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
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17.15 /// Conference Close
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.

Liz Bentley Chief Executive of the Royal Meteorological Society
Stephen Mobbs Executive Director of the National Centre for Atmospheric Science

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.”
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<tr>
<td>09.00 - 09.10</td>
<td>Welcome &amp; Opening Address</td>
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<tr>
<td>09.10 - 09.40</td>
<td>Re-Examining the Perplexity of Cyclone Complexity&lt;br&gt;Dr Helen Dacre University of Reading</td>
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<tr>
<td>09.40 - 10.00</td>
<td>An Overview of Atmospheric Pollution and Human Health in a Chinese Megacity Research Programme (APHH-Beijing)&lt;br&gt;Dr Zongbo Shi University of Birmingham</td>
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<tr>
<td>10.00 - 10.20</td>
<td>Seasonal Forecasts of the 20th Century&lt;br&gt;Dr Antje Weisheimer University of Oxford, Department of Physics &amp; ECMWF</td>
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<td>10.20 - 10.40</td>
<td>First Results from the UKESM1 CMIP6 ScenarioMIP Ensemble of Future Projections&lt;br&gt;Dr Alistair Sellar Met Office</td>
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<td>10.40 - 11.10</td>
<td>Tea &amp; Coffee</td>
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## DAY ONE

### Morning Sessions 11.10 - 12.30

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

### 12.30 - 13.30 Lunch
# DAY ONE

## Afternoon Sessions 13.30 - 16.00

| 13.30 - 13.50 | **Seasonal Predictions**  
**Room C Block**  
Chaired by Adam Scaife |
|---|---|
| **The Impact of Strong El Niño and La Niña Events on the North Atlantic**  
Dr Steve Hardiman  
Met Office Hadley Centre |
| **Aerosols**  
**Room WG5**  
Chaired by Briony Turner |
| **The Influence of VOC Mixing on the Formation and Properties of Secondary Organic Aerosols**  
Dr M. Rami Alfarra  
The University of Manchester & NCAS |
| **Ozone & Climate**  
**Room G33**  
Chaired by Tomas Sherwen |
| **Modelling the Impacts of Ongoing East Asian CFC Emissions on Ozone Recovery**  
Dr James Keeble  
NCAS |
| **Regional**  
**Room WG12**  
Chaired by Till Kuhlbrodt |
| **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**

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<tr>
<td>16.00 - 16.30</td>
<td><strong>UK Emissions from Novel Sources</strong> &lt;br&gt;Prof Frank Kelly King’s College London</td>
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<td>16.30 - 16.50</td>
<td><strong>Potential Benefits of Cool Roofs in Reducing Heat-Related Mortality During Heatwaves in a European City</strong>&lt;br&gt;Dr Helen L Macintyre Public Health England &amp; University of Birmingham</td>
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<td>16.50 - 17.10</td>
<td><strong>Increased Shear in the North Atlantic Upper-Level Jet Stream over the Past Four Decades</strong>&lt;br&gt;Prof Paul D Williams University of Reading</td>
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<tr>
<td>17.10 - 17.30</td>
<td><strong>Simulating the Climate Response to Atmospheric Oxygen Variability in the Phanerozoic</strong>&lt;br&gt;Dr Alexander T Archibald National Centre for Atmospheric Science, Met Office &amp; University of Cambridge</td>
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<tr>
<td>17.30</td>
<td><strong>Conference Close</strong></td>
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#### Additional Activities

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<tr>
<td>19.00</td>
<td><strong>Conference Dinner Arrival Drinks</strong></td>
<td>Park Regis Hotel</td>
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<td>19.30</td>
<td><strong>Conference Dinner</strong></td>
<td>Park Regis Hotel</td>
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## DAY TWO

### Morning Plenary 08.30 - 11.05

- **Room C Block**
- Chaired by Prof. John Pyle

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<td>09.05 - 09.35</td>
<td><strong>Global Intensification in Observed Short-Duration Rainfall Extremes</strong>&lt;br&gt;Prof Hayley Fowler Newcastle University</td>
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<td>09.35 - 09.55</td>
<td><strong>Isoprene Measurements in an Oak-Dominated Forest during the 2018 Heatwave in the UK</strong> &lt;br&gt;Dr Valerio Ferracci Cranfield University</td>
</tr>
<tr>
<td>09.55 - 10.15</td>
<td><strong>Measurement and Modelling of Physico-Chemical Properties and Atmospheric Behaviour of Automotive Diesel Particles</strong>&lt;br&gt;Prof Roy Harrison National Centre for Atmospheric Science, University of Birmingham &amp; King Abdulaziz University</td>
</tr>
<tr>
<td>10.15 - 10.35</td>
<td><strong>Unsupervised Classification of Convective Organisation with Deep Learning</strong>&lt;br&gt;Dr Leif Denby University of Leeds</td>
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<tr>
<td>10.35 - 11.05</td>
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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.

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.

Participants are encouraged to bring laptops.

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.
## DAY TWO

### Afternoon Sessions 14.10 - 15.30

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Chair(s)</th>
</tr>
</thead>
</table>
| 14.10 - 14.30 | **Convection & Storms**  
Dr Michael Angus University of Birmingham  
Dr Daniel Bannister SATAVIA | Room C Block | Tomas Sherwen |
| 14.30 - 14.50 | **Atmospheric Chemistry**  
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  
Analysis of tropospheric NO2, HCHO, HONO and O3 from three years of remote and urban MAX-DOAS measurements in Australasia  
Dr Robert Ryan University of Melbourne  
Ammonia in the 21st Century: Challenges for Measurements and Mitigation  
Dr Christine Braban Centre for Ecology & Hydrology | Room WG5 | Emily Black  
Vicky Boult Department of Meteorology & University of Reading  
Dr Caroline M. Wainwright University of Reading  
Are future precipitation changes homogeneous over the Sahel?  
Paul-Arthur Monerie Reading University | Richard Allen  
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  
Regional Mechanisms for the “East African Paradox” Rainfall Decline and Recent Recovery  
Dr Laura Wilcox University of Reading & NCAS | Room G33 |  
Dr Vicky Boult Department of Meteorology & University of Reading  
Dr Caroline M. Wainwright University of Reading |  
Quantifying the Effect of Asian Circulation Biases on the Climate Response to Aerosol Forcing  
Dr Laura Wilcox University of Reading & NCAS | Room WG12 |  
Dr Laura Wilcox University of Reading & NCAS | Richard Allen |
| 15.10 - 15.30 | **Climate Variability**  
Validation of TAMSAT-Derived Soil Moisture using NDVI  
Dr Vicky Boult Department of Meteorology & 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  
Regional Mechanisms for the “East African Paradox” Rainfall Decline and Recent Recovery  
Dr Laura Wilcox University of Reading & NCAS  
Reconstruction of the Southern Annular Mode from Ships’ Logbooks and other Historical Observations  
Dr Julie M Jones University of Sheffield  
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 | Room WG12 | Richard Allen |
## DAY TWO

**Afternoon Plenary 15.30 - 17.15**  
**Room C Block**  
Chaired by [Prof Liz Bentley](#) Royal Meteorological Society

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| 16.00 - 16.20 | **Long Range Predictability of Atmospheric Angular Momentum**  
                  [Prof Adam Scaife](#) Met Office Hadley Centre & University of Exeter |
| 16.20 - 16.40 | **State of the UK Climate 2018**  
                  [Michael Kendon](#) Met Office & National Climate Information Centre |
| 16.40 - 17.10 | **Climate Science Neess 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                            |
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.

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.