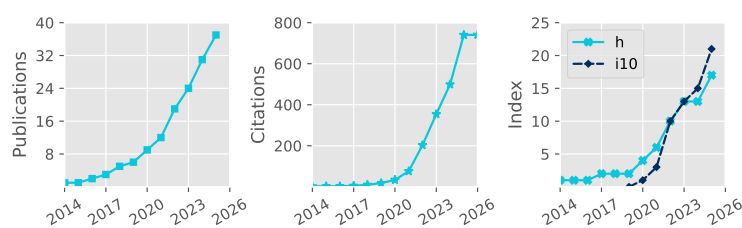


Denis Sergeev

 Pronouns: he/him/his
 University of Bristol, UK
 denis.sergeev@bristol.ac.uk
0000-0001-8832-5288
 dennissergeev.github.io
 dennissergeev



Total Pub. **37**
Refereed **36**
First Author **8**
Citations **741**
h-index **17**

Updated: 13 Dec 2025

Career history

| | |
|-------------------|--|
| Jan 2025–now | Lecturer in Astrophysics School of Physics, University of Bristol |
| Sep 2021–Dec 2024 | Postdoctoral Researcher Project: Exascale Exoplanet Modelling Department of Physics & Astronomy, University of Exeter |
| Sep 2018–Aug 2021 | Postdoctoral Researcher Project: Climate Modelling of Rocky Exoplanets Department of Mathematics & Statistics, University of Exeter |

Academic Qualifications

| | |
|-------------------|---|
| Oct 2014–Aug 2018 | PhD in Meteorology Thesis title (shortened): 'Characteristics of Polar Lows in the Nordic Seas' ↗ School of Environmental Sciences, University of East Anglia Supervisors: Ian A. Renfrew, Thomas Spengler, Stephen Dorling |
| Sep 2009–May 2014 | Specialist Diploma (1st class) Thesis title: 'Idealised Numerical Modelling of Polar Mesocyclone Dynamics' ↗ Department of Meteorology and Climatology, Moscow State University Supervisor: Victor Stepanenko |

Funding and Awards

| Direct Funding, PI | Est. Total Value |
|---|------------------|
| 2024 Above & Beyond Silver Award University of Exeter | £1000 |
| 2023 Meeting Organisation Funding (Exoclimes VI and ExoSLAM) RAS | £5000 |
| 2022 Undergraduate Student Bursary (awarded; student declined) RAS | £1200 |
| 2017 Best Presentation Award CEEDA Symposium | ~£100 |
| 2016 Travel Bursary Polar Prediction School | ~£1000 |
| 2015 Travel Award High-Latitude Dynamics workshop | ~£1000 |
| 2014 Lord Zuckerman PhD scholarship School of Environmental Sciences, UEA | ~£112 000 |
| 2014 Young Scientist Travel Award EGU General Assembly | ~£200 |
| 2014 Russian Academy of Sciences Young Scientist Medal | ~£1000 |

| Direct Funding, co-I | |
|---|----------|
| 2024 UKSA Studentships: Mars Exploration Science | ▪ |
| 2024 Research Software Engineer Support DiRAC HPC | ~£45 000 |

| Observational Facilities Resources | |
|---|---|
| 2023 JWST: 49.21 Primary Spacecraft Hours in Cycle 2 (GO 3838, PI: J. Kirk) | ▪ |

Research Interests

| | |
|--|--|
| Atmospheric aerosols: | Publications (see below): #17, 20, 22, 24, 27, 29, 34 |
| ▪ How do clouds, hazes and dust shape planetary climates? | |
| Atmospheric convection on exoplanets: | #8, 17, 30, 35 |
| ▪ How does convection shape global energy redistribution? | |
| Extraterrestrial lightning: | #19, 35 |
| ▪ How is lightning generated on exoplanets and can we detect it? | |

Atmospheric dynamics on Earth and other planets:

#2, 3, 4, 5, 7, 10, 11, 13, 14, 16

- How do wind jets and cyclones form in planetary atmospheres?

Planet formation and atmospheric evolution:

#25, 28, 31, 32, 33, 36, 37

- How does atmospheric composition relate to the planet's history?

Model development and intercomparison:

#12, 15, 16, 17, 18, 23, 30, 36

- How do we build robust and reproducible exoplanet models?

Publications

| # | (preprints in grey) | Citations |
|----|---|-----------|
| 37 | Ahrer, E., Fairman, C., Kirk, J., Wakeford, H. R., et al. (incl. Sergeev, D. E.), 2025, BOWIE-ALIGN: weak spectral features in KELT-7b's JWST NIRSpec/G395H transmission spectrum imply a high cloud deck or a low-metallicity atmosphere, MNRAS 🔗 | 2 |
| 36 | Lichtenberg, T., Schaefer, L., Krissansen-Totton, J., Miguel, Y., et al. (incl. Sergeev, D. E.), 2025, Coupled atmospHere Interior model Intercomparison (CHILI) Protocol Version 1.0: A CUISINES Intercomparison Project of Magma Ocean Models, arXiv:2511.16142 🔗 | ▪ |
| 35 | Mak, M. T., Sergeev, D. E. , Mayne, N. J., Zamyatina, M., et al., 2025, The impact of different haze types on the atmospheres and observations of hot Jupiters: 3D simulations of HD 189733b, HD 209458b, and WASP-39b, MNRAS 🔗 | ▪ |
| 34 | Sergeev, D. E. , McDermott, J. W., Woods, L., Braam, M., et al., 2025, Lightning activity on a tidally locked terrestrial exoplanet in storm-resolving simulations for a range of surface pressures, MNRAS 🔗 | ▪ |
| 33 | Meech, A., Claringbold, A. B., Ahrer, E., Kirk, J., et al. (incl. Sergeev, D. E.), 2025, BOWIE-ALIGN: substellar metallicity and carbon depletion in the aligned TrES-4b with JWST NIRSpec transmission spectroscopy, MNRAS 🔗 | 8 |
| 32 | Kirk, J., Ahrer, E., Claringbold, A. B., Zamyatina, M., et al. (incl. Sergeev, D. E.), 2025, BOWIE-ALIGN: JWST reveals hints of planetesimal accretion and complex sulphur chemistry in the atmosphere of the misaligned hot Jupiter WASP-15b, MNRAS 🔗 | 22 |
| 31 | Penzlin, A. B. T., Booth, R. A., Kirk, J., Owen, J. E., et al. (incl. Sergeev, D. E.), 2024, BOWIE-ALIGN: how formation and migration histories of giant planets impact atmospheric compositions, MNRAS 🔗 | 25 |
| 30 | Sergeev, D. E. , Boutle, I. A., Lambert, F. H., Mayne, N. J., et al., 2024, The Impact of the Explicit Representation of Convection on the Climate of a Tidally Locked Planet in Global Stretched-mesh Simulations, ApJ 🔗 | 8 |
| 29 | Natchiar, S. R. M., Webb, M. J., Lambert, F. H., Vallis, G. K., et al. (incl. Sergeev, D. E.), 2024, Reduction in the Tropical High Cloud Fraction in Response to an Indirect Weakening of the Hadley Cell, JAMES 🔗 | 1 |
| 28 | Zamyatina, M., Christie, D. A., Hébrard, E., Mayne, N. J., et al. (incl. Sergeev, D. E.), 2024, Quenching-driven equatorial depletion and limb asymmetries in hot Jupiter atmospheres: WASP-96b example, MNRAS 🔗 | 14 |
| 27 | Mak, M. T., Sergeev, D. E. , Mayne, N., Banks, N., et al., 2024, 3D simulations of TRAPPIST-1e with varying CO ₂ , CH ₄ , and haze profiles, MNRAS 🔗 | 6 |
| 26 | Villanueva, G. L., Fauchez, T. J., Kofman, V., Alei, E., et al. (incl. Sergeev, D. E.), 2024, Modeling Atmospheric Lines by the Exoplanet Community (MALBEC) Version 1.0: A CUISINES Radiative Transfer Intercomparison Project, Planet. Sci. J. 🔗 | 11 |
| 25 | Kirk, J., Ahrer, E., Penzlin, A. B. T., Owen, J. E., et al. (incl. Sergeev, D. E.), 2024, BOWIE-ALIGN: A JWST comparative survey of aligned versus misaligned hot Jupiters to test the dependence of atmospheric composition on migration history, RAS Techniques and Instruments 🔗 | 18 |
| 24 | Mak, M. T., Mayne, N. J., Sergeev, D. E. , Manners, J., et al., 2023, 3D Simulations of the Archean Earth Including Photochemical Haze Profiles, J. Geophys. Res.: Atmospheres 🔗 | 7 |
| 23 | Sergeev, D. E. , Mayne, N. J., Bendall, T., Boutle, I. A., et al., 2023, Simulations of idealised 3D atmospheric flows on terrestrial planets using LFRic-Atmosphere, Geosci. Model Dev. 🔗 | 13 |
| 22 | Cohen, M., Bollasina, M. A., Sergeev, D. E. , Palmer, P. I., et al., 2023, Traveling Planetary-scale Waves Cause Cloud Variability on Tidally Locked Aquaplanets, Planet. Sci. J. 🔗 | 8 |
| 21 | Eager-Nash, J. K., Mayne, N. J., Nicholson, A. E., Prins, J. E., et al. (incl. Sergeev, D. E.), 2023, 3D Climate Simulations of the Archean Find That Methane has a Strong Cooling Effect at High Concentrations, J. Geophys. Res.: Atmospheres 🔗 | 6 |

- 20 McCulloch, D., **Sergeev, D. E.**, Mayne, N., Bate, M., et al., 2023, A modern-day Mars climate in the Met Office Unified Model: dry simulations, *Geosci. Model Dev.* [↗](#) **6**
- 19 Braam, M., Palmer, P. I., Decin, L., Ridgway, R. J., et al. (incl. **Sergeev, D. E.**), 2022, Lightning-induced chemistry on tidally-locked Earth-like exoplanets, *MNRAS* [↗](#) **17**
- 18 Christie, D. A., Lee, E. K. H., Innes, H., Noti, P. A., et al. (incl. **Sergeev, D. E.**), 2022, CAMEMBERT: A Mini-Neptunes General Circulation Model Intercomparison, Protocol Version 1.0.A CUISINES Model Intercomparison Project, *Planet. Sci. J.* [↗](#) **9**
- 17 **Sergeev, D. E.**, Fauchez, T. J., Turbet, M., Boutle, I. A., et al., 2022, The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). II. Moist Cases-The Two Waterworlds, *Planet. Sci. J.* [↗](#) **71**
- 16 Turbet, M., Fauchez, T. J., **Sergeev, D. E.**, Boutle, I. A., et al., 2022, The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). I. Dry Cases-The Fellowship of the GCMs, *Planet. Sci. J.* [↗](#) **60**
- 15 Fauchez, T. J., Villanueva, G. L., **Sergeev, D. E.**, Turbet, M., et al., 2022, The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). III. Simulated Observables-the Return of the Spectrum, *Planet. Sci. J.* [↗](#) **53**
- 14 **Sergeev, D. E.**, Lewis, N. T., Lambert, F. H., Mayne, N. J., et al., 2022, Bistability of the Atmospheric Circulation on TRAPPIST-1e, *Planet. Sci. J.* [↗](#) **30**
- 13 Cohen, M., Bollasina, M. A., Palmer, P. I., **Sergeev, D. E.**, et al., 2022, Longitudinally Asymmetric Stratospheric Oscillation on a Tidally Locked Exoplanet, *ApJ* [↗](#) **15**
- 12 Fauchez, T. J., Turbet, M., **Sergeev, D. E.**, Mayne, N. J., et al., 2021, TRAPPIST Habitable Atmosphere Intercomparison (THAI) Workshop Report, *Planet. Sci. J.* [↗](#) **38**
- 11 Terpstra, A., Renfrew, I. A., & **Sergeev, D. E.**, 2021, Characteristics of Cold-Air Outbreak Events and Associated Polar Mesoscale Cyclogenesis over the North Atlantic Region, *J. Cli.* [↗](#) **28**
- 10 Renfrew, I. A., Barrell, C., Elvidge, A. D., Brooke, J. K., et al. (incl. **Sergeev, D.**), 2021, An evaluation of surface meteorology and fluxes over the Iceland and Greenland Seas in ERA5 reanalysis: The impact of sea ice distribution, *Q. J. R. Meteorol. Soc.* [↗](#) **70**
- 9 Eager-Nash, J. K., Reichelt, D. J., Mayne, N. J., Hugo Lambert, F., et al. (incl. **Sergeev, D. E.**), 2020, Implications of different stellar spectra for the climate of tidally locked Earth-like exoplanets, *A&A* [↗](#) **25**
- 8 **Sergeev, D. E.**, Lambert, F. H., Mayne, N. J., Boutle, I. A., et al., 2020, Atmospheric Convection Plays a Key Role in the Climate of Tidally Locked Terrestrial Exoplanets: Insights from High-resolution Simulations, *ApJ* [↗](#) **64**
- 7 Joshi, M. M., Elvidge, A. D., Wordsworth, R., & **Sergeev, D.**, 2020, Earth's Polar Night Boundary Layer as an Analog for Dark Side Inversions on Synchronously Rotating Terrestrial Exoplanets, *ApJ* [↗](#) **18**
- 6 Renfrew, I. A., Pickart, R. S., Våge, K., Moore, G. W. K., et al. (incl. **Sergeev, D.**), 2019, The Iceland Greenland Seas Project, *BAMS* [↗](#) **27**
- 5 **Sergeev, D.**, Renfrew, I. A., & Spengler, T., 2018, Modification of Polar Low Development by Orography and Sea Ice, *Mon. Wea. Rev.* [↗](#) **17**
- 4 Shestakova, A. A., Toropov, P. A., Stepanenko, V. M., **Sergeev, D. E.**, et al., 2018, Observations and modelling of downslope windstorm in Novorossiysk, *Dyn. Atm. Ocean.* [↗](#) **6**
- 3 **Sergeev, D. E.**, Renfrew, I. A., Spengler, T., & Dorling, S. R., 2017, Structure of a shear-line polar low, *Q. J. R. Meteorol. Soc.* [↗](#) **22**
- 2 Spengler, T., Renfrew, I. A., Terpstra, A., Tjernström, M., et al. (incl. **Sergeev, D.**), 2016, High-Latitude Dynamics of Atmosphere-Ice-Ocean Interactions, *BAMS* [↗](#) **7**
- 1 Eliseev, A. V., & **Sergeev, D. E.**, 2014, Impact of subgrid-scale vegetation heterogeneity on the simulation of carbon-cycle characteristics, *Izv. Atmos. Ocean. Phy.* [↗](#) **9**

Conferences and Seminars

Invited Talks

- Oct 2025 CUISINES — a framework for exoplanet model intercomparison projects
Atmospheric and interior evolution of planetary magma oceans | Leiden, the Netherlands
- Jun 2025 Atmospheric dynamics on other planets [↗](#)
Durham HPC Days | Durham, UK
- Feb 2025 Exoplanet climate modelling with LFRic

- University of East Anglia | Norwich, UK
- May 2024 3D simulations of exoplanet atmospheres with the next-generation Met Office model
University of Leicester | Leicester, UK
- Apr 2024 Shall I compare thee to a distant world? Inter-planet and inter-model comparative studies
EGU General Assembly | Vienna, Austria
- Jul 2023 Simulations of idealised 3D atmospheric flows on terrestrial planets using LFRic-Atmosphere
NASA GISS Seminar | Online
- Mar 2023 First results of using LFRic for exoplanet climate modelling
NIWA Seminar | Wellington, New Zealand
- Feb 2023 Atmospheric dynamics and chemistry on exoplanets
UQ Astro Group Meeting | Brisbane, Australia
- Feb 2023 Atmospheric dynamics and chemistry on exoplanets [↗](#)
UniSQ Exoplanet Group Seminar | Brisbane, Australia
- Feb 2023 Atmospheric dynamics and chemistry on exoplanets
UNSW AstroSeminar | Sydney, Australia
- Apr 2022 Dichotomy of the atmospheric circulation on TRAPPIST-1e [↗](#)
NASA GISS Seminar | Online
- Jan 2022 Dichotomy of the atmospheric circulation on TRAPPIST-1e
NASA GSFC Extrasolar Planets Seminar | Online
- Nov 2021 TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI)
MPIA APEX Exocoffee | Online
- May 2021 Overcast on TRAPPIST-1e [↗](#)
RCC MSU Geophysical Seminar | Online
- Sep 2020 Simulations of convection over a range of atmospheric conditions on TRAPPIST-1e [↗](#)
THAI Workshop | Online
- Apr 2020 Atmospheric convection plays a key role in the climate of tidally locked exoplanets [↗](#)
University of Reading Meteorology Seminar | Online
- Apr 2020 Atmospheric convection plays a key role in the climate of tidally locked exoplanets [↗](#)
NASA GISS Seminar | Online

Contributed Talks

- Sep 2023 Introducing GeoVista - Cartographic rendering and mesh analytics powered by PyVista (joint talk)
Met Office Seminar | Exeter, UK
- Jul 2022 Bistability of the atmospheric circulation on TRAPPIST-1e
Rocky Worlds II | Oxford, UK
- Apr 2022 Dichotomy of the atmospheric circulation on TRAPPIST-1e
Exoplanet Modelling in the James Webb Era II: Terrestrial planets and sub-Neptunes | Online
- Nov 2020 Explicit convection on tidally locked rocky exoplanets simulated with the UM nesting suite [↗](#)
Unified Model users workshop | Online
- Aug 2019 Simulations of moist convection on tidally-locked rocky exoplanets [↗](#)
Exoclines V | Oxford, UK
- Jun 2019 North Atlantic polar mesoscale cyclones in ERA5 and ERA-Interim reanalyses [↗](#)
IGP workshop | Norwich, UK
- Apr 2019 Atmospheric convection on tidally-locked Earth-like exoplanets
UK Exoplanet Community Meeting | London, UK
- Jun 2018 Modification of Polar Low Development by Sea Ice and Svalbard Orography [↗](#)
POLAR2018 | Davos, Switzerland
- Oct 2017 The influence of Svalbard orography and sea ice on polar low development [↗](#)
18th Cyclone Workshop | Sainte-Adèle, Canada
- Apr 2017 Polar lows and how background environment can influence their development [↗](#)
Cambridge Earth Systems Science EnvEast Doctoral Alliance Symposium | Cambridge, UK
- May 2016 Structure of the shear-line polar low south of Svalbard
NORPAN meeting | Tokyo, Japan
- Apr 2016 Structure of the shear-line polar low south of Svalbard [↗](#)

13th European Polar Lows Working Group Workshop | Paris, France

Poster Presentations

- Nov 2025 Lightning climatology on rocky exoplanets in a global storm-resolving model
CTR Wilson Meeting on Atmospheric Electricity | Bath, UK
- Jun 2024 The impact of convection on the climate of a tidally locked planet in stretched-mesh simulations
Exoplanets 5 | Leiden, Netherlands
- Apr 2024 The impact of convection on the climate of TRAPPIST-1e in global stretched-mesh simulations
EGU General Assembly | Vienna, Austria
- Apr 2024 The impact of convection on the climate of a tidally locked planet in stretched-mesh simulations
UK Exoplanet Community Meeting | Birmingham, UK
- Nov 2022 Dry Modern-Day Mars Climate in the Met Office Unified Model
UK Solar System Planetary Atmospheres | London, UK
- Sep 2022 Bistability of the Atmospheric Circulation on TRAPPIST-1e
UK Exoplanet Community Meeting | Edinburgh, UK
- Jul 2015 Structure and dynamics of a shear-line polar low during a cold-air outbreak over the Norwegian Sea
Royal Meteorological Society Student Conference | Birmingham, UK
- Mar 2015 Structure and dynamics of a shear-line polar low during a cold-air outbreak over the Norwegian Sea
Dynamics of Atmosphere-Ice-Ocean Interactions in the High Latitudes workshop | Rosendal, Norway
- May 2014 Numerical modelling of polar mesocyclones dynamics diagnosed by the energy budget
EGU General Assembly | Vienna, Austria
- Apr 2013 Impact of subgrid-scale vegetation heterogeneity on the carbon cycle
EGU General Assembly | Vienna, Austria
- Apr 2013 Numerical modelling of polar mesocyclones generation mechanisms
EGU General Assembly | Vienna, Austria

Supervision

(Projects with me as the lead supervisor are in **bold**. Students who continued their academic career are underlined.)

PhD Supervision

- Sep 2025–Sep 2029 **Alex Corbett** (U. Bristol)
Project: Convection on Sub-Neptunes
Co-supervisors: B. Shipway, Z. Leinhardt
- Sep 2025–Sep 2029 Will Luscombe
Project: Forecasting Martian dust storms
Co-supervisors: N. J. Mayne, M. Bate, B. Drummond
- Sep 2021–Apr 2025 Mei Ting (Martha) Mak (U. Exeter)
Project: Hazes in Planetary Atmospheres
Co-supervisors: N. J. Mayne, J. Manners, E. Hébrard

Master's and MSci Supervision

- Sep 2025–May 2026 **Freya Evans & Daisy Green**
Project: **Atmospheric Dynamics on Ice Giants**
- Sep 2025–May 2026 **Catherine Kerr & Lily Odhuba**
Project: Lightning Storms on Earth-like Exoplanets
- Jan 2023–May 2024 Tom Batchelor, Luke Benzing, & Alex McGinty
Project: Mars Atmosphere Modelling
Co-supervisors: M. Bate, N. J. Mayne, D. McCulloch
- Sep 2020–Sep 2022 Danny McCulloch (MSci by Research)
Project: Climate Modelling of Modern-Day Mars
Co-supervisors: M. Bate, N. J. Mayne
- Apr 2021–Sep 2022 Meghan Plumridge (MSci by Research)
Project: Climate Modelling of Early Mars

| | |
|-------------------|--|
| Jan 2021–May 2022 | Co-supervisors: M. Bate, N. J. Mayne Jasper Chadwick & Esse Sellwood Project: Ocean Heat Transport on Rocky Exoplanets Co-supervisors: F. H. Lambert, J. Eager-Nash |
| Jan 2021–May 2022 | Isabelle Browne & <u>Oakley Young</u> Project: Greenhouse Effect on Early Mars Co-supervisors: F. H. Lambert, N. J. Mayne, J. Eager-Nash |
| Jan 2020–May 2021 | Toby Ferrison Project: Titan Climate Modelling Co-supervisor: F. H. Lambert |
| Oct 2018–May 2019 | <u>Jake Eager-Nash</u> & David Reichelt Project: Implications of Stellar Type on the Climate of Tidally Locked Terrestrial Exoplanets Co-supervisors: F. H. Lambert, N. J. Mayne |

Undergraduate and Summer Internship Supervision

| | |
|--------------|---|
| Jul–Sep 2022 | <u>Oakley Young</u> Project: Ekman Ocean Model Co-supervisors: J. Eager-Nash, F. H. Lambert |
| Jun–Sep 2022 | <u>James McDermott & Lottie Woods</u> Project: Simulations of Lightning Storms on Tidally Locked Rocky Exoplanets |
| Jun–Aug 2021 | <u>Oakley Young</u> Project: Climate Modelling of Archean Earth Co-supervisors: J. Eager-Nash, N. J. Mayne |
| Jun–Aug 2021 | Joshua Parkin & Esse Sellwood Project: The Impact of Host Star Spectrum on the Climate of Rocky Exoplanets Co-supervisors: J. Eager-Nash, N. J. Mayne |
| Jun–Aug 2019 | <u>Isobel Parry</u> Project: Water Cycle on Proxima Centauri b Co-supervisor: F. H. Lambert |

Teaching and Mentoring

| | |
|-----------|--|
| 2026–now | Environmental Physics Lecturer University of Bristol ~40 students |
| 2025–now | Practical Physics III: Research Skills and Group Project Tutor University of Bristol 2 groups of ~7 students |
| 2025–now | Research Project in Physics Supervisor & assessor University of Bristol ~10 students |
| Jul 2024 | Algorithms For Exascale Summer School 🔗 Invited lecturer University of Exeter ~20 students |
| Feb 2024 | Physics of Climate Change Workshop lead University of Exeter ~30 students |
| Jul 2023 | Climatemark Academy Mentor Online 3 groups of ~5 students |
| Jul 2023 | International Sustainability Summer School Lecturer University of Exeter ~10 students |
| Jun 2023 | Exoclimes Summer School in Atmospheres and Modelling (ExoSLAM) 🔗 Lecturer University of Exeter ~50 students |
| 2016–2018 | Introduction to Python in Environmental Sciences 🔗 Course creator & lead University of East Anglia ~50 students |
| 2015–2017 | Modelling Environmental Processes; Meteorology; Numerical Skills Teaching assistant University of East Anglia |

Research Leadership and Impact

- 2024–now [Co-lead](#) of [Climates Using Interactive Suites of Intercomparisons Nested for Exoplanet Studies \(CUISINES\)](#) [↗](#)
- Jun 2023 [Co-chair](#) of [Exoclimes Summer School in Atmospheres and Modelling \(ExoSLAM\)](#) [↗](#)
- 2023 [Interview](#) by the University of Exeter about my research [↗](#)
- 2023 [Interview](#) by UKRI/STFC about my outreach [↗](#)
- 2023 [Expert Scientist](#) at the British Science Festival Climate Exhibition [↗](#)
- 2022 [Press releases](#): University of Exeter [↗](#), American University [↗](#), & INSU CNRS [↗](#)
- 2020–now 3D visualisations of exoplanet simulations:
'Cloudy Skies of Distant Exoplanets' [↗](#) | University of Exeter Images of Research 2023
'A refined look at tidally locked exoplanets' [↗](#) | DiRAC HPC Research Image Competition 2023
'Exoplanetary Atmospheres' [↗](#) | Exeter Science Centre, Science as Art Gallery 2020
'Dusty exoplanet atmospheres' [↗](#) | Nature Press Release
'Virtual Reality Exploration of Exoplanets' [↗](#) | 360 VR video (contributor)
- 2019 [Science consulting](#) on the 'Exoplanet Explorers' videogame
- 2015 [Blogging](#):
[Disastrous Disaster Movies](#) [↗](#)
[Polar Lows: What Fuels Arctic Hurricanes?](#) [↗](#)
[Worldwide Weird Weather Words](#) [↗](#)

Organisation of Scientific Meetings

- Mar 2026 [UK Exoplanet Community Meeting \(SOC\)](#) [↗](#) | Bristol, UK
- Oct 2025 [Atmospheric and interior evolution of planetary magma oceans \(SOC\)](#) [↗](#) | Leiden, the Netherlands
- Sep 2025 [BUFFET-5 \(Co-chair\)](#) [↗](#) | Bordeaux, France
- Jul 2025 [Exoclimes VII \(SOC\)](#) [↗](#) | Montreal, Canada
- Jun 2025 [Idealised modelling with LFRic \(Chair\)](#) | Exeter, UK | ~50 attendees
- Oct 2024 [BUFFET-4: Building a Unified Framework For Exoplanet Treatments \(Co-chair\)](#) [↗](#) | Online
- Jun 2024 [What's Cookin' Doc? A CUISINES meeting \(Chair\)](#) | Leiden, the Netherlands | ~20 attendees
- Jun 2023 [ExoSLAM Summer School \(Co-chair\)](#) [↗](#) | Exeter, UK | ~50 attendees
- Jun 2023 [Exoclimes VI \(LOC\)](#) [↗](#) | Exeter, UK | ~200 attendees
- Mar 2023 [Challenge of Science Leadership Short Course](#) | Exeter, UK

Reviewing and Academic Service

- Journals [Nat. Astron.](#), [MNRAS](#), [Planet. Sci. J.](#), [Geophys. Res. Lett.](#), [ApJ](#), [Planet. Space Sci.](#), [Q. J. R. Meteorol. Soc.](#)
- Funding [STFC Consolidated Grant](#), [STFC ERF](#)
- Observations [James Webb Space Telescope General Observer Programs \(Exoplanets & Disks, Cycles 3 & 4\)](#)
- Membership [Royal Astronomical Society](#), [Europlanet Society](#)

Technical Skills

- | | |
|--|--|
| Numerical models | LFRic, Unified Model, SOCRATES, LAGRANTO, Isca |
| Programming languages | Python, FORTRAN, MATLAB, NCL |
| Python libraries (user) | cartopy, cython, iris, matplotlib, numpy, pandas, pyvista, xarray |
| Python libraries (creator/contributor) | aeolus, cartopy, pyvista, geovista |
| Parallel computing | Dask, MPI, OpenMP |
| Version control | Git, Subversion |
| Document preparation | \LaTeX , Quarto, Jupyter Notebooks, Markdown, HTML, CSS, reST |

Vocational Training

- Sep 2023 [Belbin Training](#) [↗](#)
- Mar 2023 [Challenge of Science Leadership](#) [↗](#)
- Dec 2022 [Interview Training](#)

Jul 2020 Writing Workshop for Climate Scientists
Mar 2020 ESA JWST Master Class [↗](#)
Jul 2019 ICTP Summer School on Convective Organization and Climate Sensitivity [↗](#)
Apr 2018 Fortran Modernisation Workshop [↗](#)
Jan 2018 Helicopter Underwater Escape Training Course (CA-EBS) [↗](#)
Dec 2017 Sea Survival Course
Jun 2017 Weather Presenting
Feb 2017 Level 1 First Aid for Field Work Course
Jan 2017 Raspberry Pi Basics
Apr 2016 WWRP/WCRP/Bolin Center Polar Prediction School
Dec 2014 UK Met Office Unified Model Training

Vocational Experience

Apr–Jun 2018 Data Technician
Processing of meteorological data collected in the IGP field campaign [↗](#) | University of East Anglia
2015–2018 Founder and Leader
Python Users Group [↗](#) | University of East Anglia
Feb–Mar 2018 Member of the Meteorology Team
The Iceland-Greenland Seas Project (IGP) field campaign | Akureyri, Iceland
Mar 2015 Rapporteur
Dynamics of Atmosphere-Ice-Ocean Interactions in the High-Latitudes [↗](#) | Rosendal, Norway
Oct 2013 Research Intern
Geophysical Institute | University of Bergen, Norway
Aug–Sep 2013 Trainee Forecaster
Forecast and Briefing Service | Main Aviation Meteorological Centre, Vnukovo Airport
Jul 2012 Research Intern
A.M. Obukhov Institute of Atmospheric Physics | Moscow, Russia