

# **STUDENT AND EARLY CAREERS CONFERENCE**



**4<sup>TH</sup> – 5<sup>TH</sup> JULY 2019**  
**UNIVERSITY OF BIRMINGHAM**  
**#RMETSSTUDENTS**

Dear all,

Firstly, welcome to the Royal Meteorological Society Student and Early Career Scientist Conference 2019. The focus of the meeting is sharing the great science being done by students and ECS but this is also an opportunity for you to meet other scientists at a similar stage in their career. There are plenty of people we first met at this conference who we've since seen at other events and it's always great to see a friendly face.

We'd like to thank the whole Committee who've been working hard to put together an exciting program which we hope you'll enjoy. As well as all your presentations and posters there are two keynote panel sessions covering some of the big challenges in meteorology at the moment - Climate Change and Impacts of Extreme Events.

There's also the ice breaker and careers networking event hosted in the amazing Lapworth Museum and don't forget to take some time to relax and socialise at the Conference Dinner on Thursday.

Throughout the conference we will have photos on display for the Photo Competition, so make sure you take a look and vote for your favourite!

Don't forget to share your experience with us on social media using #RMetSStudents and at:

 @RMetS  @RMetSoc  @rmets\_

We hope you have a great experience at the conference and good luck with your presentations.

Your co-chairs,  
Freya and Sally



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The programme and abstracts are contained in a separate booklet.

Please note that due to the length of this pack and abstracts booklet, delegates **will not** receive printed copies upon arrival. You may print the booklets out for your own use if you wish.

# 1. Registration & Arrival

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Address: **Alan Walters Building**  
**Edgbaston Campus**  
**University of Birmingham**  
**Birmingham, B15 2TT**

Conference registration will take place between **0830 – 0900 hrs** at the entrance of the Alan Walters Building. Please arrive in good time to register.

The Conference will begin at **0900hrs** with the welcome and introduction by Prof Liz Bentley, CEO, Royal Meteorological Society.

**Oral presentations** can be submitted in advance or they can be uploaded on the day. **Please bring these to the committee on a USB stick.** Use of external USB sticks / computers/ other media is permitted however we encourage you to use work from one central machine to help keep the sessions to time.

**Posters:** Please set these up on your arrival on the poster boards provided.

All delegates are asked to wear their badges whilst on site. If you are scheduled to arrive outside of the registration time, please email [catherine.bicknell@rmets.org](mailto:catherine.bicknell@rmets.org)

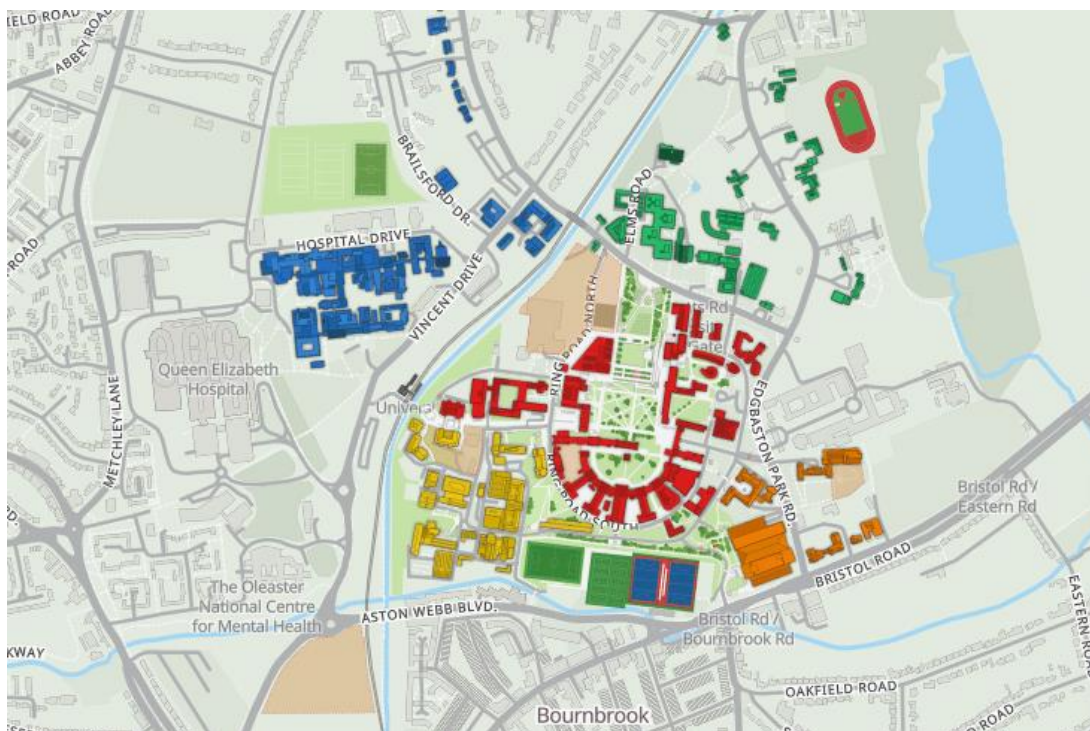
# 2. The Venue

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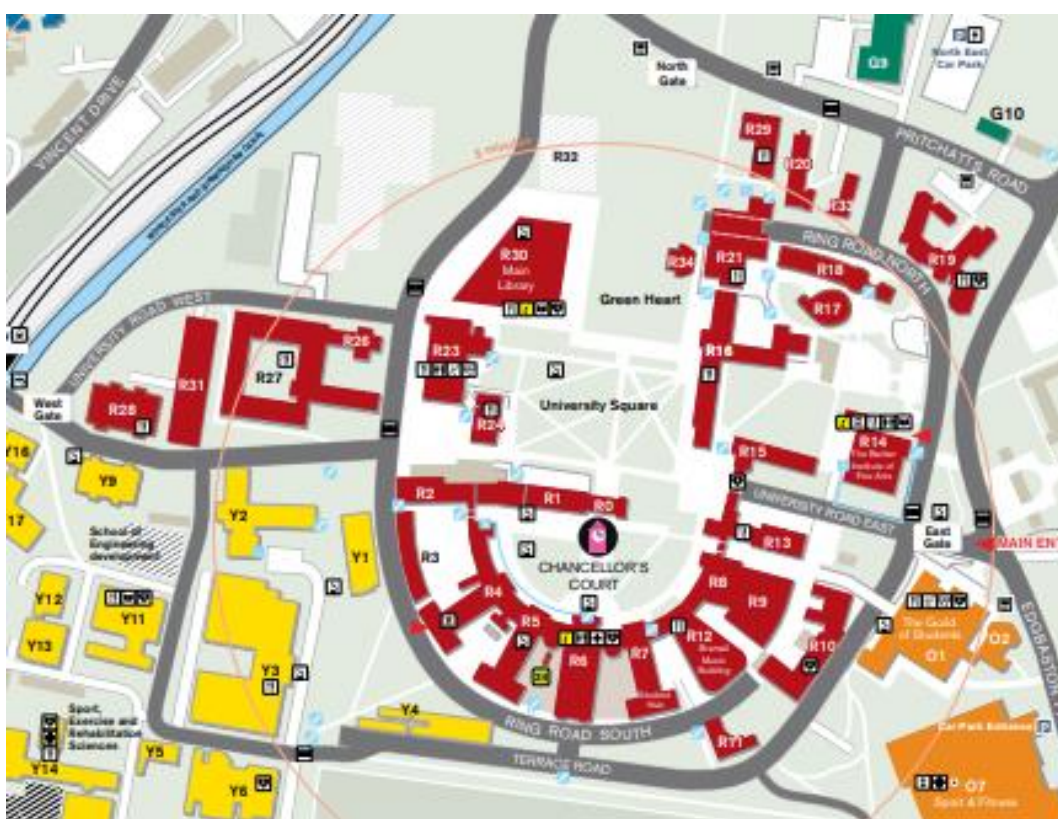
The conference will take place in the Alan Walters Building, Edgbaston Campus at the University of Birmingham – see address above. Presentations will take place in a lecture theatre and all refreshments and poster sessions, will be in the Atrium. Wednesday's Ice Breaker will take place at The Lapworth Museum in the Aston Webb Building, Edgbaston Campus, University of Birmingham. The Conference Dinner on Thursday will take place at the Radisson Blu Birmingham - more about this in section 5.2. Food will be provided at both events.



## 2.2 Map of Birmingham and Venue



## 2.3 Parking at the University



Parking is available at the North East car park. A pay and display system in place, please pay for your ticket and display in your vehicle upon arrival. Parking is charged at £7 per 10 hours. Pay by phone is available, details are provided on the pay machines in the car parks. Use Sat Nav B15 2SA.

### 3. Alan Walters Lecture Theatre Layout

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### 4. Social Events

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#### 4.1 Ice Breaker

The ice breaker event will take place pre-conference on Wednesday 3<sup>th</sup> July at 17.30hrs at the Lapworth Museum, Ashton Webb Building, Edgbaston Campus, University of Birmingham. The evening will open with a careers speed networking event, where you will have the opportunity to speak with industry professionals about their career paths and opportunities that may be available to you. It is a great opportunity to get to know your fellow delegates before the conference and networking ahead of the event. An informal light buffet will be served after the speed networking. Should you have any specific dietary requirements, please do make sure you have let the team know in advance.

#### 4.2 Conference Dinner

The Conference dinner takes place after day 1 of the conference on Thursday 4<sup>th</sup> July at The Radisson Blu Hotel, 12 Holloway Circus, Queensway, Birmingham B1 1BT. The evening will start with an arrival drink starting at 1900hrs. A cash bar will be available throughout the night.

Dress code is smart casual and informal drinks in town may also take place afterwards!

#### 4.3 Dietary Requirements

All efforts are being made to ensure that any dietary requirements specified during initial registration are met. All venue's where catering is being supplied, have been given a list of the requirements. **Please inform the serving staff of your name and dietary requirement when needed.**

## 5 Keynote Speakers Information

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### Thursday 4<sup>th</sup> July: Impacts & Extreme Events

Followed by a discussion panel session

#### ***Building Urban Climate Resilience: An urban observatory approach***

*Lee Chapman, Professor of Climate Resilience, University of Birmingham*

*The Birmingham Urban Climate Laboratory is a near real-time, high-resolution urban meteorological network of automatic weather stations and inexpensive ‘Internet of Things’ air temperature sensors located across the city of Birmingham. The network was initially designed with a focus on monitoring urban heat impacts on infrastructure and health, but has since inspired a number of other smart city / Internet of Things projects. Now, as part of a much bigger £12m initiative, the deployment is to be reimaged as an urban observatory drawing on the latest developments in the Internet of Things, opportunistic sensing and big data. This talk will focus on the key benefits of this approach and to introduce how we can harness the new monitoring technologies available to improve urban resilience.*



Lee Chapman is Professor of Climate Resilience, entrepreneur and a multi-award winning scientist at the University of Birmingham. His primary research interest concerns the impact of weather and climate on the built environment with a particular interest in urban climatology and infrastructure resilience. During a 20-year academic career, he has amassed over 80 refereed journal articles published (or in press) in international peer-reviewed journals. He is particularly interested in knowledge exchange and plays an active role in ensuring science and innovation delivers demonstrable benefits to society.

#### ***Forecasting Extreme Floods – 10 years of rich learning at the UK Flood Forecasting Centre***

*Dr Crystal Moore, Deputy Director Head of Flood Forecasting Centre. Environment Agency*

*The Flood Forecasting Centre (FFC), based at the Met Office in Exeter, is an integrated partnership between the Met Office and Environment Agency. Responsible for producing forecasts of flood risk for all natural forms of flooding across England and Wales, our primary customer is the emergency response community.*

*The level of integration that the FFC partnership achieves is impressive and the distance we have travelled in our 10 operational years is significant. Some of the high impact, low probability events that have shaped the development of the centre will be discussed.*

*These experiences have contributed to an impressive improvement in capability as well as expanding the range and co-ordination of flood mitigation and response activities possible. The journey continues and an outline of the improvements in the pipeline will be shared.*



Crystal is Head of the Flood Forecasting Centre (FFC), a partnership between the Environment Agency and Met Office. Appointed in 2012, she's led the centre during a period of historically extreme floods. These include the wettest UK summer and winter on record (2012 and 2013 respectively), the most significant coastal flooding for a generation, the highest ever recorded groundwater levels and a conveyor of 12 storms which caused prolonged, widespread and severe flooding during the winter of 2013/14. This record breaking pattern persisted in 2015/16 when communities in the north of England were devastated by 2 extreme floods within 20 days.

Prior to joining the FFC her roles have included environmental impact management, operations management, incident management and leading strategy and change. She also led the Environment Agency's national resilience arrangements for the Olympic and Paralympic games. A strong advocate of collaboration, she enjoys stimulating science to bridge knowledge gaps.

### ***Climate Information for Decision-Making: Responding to Climate Change in Developing Countries***

*Professor Rosalind Cornforth, Director, Walker Institute, University of Reading*

*Science can provide significant insight into potential impacts from climate change. However, many developing countries face challenges in understanding how to apply that information to balance immediate development needs against planning for climate stresses that may seem uncertain or far out into the future. Furthermore, expert knowledge areas have become increasingly bureaucratized and segmented, reinforced by the fact that technology and science approaches are often grounded in simplifying complex problems by breaking them down and tearing them apart to make disciplinary specific research (Bracken, 2012). The Walker Institute is instead, committed to combining and collaborating between fields, so that the complex knowledge produced may reflect and begin to answer large societal problems, problems which are usually caused by varying factors across all academic 'boundaries'. In this talk, I will explore best practices in and success stories of using climate science to inform decision making in developing countries.*



With a PhD in Meteorology, and expertise in African weather systems, she has many years' experience collaborating with policymakers, communities and international organisations particularly across sub-Saharan Africa. Her work is creating a portfolio of research designed across all scales with a wide range of stakeholder groups to help build a climate resilient future for everyone. In 2011, she established the African Climate Exchange (AfClix), which brought together academics, policymakers and practitioners to identify how climate science can play a role in reducing people's vulnerabilities to weather-related hazards in Africa; and following this through with action on the ground to strengthen capacity and promote resilience. In 2015, Ros became

Director of the Walker Institute at the University of Reading, which is working in equitable partnerships across Africa, South Asia and the Americas to drive bottom-up, problem-focused interdisciplinary solutions to climate-related issues that make a meaningful difference in people's lives.



## Friday 5<sup>th</sup> July: Climate

Followed by a discussion panel session

### **Understanding and Acting on Climate Change – Insights from Psychology and Behavioural Economics**

Dr Rachel McCloy, Associate Professor in Applied Behavioural Science, School of Psychology and Clinical Language Sciences, University of Reading

*This presentation will provide an overview of recent advances in the psychology and behavioural economics of human understanding and response to climate change. Drawing on a broad literature it will highlight some of the barriers we face both in successfully communicating information about climate science and in inspiring people to alter their behaviour in more sustainable ways.*



Dr. Rachel McCloy is Associate Professor in Applied Behavioural Science at the University of Reading UK. Her research interests fall broadly within the fields of judgment and decision-making and behavioural economics, with particular areas of interest in improving risk judgments, understanding pro-environmental behaviours and food choice, and applying psychology to public policy issues.

### **Climate Change Law: Getting in on the Act**

Richard Benwell, Policy Adviser to the Secretary of State, DEFRA

*A decade on from the Climate Change Act, policymakers are still grappling with the right regulatory response to climate and ecological challenges. In the months ahead, can the UK once again take the domestic action needed to inspire and lead global environmental action? As easy climate wins become more scarce, a modern, comprehensive approach will be needed. It must combine new law with the latest scientific understanding to take economy-wide action for the environment.*



Richard Benwell is policy adviser to the Secretary of State, Michael Gove, in the Department for Environment, Food and Rural Affairs. Previously, he was Head of Government Affairs at WWT and a director of Westmill Solar Cooperative. He has also worked for RSPB and the House of Commons Commission.

## **The Intergovernmental Panel on Climate Change Sixth Assessment Report**

Dr Amanda Maycock, Associate Professor, University of Leeds

*This talk will introduce the IPCC Sixth Assessment Report (AR6), which is due to be published in 2021-22. I will outline the scientific assessment process, which is currently being undertaken for AR6 by 230 authors with 63 citizenships from around the world. I will explain the importance of reaching scientific consensus on key findings for the IPCC assessment process. I will describe how the AR6 cycle is somewhat unusual as it follows shortly after the publication of three IPCC Special Reports on Global Warming of 1.5C (October 2018), Climate Change and Land (August 2019), and The Ocean and Cryosphere in a Changing Climate (September 2019). I will give some personal reflections on being involved in the IPCC process for the first time and some examples of how the wider climate science community can get involved with the IPCC assessments.*



Amanda Maycock is a NERC Independent Research Fellow and Associate Professor in the School of Earth and Environment at the University of Leeds, where she has been based since 2015. She previously held an AXA Postdoctoral Research Fellowship and Junior Research Fellowship at the University of Cambridge. She is expert in the use of global climate and chemistry-climate models to study interactions between atmospheric composition, radiation and circulation. She was Lead Author of the WMO/UNEP 2018 Scientific Assessment of Ozone Assessment and is Lead Author for Chapter 4 (Global and regional future projections) of the IPCC Working Group I Sixth Assessment Report. Amanda was the recipient of a 2018 Philip Leverhulme Prize in Earth Sciences and the EGU 2019 Arne Richter Award for Outstanding Early Career Scientists. Amanda co-leads the World Climate Research Programme (WCRP) SPARC activity on Atmospheric Temperature Changes and their Drivers, and is a member of the US CLIVAR working group on the Changing Width of the Tropical Belt.

### **Why we need to tell stories about the environment**

Victoria Gill, Science Correspondent, BBC News

*This talk will provide a brief insight into the value of storytelling in engaging an audience in the complexities of environmental degradation and climate change. I will discuss how science becomes an engrossing news story, why researchers have an obligation to be a part of that story and what journalists are looking for when we attempt to bridge the gap between the scientific process and the news agenda.*

I've been reporting on science for the BBC since 2009, when I started as the recipient of the Ivan Noble bursary for science journalists. Since then, I have reported for BBC online, TV and radio on stories ranging from missions to Mars to human-wildlife conflict to bedbug evolution. I'm the recipient of several science journalism awards, including the AAAS Kavli award in 2017. My most recent documentary – on science in the Chernobyl Exclusion Zone, was broadcast earlier this year on the BBC News channel.

## 6.1 Oral Presentations

The oral presentations are listed in the programme PDF.

All presentations will take place in Alan Walters lecture theatre.

Each presentation should last for 12 minutes plus 3 minutes for questions (15 minutes in total). Please do ensure that you stay within the allotted time. Oral presentations will be collected if not already submitted during registration (please bring them on a USB stick only).

The Lecture Theatre PC is running **Windows 10 and Microsoft Office with PowerPoint**. Presentations should be in a 16:9 ratio. Please check the 'Information for Presenters guide' sent to speakers for more details.

The lecture theatre is equipped with a computer and data projector, audio can be used on the computer. You are advised to check any presentations before your talk.

Presentations should be in PowerPoint format if possible, although PDF files are also accepted. If your presentation includes animations please make sure that the files are included with your PowerPoint file.

The Conference room has both fixed microphones and a lapel microphone (designed to attach to clothing). There is also a clicker for transitions between slides, although no laser pointer is provided.

Any specific queries about computer equipment should be sent in advance via email [catherine.bicknell@rmets.org](mailto:catherine.bicknell@rmets.org)

Presenters are asked to meet their Session Chairperson (Conference committee member) at the front of the room 10 minutes before the start of their Session to ensure their presentations are ready to run.

- **All presentations must be pre-loaded to ensure they run**
- **Please ensure mobile phones are switched in silent mode whilst you are in the Conference Rooms.**
- **It is important your presentation stays within the allotted time and the Chair of your Session will remind you when time is coming to an end.**

Five students who Liz Bentley, CEO, RMetS and members of the Student Organising Committee consider to have given excellent presentations will be invited to have an article published in *Weather* magazine, based on their talks.

## 6.2 Poster Presentations

**Posters** can be put up from 08.30am, during registration on Thursday 4<sup>th</sup> July on the Poster Board with your number on. The Poster Boards are located in the Atrium, which is the same area as registration.

Posters should be displayed throughout the Conference. Poster boards are 1m high and 1m wide on legs of 1m high giving an overall height of 2m. Posters should be A0 Portrait in size. Velcro will be available on the Registration Desk.

There will be 2 poster sessions, Poster Session 1 on Thursday 4<sup>th</sup> July 1655-1800 and Poster Session 2 on Friday 5<sup>th</sup> July 1335-1435. Each session provides delegates a chance to talk to the presenters and ask questions related to their work. Posters should be removed from the boards by the end of the refreshment break on the second day (Friday 5<sup>th</sup> July 14.35pm).

### Poster Prizes

Wiley have sponsored 2 poster prizes (**2 x vouchers for books from Wiley**) to be judged by the Chief Executive of the Royal Meteorological Society and members of the Student Conference Organising Committee during the Poster Sessions.

The Student Conference Organising Committee will also choose five other excellent presentations and the speakers will receive complimentary tickets to the Voice of Young Science (VoYS) workshop in Autumn 2019.

### Photo Competition

Photos submitted for the photo competition will be printed and displayed during the breaks and poster sessions for viewing. The competition will be judged by the conference delegates and all the attendees will be asked to vote for their favourite photos.

Presentations for the photo competition will be made at the Conference Dinner on Thursday 4<sup>th</sup> July.

## 6.3 Posters

Chair of Poster Session 1: Freya Aldred (odd poster numbers)

Chair of Poster Session 2: Sally Woodhouse (even poster numbers)

Poster Number	Presentation Title
1	<b>Kathryn Chalk</b> Carve your own niche
2	<b>Gongda Lu</b> Assessing the efficacy of autumn-winter air quality policies in Jing-Jin-Ji
3	<b>Zhanar Naurozbayeva</b> Climate Changes of Ice Thickness on the Northern Caspian
4	<b>Andrea Di Antonio</b> Developing a Relative Humidity Correction for Low Cost Sensors Measuring Ambient Particulate Matter
5	<b>Alice Ramsden</b> Quantifying sectoral-level methane fluxes in a Bayesian inversion using co-emitted tracers
6	<b>James King</b> Representation of the Indian Ocean Walker Circulation in Climate Models and Links to Kenyan Rainfall
7	<b>Freya Aldred</b> Satellite Land Surface Temperature for an Urban Heat Climate Service
8	<b>Jinghua Li</b> The performance and modelling of a low-cost sensor system for urban air pollution monitoring
9	<b>Eunchong Chung</b> The Use of Clumped Isotopologues to Understanding Global Methane Flux
10	<b>Akshay Deoras</b> On seasonal and sub-seasonal forecasting of the Indian monsoon low pressure systems
11	<b>Khadija Diana</b> Evaluation of meteorological drought using the Standardized Precipitation Index (SPI) in the High Ziz river Basin, Morocco
12	<b>George Pacey</b> Environments conducive for severe convective winds in Europe
13	<b>Sanjib Adhikari</b> Identification of Summer Monsoon Onset over Nepal by using Satellite-Derived OLR (Outgoing Long-wave Radiation) Data
14	<b>Jorge Garcia-Franco</b> Assessment of CMIP6 Simulations of the American Monsoon System
15	<b>Emanuele Silvio Gentile</b> The impact of atmosphere, wave, ocean coupling on extreme surface wind forecasts
16	<b>Jake Bland</b> Identifying and characterising specific humidity biases in models
17	<b>Chris Barrell</b> Cold-Air Outbreaks over the Subpolar Sea

18	<b>Oscar Dimdore-Miles</b> The role of interactive chemistry in modelling Sudden Stratospheric Warming events
19	<b>Ayesha Tandon</b> Can Global Atmospheric Chemistry Models reproduce Surface Ozone Concentrations in China
20	<b>Carl Thomas</b> Understanding the thermodynamic and dynamic contributions to future changes in European heatwaves
21	<b>Sarah Wilson-Kemsley</b> Stochastic Weather Generators and the Köppen Classification System
22	<b>Chris Wells</b> The Impact of Perturbations to tropical aerosols and their precursors on local and remote climates
23	<b>Kate Winfield</b> Overview of the CEDA Archive
24	<b>Michael Cartwright</b> Understanding the Global Sources and Sinks of Atmospheric Carbonyl Sulfide in Order to Provide Insights into Carbon Cycle Processes
25	<b>Ramashray Yadav</b> Monsoon Studies Over Indian Subcontinent Using a network of Ground Based GNSS receivers Monsoon Studies Over Indian Subcontinent Using a network of Ground Based GNSS receivers
26	<b>Adedayo Adedeji</b> Air Quality Assessment and Numerical Simulation of Aerosols in South-East Asia Region

## 7. Feedback

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At the Society your feedback is taken seriously when planning future events. Each delegate will be sent an email following the Conference with a link. Please could you take the time and complete your feedback and help to make next year's event even better.

## 8. Social Media

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Up to date information about the Conference is provided on the Society's website [www.rmets.org/student-conference-19](http://www.rmets.org/student-conference-19)

You can follow the Society on Twitter '@RMetS' and be sure to use the Student Conference 2018 hashtag '#RMetSStudents'

## 9. Internet Access

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Wifi is available at the university for all delegates at WIFIGuest. You will need to go to the registration page and create a profile before you can log on.

## 10. Green Conference Guidelines

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*The Royal Meteorological Society is the UK's Professional and Learned Society for weather and climate.*

The following guidelines summarise the Society's commitment to conducting conferences in a manner that stresses responsible use of natural resources and minimisation of greenhouse gas emissions and other waste and pollutants.

### **Conference Organisation and Planning**

1. Participants and presenters are advised in advance that the meeting will strive to minimise environmental impacts and greenhouse gas emissions.
2. For all goods procured for the meeting, preference is given to the most environmentally-appropriate, locally-produced alternatives that are available at a reasonable price. We are willing to pay more for environmental responsibility.
3. Printed material are kept to a minimum, and all printed paper (i.e. conference proceedings, registration papers, photocopying etc.) aims to have certified recycled content, with a high proportion of post-consumer content. Chlorine- bleached paper is avoided.
4. Conference CDs are not offered; rather materials such as abstracts and proceedings are provided online.
5. Steps are taken to minimise environmental impact of transportation to the conference and during the conference. This includes choosing a locale accessible by public transportation, walking and biking.

6. Attendees and organisers are encouraged to walk, bicycle, carpool or use public transit to attend meetings and events whenever possible. Venues are evaluated in part based on their environmental policies and practices.
7. Sponsors and donors are actively sought who reflect positive environmental values and practices.

### **Registration**

1. Measures are taken to reduce paper waste at check-in (e.g., short registration forms, computerised systems).
2. Registration package and nametags are provided in a reusable or reused holder.

### **Programme**

1. Educational efforts are undertaken as part of the programme to make participants aware of their environmental impacts during the conference.
2. Attendees are reminded of waste reduction and other environmental opportunities during the conference.

### **Conference Site Systems**

1. Recycling and composting systems are in place with convenient and well-marked receptacles.
2. Distribution of handouts and session notes is limited.
3. Exhibitors are encouraged to reduce environmental impact through use of reusable materials and by limiting handouts and giveaways. It is suggested that instead they collect business cards or names of those interested in receiving more information or product samples.
4. Receptacles are provided at convenient locations for the return of nametag holders at the end of the meeting.
5. Lights and other electrical equipment are turned off when not in use.



## 11. Luggage storage

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Delegates may store suitcases or luggage in room G11. The room will be locked.

## 12. Taxis, Trains and Buses

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### By rail

Most cross-country services to Birmingham arrive at New Street Station. Up to six trains an hour depart for the University on the cross-city line (ten minutes to University station, final destination Longbridge or Redditch). The centre of the main campus is a five-minute walk from University Station.

### By bus

Numbers X61 and 63 travel from the Bus Mall, Moor Street Queensway, and from New Street Station, St Martin's Queensway, to the Bristol Road, at the corner of Edgbaston Park Road. The services all run frequently from the city centre.

Alternatively, here are some useful numbers:

**Birmingham Taxis:** 0121 702 2000

**Birmingham City Taxis:** 0121 728 3999

**247 Radio Cars:** 0121 222 2222

## Thanks

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The Organising Committee and RMetS staff would like to thank you for attending the RMetS Student and Early Career Scientist Conference 2019. We hope that you enjoy the experience and look forward to seeing many of you again next year!

### **The 2019 Organising Committee**

Freya Aldred (Joint Chair)  
Sally Woodhouse (Joint Chair)  
Chris Barrell  
Megan Bickle  
Hannah Brown  
Dominic Jones  
Edward Chung

Would you like to be a member of the 2020 Organising Committee? Please email [catherine.bicknell@rmets.org](mailto:catherine.bicknell@rmets.org) to find out more details and to register your interest.