Dr. Matthew Henry

Curriculum Vitae

✉ *m.henry@exeter.ac.uk*
https://matthewjhenry.github.io/
Twitter: @mattjohenry

Postdoctoral Research Fellow in climate science at the University of Exeter

Employment

2023–2024 **Postdoctoral Research Fellow in climate science.**.
With Professor Jim Haywood at the University of Exeter, UK.
Solar geoengineering.

2020–2022 **Postdoctoral Research Fellow in climate science.**.
With Professor Geoff Vallis at the University of Exeter, UK.
Idealized climate modelling of past warm climates.

Education

2016–2019 **Ph.D. in Atmospheric and Oceanic Sciences**.
Under the supervision of Timothy Merlis.
McGill University, Montreal, Canada
Recipient of the Eben Hopson Fellowship for Study at McGill

2013–2015 **Master's in Mathematical Modelling and Climate Science**.
Master scholarship from Fondation Mathematique Jacques Hadamard Excellence Program
Universite Paris-Saclay in Paris, France

2010–2013 **Bachelor of Science, Mathematics Major**.
GPA : 3.73
McGill University, Montreal, Canada

Publications

2023 **Comparison of UKESM1 and CESM2 Simulations Using the Same Multi-Target Stratospheric Aerosol Injection Strategy**, *Matthew Henry, Jim Haywood, et al.*, In preparation.

2023 **State dependence of the clear-sky longwave feedback in a clear-sky GCM**, *Matthew Henry, Geoff Vallis, et al.*, In preparation.

2022 **Different Pathways to an Early Eocene Climate**, *Matthew Henry and Geoff Vallis*, Paleoceanography and Paleoclimatology.
https://doi.org/10.1029/2021PA004375

2022 **The Bristol CMIP6 Data Hackathon**, *Dann M. Mitchell, Emma J. Stone, Oliver D. Andrews, Jonathan L. Bamber, Rory J. Bingham, Jo Browse, Matthew Henry, David M. MacLeod, Joanne M. Morten, Christoph A. Sauter, Christopher J. Smith, James Thomas, Stephen I. Thomson, Jamie D. Wilson, and the Bristol CMIP6 Data Hackathon Participants*, Weather.
https://doi.org/10.1002/wea.4161

2021 **The impact of stratospheric aerosol intervention on the North Atlantic and Quasi-Biennial Oscillations in the Geoengineering Model Intercomparison Project (GeoMIP) G6sulfur experiment**, *Andy Jones, Jim M. Haywood, Adam A. Scaife, Olivier Boucher, Matthew Henry, Ben Kravitz, Pierre Nabat, Ulrike Niemeier, Roland Seferian, and Daniele Visioni*, Atmospheric Chemistry and Physics Discussions.
https://acp.copernicus.org/preprints/acp-2021-898/

2021 **Process Drivers, Inter-model Spread, and the Path Forward: a Review of Amplified Arctic Warming**, *Patrick Charles Taylor, Robyn C Boeke, Linette N Boisvert, Nicole Feldl, Matthew Henry, Yiyi Huang, Peter Langen, Wei Liu, Felix Pithan, Sergio Sejas, Ivy Tan*, Frontiers in Earth Science.
https://www.frontiersin.org/articles/10.3389/feart.2021.758361/full

2021 **Reduced High-Latitude Land Seasonality in Climates with Very High Carbon Dioxide**, *Matthew Henry and Geoff Vallis*, Journal of Climate.
doi:10.1175/JCLI-D-21-0131.1

2020 **Decomposing the Drivers of Polar Amplification with a Single Column Model**, *Matthew Henry, Timothy M. Merlis, Nicholas J. Lutsko, and Brian E.J. Rose*, Journal of Climate.
doi:10.1175/JCLI-D-20-0178.1

2020 **Lapse rate changes dominate residual polar warming in solar radiation management experiments**, *Matthew Henry and Timothy M. Merlis*, Geophysical Research Letters, 2020.
doi:10.1029/2020GL087929.

2018 **The role of the nonlinearity of the Stefan-Boltzmann law on the structure of radiatively forced temperature change**, *Matthew Henry and Timothy M. Merlis*, Journal of Climate, 2018.
doi:10.1175/JCLI-D-17-0603.1.

2018 **Simple estimates of polar amplification in moist diffusive energy balance models**, *Timothy M. Merlis and Matthew Henry*, Journal of Climate, 2018.
doi:10.1175/JCLI-D-17-0578.1.

Public outreach

2022 **Carbon Brief article**, An article on Arctic Amplification based on the review paper in Frontiers in Earth Sciences.
https://www.carbonbrief.org/guest-post-why-does-the-arctic-warm-faster-than-the-rest-of-the-planet

2022 **Exeter Maths School**, Informal help with projects for 16-17 year old students..

2021 **CMIP6 data hackathon**, Lead a team working on temperature and precipitation extremes under solar geoengineering scenarios.
https://cmip6moap.github.io/projects/

2020-2 **Research posts and threads**.
Research posts at https://matthewjhenry.github.io/year-archive/ and list of twitter threads at https://matthewjhenry.github.io/.

May 2019 **Pint of Science Montreal**.
Discussed Arctic amplification and how we know what we know in climate science.
Write-up of my talk at https://matthewjhenry.github.io/posts/2019/05/PoS-Talk/.

June 2018 **"Mon Projet Nordique" competition in Quebec City**.
Discussed the role of the Planck feedback in polar amplification.

Invited talks, conferences, and poster presentations

June 2022 **Poster and discussion leader at the 2022 Gordon Research Conference on Climate Engineering (Newry, ME, USA)**.
Targeted Stratospheric Aerosol Injection: a Model Intercomparison.
Work done in collaboration with Jim M. Haywood, Andy Jones, Daniele Visioni, Ewa Monika Bednarz, Jadwiga Richter, Douglas MacMartin, and Jean-Francois Lamarque.

June 2022 **Talk at NCAR (Boulder, CO, USA)**.
On the State dependence of the clear-sky longwave feedback in a clear-sky GCM
Work done in collaboration with Geoff Vallis, Brett McKim, Jake Seeley, and Nick Lutsko.

June 2022 **Talk at the Atmospheric and Oceanic Fluid Dynamics conference (Breckenridge, CO, USA)**.
On the State dependence of the clear-sky longwave feedback in a clear-sky GCM
Work done in collaboration with Geoff Vallis, Brett McKim, Jake Seeley, and Nick Lutsko.

June 2022 **Invited talk at the Carnegie Research Workshop on Continental Climate Change (St Andrews, UK)**.
On Reduced High-Latitude Land Seasonality in Climates with Very High Carbon Dioxide
Work done in collaboration with Geoff Vallis.

May 2022 **Invited seminar at Weizmann Institute of Earth and Planetary Sciences (remote)**.
On Different Pathways to an Early Eocene Climate
Work done in collaboration with Geoff Vallis.

Dec 2021 **Poster at AGU 2021 (remote)**.
On Different Pathways to an Early Eocene Climate
Work done in collaboration with Geoff Vallis.

April 2021 **Poster and lightning talk at EGU 2021 (remote)**.
On Reduced High-Latitude Land Seasonality in Climates with Very High Carbon Dioxide
Work done in collaboration with Geoff Vallis.

March 2021 **Invited talk at McGill University (remote)**.
On Reduced High-Latitude Land Seasonality in Climates with Very High Carbon Dioxide
Work done in collaboration with Geoff Vallis.

July 2020 **Invited talk at Scripps Institute of Oceanography (remote)**.
On Decomposing the Drivers of Polar Amplification with a Single Column Model.
Work done in collaboration with Timothy M. Merlis, Nicholas J. Lutsko, and Brian E.J. Rose.

June 2020 **Poster presentation at UK climate dynamics workshop**.
On idealized modelling of past warm climates.
Work done in collaboration with Geoff Vallis

Dec 2019 **Poster presentation at the American Geophysical Union meeting in San Francisco**.
On Decomposing the Drivers of Polar Amplification with a Single Column Model.
Work done in collaboration with Timothy M. Merlis, Nicholas J. Lutsko, and Brian E.J. Rose.

July 2019 **Talk at the 27th IUGG General Assembly in Montreal**.
On Lapse Rate Changes Dominate Residual Polar Warming in Solar Radiation Management Experiments.
Work done in collaboration with Timothy M. Merlis.

June 2019 **Talk at the Atmospheric and Oceanic Fluid Dynamics Conference (AOFD) in Portland, Maine**.
On Lapse Rate Changes Dominate Residual Polar Warming in Solar Radiation Management Experiments.
Work done in collaboration with Timothy M. Merlis.

March 2019 **Talk at the Advanced Climate Dynamics Course 10 years anniversary conference in Rondane, Norway**.
On Lapse Rate Changes Dominate Residual Polar Warming in Solar Radiation Management Experiments.
Work done in collaboration with Timothy M. Merlis.

October 2018 **Poster at "Heldfest" : Understanding and modeling the Earth's climate. A symposium in honor of Isaac Held in Princeton, New Jersey**.
On Lapse Rate Changes Dominate Residual Polar Warming in Solar Radiation Management Experiments.
Work done in collaboration with Timothy M. Merlis.

July 2017 **Poster at 2017 Connaught Summer Institute in Arctic Science: Atmosphere, Cryosphere and Climate in Alliston, Ontario**.
On The role of the nonlinearity of the Stefan-Boltzmann law on the structure of radiatively forced temperature change.
Work done in collaboration with Timothy M. Merlis.

June 2017 **Poster at 21st Conference on Atmospheric and Oceanic Fluid Dynamics (AOFD) in Portland, Oregon**.
On The role of the nonlinearity of the Stefan-Boltzmann law on the structure of radiatively forced temperature change.
Work done in collaboration with Timothy M. Merlis.

Research Experience

2015 **Machine Learning internship**, *Big Datext, Grenoble, France*.
Work on the prediction of the number of views for a given news article. Access to a large database with more than 100k articles and the corresponding number of views.
Acquired skills in machine learning, python, scikit-learn and natural language processing.
(2 months)

2015 **Master's internship**, *Paris 6 Computer Science Laboratory (LIP6), France*.
Under the supervision of Julien Tierny and Julie Delon
Work on the parallel and multi-scale computation of a transport plan between two distributions in order to generate a suitable time interpolation between them.
Acquired skills in C++ and algorithm design.
(6 months)

2014 **Master's internship**, *LOCEAN (part of the Institut Pierre Simon Laplace), Paris, France*.
Under the supervision of Guillaume Gastineau
Work on the radiative signature of upper tropospheric moistening.
Acquired skills in Matlab and climate science.
(2 months)

2011 **Research Assistant to PhD Student**, *McGill University, Montreal, Canada*.
Helped to conduct meta-analysis to compare the yields of organic agriculture to conventional agriculture by gathering data. Used to publish a paper in Nature.
"Comparing the yields of organic and conventional agriculture", by Seufert, Ramankutty and Foley in Nature 489, 229-232 (10 May 2012)
(2 months)

Teaching Experience

2019 **Guest Lecture for Climate Dynamics Course**.
McGill University, Montreal, Canada

2016-2019 **Teaching Assistant in Atmospheric and Oceanic Sciences department**.
McGill University, Montreal, Canada

2013 **Grader for mathematics courses**.
McGill University, Montreal, Canada

Employment History

2012 **Food Service at the Y Country Camp**, *Montreal, Canada*.
Setting up, serving food and cleaning at a summer camp for children.
(2 months)

2010 **Internship at Yejj Solar Tech**, *Phnom Penh, Cambodia*.
Marketing and setting up solar systems for clients.
(4 months)