ISABEL H. SMITH

Postdoctoral Research associate - Meteorologist & Climate Modeler

CONTACT

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EXTRA

Federal Aviation Administration (FAA) Seminar (Virtual; Jan 2024)

Discussed the future of aviation, particularly over North America and North Atlantic to a group of 80 employees and external attendees. Great to meet aviation specialist's and develop confidence and further presentation skills.

Media- Turbulence

Interviewed live on TV & Radio

Due to unfortunate aviation injuries in 2023, I was asked to explain and discuss atmospheric turbulence and climate change live on;

- NBC (National Broadcasting Company) USA
- BBC (British Broadcasting Corporation) Radio Berkshire
- CBS (Columbia Broadcasting System) Minnesota News
- Planet Radio
- AccuWeather

Also interviewed by a number of newspapers including Business Insider, Conde Nast Traveler, Wired and Popular Mechanics. I've developed efficient ways of communicating complex meteorological aspects in an effective and clear way for the public.

EDUCATION

Ph.D. - Trends in future atmospheric turbulence in CMIP6 global climate models — **2020 - 2024**
University of Reading, UK

Investigated upper-level atmospheric turbulence in three global climate models, and quantifying projected future changes in Clear Air and Mountain Wave turbulence (CAT, MWT). The high-resolution data required a large amount memory and computational power to fully diagnosing CAT & MWT, therefore actions also involved writing, running, and submitting code as batch runs on the Jasmin LOTUS computing cluster. Due to this work, three main research questions were answered: does model resolution have an impact on CAT research, how are the patches of CAT being altered by climate change, and how is MWT shifting across the globe? From this Ph.D., I learnt how to efficiently plan and organize my time to work optimally and how to approach scientific writing. I also gained confidence in own work and knowledge.

M.Met - Meteorology & Climate — **2016 - 2020**
University of Reading, UK

First class degree with honours in an integrated undergraduate and master's degree, which included a year at the National Weather Center in University of Oklahoma, USA. Due to this degree, I have a wide background knowledge in different meteorological fields. My year aboard furthered my understanding and theory around severe weather and hazards. My final year master's dissertation project focused on lightning intensity and possible increases with climate change. Using a case study approach, I compared ECMWF ERA5 values of CAPE and low level convergence with LINET currents from both positive and negative lightning strikes. The non-linear relationships that arose have been written into a paper to be submitted for review

School — **2014-2016**
Hutchesons' Grammar School, UK

Advanced Higher Qualification SQA Scotland (2016); Mathematics, Physics, Geography. Higher Qualification (2015); English, Chemistry, Intermediate 2 (2014); Spanish. A National certificate in Drama Performance (2016).

PUBLICATIONS

Clear-air turbulence trends over the North Atlantic in high-resolution climate models. — **2023**
Smith, I.H., Williams, P.D. & Schiemann, R., Climate Dynamics 61, 3063–3079. Link to paper.

Using a multi-model approach and twenty-one CAT diagnostics, we quantified projected moderate CAT changes over the North Atlantic. We found strong agreement that northern hemisphere autumn and summer had the greater projected relative increase in CAT frequency, increase by 14% per every 1 °C of global near-surface warming. Despite 25km GCMs having the capacity to resolve a patch of turbulence, no evident grid area bias arose. I gained knowledge in scientific wring and the experience of a peer reviewer.

Media- Extreme weather events

Interviewed live on TV & Radio

Interviewed by ITV (Independent Television) Meridian about extreme weather events, in particular two heatwave events over the UK. Interviewed by BBC Radio Berkshire about COP28 and unusual weather patterns impacting the UK .

Awards

RMetS Early Career and Student Conference winner (2020)

Poster presentation winner for undergraduate Lightning intensity dissertation project.

Training

Atmospheric instrumentation Observer

Trained atmospheric observer for field sites. Weekend University of Reading volunteer within atmospheric observatory.

Charity

San-Francisco Libre Charity member

Part of a charity committee, within the University, that donates money to a region of Nicaragua impacted dangerous weather events for infrastructure and more . Organised the Reading Meteorology charity ball in 2022

SKILLS

Python 7+ yrs

Linux 4+ yrs

R 1+ yrs

Article in The Conversation: Aviation turbulence soared by up to 55% as the world warmed – new research **2023**

Williams, P.D. ,Smith, I.H., & Prosser, M. Link to article.

This article focused on several work from the department around projected CAT changes and impacts on passengers and crew. I learned how to best reduce complex language into an easy to read and clear manor.

EMPLOYMENT HISTORY

Postdoctoral research associate **2025-**
University of Exeter

Assesssing uncertainties in the historical stratospheric aerosol dataset to be used for Phase 7 of the Coupled Model Intercomparison Project (CMIP7), and quantify how these uncertainties propagate to simulated historical climate. Working closely with the European Space Agency, the CMIP Climate Forcing Task Team, the UK Met Office, and international partners.

Part-time forecaster **2017- 2021**
DTN Weather, formerly MeteoGroup

Worked for several years within this large corporate and innovative weather company, providing detailed forecasts for media reports, primarily news papers and articles. Enjoyed applying my extensive knowledge in meteorology, gained through my degree, in a fast paced environment. Developed confidence in professional writing and working to a strict time limit. Aided professionalism, organisation, and time skills.

South East Organiser and Ambassador **2020- 2024**
Royal Meteorological Society (RMetS)

Over the past few years, I've organised and chaired a number of RMetS events for the south-east centre, usually held at the University of Reading. I have learnt how to formally invite speakers across the UK, and how best to chair and organise large sessions.

Teaching Assistant **2020- 2023**
University of Reading

Presented a number of weather briefing forecasts to the department within weather and climate discussions weekly meeting. Demonstrated in two modules each year, in a range of meteorology subjects from boundary layer dynamics to synoptic global circulations.

Start up Intern **2017**
Weathertrending

Internship with new company started by BBC Meteorologists John Hammond and Sara Thornton. Gained a corporate perspective on meteorology and developed skills in media, branding and working with high profile clients.

Part-time Administrator **2016**
Bryden Medical Limited

Staffed within an occupational health medical centre. Involved in improving online impact, updating website and building a social media presence. Gained critical customer service, attention to detail and team work skills.

RECENT CONFERENCES

LaTex 3+ yrs

REFERENCES

Prof. Paul D. Williams

University of Reading, UK
p.d.williams@reading.ac.uk

Prof. Reinhard K. Schiemann

National Centre for Atmospheric Science (NCAS)
University of Reading, UK
r.k.schiemann@reading.ac.uk

American Meteorological Society (AMS) Annual Conference; Aviation, Range, and Aerospace Meteorology Symposium (Baltimore, Maryland, USA) **Jan 2024**
Presentation Title; ***Using high resolution global climate models to project trends in atmospheric turbulence.***

Presented PhD work on Mountain wave Turbulence over North America in several diagnostics and Clear Air Turbulence over the North Atlantic, work from Smith et. al (2023). Attending this symposium was an excellent opportunity to be presented with research on aviation safety and efficiency, from both private and governmental sectors. The detail presentations clearly showed the needs and on-going developments in significant weather forecasting, and gave me a better understanding of costumer and user needs in this field.

CTR Wilson Meeting on Atmospheric Electricity (Bath,UK) **Novermber 2023**
Presentation Title; ***Meteorological factors influencing observed lightning discharge current***

Presented my masters dissertation findings at this conference after recently rewriting the work as a paper. A fantastic chance to refresh myself on the world of atmospheric electricity and learn about new and upcoming research, such as work being completed around the Met. Office's new automatic lightning location network LEELA.

Asia Oceania Geosciences Society (AOGS) Annual Conference (Singapore) **August 2023**
Presentation Title; ***Project Trends in Clear Air Turbulence Over the North Atlantic.***

I attended AOGS in person to meet several world leading experts in upper-level aviation-scale atmospheric turbulence. A fantastic chance to discuss collaborations and get comments and questions on my future work.

European Geosciences Union General Assembly (Vienna, Austria **May 2022**
Presentation Title; ***Using high-resolution climate models to predict increases in atmospheric turbulence***

I travelled to Vienna to present my initial Ph.D. findings. It was a great opportunity to present work to knowledgeable academics and meet colleagues in a wide range of specialities. It was my initial experience in discussing my work to external non-turbulence specialists, which aided me in future media work .

Royal Meteorological Society (RMetS) Student and Early Career Scientist Conference (Virtual) **June 2021**
Poster Title; ***Using high-resolution climate models to predict increases in atmospheric turbulence (poster)***

This conference was organised by myself and other Ph.D. students from across the UK. I was involved in reading and reviewing abstracts, chairing sessions and planning. I worked efficiently in a large team, which lead to a very successful conference.

FURTHER EXPERIENCE

Doctoral training partnership (DTP) Conference **2021**

Involved in organising the annual Ph.D. DTP conference, which invites students from across the UK in the same training partnership as my own at the University of Reading. I took action in inviting key speakers, scheduling the program, and chair events. I gained skills in team management and planning .

Brian Hoskins Dynamical Processes Research Group **2021-2023**

Managed the University of Reading Dynamical Process Research group. It entailed chairing sessions, organising external and internal speakers, frequently presenting and scheduling meeting slots and locations. Through this I've gained confidence in asking questions and giving comments to all within the department and externally.