

UK ATMOSPHERIC SCIENCE CONFERENCE

/// 2019 PROGRAMME

CONFERENCE OVERVIEW

Tuesday 2nd July

08.30 /// Registration & Refreshments

09.00 /// Welcome Address

09.10 /// Morning Plenary

10.40 /// Tea & Coffee

11.10 /// Parallel Sessions

12.30 /// Lunch

13.30 /// Parallel Sessions

14.40 /// Tea & Coffee

15.00 /// Posters

16.00 /// Afternoon Plenary

17.30 /// Conference Close

19.00 /// Conference Dinner Drinks

19.30 /// Conference Dinner

Wednesday 3rd July

08.30 /// Registration & Refreshments

09.00 /// Welcome Address

09.05 /// Morning Plenary

10.40 /// Tea & Coffee

11.05 /// Parallel Sessions

12.35 /// Lunch

13.10 /// Posters

14.10 /// Parallel Sessions

15.30 /// Tea & Coffee

16.00 /// Afternoon Plenary

17.15 /// Conference Close

WELCOME

Liz Bentley Chief Executive of the
Royal Meteorological Society

Stephen Mobbs Executive
Director of the National Centre for
Atmospheric Science

Welcome to the UK Atmospheric Science Conference 2019 at the University of Birmingham, jointly hosted by the Royal Meteorological Society and the National Centre for Atmospheric Science.

It is fitting that the conference will take place at the University of Birmingham, which is an institution helping to find solutions to climate change and air pollution. Their work in atmospheric sciences embraces physical, biological and social sciences as well as air quality and humanities. This mirrors ASC2019, which provides a unique opportunity to bring together research scientists and operational meteorologists to exchange knowledge and ideas in meteorology, air quality, climatology, and other related fields during the two day event.

We would like to thank all those who have been involved in helping to deliver what we believe will be a very interesting and stimulating conference: the organising committees, the Royal Meteorological Society and National Centre for Atmospheric Science staff, our conference speakers, and all our delegates.

We hope you enjoy the conference, and look forward to seeing you again next year.



Image: Matt Buck



Atmospheric Science has never been more relevant to society. Once again we aim to showcase the latest developments across the breadth of Atmospheric Science in a way which reaches across discipline boundaries.”

DAY ONE

Morning Plenary 08.30 - 11.10

Room C Block

Chaired by **Prof. Stephen Mobbs** National Centre for Atmospheric Science

08.30 - 09.00 Registration & Refreshments

09.00 - 09.10 Welcome & Opening Address

09.10 - 09.40 **Re-Examining the Perplexity of Cyclone Complexity**
Dr Helen Dacre University of Reading

★ Keynote
Address

09.40 - 10.00 **An Overview of Atmospheric Pollution and Human Health in a Chinese Megacity Research Programme (APHH-Beijing)**
Dr Zongbo Shi University of Birmingham

10.00 - 10.20 **Seasonal Forecasts of the 20th Century**
Dr Antje Weisheimer University of Oxford, Department of Physics & ECMWF

10.20 - 10.40 **First Results from the UKESM1 CMIP6 ScenarioMIP Ensemble of Future Projections**
Dr Alistair Sellar Met Office

10.40 - 11.10 Tea & Coffee



DAY ONE

Morning Sessions 11.10 - 12.30

	Seasonal Predictions Room C Block Chaired by Nick Dunstone	Dynamics Room WG5 Chaired by Ian Phillips	Interactions Room G33 Chaired by Clare Heavyside	Earth System Modelling Room WG12 Chaired by Alistair Sellar
11.10 - 11.30	Development, Amplification and Decay of European Summer Weather Patterns Linked to Spring North Atlantic Sea Surface Temperatures Dr Alberto Rosso NCAS	Structure, Lifecycle and Environmental Conditions of Tibetan Plateau Vortices Dr Julia Curio University of Reading & NCAS	Managing Air for Greener Inner Cities Dr Paul Hayden University of Surrey & NCAS Atmospheric Measurement Facility	UKESM1: An Assessment of the Pre-Industrial to Present-Day Anthropogenic Forcing and its Attribution to Different Forcing Agents Dr Fiona O'Connor Met Office Hadley Centre
11.30 - 11.50	The Utility of Seasonal Forecast Information for Drought Risk Assessments Dr Matthew Young University of Reading & NCAS	ENSO Modulation of MJO Teleconnection to the North Atlantic & Europe and Implications for Subseasonal Predictability Dr Robert W Lee University of Reading & NCAS	On the Influence of Pre- and In-Seasonal Meteorological Conditions on Grass Pollen Interannual Variations in the UK Dr Alexander Kurganskiy University of Worcester	UKESM-Hybrid: Focusing Resolution Where it's Most Needed Dr Marc Stringer University of Reading & NCAS
11.50 - 12.10	An Improved Approach to Land-Surface Initialisation in the Met Office Global Seasonal Forecasting System (GloSea) Philip Davies Met Office	The Study of Topographic Changes of the Middle Levels of the Atmosphere and its Effects on the Heat Increase in the Middle East Prof Nader Parvin Payame Noor University	Atmospheric Boundary Layer, Atmospheric Stagnation and Air Pollution Relationships Over the Atacama Desert Damián Oyarzun Environmental Change Research Centre, UCL	An Analysis of the UKESM1 CMIP6 Historical Ensemble Dr Till Kuhlbrodt University of Reading & NCAS
12.10 - 12.30	Volcanic Impacts on Large-Scale Climate Modes in a Multi-Model Ensemble Dr Leon Hermanson Met Office	Equatorial Waves and High Impact Weather in South East Asia Dr Sam Ferrett University of Reading & NCAS	An Extension of the Online Atmospheric Model WRF-Chem with Bioaerosols at the Species Level Prof Carsten Skjoth University of Worcester	Coupled Interactive Fire-Atmospheric Chemistry Model João Teixeira Met Office & University of Exeter

12.30 - 13.30 **Lunch**



DAY ONE

Afternoon Sessions 13.30 - 16.00

	Seasonal Predictions Room C Block Chaired by Adam Scaife	Aerosols Room WG5 Chaired by Briony Turner	Ozone & Climate Room G33 Chaired by Tomas Sherwen	Regional Room WG12 Chaired by Till Kuhlbrodt
13.30 - 13.50	The Impact of Strong El Niño and La Niña Events on the North Atlantic Dr Steve Hardiman Met Office Hadley Centre	The Influence of VOC Mixing on the Formation and Properties of Secondary Organic Aerosols Dr M. Rami Alfarra The University of Manchester & NCAS	Modelling the Impacts of Ongoing East Asian CFC Emissions on Ozone Recovery Dr James Keeble NCAS	Interaction of Convective Organisation with Monsoon Precipitation, Atmosphere, Surface and Sea: Emerging results from the 2016 INCOMPASS field campaign in India Dr Andy Turner University of Reading & NCAS
13.50 - 14.10	Understanding the Signal-to-Noise Paradox with Nonlinear Dynamics Prof Tim Palmer University of Oxford	Observations Of Highly Oxygenated Molecules and New Particle Formation In Urban Atmospheres James Brean University of Birmingham	Towards Improved Characterisation of the Impact of Chlorinated VSLs on Atmospheric Chemistry and Climate Dr Ewa Bednarz Lancaster University	Airmass Analysis of the Processes Driving the Progression of the 2016 Indian Summer Monsoon Dr Ambrogio Volonté University of Reading & NCAS
14.10 - 14.30	Attribution of 2012 Extreme Climate Events: Does air-sea interaction matter? Dr Buwen Dong University of Reading & NCAS	Air Pollution Removal by Vegetation: Potential and Limitations Dr Eiko Nemitz Centre for Ecology and Hydrology	Machine Learning Parameterizations for Ozone in Climate Sensitivity Simulations Dr Peer Nowack Imperial College London	Transport Resilience to Weather in Rio de Janeiro, Brazil Dr Emma Ferranti University of Birmingham
14.30 - 15.00	Refreshments			
15.00 - 16.00	Poster Sessions			



DAY ONE

Afternoon Plenary 16.00 - 17.30

Room C Block

Chaired by **David Warrilow**

16.00 - 16.30

UK Emissions from Novel Sources

Prof Frank Kelly King's College London

★ **Keynote
Address**

16.30 - 16.50

Potential Benefits of Cool Roofs in Reducing Heat-Related Mortality During Heatwaves in a European City

Dr Helen L Macintyre Public Health England & University of Birmingham

16.50 - 17.10

Increased Shear in the North Atlantic Upper-Level Jet Stream over the Past Four Decades

Prof Paul D Williams University of Reading

17.10 - 17.30

Simulating the Climate Response to Atmospheric Oxygen Variability in the Phanerozoic

Dr Alexander T Archibald National Centre for Atmospheric Science, Met Office & University of Cambridge

17.30

Conference Close

19.00

Conference Dinner Arrival Drinks

Park Regis Hotel

19.30

Conference Dinner

160 Broad Street
Birmingham
B15 1DT

DAY TWO

Morning Plenary 08.30 - 11.05

Room C Block

Chaired by Prof. John Pyle

08.30 - 09.00 Registration & Refreshments

09.00 - 09.05 Welcome Address

09.05 - 09.35 **Global Intensification in Observed Short-Duration Rainfall Extremes**
Prof Hayley Fowler Newcastle University

★ Keynote
Address

09.35 - 09.55 **Isoprene Measurements in an Oak-Dominated Forest during the 2018 Heatwave in the UK**
Dr Valerio Ferracci Cranfield University

09.55 - 10.15 **Measurement and Modelling of Physico-Chemical Properties and Atmospheric Behaviour of Automotive Diesel Particles**
Prof Roy Harrison National Centre for Atmospheric Science, University of Birmingham & King Abdulaziz University

10.15 - 10.35 **Unsupervised Classification of Convective Organisation with Deep Learning**
Dr Leif Denby University of Leeds

10.35 - 11.05 Tea & Coffee



DAY TWO

Morning Sessions 11.05 - 14.10

	Urban and Regional Air Quality Room WG5 Workshop	Climate Services Room G33 Workshop	Machine Learning in Earth Sciences Room WG12 Workshop
11.05 - 12.35	<p>Recently completed and ongoing studies in Europe, China and India have shown major differences in the dominant atmospheric processes determining air pollutant concentrations. This workshop will be a showcase for the results of recent fundamental studies which elucidate key physical and chemical atmospheric processes influencing air quality, as well as applied and modelling studies which exemplify the applications of such research in air quality management. Topics such as surface flux measurements, secondary pollutant formation, aerosol formation and source apportionment and boundary layer meteorology will all be included.</p>	<p>This workshop will provide an overview of emerging drivers for climate-informed decision-making including climate-related financial risk disclosure. The first part of the workshop focuses on developing awareness of end user requirements in two areas; water related policy making and financial services, providing insight into how to scope and develop tools to meet user requirements and map out the associated value chains. The second part requires participants to explore current climate model and data developments from conference participants and devise proposals for potential service forms and the associated value chain for turning this data into information to meet a one of a series of sector specific end user requirements from current real world challenges ranging from conservation agriculture to future mobility.</p> <p>Participants are encouraged to bring laptops.</p>	<p>Although machine learning has been a common technique in industry for years, Earth system science has only recently started to see a large increase in the application of machine learning tools. These tools are now seeing broad-ranging uses such as replacing computationally-expensive processes, making more robust analysis of observations, and exploring model biases on a global scale. This workshop will provide a showcase and discussion of recent and upcoming work covering spanning NCAS' three themes of Air Pollution, Climate and High-Impact Weather, and Long-term Global Change. Presentations on topics such as the novel application of tools to practitioner examples will all be included.</p>
12.35 - 13.10	Lunch		
13.10 - 14.10	Poster Session		



DAY TWO

Afternoon Sessions 14.10 - 15.30

	Convection & Storms Room C Block	Atmospheric Chemistry Room WG5 Chaired by Tomas Sherwen	Africa Room G33 Chaired by Emily Black	Climate Variability Room WG12 Chaired by Richard Allen
14.10 - 14.30	Radar Applications in Northern Scotland (RAiNS) Dr Ryan Neely III University of Leeds & National Centre for Atmospheric Science	Measurements from the Manchester Time of Flight Chemical Ionisation Mass Spectrometer on the FAAM Bae 146 Research aircraft Dr Thomas J Bannan University of Manchester	Validation of TAMSAT-Derived Soil Moisture using NDVI Dr Vicky Boulton University of Reading	Assessing External and Internal Sources of Atlantic Multidecadal Variability using Models, Proxy Data and Early Instrumental Indices Dr Christopher H. O'Reilly Atmospheric, Oceanic & Planetary Physics, University of Oxford
14.30 - 14.50	Covariance of Storm Hazards in the Atlantic Basin Dr Michael Angus University of Birmingham	Analysis of tropospheric NO₂, HCHO, HONO and O₃ from three years of remote and urban MAX-DOAS measurements in Australasia Robert Ryan University of Melbourne	Regional Mechanisms for the "East African Paradox" Rainfall Decline and Recent Recovery Dr Caroline M. Wainwright University of Reading	Quantifying the Effect of Asian Circulation Biases on the Climate Response to Aerosol Forcing Dr Julie M Jones University of Sheffield
14.50 - 15.10	High-Resolution Weather Research and Forecasting (WRF) Simulations of Ice Crystal Icing Events and the Risk to Aircraft Dr Daniel Bannister SATAVIA	Ammonia in the 21st Century: Challenges for Measurements and Mitigation Dr Christine Braban Centre for Ecology & Hydrology	Are future precipitation changes homogeneous over the Sahel? Paul-Arthur Monerie Reading University	Reconstruction of the Southern Annular Mode from Ships' Logbooks and other Historical Observations Dr Buwen Dong University of Reading & NCAS
15.10 - 15.30	Slope-Driven Convection: Present Understanding, Open Questions, and Challenges for Numerical Weather Prediction Models Prof Dino Zardi Atmospheric Physics Group, University of Trento	How Does the Formation Mechanism of Atmospheric Aerosol Particles Affect PM_{2.5} Toxicity in Urban Environments? Steven Thomson University of Birmingham		Examining the Role of Aerosol Forcing in Driving Global Climate Variations using a Novel Large Ensemble of Historical Simulations Dr Andrea Dittus University of Reading & NCAS



DAY TWO

Afternoon Plenary 15.30 - 17.15

Room C Block

Chaired by **Prof. Liz Bentley** Royal Meteorological Society

15.30 - 16.00 Refreshments

16.00 - 16.20 **Long Range Predictability of Atmospheric Angular Momentum**
Prof Adam Scaife Met Office Hadley Centre & University of Exeter

★ Keynote
Address

16.20 - 16.40 **State of the UK Climate 2018**
Michael Kendon Met Office & National Climate Information Centre

16.40 - 17.10 **Climate Science Needs to Take Risk Assessment Much More Seriously**
Prof Rowan Sutton National Centre for Atmospheric Science & University of Reading

17.10 - 17.15 Closing Remarks

17.15 Conference Close

#ASC2019

National Centre for Atmospheric Science

The National Centre for Atmospheric Science (NCAS) is a world leading research centre dedicated to the advancement of atmospheric science, funded by the Natural Environment Research Council (NERC).

Royal Meteorological Society

The Royal Meteorological Society (RMetS) is the professional and learned society for weather and climate.

SAVE THE DATE

The 2020 Atmospheric Science Conference will be held in Leeds on 1st & 2nd July 2020.

The conference will be jointly hosted by the National Centre for Atmospheric Science and Royal Meteorological Society.

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