James Shaw

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Education

2015–2018 University of Reading — PhD Atmosphere Ocean and Climate

I am improving numerical methods for simulating atmospheric flows over mountains, supervised by Hilary Weller (UoR), John Methven (UoR) and Terry Davies (UK Met Office)

- Designed a new finite volume advection scheme for flows over steep slopes represented by arbitrary meshes
- Contributing my advection scheme code upstream to the OpenFOAM CFD project
- Performed numerical analyses to ensure stability of the scheme on highly-distorted meshes

The project is funded by NERC with CASE sponsorship from the UK Met Office.

2013–2014 University of Reading — MSc Atmosphere Ocean and Climate (Distinction)

- Wrote object-oriented Fortran code to create idealised numerical models of an ocean basin
- Post-processed HDF5 satellite data in Python to retrieve Arctic sea ice age and extent
- Dissertation prize for Representation of mountains in atmospheric models (86%)

Introduction to numerical modelling (76%)
Fluid dynamics of the atmosphere and oceans (70%)
Global circulation of the atmosphere and oceans (78%)
Numerical modelling of atmospheres and oceans (84%)
Extra-tropical weather systems (75%)
Professional skills (74%)
Oceanography (85%)
Atmospheric physics (77%)
Introduction to weather systems (71%)
Field course (65%)
Remote sensing (82%)

2002–2005 University of Southampton — BSc Computer Science (1st)

1994–2001 Torquay Boys' Grammar School — A Level Mathematics (A), Physics (A), Music (A)

Employment

I have worked with a range of software companies to develop systems for commercial and government applications.

2011–2013 Shazam — Java server developer

- Practised end-to-end test-driven development, pair programming and continuous deployment
- Developed REST microservices and core infrastructure components using Amazon web services, redis, MySQL
- Designed and conducted technical interviews with prospective team members

2007–2011 NetDespatch — Software developer

- Refactored workflow system to allow automated testing of individual components
- Extended MySQL database schemas to support new track-and-trace logistics software

2006–2007 Anite **Software developer**

- Deployed new software releases to production servers
- Regular contact with customer service desk to prioritise work and manage user expectations

2005–2006 BuildOnline **Junior software developer**

- Documented production software using flow diagrams which became popular references for other team members
- Identified and refactored large areas of code duplication to simplify ongoing development

2001–2002 Acterna **Industrial trainee with the Year in Industry scheme**

- Learned Python programming in order to develop a desktop application for auto-generating boilerplate C++ components

Publications

Chen, Y., H. Weller, S. Pring, and **J. Shaw** (2017) *Comparison of dimensionally-split and multi-dimensional atmospheric transport schemes for long time-steps*. Q. J. R. Meteorol. Soc, accepted. doi:10.1002/qj.3125

Shaw, J., H. Weller, J. Methven, and T. Davies (2017) *Multidimensional method-of-lines transport for atmospheric flows over steep terrain using arbitrary meshes*. J. Comput. Phys. doi:10.1016/j.jcp.2017.04.061

Shaw, J. and H. Weller (2016) *Comparison of terrain following and cut cell grids using a non-hydrostatic model*. Mon. Weather Rev. doi:10.1175/MWR-D-15-0226.1

I am also a reviewer for Monthly Weather Review, and Meteorology and Atmospheric Physics.

Selected talks

September 2017 International conference on scientific computation and differential equations, University of Bath

April 2017 PDEs on the sphere, École normale supérieure, Paris

February 2017, invited Numerical methods for geophysical fluid dynamics, Imperial College London

December 2016, invited South-East local meeting, Royal Meteorological Society

October 2016 Numerical and computational methods for simulation of all-scale geophysical flows, ECMWF

March 2015 Galerkin methods with applications in weather and climate forecasting, ICMS

Outreach

I have engaged with parents, and children of all ages, in several scientific outreach activities.

July 2016 Organised a visit from Simon Clark, a PhD researcher and YouTube vlogger. Simon delivered a departmental seminar and filmed a weather balloon launch.

July 2015 Schools physicist of the year awards

June 2015 East Reading festival

February 2015 Brighton science festival