Dafydd Stephenson

Adaptable, creative problem solver transitioning from petascale computational climate research to data-driven climate action.

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SPECIALISMS	COMPUTING	METHODS
• Data analysis/visualisation • High-performance computing • Dynamical systems modelling • Non-technical communication	Python [xarray, numpy, scipy, matplotlib] • MATLAB • Fortran • bash • emacs • git • slurm • PBS • ArcGIS	Signal processing • EOF/PCA • Linear regression/LLS • Lagrangian/iterative optimisation

EXPERIENCE

Postdoctoral research fellow (NASA) • National Center for Atmospheric Research • June 2021 –

- Derived a new optimisation method (dynamics-weighted PCA) to isolate weather patterns that most interfere with climate-relevant aspects of ocean circulation, thus adding uncertainty to climate trends.
- Demonstrated efficacy of the method over existing statistical and dynamical methods by modifying and executing a massively parallel global model on NASA Pleiades, one of the world's most powerful HPCs.
- Presented results at leading research institutions and major conferences

Postgraduate researcher • National Oceanography Centre • September 2016 – May 2021

- Developed a new open-source Fortran module (ConTraPTION) to track the origins and fate of pollutants such as ocean plastic and CO_2 in a highly complex global circulation model.
- Designed and performed experiments using an iteratively nonlinear optimisation procedure to isolate the most effective oceanic drivers of the extreme European winter of 2009. Proved the viability of the procedure in realistic conditions by compiling and running world-first simulations in a previously prohibitively complex model.
- Led a real-world-data-driven secondment project at UCSD to identify (using optimum multiparameter analysis) the origins of irregularities in a large suite of data collected by satellites, ships, autonomous submarines, etc.
- Attended policy, outreach, and media training courses, and volunteered in teaching and public outreach activities for a range of audiences.

EDUCATION

- **Ph.D**, Ocean and climate physics**,** University of Southampton, 2021
  - DTP scholarship
- **MSc**, Oceanography, University of Southampton, 2016 [Distinction]
  - Full-tuition scholarship
  - Departmental award for highest final grade
- **BSc**, Mathematics, University of Leicester, 2013 [First class hons.]
  - Two scholarships
  - Six academic prizes including linear algebra, scientific computing
  - Founder and twice-president of award-winning university cycling club