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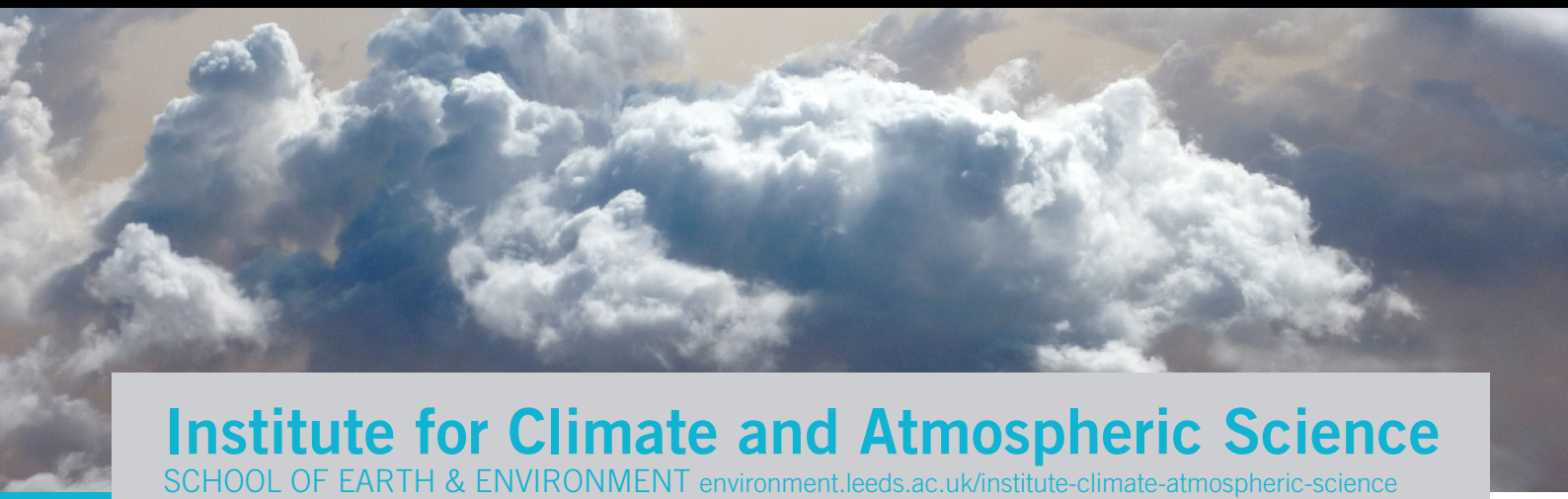


Institute for Climate and Atmospheric Science

SCHOOL OF EARTH & ENVIRONMENT environment.leeds.ac.uk/institute-climate-atmospheric-science

Director's Update

Welcome to the latest edition of the ICAS newsletter. Much has happened in ICAS since our last Newsletter in July. September saw the culmination of years of planning as the Priestley Building refurbishment was completed. ICAS now occupy the upper floors of our 'old' building and the adjacent Priestley space, with a few of us a short distance away in Fairbairn House with NCAS. Hopefully, as we settle into our new environments research connections will flourish. To that end, and to celebrate a high ranking in different international league tables, we held a special ICAS event in early October with a selection of talks and reception afterwards.

October also saw the arrival of many of our new PhD students. As a balance we have also said au revoir to others who have completed their studies and found jobs and research positions away from Leeds. Together with our Research Fellows they make up a large, vibrant and continually evolving research community.

In early November we held our Annual Science Meeting. Over 100 ICAS staff and students attended the event, presenting posters and taking part in other activities. The day really highlighted the range of work we undertake: fieldwork, laboratory work and modelling from Antarctic ice to space weather. For more details on the ASM see Page 10.

Martyn Chipperfield
Director

INSIDE THIS ISSUE

Featured Papers

The underestimated cooling effect on the planet from historic fires

Historic levels of particles in the atmosphere released from pre-industrial era fires, and their cooling effect on the planet, may have been significantly underestimated according to a new study published by ICAS researchers in Nature Communications. Fires cause large amounts of tiny particles, known as aerosols, to be released into the atmosphere. These aerosols, such as the soot in smoke or chemicals released by burning trees, can cool the planet by reflecting sunlight back into space and increasing cloud brightness. Until now, researchers believed that there were fewer wildfires before 1750 – prior to the first Industrial Revolution. Additionally, fires from agricultural burning practices in the pre-industrial era have been largely negated or underestimated in datasets of fire emissions. Therefore, it was thought there were lower levels of aerosols in the atmosphere, reducing their effect on the climate.

Research led by scientists within ICAS has now shown fires may have been as common before 1750 as in modern times and possibly even more so. This implies that the cooling effect of present-day man-made aerosol pollution, such as the tiny particles in car emissions and power plant stacks, may have been overestimated. "While climate change and rising global temperatures could lead to an increase in wildfires in the future, it becomes harder to predict the impact on atmospheric conditions without an accurate understanding the role fire emissions played in the past," says Professor Ken Carslaw.

Study lead author Dr Douglas Hamilton carried out this research while in ICAS; he is now at Cornell University in Ithaca, New York. He said: "We know aerosols in the atmosphere have always had a significant impact on climate, but until now, the influence they had historically has been underestimated. It has been a case of not having the correct tools for the job as global fire models have mostly been designed to simulate present-day fires and long-term observational records of fire activity are sparse. Our findings show there may be a significant gap between previous estimations and what was actually taking place in the pre-industrial atmosphere. This suggests the high possibility of a much smaller difference in aerosol cooling between the pre-industrial period and the present day than we have previously thought. The implication is that the cooling effect of additional present-day man-made aerosol pollution may have been overestimated. Scientists around the world use models to predict atmospheric conditions in the past. We believe these models need to be updated to take into account our new evidence. To continue to study the history of the planet's environment accurately, as well as more accurately predict how human activity impacts the Earth system, we now need to reassess our understanding of how much fires contributed in the pre-industrial era."

Analyses of ice core records, charcoal measured in lake and marine sediments, and tree rings suggests that fire activity varied considerably over the last 500 years but that generally fires peaked around 1850 before declining to present day levels. The study suggests there has possibly been a reduction of fire emissions of between 45 to 70% globally since the Industrial Revolution. Using fire models that incorporate a more robust understanding of how humans influence global fire activity, the team was able to re-assess pre-industrial fire occurrence and estimate what the levels of subsequent aerosol emission were in 1750. When incorporated into a global aerosol model, the fire models showed a substantial difference in atmospheric composition that has not been accounted for in climate models.

Ken Carslaw, added: "Satellite measurements give us a much clearer understanding of present-day wildfire patterns and the amount of aerosols they release into the atmosphere. It has been widely assumed in global climate models that aerosol emissions from fires in the pre-industrial era were lower than today, but this is based on a misconception that wildfires have increased with human population density. However, the recent analysis of wildfire occurrence shows that at a global scale burned area actually declines as population density increases. This is due in large part to advances in firefighting and fire suppression as well as changes in land use – burnable material, such as forests and grasslands, has been cleared away for houses and roads. While climate change and rising global temperatures could lead to an increase in wildfires in the future, it becomes harder to predict the impact on atmospheric conditions without an accurate understanding the role fire emissions played in the past."

Study co-author Dr Cat Scott said: "It's impossible to evaluate how present-day society's impact on climate has changed over the years without a firm understanding of what the atmosphere was like historically and how it has evolved. Our study suggests that the level of particles in the pre-industrial atmosphere might have been more similar to the level we have today than we thought. Additionally, whilst this study focused on improving understanding of aerosol emissions from pre-industrial fires we also have to remember that historic and present-day fires have many other effects on the atmosphere, such as the carbon dioxide emitted during burning, and the impact of the fire on the capacity of the remaining forests to take up and store carbon. These factors play an important role in the overall impact of fires on the climate and we need to develop a much deeper understanding of how fires evolved over the pre-industrial era and into present day to appreciate how these impacts fit together."

D. S. Hamilton, S. Hantson, C. E. Scott, J. O. Kaplan, K. J. Pringle, L. P. Nieradzik, A. Rap, G. A. Folberth, D. V. Spracklen & K. S. Carslaw. 2018. Reassessment of pre-industrial fire emissions strongly affects anthropogenic aerosol forcing. Nature Communications 9, Article number: 3182. DOI: https://doi.org/10.1038/s41467-018-05592-9

Image credit: pxhere

Improving air quality could prevent thousands of deaths in India

A new ICAS study shows more stringent emission controls are key to India's future health.

More than 6.1 million people worldwide die each year as a result of exposure to air pollution, which increases the risk of cardiovascular disease, lung disease, and cancer. In India, which contains many of the world's most polluted cities, the annual death toll from air pollution exceeds 1.6 million. Now, research led by ICAS scientists and published in GeoHealth shows how implementing stricter emissions standards in India could save hundreds of thousands of lives each year.

One of the most dangerous components of air pollution is fine particulate matter (PM2.5), nanoscopic particles and droplets produced by burning fuels, which travel deep into the lungs and bloodstream and damage the lungs and heart. On average, Indian citizens are exposed to PM2.5 concentrations between 15 and 32 times higher than the air quality guidelines set forth by the World Health Organization, and scientists project that India's PM2.5 levels will double by 2050 relative to 2015. In New Delhi, one of the world's most polluted megacities, PM2.5 concentrations have reached more than 1,200 micrograms per cubic metre, 48 times the guideline established by the World Health Organization. The Indian government has policies in place to reduce the rapid rise of pollution, such as curbing emissions from buses and trucks and expanding the household use of liquified petroleum gas to replace solid fuels.

The study compared India's existing and planned policies to a more aggressive plan to reduce emissions. The team used a high-resolution computer model to estimate the pollution levels people breathe at ground level throughout India and test how different emissions policies would affect their exposure and health. The team found that under India's existing and planned policies, dubbed the New Policy Scenario, the rate of growth in Indian citizens' exposure to pollution decreased by 9%. Compared to the present day, that plan of action will avert about 61,000 premature deaths in 2050. A more aggressive plan, called the Clean Air Scenario, would decrease the rate of growth in air pollution by about 65% and avert around 610,000 deaths.

Study lead author Luke Conibear, postgraduate researcher in ICAS, and the EPSRC Centre for Doctoral Training in Bioenergy, said: "India's 'business-as-usual' economic and industrial growth is predicted to increase emissions and further worsen ambient PM2.5 concentrations. Our results show that small emission changes bring small improvements to air quality and human health. Throughout the country, the Clean Air Scenario stands out as the most effective way to reduce ambient concentrations and alleviate some of the burden from the subsequent diseases."

Study co-author Dominick Spracklen, Professor of Biosphere-Atmosphere Interactions at Leeds, said: "Our study shows that particulate pollution across India is currently so bad that really stringent emission controls are needed to bring down air pollution to levels that will result in substantial health benefits. Even with zero emissions growth, India's rapidly growing and ageing population means that the rates of disease and premature mortality caused by air pollution will increase by 75% from 2015 to 2050. Despite that grim statistic, the team argues, hundreds of thousands of deaths could be avoided through tighter emissions standards—like cleaner iron and steel manufacturing—and universal access to clean household energy.

Conibear, L, Butt, EW, Knote, C, Arnold, SR and Spracklen, DV. 2018. Stringent Emission Control Policies Can Provide Large Improvements in Air Quality and Public Health in India. GeoHealth, 2 (7). pp. 196-211. ISSN 2471-1403. DOI: https://doi.org/10.1029/2018GH000139

Joining the Arctic research ship 'drifting' past North Pole

A research ship carrying 80 international scientists, including ICAS researchers, is studying the region's climate system. The ship will be deliberately wedged into Arctic sea ice as it floats past the North Pole. The expedition aims to further understanding of the Arctic climate system and how it affects global climate models. This study aboard the 120-metre long RV Polarstern will see the research vessel move with the current in the ice across the central Arctic Ocean from September 2019 to September 2020.

Spearheaded by Germany's Alfred Wegener Institute, the 120 million Euros Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) mission aims to answer some of the biggest scientific questions about the Arctic, including investigating why the region is warming twice as fast as the global average. The Natural Environment Research Council (NERC) has awarded grants worth £1.8 million to six research proposals, including one led by Professor Ian Brooks from ICAS, that will utilise a two-month berth on the German research vessel.

"Current knowledge of these physical processes is relatively poor, largely because of a lack of extensive in situ measurements, and in particular measurements taken throughout the winter. MOSAiC is offering a unique opportunity to overcome these barriers," says Ian.

The Leeds project will focus on atmospheric boundary-layer dynamics, particularly the vertical profile of mean wind and turbulent mixing. These are the primary factors that control the interactions between the Arctic region's atmosphere and surface. These factors regulate the exchange of heat, water vapour, and trace gases – including greenhouse gases such as carbon dioxide and methane. They also influence and are influenced by cloud properties and processes.

Ian added: "The Arctic is a unique environment and many of the physical processes that control the climate there are either specific to Polar Regions, such as sea ice formation and melt, or have key differences from the lower latitude regions. Current knowledge of these physical processes is relatively poor, largely because of a lack of extensive in situ measurements, and in particular measurements taken throughout the winter. MOSAiC is offering a unique opportunity to overcome these barriers. Our research will focus on the interactions between the boundary-layer structure and the surface turbulent fluxes of momentum and heat over a full annual cycle. By using active remote sensing measurements we will be able to gather a wide range of data, such as wind and turbulent structure from the surface up to a few hundred metres into the atmosphere. Our measurements will not only give us new insight into how the atmospheric boundary-layer functions but we will also be providing context for many other ongoing and future measurements."

Dr Ryan Neely, from ICAS, and Dr Barbara Brooks from the National Centre for Atmospheric Science (NCAS) in Leeds are co-investigators for the project, which will include collaboration from the University of Trier, Germany and the University of Colorado. The voyage will see UK researchers working alongside nearly 600 international scientists and crew from 17 countries as part of this major international effort to better understand the fastest changing environment on the planet.

Minister of State for Universities, Science, Research and Innovation, Sam Gyimah, said: "Science has no borders and I am delighted that six teams of our world leading scientists, backed by our modern Industrial Strategy, have been chosen to join this international expedition. This government is determined to tackle the devastating effects of climate change."

NERC Associate Director of Research Ned Garnett said: "We know that the dramatic changes in the Arctic climate system and the rapid decline in the extent of Arctic sea ice in summer has a major impact on our global climate. However, we don't yet adequately understand this warming process, and a lack of year-round observations in the central Arctic makes predicting future changes in the area very challenging. This gap in our understanding of the Arctic climate is one of the most pressing problems in predicting global climate change." He said, as part of the MOSAiC programme, world-class scientists from the UK will join international counterparts on the Polarstern to help scientists to better predict changes in the Arctic and globally.

The MOSAiC project has been designed under the umbrella of the International Arctic Science Committee (IASC), led by the AWI, Russian Arctic & Antarctic Research Institute (AARI) and the University of Colorado (CIRES).

environment.leeds.ac.uk/institute-climate-atmospheric-science/news/article/382/joining-the-arctic-research-ship-drifting-past-north-pole

China emissions on the right track as air pollution drops

The first detailed analysis of air pollution trends in China reveals a 20% drop in concentrations of particulate pollution over the last three years. A study by ICAS has examined measurements from more than 1,600 locations in China. It found that more than 50% of the locations showed a significant decrease in concentrations of sulphur dioxide and fine particulates that make up a large portion of air pollution.

The team used datasets from 2015 to 2017 consisting of hourly assessments of concentrations of nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3), and fine particles measuring less than 2.5 µm ($PM_{2.5}$). The hourly data was used to calculate monthly averages and determine overall concentration levels as well as which regions of China had the highest and lowest concentrations. The data was then used to assess whether pollutant concentrations had changed over the 2015 to 2017 period. The team found that concentrations of $PM_{2.5}$ fell by 7.2% per year over this period and concentrations of SO_2 by 10.3% per year. In contrast, O_3 concentrations increased by 5% per year.

Study co-author Professor Dominick Spracklen, said: "Rapid economic growth and large increases in emissions has led to serious air quality issues across China. One of the most dangerous components of air pollution is fine particulate matter that measures less than the width of a human hair. These particles can penetrate deeply into the lungs causing serious health complications. Exposure to these particles is estimated to cause more than one million deaths across China each year. In response the Chinese government introduced policies to reduce emissions and set ambitious targets to limit the amount of particulates in the atmosphere. This is the first detailed assessment as to whether these policies are having an impact."

Ben Silver, study lead author and ICAS postgraduate researcher, said "Our work shows rapid and extensive changes in air pollution right across China. In particular it is encouraging to see that levels of fine particulate matter have fallen rapidly in the last few years. While more research is needed to fully assess what is driving the trends we've uncovered here, particularly what is causing the widespread increase in ozone concentrations, we can see that China's emissions control policies seem to be on the right track."

This work was funded by the AIA Group, which is the largest independent publicly listed pan-Asian life insurance group, headquartered in Hong Kong. AIA is committed to playing a meaningful role in combating rising health issues in Asia, including through support for improved air quality in the region.

Silver, B, Reddington, CL, Arnold, SR and Spracklen, DV. 2018. Substantial changes in air pollution across China during 2015 - 2017. Environmental Research Letters, Volume 13, Number 11. DOI: /10.1088/1748-9326/aae718

Successes

New strategic research programme to reduce climate uncertainties

The Natural Environment Research Council (NERC) has announced new investment in a large-scale strategic research programme on Reducing Uncertainties in Climate Models from Clouds. The strategic programme area (SPA) is the outcome of NERC's Ideas process for strategic research. The original idea for the programme came from a National Centre for Atmospheric Science (NCAS) Research Forum and was submitted by Professor Alan Blyth, NCAS at Leeds.

The case was then developed by an independent writing team commissioned by NERC and eventually presented to NERC Science Board by Professor Ken Carslaw (ICAS) and Professor Joanna Haigh (Imperial College). The programme was up against two other major ideas.

Cloud feedbacks are a fundamental and persistent problem in climate science and are the dominant uncertainty in assessing global and regional climate sensitivity. The Reducing Uncertainties in Climate Models from Clouds programme will enable a step change in quantifying and reducing uncertainty in cloud feedbacks under climate change by exploiting existing and new observations, together with new capacity in climate modelling. Leeds has a long and successful track record of research on clouds and climate, including research carried out in ICAS and NCAS. The success of this programme is in part due to a long tradition in Leeds of combining observations and modelling of physical processes. Long-term collaboration with the Met Office has led to the development of some of the advanced computer models that will form an essential part of the future research programme.

ICAS Links with Nanjing University

In October Ken Carslaw served as a member of the International Advisory Board of the Joint International Research Laboratory of Atmospheric and Earth System Sciences (JirLATEST) in Nanjing. The new international laboratory has enabled the development of an advanced aerosol and chemistry field measurement site called the Station for Observing Regional Processes of the Earth System.

Ken's group are making use of new aerosol measurements from this site as part of their Climate Science for Services (CSSP) project with the Met Office to constrain the uncertainty in aerosol effects on climate.

This collaboration has been part of a wider effort to develop a long-term cooperation between ICAS and Nanjing University School of Atmospheric Sciences. Prof Aijun Ding, the new Dean of the School has collaborations with several people in ICAS. Both institutions are keen to explore opportunities for joint doctoral degrees and student exchanges. A proposal was also recently submitted to the EU Marie Skłodowska-Curie to fund a European Fellowship in Leeds.

In future Ken will also take up a visiting position in Nanjing to develop common areas of research interest.

Image: Photo of the International Advisory Board of the JirLATEST, Nanjing

Congratulations

Women in Aerospace 2018 Professional Award Winner

Rachel Tilling is the WIA-Europe 2018 Young Professional Award winner!

Rachel is a climate scientist, specialising in satellite observations of the Polar regions. She received her PhD in Polar Remote Sensing from University College London in 2016 after obtaining her BSc in Physics from the University of Bristol and MSc in Physical Oceanography and Climate Studies from the University of Southampton. She is now an academic research fellow at the UK Centre for Polar Observation and Modelling (CPOM) where her research focuses on using radar altimetry to monitor changes in global sea ice cover.

Rachel's research has taken her on expeditions to the Arctic and Antarctic with the European Space Agency (ESA) and British Antarctic Survey (BAS), where she investigates ground-based radar measurements over sea ice for satellite validation. Her publications have earned her the International Association of Cryospheric Sciences (IACS) and Committee on Space Research (COSPAR) early career awards for her work on quantifying sea ice volume changes in the Arctic.

Outside of work Rachel teaches scuba diving and has experience in scientific diving. She is active in communicating her research to the public and keen to diversify the representation of scientists in the media.

Brazil Small Grants Award

Jess Baker has been awarded a Brazil Small Grants Award through the Met Office Climate Science for Service Partnership (CSSP). The award will facilitate collaboration between the University of Leeds and the Centre for Weather Forecasting and Climate Studies (CPTEC) and the National Institute for Amazonian Research (INPA) in Brazil.

Philip Leverjulme Prize & Arne Richter Award

Amanda Maycock has recently been awarded two prestigious prizes. She has won Philip Leverhulme Prize for 2018. She will also be awarded the Arne Richter Award for Outstanding Early Career Scientists by the European Geosciences Union at their 2019 meeting in Vienna. Very well done Amanda!

Winton competition

Beth Woodhams, Dean Walker, Ben Pickering and James Norman from our weekly Chatmosphere meetings have won £4,000 for ICAS in a competition to forecast monthly weather in the UK. The competition was an experiment by the Winton investment firm to see whether "prediction" markets could be applied to climate and weather as a means to reveal and aggregate information (https://www.climatepredictionmarket.com/about). Winton is now looking to initiate a similar market where real money can be bet on predictions of global temperature and carbon dioxide concentrations (https://www.pionline.com/article/20171030/PRINT/171039996/winton-provides-market-for-those-who-want-to-wager-on-the-weather)."

Declan Finney explained the nature of the competition: "Entrance was free since Winton were running this as an experiment for something real they want to do in future. Only university teams could enter. We were given some play money in the Winton competition and we had to buy 'contracts' for the average monthly UK maximum temperature and rainfall for each month from April to September this year. The buying of contracts is effectively placing a bet. You could bet on any range of temperatures or rain amounts you like, with the price of each value in that range having a price based on how many other groups have bet on it. After the observation data was released for each month, the bets were settled. Basically if you got the correct values for both temperature and rainfall then you won play money back for your account."

"There was a leaderboard which showed whether groups were in profit or loss. At the end of the 6 months, the 10 teams with the most profit were rewarded real prize money for their university. The Chatmosphere team came sixth, and got £4000. The betting procedure turned out to be rather complicated, and it made it difficult to engage at the wider Chatmosphere group as originally intended. Instead I mainly placed bets based on the climatology of past data as a simple attempt. This proved to be sufficient, but probably only because lots of groups were trying to understand the how the competition worked."

Met Office update

Ozone

Steven Turnock has developed a simplified model of source-receptor relationships from a range of models participating in the Task Force on Hemispheric Transport of Air Pollutants (TF-HTAP) experiments to predict future changes in tropospheric ozone (O_3). Surface and tropospheric O_3 changes are calculated globally and across 16 regions from perturbations in precursor emissions. The model provides a simple tool to highlight the different impacts and associated uncertainties of local and hemispheric emission control strategies on both surface air quality and the near-term climate forcing by tropospheric O_3.

Moist Parcel in Cell (MPIC)

Cross-section of the humidity field in a high-resolution MPIC simulation

Steven Boeing, Doug Parker, Alan Blyth are working on a radically different approach to simulating cloud processes and dynamics. This work is based on the recent development of a so-called Lagrangian model for atmospheric dynamics led by David Dritschel at the University of St Andrews. Together with Prof. Dritschel, they are testing the application of the model to moist convection. The aim of the work is to improve simulation and understanding of important phenomena such as turbulent mixing in clouds, rainfall production and pollution transport.

Existing atmospheric models represent the wind, moisture and temperature fields on a grid. In the new model, these variables are instead modelled by following parcels of fluid. These parcels carry a volume, thermodynamic properties (heat and moisture), and part of the flow circulation around with them. All of these quantities are approximately conserved for any given parcel, so that following the motion of parcels is an efficient way of calculating the flow evolution. This approach will therefore be ideally suited for accurate simulations of clouds at high resolution. Additional variables, which could represent chemical species or aerosol concentration, can be added at low computational cost. Furthermore, it is possible to obtain diagnostics on the parcel level, which will provide a unique insight into the cloud lifecycle.

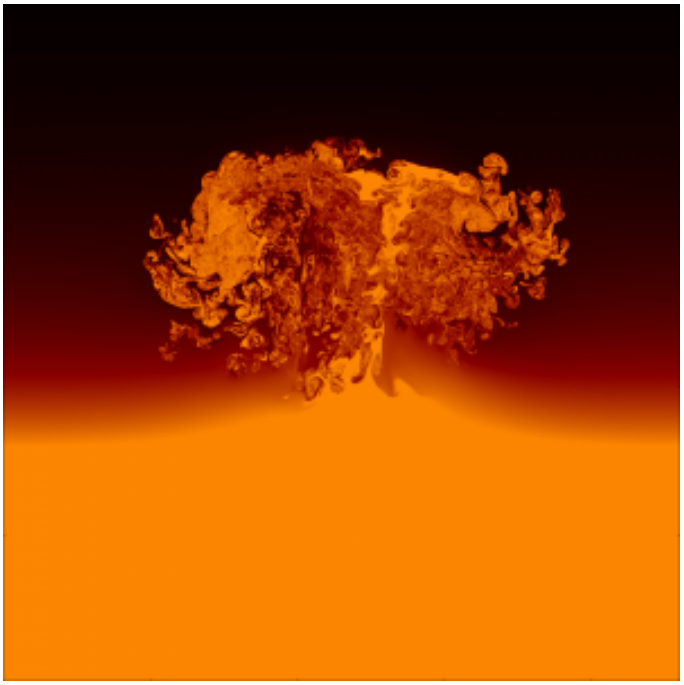
A first version of this Moist-Parcel-in-Cell (MPIC) method has been compared favourably with the Met Office NERC Cloud model (MONC), and Steven is involved in further work to develop a version of MPIC within MONC's framework with Gordon Gibb, Nick Brown and Michèle Weiland at EPCC. This fully parallel version of MPIC has been run on up to 16,000 cores on ARCHER, and will make it possible to perform very detailed studies of cloud dynamics and physics in future work. The next big step will be to apply the model to realistic case studies, rather than the idealised ones that have been used so far.

The work has been funded through the EPSRC Maths Foresees network (EP/M008525/1), the NERC/Met Office Joint Programme on Understanding and Representing Atmospheric Convection across Scales (NE/N013840/1), and an eCSE Grant (eCSE12-10: A fully Lagrangian dynamical core for the Met Office NERC Cloud Model).

MPIC is now also being used by a PhD student in St Andrews, Sam Wallace, who is partially supervised by Alison Stirling.

References

Dritschel, D. G., Böing, S. J., Parker, D. J., & Blyth, A. M. (2018). The moist parcel-in-cell method for modelling moist convection. Quarterly Journal of the Royal Meteorological Society, 144(715), 1695-1718



Asia – Regional Resilience to a Changing Climate (ARRCC) Met Office Partnership (MOP), Adrian Hines

Following the project kick-off in September, work is now well underway across all of the work packages in the Asia – Regional Resilience to a Changing Climate (ARRCC) Met Office Partnership (MOP).

DFID's ARRCC Programme is a 4-year, £23.5m investment, delivered through a combination of the Met Office Partnership (£12m), the World Bank (£10m), and activities directly executed by DFID (£1.5m). Conservative estimates indicate this investment could benefit up to 30 million people and provide around £780m in economic benefits (2018-30) through increased resilience of vulnerable groups and economic growth to current and future climate/environment impacts.

ARRCC MOP's aim is to support the South Asia region in making better use of weather data & climate information to inform response and action. We will approach this via a range of technical coordination and technical assistance activities with in region partners. The ARRCC MOP is being delivered in collaboration between Applied Science, Government Services, FSD, and the University of Leeds. The activities are being delivered through four work packages:

WP1: IBF: 'Impact Based Forecasting' – Day/week timescale.

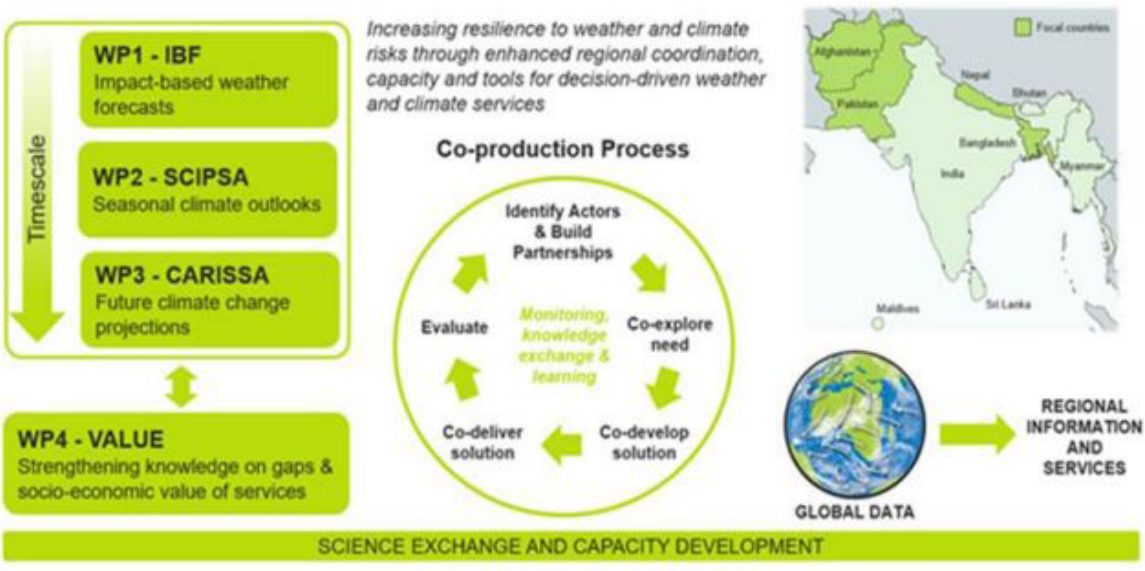
Working with target NMHS in Afghanistan, Pakistan, Nepal and Bangladesh & linking into other programmes such as World Bank Hydromet Modernisation to improve capacity and capability for IBF. Led by Ele Hunt and Catrina Johnson

WP2: SCIPSA: 'Strengthening Climate Information Partnerships – South Asia'. Seasonal timescale, adapting the approach developed for the SCIPEA project under WISER. Developing and enhancing services via the South Asia Seasonal Climate Outlook Forum (SASCOF) process. Led by Francis Colledge and Rachel McInnes.

WP3: CARISSA: 'Climate Analysis for Risk Information & Services in South Asia'. Climate timescale, focussed on making better utility of existing climate data to support national/regional adaptation and mitigation policy. Led by Joe Daron.

WP4: Value - Ensuring that there is return on investment and recognised socio economic benefit in above WP's. Assist NMHS in promoting their worth to their owning ministries, and linking with the DFID contracted Monitoring, Evaluation and Learning provider. Led by Marta Bruno Soares (University of Leeds and Met Office).

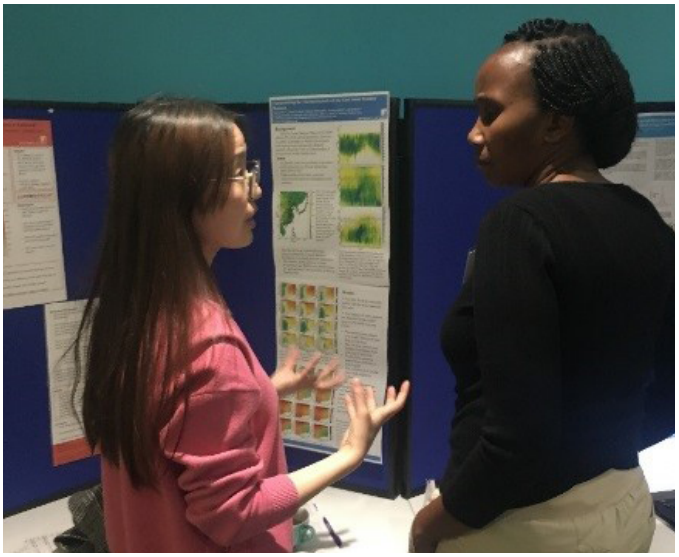
An internal event will be held in the coming months to share more details of the work to date, and future plans for the ARRCC MOP. In the meantime, if you have any queries or want to know more, please contact the relevant work package leader, or Adrian Hines.



ICAS Annual Science Meeting- Thursday 8th November, Horizon, Leeds

Our Annual Science Meeting was a great success, with the event being held at Horizon in Leeds city centre this year. The day consisted of three poster sessions for academic staff, students and post docs, three breakout activities and saw Tami Bond from the University of Illinois as guest speaker. The event was followed by an evening meal at Bibi's restaurant, with an ICAS quiz hosted by PhD student Martin Daily.

There has been lots of positive feedback on this year's event, with attendees finding it useful and with plenty of opportunities for networking.



Yanjuan Wu and Hellen Msemo discussing Yanjaun's poster "Characterising the structure of the East Asian Summer Monsoon".

Leighton Regayre organised a great activity which encouraged attendees to speak to people from other research groups and in doing so, they could then collect a sticker from them- the prize went to Lucy Recchia for completing her collection first.

Chris Dearden and Rachel Sansom deep in discussion and collecting stickers for their handbooks!

The first break out activity was a team building task to build a structure from Lego. Judging was very difficult as all structures were of the highest quality, but there could only be one winner in the end – a model of big ben, the London Eye and the river Thames.

Jutta Vuellers and Rachel Tilling, two of team who designed the winning structure.

Guest speaker Tami Bond with Amanda Maycock.

Tami delivered an excellent talk entitled "Little Fires, Tangled Systems, and Vulnerability", where she discussed a system-of-systems approach to developing scenarios, arguing that the ultimate goal is identifying and reducing overall vulnerability, in a way that enhances equity.

Attendees of the ASM asked some interesting and thought provoking questions afterwards.

ICAS would like to thank Horizon for hosting the Annual Science Meeting and making the day run smoothly. Thanks also to Tami Bond who gave a very informative and engaging talk. Finally, a big thank you to those who took part; we hope that there will be many new research ideas developed as a result of this event.

Contact us

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