Dr Simon C. Peatman – Curriculum Vitae

Name	Dr Simon Christopher Peatman
Address (work)	Priestley Centre 11.06, School of Earth and Environment, University of Leeds, Leeds, West Yorkshire, LS2 9JT, UK
Email (work)	s.c.peatman@leeds.ac.uk
Web page	http://www.simonpeatman.me.uk
ORCID	0000-0002-2511-7649
Nationality	British

Employment

September 2022 – *present*: Senior Research Fellow
December 2018 – August 2022: Research Fellow
Institute for Climate and Atmospheric Science, School of Earth and Environment, University of Leeds

- **PI:** Severe Precipitation In SouthEast Asia (SPISEA), WCSSP Southeast Asia
- **PDRA:** TerraMaris – Observational study of weather systems over western Java and surrounding seas
- **PDRA:** Vertical Structure of Weather over Southeast Asia, WCSSP Southeast Asia
- **Co-I:** Coupled Air-Sea Prediction of Extreme Rainfall (CASPER), WCSSP India
- UK Summer Testbed 2023 – member of steering group

June 2014 – December 2018: Post-Doctoral Research Assistant
Department of Meteorology, University of Reading

- **PDRA:** Forecasting Air-Sea Coupled Interactions in NWP of Atmospheric Tropical Extremes (FASCINATE), WCSSP Southeast Asia
- **PDRA:** Bay of Bengal Boundary Layer Experiment (BoBBLE)
- **PDRA:** Fundamental Influences of Large-Scale Wave Dynamics on Tropical Weather Systems

2010 – 2013: Associate Tutor and Marker
University of East Anglia

Summer 2010: Met Office summer placement (12 weeks) – Data Assimilation and Ensembles

External funding awarded

- **PI:** Extension to Severe Precipitation In SouthEast Asia (SPISEA), Newton Fund (**£94k**)
- **PI:** Severe Precipitation In SouthEast Asia (SPISEA), Newton Fund (**£165k**)
- **Co-I:** Coupled Air-Sea Prediction of Extreme Rainfall (CASPER), Newton Fund (**£900k**)

Professional qualifications

December 2021: Associate Fellow of the HEA

Education

2010–2014	**University of East Anglia (School of Mathematics)** Funded by Natural Environment Research Council (NERC) PhD – The Madden-Julian Oscillation and the diurnal cycle over the Maritime Continent: scale interactions and modelling
2006–2010	**St John's College, University of Oxford (Department of Physics)** MPhys Physics (4 year) – 2:1
1999–2006	**Ipswich School** Foundation scholarship 4 A Levels: all at grade A (Physics, Mathematics, Further Mathematics, Chemistry) Institute of Physics, Bill Trotter Prize: Commended (for excellence in A-Level Physics Practical Investigation) OCR Level 3 Certificate for IT Users (CLAIT Advanced) 11 GCSEs: all at grade A* (Biology, Chemistry, English Language, English Literature, French, Geography, German, Latin, Mathematics, Physics, Statistics)

Peer-reviewed publications

h-index: 10 (Citations indicated for top 10 papers)

For details, see: https://scholar.google.co.uk/citations?user=VVjfa_sAAAAJ

16. Tan I, Reeder MJ, Singh MS, Birch CE, **Peatman SC** (2023). Wet and dry cold surges over the Maritime Continent. *J. Geophys. Res. Atmos.*, **128**(12), e2022JD038196. 10.1029/2022JD038196

15. **Peatman SC**, Birch CE, Schwendike J, Marsham JH, Dearden C, Webster S, Neely RR, Matthews AJ (2023) The role of density currents and gravity waves in the offshore propagation of convection over Sumatra. *Mon. Wea. Rev.*, **151**(7), 1757–1777. 10.1175/MWR-D-22-0322.1

14. Crook J, Marsham JH, Fitzpatrick R, Aryee JNA, Baidu M, Baker JCA, Bland S, Chapman S, Denby L, Hartley A, Kovacs E, Lam T, Morris F, Mwanthi A, Owen L, **Peatman SC**, Pickering B, Sabiiti G, Wainwright C, Webb T, Yamba EI, Bani EK, Amoako KK and Ochieng W (2022) The Leeds Africa Climate Hackathon – experiences of running a hackathon and highlights of results. *Wea.*, **78**(2), 36–42. 10.1002/wea.4246

13. **Peatman SC**, Schwendike J, Birch CE, Marsham JH, Matthews AJ, Yang G-Y (2021) A local-to-large scale view of Maritime Continent rainfall: control by ENSO, MJO and equatorial waves. *J. Climate*, **34**(22), 8933–8953. 10.1175/JCLI-D-21-0263.1 [**21 citations**]

12. Levine RC, Klingaman NP, **Peatman SC** and Martin GM (2021) Roles of air-sea coupling and horizontal resolution in the climate model simulation of Indian monsoon low pressure systems. *Clim. Dyn.*, **56**, 1203–1226. 10.1007/s00382-020-05526-6

11. Valdivieso M, **Peatman SC** and Klingaman NP (2021) The influence of air-sea coupling on forecasts of the 2016 Indian summer monsoon and its intraseasonal variability. *Quart. J. Roy. Meteor. Soc.*, **147**(734), 202–228. 10.1002/qj.3914

10. Merryfield WJ, Baehr J, Batté L, Becker EJ, Butler AH, Coelho CAS, Danabasoglu G, Dirmeyer PA, Doblas-Reyes FJ, Domeisen DIV, Ferranti L, Ilynia T, Kumar A, Müller WA, Rixen M, Robertson AW, Smith DM, Takaya Y, Tuma M, Vitart F, White CJ, Alvarez MS, Ardilouze C, Attard H, Baggett C, Balmaseda MA, Beraki AF, Bhattacharjee PS, Bilbao R, de Andrade FM, DeFlorio MJ, Díaz LB, Ehsan MA, Fragkoulidis G, Grainger S, Green BW, Hell MC, Infanti JM, Isensee K, Kataoka T, Kirtman BP, Klingaman NP, Lee J-Y, Mayer K, McKay R, Mecking JV, Miller DE, Neddermann N, Justin Ng CH, Ossó A, Pankatz K, **Peatman SC**, Pegion K, Perlwitz J, Recalde-Coronel GC, Reintges A, Renkl C, Solaraju-Murali B, Spring A, Stan C, Sun YQ, Tozer CR, Vigaud N, Woolnough S, and Yeager S (2020) Current and emerging developments in subseasonal to decadal prediction. *Bull. Amer. Meteor. Soc.*, **101**(6), E869–E896. 10.1175/BAMS-D-19-0037.1 [**128 citations**]

9. **Peatman SC**, Klingaman NP, Hodges KI (2019) Tropical Cyclone-Related Precipitation over the Northwest Tropical Pacific in Met Office Global Operational Forecasts. *Wea. Forecasting*, **34**(4), 923–941. 10.1175/WAF-D-19-0017.1

8. **Peatman SC**, Klingaman NP (2018) The Indian Summer Monsoon in MetUM-GOML2.0: Effects of air-sea coupling and resolution. *Geosci. Model Dev.*, **11**(11), 4693–4709. 10.5194/gmd-2018-197 [**10 citations**]

7. **Peatman SC**, Methven J, Woolnough SJ (2018) Isolating the effects of moisture entrainment on convectively-coupled equatorial waves in an aquaplanet GCM. *J. Atmos. Sci.*, **75**(9), 3139–3157. 10.1175/JAS-D-18-0098.1 [**11 citations**]

6. Vinayachandran PN, Matthews AJ, Kumar KV, Sanchez-Franks A, Thushara V, George J, Vijith V, Webber BGM, Queste BY, Roy R, Sarkar A, Baranowski DB, Bhat GS, Klingaman NP, **Peatman SC**, Parida C, Heywood KJ, Hall R, Kent B, King EC, Nayak AA, Neema CP, Amol P, Lotliker A, Kankonkar A, Gracias DG, Vernekar S, Souza ACD, Valluvan G, Pargaonkar SM, Dinesh K, Giddings J, Joshi M (2018) BoBBLE (Bay of Bengal Boundary Layer Experiment): Ocean-atmosphere interaction and its impact on the South Asian monsoon. *Bull. Amer. Meteor. Soc.*, **99**(8), 1569–1587. 10.1175/BAMS-D-16-0230.1 [**53 citations**]

5. Sanchez-Franks A, Kent EC, Matthews AJ, Webber BGM, **Peatman SC**, Vinayachandran PN (2018) Intraseasonal Variability of Air-Sea Fluxes over the Bay of Bengal during the Southwest Monsoon. *J. Climate*, **31**, 7087–7109. 10.1175/JCLI-D-17-0652.1 [**22 citations**]

4. Birch CE, Webster S, **Peatman SC**, Parker DJ, Matthews AJ, Li Y, Hassim ME (2016) Scale interactions between the MJO and Maritime Continent in a convection-permitting regional climate model. *J. Climate*, **29**, 2471–2492. 10.1175/JCLI-D-15-0557.1 [**124 citations**]

3. **Peatman SC**, Matthews AJ, Stevens DP (2015) Propagation of the Madden-Julian Oscillation and scale interaction with the diurnal cycle in a high-resolution GCM. *Clim. Dyn.*, **45**, 2901–2918. 10.1007/s00382-015-2513-5 [**56 citations**]

2. **Peatman SC**, Matthews AJ, Stevens DP (2014) Propagation of the Madden-Julian Oscillation through the Maritime Continent and scale interaction with the diurnal cycle of precipitation. *Q. J. R. Meteorol. Soc.*, **140**, 814–825. 10.1002/qj.2161 [**265 citations**]

1. Matthews AJ, Pickup G, **Peatman SC**, Clews P, Martin J (2013) The effect of the Madden-Julian Oscillation on station rainfall and river level in the Fly River system, Papua New Guinea. *J. Geophys. Res. Atmos.*, **118**, 10926–10935. 10.1002/jgrd.50865 [**38 citations**]

Peer-reviewing

Full record available at: https://www.webofscience.com/wos/author/rid/C-8071-2012

Reviewed the following papers with named reviewers:
- Moron V, Robertson AW, Qian J-H and Ghil M (2015) Weather types across the Maritime Continent: from the diurnal cycle to interannual variations. *Front. Environ. Sci.* **2**:65. 10.3389/fenvs.2014.00065

Also reviewed for the following journals:
- Atmospheric Science Letters
- Climate Dynamics (3)
- Geophysical Research Letters
- Journal of Advances in Modeling Earth Systems
- Journal of Atmospheric and Solar-Terrestrial Physics
- Journal of Climate (3)
- Journal of Geophysical Research – Atmospheres (7)
- Journal of the Meteorological Society of Japan
- Meteorological Applications
- Monthly Weather Review
- Nature Communications
- Quarterly Journal of the Royal Meteorological Society (4)
- Scientific Online Letters on the Atmosphere

Conference and seminar presentations

Invited
- **Session co-chair**: American Meteorological Society, 35th Conference on Hurricanes and Tropical Meteorology, New Orleans, May 2022
- **Speaker**: Atmosphere, Ocean and Climate seminar, University of East Anglia, June 2019
- **Session rapporteur**: International Conference on Subseasonal to Seasonal Prediction, Boulder, CO, USA, September 2018
- **Speaker**: Workshop on Intraseasonal Processes and Prediction in the Maritime Continent, Singapore, April 2016
- **Speaker**: Post Graduate Student Evening, Scottish Centre of the Royal Meteorological Society, Edinburgh, March 2012

Other
- Talk: Asia Oceania Geosciences Society 20th Annual Meeting, Singapore, August 2023
- Talk: WCSSP Southeast Asia Regional Workshop, Hanoi, May 2023
- Talk: European Geosciences Union General Assembly, Vienna, Austria, April 2023
- Talk: Institute for Climate and Atmospheric Science internal seminar, University of Leeds, April 2023

- Talk: 7th UK National Climate Dynamics Workshop, Norwich, June 2022
- Talk and poster: American Meteorological Society, 35th Conference on Hurricanes and Tropical Meteorology, New Orleans, May 2022
- Talk: Institute for Climate and Atmospheric Science internal seminar, University of Leeds, October 2021
- Talk and poster: American Meteorological Society, 34th Conference on Hurricanes and Tropical Meteorology, online, May 2021
- Talk: 2nd International Conference on Tropical Meteorology and Atmospheric Sciences, online, March 2021
- Talk: WCSSP Southeast Asia Regional Workshop, online, February 2021
- Talk: Institute for Climate and Atmospheric Science internal seminar, University of Leeds, February 2021
- Talk: American Geosciences Union Fall Meeting, online, December 2020
- Talk: WCSSP Southeast Asia UK Science Workshop, online, November 2020
- Talk: Institute for Climate and Atmospheric Science internal seminar, University of Leeds, May 2020
- Talk: WCSSP Southeast Asia Regional Workshop, Manila, November 2019
- Talk: WCSSP Southeast Asia UK Science Workshop, Met Office, Exeter, July 2019
- Poster: International Conference on Subseasonal to Seasonal Prediction, Boulder, USA, September 2018
- Talk: BoBBLE-SWAAMI-INCOMPASS Joint Workshop, Bangalore, India, July 2018
- Talk: American Meteorological Society, 33rd Conference on Hurricanes and Tropical Meteorology, Ponte Vedra Beach, FL, USA, April 2018
- Talk: International Workshop on Monsoons, Singapore, November 2017
- Posters (2): IAMAS-IAPSO-IAGA, Cape Town, South Africa, August 2017
- Talk: European Geosciences Union General Assembly, Vienna, Austria, April 2016
- Talk: Lunchtime seminar, Department of Meteorology, University of Reading, November 2014
- Talk: Atmosphere, Ocean and Climate seminar, University of East Anglia, May 2013
- Talk: European Geosciences Union General Assembly, Vienna, Austria, April 2013
- Talks and posters: Royal Meteorological Society student conferences; 2011, 2012 and 2013

Other publications and reports

- The Indian monsoon: atmospheric dynamics, aerosol and the ocean (meeting report). *Weather* **74**(2), p.75, 2019. [10.1002/wea.3264](10.1002/wea.3264)
- Consistency checking and diagnosis of observation and background errors by the Desroziers method, September 2010, *UK Met Office* (summer placement)
- Uncertainties in anthropogenic radiative perturbations on climate: the impact of plume injection heights, April 2010, *Atmospheric Oceanic and Planetary Physics, University of Oxford* (MPhys project)

Teaching and supervision

- September 2023 onwards, University of Leeds, co-supervising PhD student (South-east Asia mesoscale convection and machine learning)
- Spring semester 2022, University of Leeds, co-supervising undergraduate dissertation (Borneo vortices)
- September 2021 onwards, University of Leeds, co-supervising PhD student (South-east Asia severe convection)
- February 2021, University of Leeds, undergraduate lecture: Severe Weather Events and Floods
- February 2020 onwards, University of Leeds, co-supervising PhD student at Monash University (Cold surges)
- January 2020 – *March 2022* Supervision of three PDRAs, University of Leeds
- Autumn 2019, University of Leeds, course teacher: Data Analysis and Visualisation for Environmental Applications (teaching Python)
- Summer 2019, University of Leeds, undergraduate summer project supervisor: Impact of Madden-Julian Oscillation on land-sea breeze diurnal cycle over the Maritime Continent
- Summer 2018, University of Reading, MSc project supervisor: The Madden-Julian Oscillation's influence on precipitation in Tonga
- 2014–2018, University of Reading, course teacher and demonstrator: Numerical Methods for Environmental Science, Introduction to Computing
- 2013–2014, University of East Anglia, one-to-one tutoring: dynamical meteorology, fluid mechanics and mathematical biology
- 2010–2014, University of East Anglia, coursework marker: Maths for Scientists
- 2010–2014, University of East Anglia, demonstrator: Maths for Scientists, Dynamical Meteorology, Forces of Nature (practicals)

Computing skills

Proficient in Python, Linux command line and bash, Git version control, LaTeX, HTML and CSS. Experience of machine learning using scikit-learn and keras. Also familiar with with JavaScript, MySQL, WordPress, Fortran, C and IDL.

Training

- Summer school, Introduction to Machine Learning in Geosciences, University of Pisa, July 2023
- Met Office Unified Model training, Reading, April 2019 and December 2014
- WCRP Summer School, Climate Model Development (Atmospheric Moist Processes), Hamburg, June 2015
- Software Development for Environmental Scientists: Level 1, Reading, September 2014 and Level 2, Reading, March 2015
- NCAS Climate Modelling Summer School, Cambridge, September 2011

Memberships

- Royal Meteorological Society
- Christians in Science

Experience and skills

Introduction to Machine Learning in Geosciences summer school, University of Pisa, July 2023
Week-long summer school of lectures and practical work covering supervised and unsupervised learning techniques including regression, clustering and neural networks.

Organizing internal seminar series, academic year 2022–2023
One of two organizers of the weekly internal seminars for the Institute for Climate and Atmospheric Science at the University of Leeds. Arranging rota of speakers and chairs, handling changes to rota, making practical arrangements, presenting introductory session at the start of the academic year and being on-hand as a back-up chair if necessary.

Co-supervising PhD student at University of Leeds, September 2021 onwards
Co-supervising project on convection in south-east Asia. Participating in weekly supervisory meetings, contributing to understanding results and advising on future direction of research. Attended first-year transfer viva.

***Principal Investigator, SPISEA project (£165,000), University of Leeds, April 2020* – March 2021**
Lead author of winning research proposal. Wrote job advert, led the shortlisting process and chaired job interviews. Co-supervised PDRA's research throughout project. Performed administrative tasks such as checkpoint reporting and liaising with Met Office over contractual modifications due to COVID-19.

Co-supervising PhD student at Monash University, Melbourne, Australia, February 2020 onwards
Co-supervising project on dynamics of cold surges. Participating in online supervisory meetings every 2–4 weeks, contributing to understanding results and advising on future direction of research.

Unified Model Training, Reading, April 2019
Three-day training course in running the Met Office Unified Model on the UK National Supercomputer (ARCHER), repeat of training I attended in December 2014 but using Rose and Cylc.

***Post-Doctoral Research, Vertical Structures and TerraMaris projects, University of Leeds, December 2018* – September 2023**
Researching convective variability over the Maritime Continent. Analysed field campaign data, including k-means cluster algorithm to define coastal regimes which help to understand offshore propagation of convection and its link to the large scale. Designed and ran high-resolution MetUM nested suite simulations to investigate physical mechanisms of propagation of convection. Contributed to planning of scheduled field campaign in SE Asia.

Post-Doctoral Research, BoBBLE project, University of Reading, February 2016 – December 2018
Investigated air-sea interactions in the Indian monsoon using climate-length simulations of MetUM-GOML (UM coupled to a KPP mixed layer ocean) and forecasts of the 2016 monsoon season. Self-taught Iris (Python package developed by the Met Office) for data analysis and plotting.

Post-Doctoral Research, Tropical Waves project, University of Reading, June 2014 – February 2016
Investigated convectively-coupled equatorial waves in MetUM aquaplanet simulations. Designed and performed experiments by modifying how entrainment is handled by the convection scheme in the MetUM. Wrote Python code from scratch to produce Wheeler-Kiladis diagrams, filter data and produce composites of equatorial wave structures.

1st WCRP Summer School on Climate Model Development (Atmospheric Moist Processes), Hamburg, June 2015
Two-week summer school on atmospheric parametrization schemes in models, including the boundary layer, convection, clouds and radiation. Group investigation on sensitivity of the ICON model to boundary layer turbulent mixing length.

NERC Short Course: Software Development for Environmental Scientists Level 2, Reading, March 2015
Four-day NERC-funded short course covering software development concepts including code sharing and collaboration using GitHub; Object Oriented (OO) programming, OO design using class diagrams and sequence diagrams; coding standards, design patterns, exception handling and parallel processing.

Unified Model Training, Reading, December 2014
Three-day training course in running the Met Office Unified Model on the UK National Supercomputer (ARCHER). Learned to configure and run the model through the UMUI on PUMA; search for and understand errors in output files; and edit model Fortran code using FCM version control.

NERC Short Course: Software Development for Environmental Scientists Level 1, Reading, September – October 2014
Week-long NERC-funded short course covering software development concepts including software design, unit testing, version control using git, use of an integrated development environment and debugging.

Tutoring, University of East Anglia, April – May 2014
One-to-one tutoring in dynamical meteorology, fluid mechanics and mathematical biology.

NCAS Climate Modelling Summer School, Cambridge, September 2011
Two-week NERC-funded summer school, covering the science behind the components of the Earth's climate system and their interactions, computational fluid dynamics, and analysis of climate experiments using the Met Office Unified Model. Contributed to a group project investigating the effect of perturbing global sea surface temperatures in an atmosphere-only model, including group presentation.

PhD, University of East Anglia, October 2010 – May 2014
Researched relationship between the diurnal cycle and Madden-Julian Oscillation over the Maritime Continent. Processed large (up to ~500GB) high-resolution data sets; time series analysis of meteorological data, including harmonic analysis, filtering and EOF analysis; process-based analysis of data sets, linking observations to underlying physical processes; analysis of output from a state-of-the-art climate model; programming in Python using Climate Data Analysis Tools (CDAT); improved knowledge of LaTeX and Linux.

Associate Tutor and Marker, University of East Anglia, October 2010 – March 2013
Demonstrator in undergraduate seminars and labs, covering Mathematics For Scientists, Dynamical Meteorology and lab experiments in Forces Of Nature (e.g., convection, eustatic sea level change and glacier flow). Gained experience of explaining concepts not just in a way that I would find useful, but adapting my explanations on-the-spot to explain the ideas in the most helpful way for each individual student.
Marker of undergraduate coursework, both mathematical and essay-based.

Summer Placement, Data Assimilation and Ensembles, UK Met Office, June – September 2010
Implemented and tested error diagnostics used in 4-dimensional variational data assimilation (4D-Var); learned to use the Met Office Unified Model, Observation Processing System, variational data assimilation (VAR) and Suite Control System user interfaces. Wrote IDL code to analyse the results, gave a presentation to colleagues and wrote up project in LaTeX.

Masters Project, University of Oxford, January – April 2010
Investigated effect on radiative forcing of smoke plume injection heights from wildfires in ECHAM5-HAM. Designed a model sensitivity study; altered the height and shape of smoke plumes by adapting a Fortran subroutine; wrote IDL code to analyse model output; wrote up a scientific report in LaTeX and defended my work in a "mini-viva".

Other positions and achievements

Published chapter in *A Teacher's Guide to Science and Religion in the Classroom* (Routledge)

Church of England: Church Warden and Deanery Synod representative
Leeds Minster, North-west Leeds Deanery

Former positions held
Secretary and Parochial Church Councillor
Redlands Parish Church, Reading

Committee Member
Christians in Science Reading

Workshop Leader
Learning About Science And Religion (LASAR), University of Reading

Parochial Church Councillor
St Peter Mancroft Church, Norwich

Secretary
Quiz Society, University of East Anglia

Head Chapel Warden and Keeper of the Sherry
St John's College Chapel, University of Oxford

Updated: 25 July 2023