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Short Curriculum Vitae

Professor Bryan N. Lawrence

Citizenship: United Kingdom, New Zealand (Dual Citizenship)

University of Reading: Professor of Weather and Climate Computing

Employment and Qualifications

Brief Description of Current Role

University of Reading: Professor of Weather and Climate Computing (2011-now).

I am primarily funded by the **UK NERC National Centre for Atmospheric Science**. I:

- **Foster research into, and carry out next generation weather and climate science**, utilising a range of tools, including, but not limited to large ensembles, high resolution climate simulation, and the necessary component models and parameterisations. Develop and maintain climate modelling strategies, for the UK, and Europe. Develop models for simulation on future architectures, tools for managing storage, access, and workflows for petascale and exascale data. Utilise cloud computing and machine learning techniques, and develop and implementing environmental information management systems.
- **Deliver the NCAS Computational Modelling Services (CMS) unit** which provides user support, software engineering, training and future computing research (day-to-day management is delivered by Ms Ros Hatcher, my role is to set strategic directions, acquire funding, direct specific projects, and line-manage selected staff).
- **Contribute to major community activities**, including serving on advisory groups, and taking part in, and where necessary, leading relevant national and European activities and supporting the JASMIN management team.

Previously (often in a range of overlapping joint positions)

- 2005-2022: **Director** of Models and Data, U.K. National Centre for Atmospheric Science, STFC, UK.
- 2011-2022: JASMIN supercomputer **Director**, STFC, UK.
- 2005-2017: **Director** of the UK Centre for Environmental Data Archival, STFC, UK.
- 2000-2005: **Head** of the British Atmospheric Data Centre, STFC, UK.
- 1996-2000: Lecturer than **Senior Lecturer** in Physics at the University of Canterbury, NZ.
- 1990-1996: Post-Doc University of Oxford, U.K. then **Joint Research Fellow** with University of Oxford, Lady Margaret Hall, and the Rutherford Appleton Laboratory.

Education

- PhD University of Canterbury, NZ, 1990 (The Southern Hemisphere Middle Atmosphere: Climatology and Waves)
- BSc (First Class Honours), University of Canterbury, NZ, 1986.

Awards and Highlights

- Co-recipient (as part of the Climate Forecast (CF) Conventions community) of the AGU Open Science Recognition Prize for our "exceptional contributions to advancing Open Science in Earth and space sciences".
- Received the Royal Meteorological Society's 2022 Award for Innovation in Development of Computational Models, Tools or Visualisation.
- Impact case for the 2021 UKRI Research Excellence Framework included a letter from the Met Office which stated that "It is no understatement to conclude that your work has played a significant role in underpinning the science carried out globally which has led to the Paris Agreement and will lead to future global policy actions."
- Expert team member for supercomputer procurements: ARCHER (2013), ARCHER2 (2022), UK Exascale (2024).
- Awarded the Leptoukh Lecture by the American Geophysical Union for significant contributions to informatics, computational, or data sciences (2014)

Six Selected Research Grants

- FUTURA: Future of climate change scenarios of the earth system, impacts, and socio-economic outcomes for assessment and society (European Commission; role: project scientist with responsibility for 9M euro infrastructure sub-project; four years from mid 2026).
- ENES-RISE: ENES-RI Services (European Commission; role: project scientist, three years from mid 2026).
- EXPECT: Towards an integrated capability to explain and predict regional climate changes (European Commission; role: local coordinator, leading multiple tasks; four years from May 2024).
- IS-ENES3: Infrastructure for the European Network for Earth System Modelling – Project Lead Scientist (European Commission, from January 2019 – 2023) and predecessor, ISENES2.
- ESIWACE2: European Centre of Excellence in Weather and Climate Computing – Work Package Leader (European Commission, from January 2019 – 2023) and predecessor, ESIWACE .
- GRAPE: Global retrieval of ATSR cloud parameters and evaluation (completed 2007) – Co-Investigator

Community Service

Currently:

- Committee Member: UKRI Digital Research Infrastructure Advisory Group.
- Committee Member: NERC Digital Research Infrastructure Investment Board
- Committee Member: NCAS Science Strategy Board
- Advisory Panel Member: Schmidt Sciences' Virtual Earth Systems Research Institute (VESRI)
- Science Advisory Board Member: Barcelona Supercomputer Centre
- Board Member & Co-Chair: European Network for Earth System Modelling (ENES).
- Governance Committee Member: Climate-Forecasts Conventions (https://cfconventions.org).
- Scientific Advisory boards for ESIWACE3 (European Commission) and Warm World (German Federal Funding)

Previously

- Chair of the UKRI Procurement Panel for the NCR GPU Phase 1 Systems (2025).
- Independent Advisory Panel: Deep South National Science Challenge NZ.
- Advisory Panel: Computational and Information Systems Laboratory, NCAR, USA (Chair from 2019-2024).
- Committee Member: UKRI Excalibur: Steering Committee and EPSRC first round review panel
- Chair: JASMIN/CEDA Board.
- Chair: NERC High Performance Computing (HPC) Strategy Committee.
- Member of the World Climate Research Programme (WCRP) Working Group on Coupled Climate Modelling (WGCM) Information Panel (WIP).
- Institutional reviewer for Helmholtz Association Germany.
- Editorial Board of the *International Journal of Digital Curation* (Publisher: UK Digital Curation Centre).
- Editorial Board of *Scientific Data* (Publisher: Nature).
- One of eight principal investigators of the Global Organisation for Earth System Science Portals (GO-ESSP, predecessor to, and instigator of, the Earth System Grid Federation, ESGF).

Eleven Selected Publications

A full publication list is available at https://www.bnlawrence.net/publications/.
See also my google scholar profile.

Wordle word cloud generated from the titles of all my publications recorded at Google Scholar.

1. Jones, C. G., ... Lawrence, B. N., … Zaehle, S. (2024). Bringing it all together: science priorities for improved understanding of Earth system change and to support international climate policy. *Earth System Dynamics*, *15*(5), 1319–1351. https://doi.org/10.5194/esd-15-1319-2024.
2. Govett, M., ... , **Lawrence, B.**, …,Williams, K. (2024). Exascale Computing and Data Handling: Challenges and Opportunities for Weather and Climate Prediction. *Bulletin of the American Meteorological Society*. https://doi.org/10.1175/BAMS-D-23-0220.1
3. Galea, D., Kunkel, J., & **Lawrence, B. N**. (2023). TCDetect: A New Method of Detecting the Presence of Tropical Cyclones Using Deep Learning. *Artificial Intelligence for the Earth Systems*, *2*(3), e220045. https://doi.org/10.1175/AIES-D-22-0045.1
4. **Lawrence, B.**, Adloff, F., & Joussaume, S. (2023). Infrastructure Strategy for Earth System Modelling for 2024-2033: What is needed to sustain large-scale European earth system modelling infrastructure from 2024 and beyond. zenodo. https://doi.org/10.5281/zenodo.8090786
5. Hallouin, T., Ellis, R. J., Clark, D. B., Dadson, S. J., Hughes, A. G., **Lawrence, B. N**., Lister, G. M. S., & Polcher, J. (2022). UniFHy v0.1.1: A community modelling framework for the terrestrial water cycle in Python. *Geoscientific Model Development*, *15*(24), 9177–9196. https://doi.org/10.5194/gmd-15-9177-2022
6. Senior, C.A., C.G Jones, R.A. Wood, A. Sellar, S. Belcher, A Klein-Tank, R. Sutton, J. Walton, **B.N. Lawrenc**e, T. Andrews, and J.P. Mulcahy (2020). UK Community Earth System Modelling for CMIP6. *J. Adv. Mod. Earth. Sys*, 12, e2019MS002004. doi:10.1029/2019MS002004
7. Pascoe, C., **B.N. Lawrence**, E. Guilyardi, M. Juckes and K.E. Taylor (2020). Documenting numerical experiments in support of CMIP6. *Geosci. Mod. Dev*. 13, 2149–2167, doi: 10.5194/gmd-13-2149-202
8. **Lawrence, B. N**., … Wilson, S. (2018). Crossing the Chasm: How to Develop Weather and Climate Models for next Generation Computers? *Geosci. Mod. Dev.*, *11*(5), 1799–1821. doi:10.5194/gmd-11-1799-2018
9. Balaji, V., Taylor, K. E., Juckes, M., **Lawrence, B. N**., ..., & Williams, D. (2018). Requirements for a global data infrastructure in support of CMIP6. *Geoscientific Model Development*, *11*, 3659–3680. doi:10.5194/gmd-11-3659-2018
10. **Lawrence, B.N**. , V.L. Bennett, J. Churchill, M. Juckes, P. Kershaw, S. Pascoe, S. Pepler, M. Pritchard, and A. Stephens (2013). Storing and manipulating environmental big data with JASMIN. *Proceedings of IEEE Big Data, 2013,* doi:10.1109/BigData.2013.6691556
11. **B. Lawrence**, S. Pepler, C. Jones, B. Matthews, and Callaghan, S. (2011). Citation and Peer Review of Data: Moving Towards Formal Data Publication. *International Journal of Digital Curation*, vol. 6, no. 2. doi:10.2218/ijdc.v6i2.205