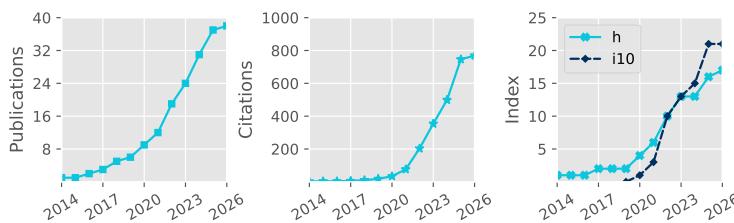


# Denis Sergeev

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• dennissergeev



|              |     |
|--------------|-----|
| Total Pub.   | 38  |
| Refereed     | 37  |
| First Author | 8   |
| Citations    | 769 |
| h-index      | 17  |

Updated: 29 Jan 2026

## Career history

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

## Academic Qualifications

|                   |   |
|-------------------|---|
| Oct 2014–Aug 2018 | <b>PhD in Meteorology</b><br>Thesis title (shortened): 'Characteristics of Polar Lows in the Nordic Seas' <a href="#">🔗</a><br>School of Environmental Sciences, University of East Anglia<br>Supervisors: Ian A. Renfrew, Thomas Spengler, Stephen Dorling |
| Sep 2009–May 2014 | <b>Specialist Diploma (1<sup>st</sup> class)</b><br>Thesis title: 'Idealised Numerical Modelling of Polar Mesocyclone Dynamics' <a href="#">🔗</a><br>Department of Meteorology and Climatology, Moscow State University<br>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   CEEADA 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                     |   |                  |
| 2025                                     | Meeting Organisation Funding (UKExoM 2026)   RAS                              | £2500            |
| 2025                                     | Isambard 3 Allocation (30,000 node-hours; PI: N.J. Mayne)   UKRI (Isambard 3) | ▪                |
| 2024                                     | UKSA Studentships: Mars Exploration Science                                   | ~£100 000        |
| 2024                                     | Research Software Engineer Support   DiRAC HPC                                | ~£45 000         |
| Observational Facilities Resources, co-I |   |                  |
| 2023                                     | JWST Cycle 2, 49.21 hours (GO 3838, PI: J. Kirk)                              | ▪                |

## Research Interests

### Atmospheric aerosols:

- How do clouds, hazes and dust shape planetary climates?

### Atmospheric convection on exoplanets:

- How does convection shape global energy redistribution?

Publications (see below):

#17, 20, 22, 24, 27, 29, 34

#8, 17, 30, 35

|  |                                    |
|--|------------------------------------|
| <b>Extraterrestrial lightning:</b>                                 | #19, 35                            |
| ▪ How is lightning generated on exoplanets and can we detect it?   |                                    |
| <b>Atmospheric dynamics on Earth and other planets:</b>            | #2, 3, 4, 5, 7, 10, 11, 13, 14, 16 |
| ▪ How do wind jets and cyclones form in planetary atmospheres?     |                                    |
| <b>Planet formation and atmospheric evolution:</b>                 | #25, 28, 31, 32, 33, 36, 37, 38    |
| ▪ How does atmospheric composition relate to the planet's history? |                                    |
| <b>Model development and intercomparison:</b>                      | #12, 15, 16, 17, 18, 23, 30, 36    |
| ▪ How do we build robust and reproducible exoplanet models?        |                                    |

## Publications

| #  | (preprints in grey)   | Citations |
|----|---|-----------|
| 38 | Claringbold, A. B., Fisher, C. E., Kirk, J., Ahrer, E., et al. (incl. <b>Sergeev, D. E.</b> ), 2026, BOWIE-ALIGN: Sub-solar C/O ratio and metallicity atmosphere of the misaligned hot Jupiter HAT-P-30 b, MNRAS <a href="#">🔗</a>  | ▪         |
| 37 | Ahrer, E., Fairman, C., Kirk, J., Wakeford, H. R., et al. (incl. <b>Sergeev, D. E.</b> ), 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 <a href="#">🔗</a>                                  | 3         |
| 36 | Lichtenberg, T., Schaefer, L., Krissansen-Totton, J., Miguel, Y., et al. (incl. <b>Sergeev, D. E.</b> ), 2025, Coupled atmosphHere Interior modeL Intercomparison (CHILI) Protocol Version 1.0: A CUISINES Intercomparison Project of Magma Ocean Models, arXiv:2511.16142 <a href="#">🔗</a>                | ▪         |
| 35 | Mak, M. T., <b>Sergeev, D. E.</b> , 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 <a href="#">🔗</a>  | ▪         |
| 34 | <b>Sergeev, D. E.</b> , 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 <a href="#">🔗</a>   | ▪         |
| 33 | Meech, A., Claringbold, A. B., Ahrer, E., Kirk, J., et al. (incl. <b>Sergeev, D. E.</b> ), 2025, BOWIE-ALIGN: substellar metallicity and carbon depletion in the aligned TrES-4b with JWST NIRSpec transmission spectroscopy, MNRAS <a href="#">🔗</a>   | 8         |
| 32 | Kirk, J., Ahrer, E., Claringbold, A. B., Zamyatina, M., et al. (incl. <b>Sergeev, D. E.</b> ), 2025, BOWIE-ALIGN: JWST reveals hints of planetesimal accretion and complex sulphur chemistry in the atmosphere of the misaligned hot Jupiter WASP-15b, MNRAS <a href="#">🔗</a>                              | 23        |
| 31 | Penzlin, A. B. T., Booth, R. A., Kirk, J., Owen, J. E., et al. (incl. <b>Sergeev, D. E.</b> ), 2024, BOWIE-ALIGN: how formation and migration histories of giant planets impact atmospheric compositions, MNRAS <a href="#">🔗</a>   | 28        |
| 30 | <b>Sergeev, D. E.</b> , 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 <a href="#">🔗</a>  | 9         |
| 29 | Natchiar, S. R. M., Webb, M. J., Lambert, F. H., Vallis, G. K., et al. (incl. <b>Sergeev, D. E.</b> ), 2024, Reduction in the Tropical High Cloud Fraction in Response to an Indirect Weakening of the Hadley Cell, JAMES <a href="#">🔗</a>   | 1         |
| 28 | Zamyatina, M., Christie, D. A., Hébrard, E., Mayne, N. J., et al. (incl. <b>Sergeev, D. E.</b> ), 2024, Quenching-driven equatorial depletion and limb asymmetries in hot Jupiter atmospheres: WASP-96b example, MNRAS <a href="#">🔗</a>  | 14        |
| 27 | Mak, M. T., <b>Sergeev, D. E.</b> , Mayne, N., Banks, N., et al., 2024, 3D simulations of TRAPPIST-1e with varying CO <sub>2</sub> , CH <sub>4</sub> , and haze profiles, MNRAS <a href="#">🔗</a>   | 8         |
| 26 | Villanueva, G. L., Fauchez, T. J., Kofman, V., Alei, E., et al. (incl. <b>Sergeev, D. E.</b> ), 2024, Modeling Atmospheric Lines by the Exoplanet Community (MALBEC) Version 1.0: A CUISINES Radiative Transfer Intercomparison Project, Planet. Sci. J. <a href="#">🔗</a>                                  | 11        |
| 25 | Kirk, J., Ahrer, E., Penzlin, A. B. T., Owen, J. E., et al. (incl. <b>Sergeev, D. E.</b> ), 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 <a href="#">🔗</a> | 22        |
| 24 | Mak, M. T., Mayne, N. J., <b>Sergeev, D. E.</b> , Manners, J., et al., 2023, 3D Simulations of the Archean Earth Including Photochemical Haze Profiles, J. Geophys. Res.: Atmospheres <a href="#">🔗</a>   | 7         |
| 23 | <b>Sergeev, D. E.</b> , 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. <a href="#">🔗</a>   | 14        |

- 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.* [🔗](#) **9**
- 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* [🔗](#) **19**
- 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.* [🔗](#) **72**
- 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.* [🔗](#) **54**
- 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.* [🔗](#) **31**
- 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.* [🔗](#) **29**
- 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.* [🔗](#) **72**
- 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* [🔗](#) **27**
- 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* [🔗](#) **66**
- 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* [🔗](#) **19**
- 6 Renfrew, I. A., Pickart, R. S., Väge, 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.* [🔗](#) **18**
- 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. Phys.* [🔗](#) **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 [↗](#)  
Exoclimes 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

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(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

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

## Undergraduate and Summer Internship Supervision

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

## Teaching and Mentoring

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|           |  |
|-----------|--|
| 2026–now  | Environmental Physics<br>Lecturer   University of Bristol   ~40 students   |
| 2025–now  | Practical Physics III: Research Skills and Group Project<br>Tutor   University of Bristol   2 groups of ~7 students    |
| 2025–now  | Research Project in Physics<br>Supervisor & assessor   University of Bristol   ~10 students                            |
| Jul 2024  | Algorithms For Exascale Summer School ↗<br>Invited lecturer   University of Exeter   ~20 students                      |
| Feb 2024  | Physics of Climate Change<br>Workshop lead   University of Exeter   ~30 students                                       |
| Jul 2023  | ClimateMatch Academy<br>Mentor   Online   3 groups of ~5 students  |
| Jul 2023  | International Sustainability Summer School<br>Lecturer   University of Exeter   ~10 students                           |
| Jun 2023  | Exoclimes Summer School in Atmospheres and Modelling (ExoSLAM) ↗<br>Lecturer   University of Exeter   ~50 students     |
| 2016–2018 | Introduction to Python in Environmental Sciences ↗<br>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

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- 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

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- 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

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- 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

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|--|---|
| Numerical models                       | LFRic, Unified Model, SOCRATES, LAGRANTO, Isca  |
| Programming languages                  | Python, FORTRAN, MATLAB, NCL  |
| Python libraries (user)                | cartopy, cython, iris, matplotlib, numpy, pandas, pvysta, xarray                      |
| Python libraries (creator/contributor) | aeolus, cartopy, pvysta, geovista   |
| Parallel computing                     | Dask, MPI, OpenMP   |
| Version control                        | Git, Subversion   |
| Document preparation                   | L <sup>A</sup> T <sub>E</sub> X, Quarto, Jupyter Notebooks, Markdown, HTML, CSS, reST |

## Vocational Training

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- 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

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- 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

## Unsuccessful Funding Applications

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- 2025 STFC Small Award  
2025 Leverhulme Research Leadership Award  
2025 ERC Starting Grant  
2025 2nd GPU Embedded CSE (eCSE) support call  
2024 1st GPU Embedded CSE (eCSE) support call  
2023 STFC Ernest Rutherford Fellowship  
2021 Leverhulme Trust Early Career Fellowship