

# Samuel Edward Hatfield

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## EDUCATION

### DPhil Environmental Research, University of Oxford

2015 - PRESENT

- Advisors: Prof. Tim Palmer and Dr. Peter Düben
- Expected date of completion: August 2019
- Thesis title: *Numerical precision and ensemble data assimilation*
- Thesis topics: Data assimilation, numerical weather prediction, model error, observation error

### MSci Physics, University of Bristol

2010 - 2014

- First-class honours, average mark 78%
- Final year project advisor: Dr. Simon Hanna
- Final year project title: *Knots in geometrically-confined polymers: nanochannels and other geometries*, mark 82%

## PEER-REVIEWED PUBLICATIONS

- 2018: **Choosing the optimal numerical precision for data assimilation in the presence of model error**, [Sam Hatfield](#), Peter Düben, Matthew Chantry, Keiichi Kondo, Takemasa Miyoshi and Tim Palmer, *Journal of Advances in Modeling Earth Systems*, **10**, 2177-2191, doi: 10.1029/2018MS001341
- 2018: **Improving weather forecast skill through reduced precision data assimilation**, [Sam Hatfield](#), Aneesh Subramanian, Peter Düben and Tim Palmer, *Monthly Weather Review*, **146**, 49-62, doi: 10.1175/MWR-D-17-0132.1

## CONFERENCES

- JANUARY 2019: **The 7th Annual International Symposium on Data Assimilation (oral and poster presentation, voted one of top 3 posters)**, Kobe, Japan  
*Single-precision in 4D-Var: The impact of rounding errors on the tangent-linear and adjoint models*  
[S. Hatfield](#), P. Düben, A. McRae, T. Palmer,
- APRIL 2018: **SIAM Uncertainty Quantification (oral presentation)**, Los Angeles, USA  
*Reducing Precision in Ensemble Data Assimilation to Improve Forecast Skill*  
[Samuel Hatfield](#), Peter D. Düben, Matthew Chantry, Tim Palmer
- MARCH 2018: **The 6th Annual International Symposium on Data Assimilation (poster presentation, €500 travel support)**, Munich, Germany  
*Lowering precision in an atmospheric ensemble data assimilation system*  
[S. Hatfield](#), T. Palmer, P. Düben

- APRIL 2017: **EGU General Assembly (oral presentation)**, Vienna, Austria  
*Improving Weather Forecasts Through Reduced Precision Data Assimilation*  
Sam Hatfield, Peter Düben and Tim Palmer
- FEBRUARY 2017: **RIKEN International Symposium on Data Assimilation (oral presentation)**, Kobe, Japan  
*Improving Weather Forecasts Through Reduced Precision Data Assimilation*  
Sam Hatfield, Peter Düben and Tim Palmer
- JULY 2016: **The 5th Annual International Symposium on Data Assimilation (poster presentation)**, Reading, UK  
*The use of inexact hardware in data assimilation for improved weather and climate prediction*  
Sam Hatfield, Peter Düben, Aneesh Subramanian and Tim Palmer

## TEACHING

- OCTOBER 2016 - PRESENT: Computing demonstrator for Oxford undergraduate students in Physics. **Senior Demonstrator from October 2018 - June 2019.**
- AUTUMN 2017, 2018: Python demonstrator for Environmental Research 1st year students

## AWARDS AND SCHOLARSHIPS

- OCTOBER 2018 - JUNE 2019: **Jesus College Graduate Scholarship**, £900 grant
- JUNE - AUGUST 2017: **Japan Society for the Promotion of Science (JSPS) Summer Programme**  
Fully funded 2 month research stay at the RIKEN Advanced Institute for Computational Science (AICS), Kobe, Japan hosted by Dr. Takemasa Miyoshi
- NOVEMBER 2016: **Elsevier travel grant**  
Awarded for poster and presentation at Oxford Environmental Research student conference, £1000 cash prize
- JULY 2014: **Undergraduate Awards Highly Commended** Awarded for MSci thesis, *Knots in geometrically-confined polymers: nanochannels and other geometries*

## DEPARTMENTAL SEMINAR TALKS

- Marine Meteorology Division, Naval Research Laboratory, Monterey, USA  
APRIL 2018
- Scripps Institution of Oceanography, San Diego, USA  
APRIL 2018
- RIKEN Advanced Institute for Computational Science (AICS), Kobe, Japan  
JULY 2017
- Atmosphere and Ocean Research Institute (AORI), University of Tokyo  
JULY 2017
- Japan Meteorological Agency (JMA)  
JULY 2017
- The Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokohama Institute for Earth Sciences, Japan  
JULY 2017

PEER REVIEW	<ul style="list-style-type: none"> <li>Quarterly Journal of the Royal Meteorological Society</li> </ul>	
TRAINING	<ul style="list-style-type: none"> <li>JULY 2018: CUDA Programming on NVIDIA GPUs, Mathematical Institute, University of Oxford</li> <li>JUNE 2016: E2SCMS Summer School (Earth-System modelling), Helsinki</li> <li>MARCH - MAY 2016: Training courses on data assimilation, predictability of weather and climate and numerical methods, ECMWF</li> </ul>	
OUTREACH	<ul style="list-style-type: none"> <li>Oxford Department of Physics Autumn 2018 Newsletter: <i>Five minutes with Samuel Hatfield</i></li> </ul>	
OTHER EXPERIENCE	<b>Microcosm Ltd., Bristol</b>	AUGUST 2014 - AUGUST 2015
	<ul style="list-style-type: none"> <li>Worked on the front- and back-ends of a two-factor authentication system, SmartSign</li> <li>Learned PHP, JavaScript, CSS and HTML</li> </ul>	
	<b>Surrey Space Centre, University of Surrey</b>	SUMMER 2013
	<ul style="list-style-type: none"> <li>Designed and built a Cherenkov radiation detector</li> <li>Developed MATLAB scripts for processing data from geostationary satellites on the radiation belts</li> </ul>	
	<b>Earth Sciences Department, University of Bristol</b>	SUMMER 2012
	<ul style="list-style-type: none"> <li>Studied exploration geophysics, specialising in gravity surveys</li> <li>Analysed data from geophysical surveys of Lamb Leer cave in Somerset, using MATLAB</li> </ul>	
TECHNICAL EXPERTISE	<ul style="list-style-type: none"> <li>Proficient in: FORTRAN 90, Python (incl. Iris, Numpy), UNIX command line, Git</li> <li>Have experience with: C/C++, Matlab</li> </ul>	
LANGUAGES	<ul style="list-style-type: none"> <li>English (native)</li> <li>Japanese (4 years experience, around JLPT N3)</li> </ul>	
SUPERVISORS' CONTACT INFORMATION	<b>Professor Tim Palmer</b> Atmospheric, Oceanic and Planetary Physics University of Oxford Oxford, UK tim.palmer@physics.ox.ac.uk	<b>Dr. Peter Düben</b> European Centre for Medium-Range Weather Forecasts  Reading, UK peter.dueben@ecmwf.int