 2014 Program committee, Interdisciplinary Symposium on Complex Systems, Florence, Italy  
 2013 Co-convenor, Unification of Alternative Models in Climate and Geophysics, AGU Fall Meeting, San Francisco  
 2013 Co-organiser, EuroMech Colloquium on Modelling Atmospheric and Oceanic Flows, Berlin  
 2013 Organiser, RMetS national meeting, Should Weather and Climate Prediction Models be Deterministic or Stochastic?  
 2013 Program committee, Workshop on Stochastic Modelling and Computing for Weather and Climate Prediction, Oxford  
 2013 Program committee, Interdisciplinary Symposium on Complex Systems, Prague, Czech Republic  
 2012 Co-convenor, Gravity Waves in the Atmosphere and Ocean, AGU Fall Meeting, San Francisco  
 2012 Co-organiser, Summer Workshop on Stochastic Flows and Climate Modeling, Aspen Center for Physics, USA  
 2012 Program committee, Interdisciplinary Symposium on Complex Systems, Kos, Greece

2011	Chair of organising committee, IMA Conference on the Mathematics of the Climate System, University of Reading
2011	Program committee, Interdisciplinary Symposium on Complex Systems, Halkidiki, Greece
2010	Co-organiser, one-day meeting on Spectral Imaging at Photonex 2010, Telford
2009	Organiser and chair, IOP one-day meeting on Computer Simulation and the Environment, London (budget: £1,500)
2007	Organiser and chair, IOP public evening lecture on the IPCC Fourth Assessment Report, London (budget: £1,700)

### Invited Research Visits

2022	Programme Participant, Isaac Newton Institute for Mathematical Sciences Satellite Programme, Reading (four weeks)
2017	Max Planck Institute for the Physics of Complex Systems, Dresden, Germany (two weeks)
2014	Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA (two months)
2013	Meteorology group, Faculty of Mathematics and Physics, University of Ljubljana, Slovenia (one week)
2013	Visiting Fellow, Isaac Newton Institute for Mathematical Sciences, University of Cambridge (two months)
2012	Aspen Center for Physics, Colorado, USA (three weeks)
2012	Programme Participant, Isaac Newton Institute for Mathematical Sciences, University of Cambridge (three months)
2010	Visiting Fellow, Isaac Newton Institute for Mathematical Sciences, University of Cambridge (four months)
2008	Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA (three months)
2006	Atmospheric Physics group, Department of Physics, University of Toronto, Canada (one month)
2006	Laboratoire d'Océanographie et du Climat (LOCEAN), Université Paris VI, France (one month)

### Travel Funding Awarded

2022	AGU/ASLO/TOS: Ocean Sciences Meeting Caregiver Grant (\$100)
2017	Royal Society and NRF Singapore: Commonwealth Science Conference, Singapore (£550 + hotel + registration)
2014	Kavli Institute: Wave-Flow Interaction in Geophysics, Climate, Astrophysics, and Plasmas (\$4,143.50)
2013	Isaac Newton Institute: Mathematics for the Fluid Earth (£1,525)
2012	Isaac Newton Institute: Multiscale Numerics for the Atmosphere and Ocean (£1,720)
2010	Isaac Newton Institute: Mathematical and Statistical Approaches to Climate Modelling and Prediction (£6,664)
2010	European Geosciences Union General Assembly: Adrian Gill Travel Award (registration waiver)
2009	European Meteorological Society Annual Meeting: Young Scientists Travel Award (€300 + registration waiver)
2009	European Geosciences Union General Assembly: Young Scientists Travel Award (registration waiver)
2008	Kavli Institute: Physics of Climate Change (\$5,370)
2008	Royal Astronomical Society: Grant for Studies in Astronomy and Geophysics (£1,700)
2006	Royal Society: Conference Grant (£1,170)
2003	Institute of Physics: C. R. Barber Trust Fund (£100)
2003	Royal Meteorological Society: Legacies Fund (£300)

### Invited Conference Talks (Reimbursed)

2024	International Air Transport Association (IATA) World Sustainability Symposium (WSS), Miami (keynote plenary address)
2024	KLM Executive Committee Meeting (including CEO), Hotel Jakarta, Amsterdam
2023	Institute of Physics COP28 panel on "Can we achieve a sustainable transport system?", Dubai (panel chair and speaker)
2023	ICAO Regional Aviation Safety Group – Pan America (RASG-PA) 13th Plenary Meeting, Dominican Republic
2023	International Air Transport Association (IATA) World Sustainability Symposium (WSS), Madrid, Spain
2023	European Mechanics Society (EuroMech) 18th European Turbulence Conference (ETC), València, Spain (keynote plenary)
2023	International Union of Aerospace Insurers (IUAI) Members' Conference, Lisbon
2023	London Aviation Summit, Norton Rose Fulbright, London
2022	Novel EOSC Services for Emerging Atmosphere, Underwater & Space Challenges (NEANIAS) Open Event, Barcelona
2022	NERC Staff Summer Event, Swindon STEAM Museum (declined)
2022	Sustainable Aviation Futures Congress, Amsterdam
2022	Sustainable Skies World Summit, Farnborough International Exhibition and Conference Centre, Hampshire
2022	7th International Conference on Climate, Tourism and Recreation, University of South-Eastern Norway, Bø (keynote)
2022	4th Royal Society Research Fellow's Network Meeting, London
2020	European Business Aviation Association (EBAA) Business Aviation Risk event, Churchill College Cambridge
2019	Dutch Meteorological Society Autumn Symposium on Atmospheric Circulation and Climate Changes, Utrecht University
2019	Workshop on Time Filters and Predictive Accuracy, University of Pittsburgh, USA
2019	Royal Schiphol Group Aviation Vision 2050 Workshop, Schiphol Airport, Amsterdam, The Netherlands
2019	International Air Transport Association (IATA) Safety and Flight Operations Conference, Barcelona, Spain
2018	Helitech International helicopter expo and conference, Amsterdam, The Netherlands
2018	European Physical Society (EPS) Energy Group annual meeting, Barcelona, Spain

2018 Sixth Annual Meeting of CliMathNet, University of Reading  
 2018 China–UK Symposium on Meteorology and Environment, Nanjing University of Information Science and Technology, China  
 2017 CNRS Workshop on Interdisciplinary Geo-Astro Fluid Dynamics, Paris  
 2017 Workshop on Climate Fluctuations and Non-equilibrium Statistical Mechanics, Max Planck Institute, Dresden, Germany  
 2017 Winter School on Diversity of Planetary Circulation Regimes in our Solar System and Beyond, Les Houches, France  
 2016 Fifth Workshop on Aviation Meteorology, Jeju Island, South Korea  
 2016 NAV CANADA North Atlantic Operational Forum, Toronto, Canada  
 2016 Workshop on Turbulence and Waves in Flows Dominated by Rotation, NCAR, Colorado, USA  
 2016 Workshop on Numerical Analysis and Predictability of Fluid Motion, University of Pittsburgh, USA  
 2015 Minisymposium on nonlinear and stochastic weather and climate, XXXV Dynamics Days Europe, Exeter  
 2015 Workshop on Nonlinear Dynamics, Extremes, Geohazards and Predictability of the Earth System, Hamburg  
 2015 Conference on Complex Networks and Climate Variability, Vienna, Austria  
 2014 Fourth Workshop on Aviation Meteorology, Yonsei University, Seoul, South Korea  
 2014 Alpine Summer School on Dynamics, Stochastics & Predictability of the Climate System, Valsavarenche  
 2014 Royal Society Research Fellows Conference, London  
 2013 RIMS International Conference on Zonal Flows in Geophysical and Astrophysical Fluids, Kyoto, Japan  
 2013 Symposium on Stochastic Parameterisation in Weather and Climate Models, Bonn, Germany  
 2013 Workshop on Stochastic Modelling and Computing for Weather and Climate Prediction, Oxford  
 2010 EuroScience Open Forum (ESOF), Turin

### Invited Conference Talks (Unreimbursed)

2023 World Meteorological Organization (WMO) Aeronautical Meteorology Scientific Webinars (online)  
 2023 Friends and Partners of Aviation Weather (FPAW) Fall Meeting, MITRE Corporation, McLean, Virginia  
 2023 Sixth International Electronic Conference on Atmospheric Sciences (keynote speaker)  
 2023 Aviation Reimagined webinar, Griffith University, Brisbane, Australia (online)  
 2023 SPARC/FISAPS Workshop on Research Using High Vertical-Resolution Radiosonde Data, NCAR, Boulder, Colorado, USA  
 2022 MDPI Open Access Week Seminar (online; declined)  
 2022 Asia Oceania Geosciences Society (AOGS) 19th Annual Meeting (online)  
 2022 European Geosciences Union General Assembly, Vienna, Austria  
 2021 Asia Oceania Geosciences Society (AOGS) 18th Annual Meeting, Singapore (online)  
 2020 Asia Oceania Geosciences Society (AOGS) 17th Annual Meeting, Hongcheon, South Korea (cancelled)  
 2020 American Meteorological Society 100th Annual Meeting, Boston, Massachusetts, USA  
 2019 European Meteorological Society Annual Meeting, Technical University of Denmark (DTU), Copenhagen, Denmark  
 2019 Asia Oceania Geosciences Society (AOGS) 16th Annual Meeting, Singapore (declined)  
 2018 Asia Oceania Geosciences Society (AOGS) 15th Annual Meeting, Honolulu, Hawaii, USA  
 2018 Royal Meteorological Society Student and Early Career Scientist Conference, University of York (declined)  
 2018 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Taipei, Taiwan (declined)  
 2016 American Geophysical Union Fall Meeting, San Francisco, California, USA  
 2015 Conference on Complex Systems, Arizona, USA, Complex Systems Digital Campus World e-Conference  
 2014 American Geophysical Union Fall Meeting, San Francisco, California, USA  
 2014 Royal Meteorological Society national meeting on Aviation and Turbulence in the Free Atmosphere, London  
 2012 American Geophysical Union Fall Meeting, San Francisco, California, USA  
 2012 Royal Meteorological Society national meeting on Quantifying Uncertainties in Climate Science, London  
 2011 American Geophysical Union Fall Meeting, San Francisco, California, USA  
 2011 European Geosciences Union General Assembly, Vienna, Austria  
 2010 European Geosciences Union General Assembly, Vienna, Austria  
 2006 European Geosciences Union General Assembly, Vienna, Austria  
 2005 Astronomy and Geophysics meeting, Royal Astronomical Society, London

### Seminars and Colloquia (Reimbursed)

2024 Aerodynamics and Control Seminar, Department of Aeronautics, Imperial College London  
 2024 Federal Aviation Administration (FAA) New and Emerging Aviation Technologies (NEAT) seminar (online)  
 2023 Lunch & Learn Seminar, Climate Central, Princeton (online)  
 2023 Department of Physics colloquium, University of Warwick  
 2023 Department of Energy and Process Engineering seminar, Norwegian University of Science and Technology, Norway  
 2022 Department of Physics Colloquium, University of Bath  
 2021 Atmosphere, Ocean, and Climate Dynamics (AOCD) seminar, Department of Earth & Planetary Sciences, Yale University  
 2020 School of Earth and Environmental Sciences (SEES) colloquium, Seoul National University, South Korea

2019 NCAS-Climate science meeting, University of Reading  
 2019 Institute for Geophysical Research (IGR) and Applied Math Institute (AMI) joint seminar, University of Alberta, Canada  
 2019 Applied and Computational Mathematics seminar, University College Dublin, Ireland  
 2019 Evening lecture, Royal Meteorological Society Scottish Local Centre, University of Edinburgh  
 2018 Evening lecture, Royal Meteorological Society South West Local Centre, Bath Royal Literary and Scientific Institution  
 2018 Evening lecture, Royal Meteorological Society West Midlands Local Centre, University of Birmingham  
 2018 Evening lecture, Royal Meteorological Society Welsh Local Centre, Cardiff University  
 2018 Institute of Atmospheric Physics seminar, German Aerospace Center (DLR), Oberpfaffenhofen, Germany  
 2017 Evening lecture, Royal Meteorological Society North East Local Centre, Durham University  
 2017 Seminar on Climate Fluctuations and Non-equilibrium Statistical Mechanics, Max Planck Institute, Dresden, Germany  
 2017 Evening lecture, Royal Meteorological Society Yorkshire Local Centre, University of Leeds  
 2017 Engineering Modelling and Simulation Group seminar, University of the West of England, Bristol  
 2016 Evening lecture, Royal Meteorological Society North West Local Centre, Manchester Metropolitan University  
 2016 NCAS-Climate science meeting, University of Reading  
 2016 Mathematics of Planet Earth (MPE) Centre for Doctoral Training (EPSRC CDT) seminar, Imperial College London  
 2015 Fluids and MHD seminar, School of Mathematics, University of Leeds  
 2015 Numerical Analysis seminar, Department of Mathematical Sciences, University of Bath  
 2014 Mathematics seminar, Department of Mathematics and Statistics, University of Reading  
 2014 Department of Atmospheric Sciences colloquium, Yonsei University, Seoul, South Korea  
 2014 Non-linearity and Complexity Research Group seminar, Aston University  
 2013 Department of Meteorology seminar, University of Reading  
 2013 Atmosphere, Ocean and Climate Seminar, School of Environmental Sciences, University of East Anglia  
 2013 Faculty of Mathematics and Physics seminar, University of Ljubljana, Slovenia  
 2013 Astronomy Unit seminar, School of Physics and Astronomy, Queen Mary University of London  
 2013 NCAS-Climate science meeting, University of Reading  
 2013 Atmospheric Physics seminar, Department of Physics, Imperial College London  
 2012 Physics colloquium, Aspen Center for Physics, USA  
 2012 Multiscale Numerics for the Atmosphere and Ocean seminar, Isaac Newton Institute, Cambridge  
 2011 Meteorologische Kolloquium, Institut für Atmosphäre und Umwelt, Universität Frankfurt, Germany  
 2011 Applied Mathematics seminar, School of Engineering, Computing and Mathematics, University of Exeter  
 2009 Physical Oceanography and Climate seminar, National Oceanography Centre, Southampton  
 2008 Physics of Climate Change seminar, University of California, Santa Barbara, USA  
 2008 Applied Modelling and Computation Group seminar, Imperial College London  
 2007 Geophysical and Nonlinear Fluid Dynamics seminar, University of Oxford  
 2006 Atmospheric Physics seminar, Department of Physics, University of Toronto, Canada  
 2006 Fluid Mechanics seminar, Department of Applied Mathematics and Theoretical Physics, University of Cambridge  
 2006 Climatic Research Unit seminar, University of East Anglia  
 2006 Laboratoire de Météorologie Dynamique (LMD) seminar, Ecole Normale Supérieure, Paris, France  
 2006 Laboratoire des Écoulements Géophysiques et Industriels (LEGI) seminar, Grenoble, France  
 2006 Atmospheric Physics seminar, Department of Physics, Imperial College London  
 2005 Applied Mathematics Seminar, Department of Mathematics, Keele University  
 2004 European Centre for Medium-range Weather Forecasts seminar, Reading  
 2004 Geophysical and Nonlinear Fluid Dynamics seminar, University of Oxford  
 2004 Department of Meteorology seminar, University of Reading  
 2002 Department of Earth and Planetary Sciences seminar, Johns Hopkins University, Baltimore, USA  
 2001 Atmospheric, Oceanic and Planetary Physics vacation seminar, University of Oxford

## Conference and Workshop Talks

2014 European Geosciences Union General Assembly, Vienna, Austria  
 2023 AEROPLANE Project Kick-Off Meeting, Eurocontrol Headquarters, Brussels  
 2023 American Meteorological Society 103rd Annual Meeting, Denver, Colorado, USA  
 2022 Isaac Newton Institute satellite programme on Geophysical Fluid Dynamics, University of Reading  
 2022 Ocean Sciences Meeting, Honolulu, Hawaii, USA (online)  
 2022 American Meteorological Society 102nd Annual Meeting, Houston, Texas, USA (online)  
 2021 American Geophysical Union Fall Meeting, New Orleans, Louisiana, USA (online)  
 2021 4th BALPA/GATCO Controller–Pilot Symposium (online)  
 2021 4th NCAR/FAA/MITRE Turbulence Mitigation Workshop (online)  
 2021 All-Cohort Meeting on Science Communication, NERC SCENARIO Doctoral Training Partnership (online)  
 2021 MPE Wednesday on Science Communication, EPSRC Mathematics of Planet Earth Centre for Doctoral Training (online)



2020 Royal Society South-East Regional Meeting (online)

2020 3rd Environmentally Compatible Air Transport System (ECATS) Conference, Gothenburg (online)

2020 Asia Oceania Geosciences Society (AOGS) 17th Annual Meeting, Hongcheon, South Korea (cancelled)

2020 EUMETNET/ECMWF Workshop on Aircraft Weather Observations and their Use, ECMWF, Reading

2020 American Meteorological Society 100th Annual Meeting, Boston, Massachusetts, USA

2019 American Geophysical Union Fall Meeting, San Francisco, California, USA

2019 Foreign and Commonwealth Office project workshop on Delivering Training in Climate Services, University of Reading

2019 UK Fluids Conference, University of Cambridge

2019 RMetS/NCAS Atmospheric Science Conference, University of Birmingham (plenary speaker)

2019 5th OpenIFS Workshop, University of Reading

2019 European Geosciences Union General Assembly, Vienna, Austria

2018 SPARC/FISAPS Workshop on Atmospheric Turbulence, Leibniz Institute of Atmospheric Physics, Kühlungsborn, Germany

2018 3rd NCAR/FAA/MITRE Turbulence Impact Mitigation Workshop, The MITRE Corporation, McLean, Virginia, USA

2018 4th National Climate Dynamics Workshop, University of Oxford

2018 Asia Oceania Geosciences Society (AOGS) 15th Annual Meeting, Honolulu, Hawaii, USA

2017 American Geophysical Union Fall Meeting, New Orleans, Louisiana, USA

2017 World Meteorological Organization (WMO) Aeronautical Meteorology Scientific Conference, Toulouse, France

2017 Challenger Society Ocean Modelling Group Meeting, Met Office, Exeter

2017 Third international conference on Advances in Extreme Value Analysis and Application to Natural Hazards, Southampton

2017 CliMathNet Fifth Annual Meeting, University of Reading

2017 Meeting on New Technologies for In Situ Volcanic Plume Monitoring, University of Oxford

2017 Royal Society Meeting of Minds Conference, London

2017 European Geosciences Union General Assembly, Vienna, Austria

2017 American Meteorological Society 97th Annual Meeting, Seattle, Washington, USA

2016 American Geophysical Union Fall Meeting, San Francisco, California, USA

2016 Joint meeting, British Computer Society Fortran Specialist Group and IoP Computational Physics Group, London

2016 Second General Assembly of the Maths Foresees EPSRC Network, University of Edinburgh

2015 American Geophysical Union Fall Meeting, San Francisco, California, USA

2015 Challenger Society Ocean Modelling Group Meeting, Corpus Christi College, Cambridge

2015 Expert panel discussion member, Science communication workshop, NCAS conference, York

2015 CliMathNet Third Annual Meeting, University of Bath

2015 American Meteorological Society 20th Conference on Atmospheric and Oceanic Fluid Dynamics, Minneapolis, USA

2015 First General Assembly of the Maths Foresees EPSRC Network, University of Leeds

2015 Stochastic Parametrisation Workshop, European Centre for Medium-range Weather Forecasts, Reading

2015 Dynamics of Rotating Fluids meeting, University College London

2014 European Meteorological Society 14th Annual Meeting, Prague

2014 World Weather Open Science Conference, Montréal, Canada

2014 Institute of Physics Environmental Physics Group Environmental Physics Day, London

2013 American Geophysical Union Fall Meeting, San Francisco, California, USA

2013 Town Hall meeting on Maths, Nonlinear Geophysics and Planet Earth, AGU Fall Meeting, San Francisco, USA

2013 Grantham Institute Workshop on Numerical Methods for Geophysical Fluid Dynamics, Imperial College London

2013 EuroMech Colloquium on Modelling Atmospheric and Oceanic Flows, Berlin, Germany

2013 European Meteorological Society 13th Annual Meeting, University of Reading

2013 European Geosciences Union General Assembly, Vienna, Austria

2013 American Meteorological Society 93rd Annual Meeting, Austin, Texas, USA

2012 Royal Society Networking Nations UK–Spain Joint Scientific Meeting, London

2012 European Meteorological Society 12th Annual Meeting, Łódź, Poland

2012 Canadian Meteorological and Oceanographic Society 46th Congress, Montréal, Canada

2012 European Geosciences Union General Assembly, Vienna, Austria

2011 Gung-Ho meeting on the explicit time-stepping work package, Imperial College London

2011 Seventh International Symposium on Stratified Flows, Rome, Italy

2011 Workshop on Hierarchical Modeling of Climate, International Centre for Theoretical Physics, Trieste, Italy

2011 Royal Meteorological Society Conference, University of Exeter

2011 American Meteorological Society 18th Conference on Atmospheric and Oceanic Fluid Dynamics, Spokane, USA

2011 9th International SRNWP Workshop on Nonhydrostatic Modelling, Bad Orb, Germany

2011 Chapman Conference on Atmospheric Gravity Waves and Their Effects on General Circulation and Climate, Hawaii

2011 Dynamics of Rotating Fluids meeting, University College London

2010 Uncertainty in Climate Prediction: Models, Methods and Decision Support, Isaac Newton Institute, Cambridge

2010 Career Development Workshop for Grade 6 Researchers, School of Mathematical and Physical Sciences, U. Reading

2010 Workshop on Mathematical Theory and Modelling in Atmosphere–Ocean Science, Oberwolfach, Germany

2010 Challenger Society Ocean Modelling Group Meeting, National Oceanography Centre, Southampton  
 2010 Stochastic Methods in Climate Modelling workshop, Isaac Newton Institute, Cambridge  
 2010 FAMOUS workshop, University of Reading  
 2010 Wave–Flow Interactions Network 3rd annual meeting, University of St Andrews  
 2010 National Centre for Atmospheric Science Early Career Research Forum, York  
 2009 American Geophysical Union Fall Meeting, San Francisco, California, USA  
 2009 8th International SRNWP Workshop on Nonhydrostatic Modelling, Bad Orb, Germany  
 2009 European Meteorological Society 9th Annual Meeting, Toulouse, France  
 2009 MOCA-09: IAMAS, IAPSO and IACS Joint Assembly, Montréal, Canada  
 2009 Wave–Flow Interactions Network 2nd annual meeting, Edinburgh  
 2009 European Geosciences Union General Assembly, Vienna, Austria  
 2008 Workshop on Stochastic and Probabilistic Methods for Atmosphere, Ocean and Climate Dynamics, Victoria, Canada  
 2008 Workshop on Teaching Weather and Climate Using Laboratory Experiments, University of Chicago, USA  
 2008 European Geosciences Union General Assembly, Vienna, Austria  
 2008 British Council China/UK Workshop on Modelling Climate Variability and Change, Met Office, Exeter  
 2008 National Endowment for Science, Technology and the Arts (NESTA) Crucible meeting, Stockport  
 2008 Dynamics of Rotating Fluids meeting, University College London  
 2007 Workshop on Stochastic Dynamical Systems and Climate Modelling, Banff, Canada  
 2006 MFO Workshop on Mathematical Theory and Modelling in Atmosphere–Ocean Science, Oberwolfach, Germany  
 2006 Spontaneous Imbalance Workshop: Perspectives from Atmospheric and Oceanic Dynamics, Seattle, USA  
 2006 NEMO Users Meeting, Université Pierre et Marie Curie, Paris, France  
 2005 2nd Rapid Climate Change Annual Science Meeting, Swansea University  
 2005 IPSL/CGAM Workshop on Tropical Climate, University of Reading  
 2005 Dynamics of Rotating Fluids meeting, University College London  
 2004 Institute of Physics Environmental Physics Group Members Day, London  
 2003 EGS–AGU–EUG Joint Assembly, Nice, France  
 2003 Nonlinear Waves in Fluids workshop, Department of Applied Mathematics, Loughborough University  
 2001 European Geophysical Society XXVIth General Assembly, Nice, France  
 2001 10th Annual Oxford/Cambridge Applied Mathematics Meeting, University of Cambridge

## Engagement with the Media

2019 Short film about my clear-air turbulence research shown at *AGU Cinema* during the Fall Meeting, San Francisco  
 2018 Two of my studies appear in Carbon Brief’s list of the top 25 climate papers with the most media coverage in 2017  
 2017 Speaker at American Geophysical Union press conference, New Orleans, on using music to advance geoscience research  
 2013 Speaker at European Geosciences Union press conference, Vienna, on impacts of climate change

- 2004– 675 media reports about my research, including *Fox News* (20 December 2022; 5 October 2017), *Daily Mail* (20 December 2022; 9 October 2021; 26 January 2021; 13 February 2020; 9 August 2019; 4 October 2017; 7 April 2017; 26 August 2016; 25 March 2016; 10 February 2016; 7 July 2015; 10 April 2013; 28 September 2011), *Washington Post* (20 December 2022; 7 August 2019; 4 July 2017; 6 April 2017), *The Independent* (20 December 2022; 7 September 2022; 18 March 2021; 4 February 2021; 1 February 2021; 26 January 2021; 9 February 2020; 6 April 2017; 10 February 2016), *CNN* (3 November 2022; 1 September 2022; 24 March 2022; 10 February 2021; 25 February 2016), *Yale Environment 360* (13 September 2022), *The Daily Mirror* (2 September 2022; 4 October 2017; 25 March 2016), *Stern* (2 September 2022), *IFL Science* (6 April 2022; 27 January 2021; 6 October 2017; 11 February 2016), *USA Today* (27 March 2022; 6 April 2017), *The Sunday Telegraph* (19 December 2021; 14 February 2016), *Financial Times* (8 October 2021; 18 August 2021; 31 December 2018; 9 April 2013; 23 September 2011; 19 March 2004), *The Guardian* (1 September 2021; 9 August 2019; 19 February 2018; 29 March 2016; 10 February 2016; 20 July 2015; 10 April 2013; 4 February 2011), *Politico* (17 August 2021), *stuff.co.uk* (August 2021), *Inside Science* (4 August 2021), *S&P Global Platts global newswires* (28 July 2021), *TheWeatherNetwork.com* (26 April 2021), *Forbes* (24 March 2021; 6 April 2017), *Corriere della Sera* (2 March 2021), *The i newspaper* (6 February 2021), *Berliner Zeitung* (28 January 2021), *The Daily Telegraph* (26 January 2021; 8 August 2019; 4 October 2017; 6 April 2017; 10 February 2016; 7 July 2015; 9 April 2013; 1 October 2008), *Der Spiegel* (26 January 2021; 24 August 2019), *Flight International* (14 April 2020), *Geographical* (December 2019), *The Times* (4 September 2019; 9 August 2019; 21 February 2019; 6 April 2017; 7 July 2015), *New York Times* (22 August 2019; 21 June 2017; 8 September 2014; 16 April 2013), *The Daily Express* (9 August 2019; 4 October 2017; 26 March 2016), *The Weather Channel* (8 August 2019), *Global Television Network Canada* (12 July 2019), *The Associated Press* (12 July 2019), *National Geographic* (22 February 2019; 8 April 2013), *Planet Earth magazine* (Autumn/Winter 2018; Autumn/Winter 2017; Summer 2004), *Times Higher Education* (10 May 2018; 3 December 2009), *BBC Focus Magazine* (March 2018), *The Atlantic* (17 December 2017; 9 July 2015), *Air & Space Smithsonian Magazine* (December 2017 / January 2018), *China Daily* (20 October 2017), *CBS Miami* (5 October 2017), *Travel Weekly* (28 August 2017; 23 May 2016), *El País* (28 August 2017; 24 October 2016), *BBC News website* (24 August 2017; 10 February 2016; 9 April 2013; 6 October 2008), *South China Morning Post* (7 April 2017), *New Scientist* (6 April 2017; 13 April 2013; 11 October 2008; 29 November 2003), *Royal Society Year in Review* (31 March 2017), *The World Economic Forum* (27 September 2016), *The Observer* (11 September 2016), *UN Climate Change Newsroom* (8 August 2016), *The Daily Star* (22 July 2016), *The Huffington Post* (9 March 2016; 10 February 2016), *The Sun* (10 February 2016), *Newsweek.com* (10 February 2016), *El Mundo* (10 February 2016), *The Toronto Star* (22 December 2015), *Psychologie Heute* (October 2015), *Nature* (9 December 2004), *BBC Radio 4* (13 May 2004)
- 2018 Key on-screen contributor to Channel 4 documentary *The World's Wildest Weather*
- 2017 Interviewed about music and the geosciences on *AGU TV*; the interview was shown during the AGU Fall Meeting in the Ernest N. Morial Convention Center, New Orleans and in several nearby hotels
- 2017 Key on-screen contributor to Channel 4 documentary *Britain's Wildest Weather*
- 2016 Key on-screen contributor to NBCUniversal documentary *Super Scary Plane Landings*, which has aired in the UK on Channel 5 and worldwide
- 2015 Key on-screen contributor to Discovery Channel documentary *Terror in the Skies: Air Asia and Beyond*, which has aired in more than 220 countries and territories
- 2011– TV appearances include *ITV News Meridian* (23 September 2022; 10 February 2016), Weather Underground on *The Weather Channel* (1 September 2022), Morning Live on *BBC One* (watched by 1.5 million viewers; 8 September 2021), Channel 11 News Live at 5PM on *WPXI* (18 May 2021), Weather Watch on *The Weather Network* (23 April 2021), In The Know on *The Weather Network* (6 April 2021), Cheddar Explains on *Cheddar* (14 January 2021), BBC Newsroom Live on *BBC News Channel* (12 July 2019), *BBC 1 South Today Evening News* (6 October 2017; 10 February 2016), Wake Up on *WIVB* (6 October 2017), Stirile Pro TV on *Pro TV Romania* (4 October 2017), *Business Insider* (10 September 2017; 7 September 2017), World News Tonight on *American Broadcasting Company ABC* (7 August 2017), Good Morning America on *American Broadcasting Company ABC* (7 August 2017), Central Television on *NTV Russia* (3 June 2017; 6 May 2017), DR2 Dagen on *Danish Broadcasting Corporation DR2* (8 May 2017), This Morning on *CBS* (2 May 2017), *Global News Canada* (8 April 2017), Insight on *TRT World* (26 September 2016), Daily Planet on *Discovery Channel Canada* (16 September 2016), AMHQ on *The Weather Channel* (18 February 2016), *BBC World News* (10 February 2016), *Sky News* (30 November 2015; 14 September 2015; 14 February 2014), *BBC News Channel* (9 November 2015; 9 April 2013), *ITV London News* (8 July 2015), *CNN US and International editions* (17 July 2014), *CNN* (18 February 2014), *The Weather Network* (24 October 2011)
- 2016 Study on flight times used as a question on prime-time German TV quiz show *Wer Weiss Denn Sowas?*

- 2008– Radio and podcast appearances include the Flight Plan podcast by the *National Business Aviation Association* (8 August 2022), The PM Programme on *BBC Radio 4* (28 January 2022; 19 October 2011), Good Evening Shetland on *BBC Radio Shetland* (12 October 2021), Good Morning Scotland on *BBC Radio Scotland* (12 October 2021), The Nick Abbot Show on *LBC* (9 October 2021), The Paul Hudson Weather Show on *BBC Radio Humberside* (15 February 2020; 7 October 2017), The Phil Kennedy Drive Time Show on *BBC Radio Berkshire* (13 February 2020; 4 October 2017; 12 July 2016), Blueprint For Living on *Australian Broadcasting Corporation Radio National* (7 September 2019), Newshour on *BBC World Service* (10 August 2019; 10 February 2016), The Newsroom on *BBC World Service* (10 August 2019), Newsdrive on *BBC Radio Scotland* (9 August 2019; 4 October 2017; 9 April 2013), Up All Night on *BBC Radio 5 Live* (13 July 2019), The Current on *CBC Radio 1* (12 July 2019), The Andrew Peach Show on *BBC Radio Berkshire* (19 June 2019), The Sarah Walker Show on *BBC Radio Berkshire* (2 August 2018), *BBC Radio 5 Live* (3 June 2018; 11 February 2016; 9 April 2013), All Things Considered on *WWNO: New Orleans Public Radio* (22 December 2017), Morning Edition on *WWNO: New Orleans Public Radio* (22 December 2017), A Moment of Science on over 80 radio stations worldwide (7 September 2017), Calgary Today on *News Talk 770 CHQR* (9 August 2017; 4 May 2017), Yale Climate Connections on 350 radio stations across the USA (24 July 2017), Let's Talk on *Talk Radio Europe* (21 April 2017), La FM on *Radio Cadena Nacional Colombia* (10 April 2017), 5 Live Science on *BBC Radio 5 Live* (9 April 2017), The Naked Scientists on *BBC Radio Cambridgeshire* (9 April 2017), In Depth on *CBS Los Angeles KNX 1070* (6 April 2017), La W on *W Radio Colombia* (6 April 2017), This Way Up on *Radio New Zealand National* (24 September 2016), Morning Focus on *Clare FM* (14 September 2016), Good Morning Ulster on *BBC Radio Ulster* (13 September 2016), The Breakfast Show on *BBC Radio Foyle* (13 September 2016), Newsday on *BBC World Service* (12 September 2016; 14 September 2015), Science Friday on US National Public Radio (24 June 2016), The Shaun Doherty Show on *Highland Radio* (29 March 2016), *Bloomberg Radio* (14 February 2016), Science In Action on *BBC World Service* (11 February 2016), *Radio France Internationale* (11 February 2016), Evening Extra on *BBC Radio Ulster* (10 February 2016), 5 Live Breakfast on *BBC Radio 5 Live* (10 February 2016; 30 November 2015), The Breakfast Show on *BBC Radio Berkshire* (10 February 2016; 9 April 2013; 6 October 2008), The Central Morning Show on *CBC Radio 1* (29 January 2016), The Breakfast Show on *BBC Radio Oxford* (30 November 2015), The Breakfast Show on *BBC West Midlands Radio* (30 November 2015), The Anne Diamond Show on *BBC Radio Berkshire* (14 September 2015), news bulletins on *Heart Radio* (23 November 2014), The Stephen Nolan Show on *BBC Radio 5 Live* (31 January 2014; 27 September 2013), You And Yours on *BBC Radio 4* (12 August 2013), All Things Considered on *US National Public Radio* (11 April 2013), Material World on *BBC Radio 4* (11 April 2013), The Jeremy Vine Show on *BBC Radio 2* (9 April 2013), The In Tune Show on *BBC Radio 3* (22 September 2011)
- 2007– Expert commentary quoted in *The Week* (13 December 2022), *New Scientist* (30 July 2022), *Financial Times* (22 July 2022; 7 August 2019), *BBC News website* (19 July 2022; 2 August 2018), *London Evening Standard* (19 July 2022; 18 June 2009), *New Scientist's Fix the Planet newsletter* (10 June 2021), *Business Insider* (14 May 2021), *The Times* (13 May 2021; 18 February 2014; 19 June 2009; 14 December 2007), *The Guardian* (13 May 2021; 19 June 2009; 13 November 2002), *Daily Mail* (13 May 2021), *The i newspaper* (24 September 2019), *The Daily Telegraph* (23 July 2019), *Carbon Brief* (15 January 2018), *Forbes* (13 July 2017), *Wired* (13 July 2017), *The Independent* (2 January 2016; 1 January 2016), *PhysicsWorld.com* (7 December 2011), *New Scientist* (12 August 2010), *Chemistry World* (March 2010), *Nature* (2 August 2007)
- 2007– Regular science contributor to letters pages, including *Mathematics Today* (October 2017; August 2017), *Physics World* (November 2016; April 2007), *The Sunday Telegraph* (21 February 2016; 27 December 2009; 13 December 2009), *The BMJ* (23 January 2016), *The Times* (14 November 2015), *The Sunday Times* (5 June 2011), *The Daily Telegraph* (28 July 2008), *The Week* (5 January 2008), *The Independent* (29 December 2007)

## Engagement with the Public

- 2016– Active Twitter user (formerly with blue verified badge), tweeting daily about atmospheric science to over 8,000 followers
- 2023 Patrons' Evening Lecture, Science Museum, London
- 2022 Speaker at the Royal Meteorological Society's *WeatherLive* National Meeting (online)
- 2022 Profiled in *CONNECTED*, the University of Reading's alumni magazine
- 2021 My climate change and turbulence research visualized in double-page spread in *Atlas of the Invisible* (Penguin books)
- 2021 Delivered an online public evening lecture on climate change for TEAM Global (an educational charity)
- 2021 Script consultant, *How We Save The World*, commissioned by NERC and produced by Coney, performed online
- 2020 Consultant to *Guinness World Records* on extreme atmospheric events; named contributor in 2021 edition of book
- 2020 Co-author of online article for *The Conversation*, which has been read nearly 50,000 times
- 2019 Speaker at New Scientist Live, ExCeL London
- 2019 Speaker at Lincoln Leads seminar on "Should We Control the Weather?", Lincoln College, University of Oxford
- 2019 Featured case study in UK Research and Innovation brochure on "The impact of UK-US research collaboration"
- 2019 Featured case study in NERC's Delivery Plan 2019

2019 Advisor for the “Lasting Impressions: From Deep Earth to Deep Space” lobby exhibit, AGU HQ, Washington DC, USA

2018 Curator of @RealScientists Twitter account with 70k followers, 9–15 December

2018 Designed and delivered “Turbulence ahead” pop-up science station at Natural History Museum “Lates” event, London

2018 Script consultant, *How We Save The World*, commissioned by NERC and produced by Coney, performed at the NHM

2018 Contributor to the “Going Places” exhibit on human transportation, Science Museum of Virginia, USA

2017 Delivered the public evening lecture at the Mathematics of Planet Earth Exhibition, Imperial College London

2017 Speaker at British Science Association Oxford Branch SciBar event, St Aldates Tavern, Oxford

2017 Speaker at Pint of Science Festival event on CO<sub>2</sub>, The Hand and Flower Pub, London

2017 My aviation and climate change research featured in World Economic Forum video (370,000 Facebook views)

2017 Speaker at Café Scientifique on “Turbulent times ahead for air travel?”, Royal Society, London

2017 Speaker to Marlow and District University of the Third Age, Marlow

2016 One of four invited speakers at the University of Reading’s inaugural Alumni Homecoming event

2015 Presenter of Royal Society short film to mark 350th anniversary of *Philosophical Transactions* (5,751 YouTube views)

2015 Climate science lecturer, Marlborough Science Fair

2013 Speaker to 24 government officers from Sikkim, India at the University of West London

2012 Speaker to Epsom and Ewell University of the Third Age, Surrey

2011 Delivered the Mina Lewis Annual Memorial Lecture, Farnborough and District University of the Third Age

2010 Expert adviser for £4.5m “atmosphere: exploring climate science” gallery, Science Museum, London

2010 Featured case study in IMA/EPSRC leaflet on “Mathematics Matters: Predicting Climate Change”

2010 Speaker to Goring Gap University of the Third Age, Berkshire

2009 Speaker at Café Scientifique event on Climate Change: The Facts, Queen’s Head Pub, Reading

2008 Climate science advisor to author Hamish MacDonald for his novel *Finitude*

2007 After-dinner speaker to Pangbourne Rotary Club

2007 Climate science speaker at Celebration of Physics event, Dundee

2006 Continuing Education day-course on Climate Change, The Environment And You, University of Sussex

## Engagement with Schools

2024 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2024 Lecturer on the John Hall Venice Course for gap-year students, Institute of Contemporary Arts, London

2023 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2023 Advisor, Royal Meteorological Society curriculum audit, identifying climate change links in GCSE music specifications

2023 Lecturer on the John Hall Venice Course for gap-year students, Institute of Contemporary Arts, London

2022 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2022 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2021 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2020 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2020 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2019 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2018 Keynote speaker at InterClimate Network’s Model Climate Conference, Reading Borough Council Chambers

2018 Delivered a Sixth-Form Enrichment Lecture, St Albans School, Hertfordshire

2018 Speaker at Climate Change Conference, Gumley House School sixth form, Middlesex

2018 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2017 Speaker at the Trust for Sustainable Living (TSL) International Schools Debates, Green Park, Reading

2016 Speaker at JFS Comprehensive School, Harrow

2016 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2015 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2014 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2013 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2012 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2011 Speaker at Westminster Kingsway College, London

2011 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2010 Speaker at North London Collegiate School sixth form, Edgware

2010 Lecturer on the John Hall Venice Course for gap-year students, The National Gallery, London

2007 Speaker at Roundwood Park School sixth form, Hertfordshire

## Engagement with Policymakers

2023 Speaker, EASA European Network on the Impact of Climate Change on Aviation (EN-ICCA) kick-off meeting, Cologne

2023 Invited speaker, International Civil Aviation Organization (ICAO) Air Navigation Commission (ANC) Talk

2022 Featured in video played at University of Reading exhibition stand at COP27 Climate Conference, Sharm El Sheikh, Egypt

2022 Cited in landmark CSIRO study *Our Future World: Global megatrends impacting the way we live over coming decades*

2021 Videos about my research played at UKRI exhibition at COP26 UN Climate Change Conference, Glasgow

2019 Studies on aviation and climate cited by EASA/EEA/EUROCONTROL European Aviation Environmental Report

2018 Cited in International Civil Aviation Organization (ICAO) *Climate Adaptation Synthesis* report

2018 Cited in UK Ministry of Defence *Global Strategic Trends* report (Sixth Edition)

2017 Invited speaker, International Civil Aviation Organization (ICAO) Seminar on Green Airports, Montréal, Canada

2017 Featured in Energy and Climate Intelligence Unit (ECIU) daily news alert, aimed at influential policy-relevant audience

2017 Invited author of guest post on climate and aviation for Carbon Brief website

2016 Invited author of article for International Civil Aviation Organization (ICAO) Environmental Report

2015 Invited expert panellist, ICAO Aviation Environmental Impacts Seminar, Alexandria, Virginia, USA (declined)

2014 Study on increased aviation turbulence cited by IPCC AR5 WGII

2007 Participant in The Royal Society's MP–Scientist Pairing Scheme

2007 Delegate at SET for Britain House of Commons reception for Britain's top early-stage researchers

2007 Speaker at Climate Change Exchange, a conference for 64 future leaders (aged 16–25) from 13 countries

2006 Climate speaker at the Green Economics Institute conference, Mansfield College, University of Oxford

2004 Author of Global Warming, Local Warning, a report commissioned and published by the European Parliament

## Engagement with Business

2023 Invited speaker, Center for Integrated Transportation, The MITRE Corporation

2023 Invited speaker, inaugural Sustainability Workshop, Loads and Aeroelastics Department, Airbus, Toulouse

2022 Academic consultant for Roland Berger's *Roadmap to True Zero* report

2022 Speaker to British Chambers of Commerce DG and Thames Valley Chamber of Commerce CEO, University of Reading

2022 Wrote Research Excellence Framework (REF) Impact Case Study on *Improved turbulence forecasts for the aviation sector*

2022 Presentation on climate change and turbulence to European Union Aviation Safety Agency (EASA) Scientific Committee

2022 North Atlantic Organised Track System (used since 1965) partly abolished, after we quantified excess emissions incurred

2021 Quoted in Global Aerospace's *Jetstream* annual publication (global readership 6,000 clients)

2021 NATS announce trial disbanding North Atlantic organised tracks, after our study quantifies possible emissions savings

2020 Presentation to senior staff at Heathrow Airport on aviation impacts of climate change

2020 My consultancy work for Heathrow Airport cited in their *Target Net Zero* document

2019 Studies on turbulence cited in *Aviation Risk 2020* report by Allianz, one of the world's leading insurers and asset managers

2019 Invited speaker, Avocet Forum on Climate Change Risks for Aircraft Owners, Financiers and Investors, RGS, London

2019 Invited presentation to senior staff, Satavia, Cambridge

2018 Invited speaker, Sustainable Aviation's Climate Change Working Group, British Airways Head Office, Heathrow Airport

2018 Invited presentation to senior operational managers, NATS Air Traffic Control Centre, Prestwick

2017 Invited speaker, European Business Aviation Association (EBAA) committee meeting, Royal Aeronautical Society, London

2017 Invited seminar, IBM / The Weather Company, Birmingham

2017 Aviation lecture, Insurance Institute of London, Old Library, Lloyd's of London

2016 Feature article in Global Aerospace's *Jetstream* annual publication (global readership 6,000 clients)

2016 Invited speaker, NAV CANADA North Atlantic Operational Forum, Toronto, Canada

2016 Guest speaker, Marex Spectron Institute one-day course on *Applied Meteorology for European Energy Markets*, London

2016 Guest speaker, Marex Spectron Institute one-day course on *Applied Meteorology for Key Agricultural Markets*, London

2016 Speaker, CIWEM Annual Conference *Does Modelling Deliver?*, Crowne Plaza Hotel, Reading

2016 Speaker, Global Aerospace *What's on the Horizon?* seminar, Royal Aeronautical Society, London

2013 Speaker, *Environmental Risks to the Aviation Industry* business interaction event, Science Museum, London

2011 Speaker, Bloomberg, London, with subsequent interview in *Climate & Carbon* (global readership 300,000)

2011 My research used as a case study in the Springer book *European Success Stories in Industrial Mathematics*

2007 Speaker, MotivAction Going Green, Inspiring People seminar, Royal Commonwealth Club, London

2007 Speaker, Green Light Conference, Edward Billington & Son, Chester

2007 Speaker, Spicers Synergy Green Business Conference, Hilton Metropole Hotel, Birmingham

## Training Courses Attended

2011–14 Royal Society course on Innovation and the Business of Science, Imperial College London Business School

2013 American Meteorological Society Short Course on Aviation Weather, Austin, Texas

2012 Royal Society media skills course (delivered by Judith Hann, presenter of BBC One's *Tomorrow's World*)

2012 Royal Society communication skills course (delivered by Judith Hann, presenter of BBC One's *Tomorrow's World*)

2009 Leadership and Management Development Course for Science Research Staff, Roffey Park Institute

2007 Short Course on The Mathematics of Large-Scale Atmospheric Flows, University of Reading

2007 Doing Outreach workshop, Institute of Physics, London  
 2002 Research Councils' Graduate Schools Programme, West Sussex  
 2000 Geophysical and Environmental Fluid Dynamics Summer School, University of Cambridge

# Peer-Reviewed Journal Articles (72 in total; Web of Science™ h-index is 23)

- 2024 • Straka, J. M., **Williams, P. D.** and Kanak, K. M. (2024) Nonlinear diffusion-limited two-dimensional colliding-plume simulations with very high-order numerical approximations. *Quarterly Journal of the Royal Meteorological Society*, **150**(759), pp 663–705.
- 2023 • Straka, J. M., Kanak, K. M. and **Williams, P. D.** (2023) Comparison of very high order (O3–18) flux and Crowley flux, and (O3–17) WENO flux schemes with a 2D nonlinear test problem. *Quarterly Journal of the Royal Meteorological Society*, **149**(757), pp 3669–3710.
- Prosser, M. C., **Williams, P. D.**, Marlton, G. J. and Harrison, R. G. (2023) Evidence for large increases in clear-air turbulence over the past four decades. *Geophysical Research Letters*, **50**(11), e2023GL103814.
- Smith, I. H., **Williams, P. D.** and Schiemann, R. (2023) Clear-air turbulence trends over the North Atlantic in high-resolution climate models. *Climate Dynamics*, **61**(7–8), pp 3063–3079.
- Wells, C. A., Kalise, D., Nichols, N. K., Poll, I. and **Williams, P. D.** (2023) The role of airspeed variability in fixed-time, fuel-optimal aircraft trajectory planning. *Optimization and Engineering*, **24**(2), pp 1057–1087.
- Wells, C. A., **Williams, P. D.**, Nichols, N. K., Kalise, D. and Poll, I. (2023) Minimising emissions from flights through realistic wind fields with varying aircraft weights. *Transportation Research Part D: Transport and Environment*, **117**, 103660.
- 2022 • Tenenbaum, J., **Williams, P. D.**, Turp, D., Buchanan, P., Coulson, R., Gill, P. G., Lunnon, R. W., Oztunali, M. G., Rankin, J. and Rukhovets, L. (2022) Aircraft observations and reanalysis depictions of trends in the North Atlantic winter jet stream wind speeds and turbulence *Quarterly Journal of the Royal Meteorological Society*, **148**(747), pp 2927–2941.
- **Williams, P. D.** and Storer, L. N. (2022) Can a climate model successfully diagnose clear-air turbulence and its response to climate change? *Quarterly Journal of the Royal Meteorological Society*, **148**(744), pp 1424–1438.
- **Williams, P. D.**, Straka, J. M. and Kanak, K. M. (2022) The performance of filtered leapfrog schemes in benchmark simulations. *Quarterly Journal of the Royal Meteorological Society*, **148**(743), pp 784–808.
- Doctor, F., Budd, T., **Williams, P. D.**, Prescott, M. and Iqbal, R. (2022) Modelling the effect of electric aircraft on airport operations and infrastructure. *Technological Forecasting and Social Change*, **177**, 121553.
- Gratton, G. B., **Williams, P. D.**, Padhra, A. and Rapsomanikis, S. (2022) Reviewing the impacts of climate change on air transport operations. *The Aeronautical Journal*, **126**(1295), pp 209–221.
- 2021 • Thompson, R. L., Morley, S. K., Watt, C. E. J., Bentley, S. N. and **Williams, P. D.** (2021) Pro-L\* – A probabilistic L\* mapping tool for ground observations. *Space Weather*, **19**(2), e2020SW002602.
- Wells, C. A., **Williams, P. D.**, Nichols, N. K., Kalise, D. and Poll, I. (2021) Reducing transatlantic flight emissions by fuel-optimised routing. *Environmental Research Letters*, **16**(2), 025002.
- 2020 • Kim, J.-H., Kim, D., Lee, D.-B., Chun, H.-Y., Sharman, R. D., **Williams, P. D.** and Kim, Y.-J. (2020) Impact of climate variabilities on trans-oceanic flight times and emissions during strong NAO and ENSO phases. *Environmental Research Letters*, **15**(10), 105017.
- Thompson, R. L., Watt, C. E. J. and **Williams, P. D.** (2020) Accounting for variability in ULF wave radial diffusion models. *Journal of Geophysical Research: Space Physics*, **125**(8), e2019JA027254.
- Gratton, G., Padhra, A., Rapsomanikis, S. and **Williams, P. D.** (2020) The impacts of climate change on Greek airports. *Climatic Change*, **160**(2), pp 219–231.
- Storer, L. N., Gill, P. G. and **Williams, P. D.** (2020) Multi-diagnostic multi-model ensemble forecasts of aviation turbulence. *Meteorological Applications*, **27**(1), e1885.
- 2019 • Dexheimer, D., Airey, M., Roesler, E., Longbottom, C., Nicoll, K., Kneifel, S., Mei, F., Harrison, R. G., Marlton, G. and **Williams, P. D.** (2019) Evaluation of ARM tethered-balloon system instrumentation for supercooled liquid water and distributed temperature sensing in mixed-phase Arctic clouds. *Atmospheric Measurement Techniques*, **12**(12), pp 6845–6864.
- Lee, S. H., **Williams, P. D.** and Frame, T. H. A. (2019) Increased shear in the North Atlantic upper-level jet stream over the past four decades. *Nature*, **572**(7771), pp 639–642.

- Zanna, L., Brankart, J. M., Huber, M., Leroux, S., Penduff, T. and **Williams, P. D.** (2019) Uncertainty and scale interactions in ocean ensembles: From seasonal forecasts to multidecadal climate predictions. *Quarterly Journal of the Royal Meteorological Society*, **145**(S1), pp 160–175.
- Storer, L. N., Gill, P. G. and **Williams, P. D.** (2019) Multi-model ensemble predictions of aviation turbulence. *Meteorological Applications*, **26**(3), pp 416–428.
- Gultepe, I., Sharman, R., **Williams, P. D.**, Zhou, B., Ellrod, G., Minnis, P., Trier, S., Griffin, S., Yum, S. S., Gharabaghi, B., Feltz, W., Temimi, M., Pu, Z., Storer, L. N., Kneringer, P., Weston, M. J., Chuang, H.-Y., Thobois, L., Dimri, A. P., Dietz, S. J., França, G. B., Almeida, M. V. and Neto, F. L. A. (2019) A review of high impact weather for aviation meteorology. *Pure and Applied Geophysics*, **176**(5), pp 1,869–1,921.
- Storer, L. N., **Williams, P. D.** and Gill, P. G. (2019) Aviation turbulence: dynamics, forecasting, and response to climate change. *Pure and Applied Geophysics*, **176**(5), pp 2,081–2,095.
- 2017 • Harrison, R. G., Marlton, G. J., Nicoll, K. A., Airey, M. W. and **Williams, P. D.** (2017) A self-calibrating wide range electrometer for in-cloud measurements. *Review of Scientific Instruments*, **88**(12), 126109.
- **Williams, P. D.**, Alexander, M. J., Barnes, E. A., Butler, A. H., Davies, H. C., Garfinkel, C. I., Kushnir, Y., Lane, T. P., Lundquist, J. K., Martius, O., Maue, R. N., Peltier, W. R., Sato, K., Scaife, A. A. and Zhang, C. (2017) A census of atmospheric variability from seconds to decades. *Geophysical Research Letters*, **44**(21), pp 11,201–11,211.
- Storer, L. N., **Williams, P. D.** and Joshi, M. M. (2017) Global response of clear-air turbulence to climate change. *Geophysical Research Letters*, **44**(19), pp 9,976–9,984.
- Airey, M. W., Harrison, R. G., Nicoll, K. A., **Williams, P. D.** and Marlton, G. J. (2017) A miniature oscillating microbalance for sampling ice and volcanic ash from a small airborne platform. *Review of Scientific Instruments*, **88**(8), 086108.
- **Williams, P. D.** (2017) Increased light, moderate, and severe clear-air turbulence in response to climate change. *Advances in Atmospheric Sciences*, **34**(5), pp 576–586.
- Berner, J., Achatz, U., Batté, L., Bengtsson, L., Cámara, A., Christensen, H. M., Colangeli, M., Coleman, D. R. B., Crommelin, D., Dolaptchiev, S. I., Franzke, C. L. E., Friederichs, P., Imkeller, P., Järvinen, H., Juricke, S., Kitsios, V., Lott, F., Lucarini, V., Mahajan, S., Palmer, T. N., Penland, C., Sakradzija, M., von Storch, J.-S., Weisheimer, A., Weniger, M., **Williams, P. D.** and Yano, J.-I. (2017) Stochastic parameterization: toward a new view of weather and climate models. *Bulletin of the American Meteorological Society*, **98**(3), pp 565–588.
- 2016 • **Williams, P. D.**, Howe, N. J., Gregory, J. M., Smith, R. S. and Joshi, M. M. (2016) Improved climate simulations through a stochastic parameterization of ocean eddies. *Journal of Climate*, **29**(24), pp 8763–8781.
- Marston, J. B. and **Williams, P. D.** (2016) Editorial: Focus on stochastic flows and climate statistics. *New Journal of Physics*, **18**(9), 090201.
- Marlton, G. J., **Williams, P. D.** and Nicoll, K. A. (2016) On the detection and attribution of gravity waves generated by the 20 March 2015 solar eclipse. *Philosophical Transactions of the Royal Society A*, **374**(2077), 20150222.
- Harrison, R. G., Marlton, G. J., **Williams, P. D.** and Nicoll, K. A. (2016) Coordinated weather balloon solar radiation measurements during a solar eclipse. *Philosophical Transactions of the Royal Society A*, **374**(2077), 20150221.
- Kim, J.-H., Chan, W. N., Sridhar, B., Sharman, R. D., **Williams, P. D.** and Strahan, M. (2016) Impact of the North Atlantic Oscillation on transatlantic flight routes and clear-air turbulence. *Journal of Applied Meteorology and Climatology*, **55**(3), pp 763–771.
- **Williams, P. D.** (2016) Transatlantic flight times and climate change. *Environmental Research Letters*, **11**(2), 024008.
- 2015 • Brown, S., Aplin, K. L., Jenkins, K., Mander, S., Walsh, C. and **Williams, P. D.** (2015) Is there a rhythm of the rain? An analysis of weather in popular music. *Weather*, **70**(7), pp 198–204.
- Amezcua, J. and **Williams, P. D.** (2015) The composite-tendency Robert–Asselin–Williams (RAW) filter in semi-implicit integrations. *Quarterly Journal of the Royal Meteorological Society*, **141**(688), pp 764–773.
- **Williams, P. D.** and Kelsall, C. W. (2015) The dynamics of baroclinic zonal jets. *Journal of the Atmospheric Sciences*, **72**(3), pp 1137–1151.
- Marlton, G. J., Harrison, R. G., Nicoll, K. A. and **Williams, P. D.** (2015) A balloon-borne accelerometer technique for measuring atmospheric turbulence. *Review of Scientific Instruments*, **86**(1), 016109.



- Franzke, C. L. E., O’Kane, T. J., Berner, J., **Williams, P. D.** and Lucarini, V. (2015) Advanced Review: Stochastic climate theory and modeling. *Wiley Interdisciplinary Reviews: Climate Change*, **6**(1), pp 63–78.
- 2013 • **Williams, P. D.** and Joshi, M. M. (2013) Intensification of winter transatlantic aviation turbulence in response to climate change. *Nature Climate Change*, **3**(7), pp 644–648.
- **Williams, P. D.** (2013) Achieving seventh-order amplitude accuracy in leapfrog integrations. *Monthly Weather Review*, **141**(9), pp 3037–3051.
- **Williams, P. D.**, Cullen, M. J. P., Davey, M. K. and Huthnance, J. M. (2013) Mathematics applied to the climate system: outstanding challenges and recent progress. *Philosophical Transactions of the Royal Society A*, **371**(1991), 20120518.
- 2012 • Aplin, K. L. and **Williams, P. D.** (2012) Whether weather affects music. *Eos*, **93**(36), pp 347–348.
- **Williams, P. D.** (2012) Climatic impacts of stochastic fluctuations in air–sea fluxes. *Geophysical Research Letters*, **39**, L10705.
- **Williams, P. D.** (2012) Comment on “A modified leapfrog scheme for shallow water equations” by Wen-Yih Sun and Oliver M. T. Sun. *Computers & Fluids*, **62**, p 91.
- McCann, D. W., Knox, J. A. and **Williams, P. D.** (2012) An improvement in clear-air turbulence forecasting based on spontaneous imbalance theory: the ULTURB algorithm. *Meteorological Applications*, **19**(1), pp 71–78.
- 2011 • Aplin, K. L. and **Williams, P. D.** (2011) Meteorological phenomena in Western classical orchestral music. *Weather*, **66**(11), pp 300–306.
- **Williams, P. D.** (2011) The RAW filter: an improvement to the Robert–Asselin filter in semi-implicit integrations. *Monthly Weather Review*, **139**(6), pp 1996–2007.
- Amezcua, J., Kalnay, E. and **Williams, P. D.** (2011) The effects of the RAW filter on the climatology and forecast skill of the SPEEDY model. *Monthly Weather Review*, **139**(2), pp 608–619.
- Jacoby, T. N. L., Read, P. L., **Williams, P. D.** and Young, R. M. B. (2011) Generation of inertia–gravity waves in the rotating thermal annulus by a localised boundary layer instability. *Geophysical and Astrophysical Fluid Dynamics*, **105**(2–3), pp 161–181.
- 2010 • **Williams, P. D.**, Read, P. L. and Haine, T. W. N. (2010) Testing the limits of quasi-geostrophic theory: application to observed laboratory flows outside the quasi-geostrophic regime. *Journal of Fluid Mechanics*, **649**, pp 187–203.
- **Williams, P. D.**, Guilyardi, E., Madec, G., Gualdi, S. and Scoccimarro, E. (2010) The role of mean ocean salinity in climate. *Dynamics of Atmospheres and Oceans*, **49**(2–3), pp 108–123.
- 2009 • **Williams, P. D.** (2009) A proposed modification to the Robert–Asselin time filter. *Monthly Weather Review*, **137**(8), pp 2538–2546.
- Knox, J. A., McCann, D. W. and **Williams, P. D.** (2009) Reply to comments on “Application of the Lighthill–Ford theory of spontaneous imbalance to clear-air turbulence forecasting”. *Journal of the Atmospheric Sciences*, **66**(8), pp 2511–2516.
- **Williams, P. D.** (2009) Rapid climate change: an overview for economists. *International Journal of Green Economics*, **3**(1), pp 63–76.
- **Williams, P. D.**, Haine, T. W. N., Read, P. L., Lewis, S. R. and Yamazaki, Y. H. (2009) QUAGMIRE v1.3: a quasi-geostrophic model for investigating rotating fluids experiments. *Geoscientific Model Development*, **2**(1), pp 13–32.
- 2008 • **Williams, P. D.**, Haine, T. W. N. and Read, P. L. (2008) Inertia–gravity waves emitted from balanced flow: observations, properties, and consequences. *Journal of the Atmospheric Sciences*, **65**(11), pp 3543–3556.
- Knox, J. A., McCann, D. W. and **Williams, P. D.** (2008) Application of the Lighthill–Ford theory of spontaneous imbalance to clear-air turbulence forecasting. *Journal of the Atmospheric Sciences*, **65**(10), pp 3292–3304.
- Birner, T. and **Williams, P. D.** (2008) Sudden stratospheric warmings as noise-induced transitions. *Journal of the Atmospheric Sciences*, **65**(10), pp 3337–3343.
- Palmer, T. N. and **Williams, P. D.** (2008) Introduction. Stochastic physics and climate modelling. *Philosophical Transactions of the Royal Society A*, **366**(1875), pp 2421–2427.
- 2007 • Read, P. L., Yamazaki, Y. H., Lewis, S. R., **Williams, P. D.**, Wordsworth, R., Miki-Yamazaki, K., Sommeria, J. and Didelle, H. (2007) Dynamics of convectively driven banded jets in the laboratory. *Journal of the Atmospheric Sciences*, **64**(11), pp 4031–4052.
- **Williams, P. D.**, Guilyardi, E., Sutton, R. T., Gregory, J. M. and Madec, G. (2007) A new feedback on climate change from the hydrological cycle. *Geophysical Research Letters*, **34**, L08706.

- 2006 • **Williams, P. D.**, Guilyardi, E., Sutton, R. T., Gregory, J. M. and Madec, G. (2006) On the climate response of the low-latitude Pacific Ocean to changes in the global freshwater cycle. *Climate Dynamics*, **27**(6), pp 593–611.
- 2005 • **Williams, P. D.** (2005) Modelling climate change: the role of unresolved processes. *Philosophical Transactions of the Royal Society A*, **363**(1837), pp 2931–2946.
- **Williams, P. D.**, Haine, T. W. N. and Read, P. L. (2005) On the generation mechanisms of short-scale unbalanced modes in rotating two-layer flows with vertical shear. *Journal of Fluid Mechanics*, **528**, pp 1–22.
- 2004 • **Williams, P. D.**, Read, P. L. and Haine, T. W. N. (2004) A calibrated, non-invasive method for measuring the internal interface height field at high resolution in the rotating, two-layer annulus. *Geophysical and Astrophysical Fluid Dynamics*, **98**(6), pp 453–471.
- Read, P. L., Yamazaki, Y. H., Lewis, S. R., **Williams, P. D.**, Miki-Yamazaki, K., Sommeria, J., Didelle, H. and Fincham, A. (2004) Jupiter's and Saturn's convectively driven banded jets in the laboratory. *Geophysical Research Letters*, **31**(22), L22701.
- **Williams, P. D.** (2004) Storm in a teacup. *Weather*, **59**(4), pp 96–98.
- **Williams, P. D.**, Haine, T. W. N. and Read, P. L. (2004) Stochastic resonance in a nonlinear model of a rotating, stratified shear flow, with a simple stochastic inertia-gravity wave parameterization. *Nonlinear Processes in Geophysics*, **11**(1), pp 127–135.
- 2003 • **Williams, P. D.**, Read, P. L. and Haine, T. W. N. (2003) Spontaneous generation and impact of inertia-gravity waves in a stratified, two-layer shear flow. *Geophysical Research Letters*, **30**(24), 2255.
- 2002 • Haine, T. W. N. and **Williams, P. D.** (2002) The role of nonhydrostatic dynamics in controlling development of a surface ocean front. *Ocean Modelling*, **4**(2), pp 121–135.

#### Journal Special Issues Edited

- 2021 • Coffel, E., Dedoussi, I., Barrett, S. and **Williams, P. D.** (2021) Focus on Transportation and the Environment. *Environmental Research Letters*.
- 2017 • **Williams, P. D.** (2017) A Census of Atmospheric Variability From Seconds to Decades. *Geophysical Research Letters*.
- 2016 • Marston, J. B. and **Williams, P. D.** (2016) Focus on Stochastic Flows and Climate Statistics. *New Journal of Physics*.
- 2013 • **Williams, P. D.**, Cullen, M. J. P., Davey, M. K. and Huthnance, J. M. (2013) Mathematics Applied to the Climate System. *Philosophical Transactions of the Royal Society A*, **371**(1991).
- 2008 • Palmer, T. N. and **Williams, P. D.** (2008) Stochastic Physics and Climate Modelling. *Philosophical Transactions of the Royal Society A*, **366**(1875), pp 2419–2641.

#### Books Edited

- 2015 • von Larcher, T. and **Williams, P. D.** (2015) *Modeling Atmospheric and Oceanic Flows: Insights from Laboratory Experiments and Numerical Simulations*. John Wiley & Sons, pp 368, ISBN 978-1-118-85593-5.
- 2009 • Palmer, T. N. and **Williams, P. D.** (2009) *Stochastic Physics and Climate Modelling*. Cambridge University Press, pp 496, ISBN 978-0-521-76105-5.

#### Book Chapters

- 2021 • Stendel, M., Francis, J., White, R., **Williams, P. D.** and Woollings, T. (2021) *The jet stream and climate change*. Chapter 15 (pp 327–357) in *Climate Change: Observed Impacts on Planet Earth (Third Edition)*, Edited by Trevor M. Letcher, Elsevier, pp 848, ISBN 978-0-12-821575-3.
- 2020 • Storer, L. N., **Williams, P. D.** and Gill, P. G. (2020) *Aviation Turbulence: Dynamics, Forecasting, and Response to Climate Change*. Chapter 9 (pp 219–234) in *Aviation Meteorology: Observations and Models*, Edited by Ismail Gulpepe and Wayne F. Feltz, Birkhäuser, pp 340, ISBN 978-3-030-30981-7.
- Gulpepe, I., Sharman, R., **Williams, P. D.**, Zhou, B., Ellrod, G., Minnis, P., Trier, S., Griffin, S., Yum, S. S., Gharabaghi, B., Feltz, W., Temimi, M., Pu, Z., Storer, L. N., Kneringer, P., Weston, M. J., Chuang, H.-Y., Thobois, L., Dimri, A. P., Dietz, S. J., França, G. B., Almeida, M. V. and Neto, F. L. A. (2020) *A Review of High Impact Weather for Aviation Meteorology*. Chapter 2 (pp 7–60) in *Aviation Meteorology: Observations and Models*, Edited by Ismail Gulpepe and Wayne F. Feltz, Birkhäuser, pp 340, ISBN 978-3-030-30981-7.

- 2018 • **Williams, P. D.** (2018) A “Forecast Factory”. Chapter on 1922 (pp 124–125) in *Weather: An Illustrated History: From Cloud Atlases to Climate Change*, Andrew Revkin and Lisa Mechaley, Sterling Publishing, pp 224, ISBN 978-1-4549-2140-0.
- 2016 • **Williams, P. D.** and Joshi, M. M. (2016) *Clear-air turbulence in a changing climate*. Chapter 23 (pp 465–480) in *Aviation Turbulence: Processes, Detection, Prediction*, Edited by Robert Sharman and Todd Lane, Springer, pp 523, ISBN 978-3-319-23629-2.
- 2014 • **Williams, P. D.** (2014) *Leapfrogging into the future: How child’s play is at the heart of weather and climate models*. Chapter 45 (pp 168–171) in *50 Visions of Mathematics*, Edited by Sam Parc, Foreword by Dara Ó Briain, Oxford University Press, pp 208, ISBN 978-0-19-870181-1.

### Books Reviewed

- 2013 • **Williams, P. D.** (2013) Review of “The Goldilocks Planet: The Four Billion Year Story of Earth’s Climate” by Jan Zalasiewicz and Mark Williams. *Weather*, **68**(6), p 167.
- 2012 • **Williams, P. D.** (2012) Review of “Atmospheric Dynamics” by Mankin Mak. *Bulletin of the American Meteorological Society*, **93**(2), pp 242–243.
- 2010 • **Williams, P. D.** (2010) Review of “Eloquent Science: A Practical Guide to Becoming a Better Writer, Speaker and Atmospheric Scientist” by David M. Schultz. *Progress in Physical Geography*, **34**(5), pp 729–731.

### Book Forewords

- 2022 • **Williams, P. D.** (2022) Foreword to “Science of Weather, Climate and Ocean Extremes” by John Hay, Elsevier, pp 396, ISBN 9780323855419 (paperback) and 9780323900775 (ebook).

### Meeting Summaries

- 2017 • Chun, H.-Y., Kim, J.-H., Lee, D.-B., Kim, S.-H., Strahan, M., Pettegrew, B., Gill, P., **Williams, P. D.**, Schumann, U., Tenenbaum, J., Lee, Y.-G., Choi, H.-W., Song, I.-S., Park, Y.-J. and Sharman, R. D. (2017) Research Collaborations for Better Predictions of Aviation Weather Hazards. *Bulletin of the American Meteorological Society*, **98**(5), pp ES103–ES107.

### Conference Abstracts

- 2001– 278 abstracts submitted, accepted, and presented