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ICAS Newsletter

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Institute for Climate and Atmospheric Science

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

DIRECTOR'S CUT

We've reached the end of another busy and productive academic year in ICAS. I'm particularly pleased in this issue to report on the work and successes of many of our early career scientists. Our PhD and postdoctoral researcher communities are at the heart of everything we do in ICAS and it's fantastic to see so much activity taking place. Of course there are many more things to report than we are able to fit into the Newsletter.

I want to take the opportunity to thank and commend everyone in ICAS for their perseverance during a very challenging year. My experience has been colleagues have worked to support one another and I am grateful to those who have supported me in leading ICAS through these trying times. The opportunity to get together at our ICAS Summer Picnic has been a personal highlight and I look forward to seeing everyone again in the near future.

ICAS Director Dr Amanda Maycock

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ICAS WATER WOMAN AWARD WINNERS 2021

Two ICAS researchers have won prestigious Water Woman awards from the University of Leeds. Dr Juliane Schwendike won the award for Research Excellence and Dr Beth Woodhams won the award for Early Career Researchers. Launched by water@leeds, in partnership with Athena Swan teams at the University, the Water Woman Award is now in its second year and aims to recognise the achievements of women in research and their power to inspire others.

By rewarding achievements by women whose work contributes to the objectives of water@leeds in securing competitive research funds, producing world-class research or achieving significant societal impact, the Water Woman Award shines a light on their efforts in an academic world in which the hurdles are still greater for females.

The award is based on two equally weighted criteria: the nature of the achievement plus its potential for empowering and inspiring other women into following their example. Water Woman places a particular emphasis to recognize the value of female researchers across all disciplines and including those in supporting roles.

The Water Woman Award Panel was overwhelmed by the inspiring power of all applications. Panel Chair, Professor Julia Martin-Ortega, said:

'Particularly interesting this year is how many nominations have made by male academics in recognition of their female colleagues as well as the number of applications on the category of research support. I believe these are signs of an increasingly wider spread awareness of the value and importance of women's contribution to science in multiple aspects. Like last year, we not only have amazing winners, but also a great pool of inspiring candidates that we hope to engage in empowering and supporting other women'.

The Water Woman Award Winners 2021

Water Woman Award for Research Excellence

Dr Juliane Schwendike, Lecturer in Meteorology, School of Earth and Environment

'Juliane's research group and collaborators are publishing scientific papers improving our understanding and forecasting of tropical cyclone intensification, including studies of the physics of cyclones, and studies analysing the performance of forecasting systems. The results have an impact on the skill of future cyclone forecasts, which can potentially help protect the lives and livelihoods of millions of people.

Juliane's work is inspiring because of its international basis. Juliane works with colleagues around the world, to solve challenges which affect everyone on the planet. **Prof. Doug Parker**, who nominated Juliane for the award.

Water Woman Award for Early Career Research (split award)

Dr Beth Woodhams, Research Fellow, School of Earth and Environment

' I have been lucky enough to be inspired by women in the academic generation above me. I feel especially privileged that two thirds of my PhD supervisors were women, both of whom are rising stars in their careers and have always encouraged me. One can look at the existing professors and feel disheartened at the number of white males, but I am inspired every day by the fact that the upcoming fellowship holders and associate professors in my department are predominantly female and I look forward to a more diverse future.'

All winners and applicants will be invited to co-design an inspirational programme. An important element of the Water Woman Award, is a programme of participatory events led by our award winners, which provide a platform to share lessons learned, and also provide a space for the stories of our Water Women to inspire others.

In 2020 and under Coronavirus lockdown, the Award team ran its first on-line Inspirational Forum on 9 September which brought together a range of delegates from across disciplines. Each participant benefitted from listening to a series of presentations from the award winners and then taking part in Action Learning Sets in facilitated breakout groups.

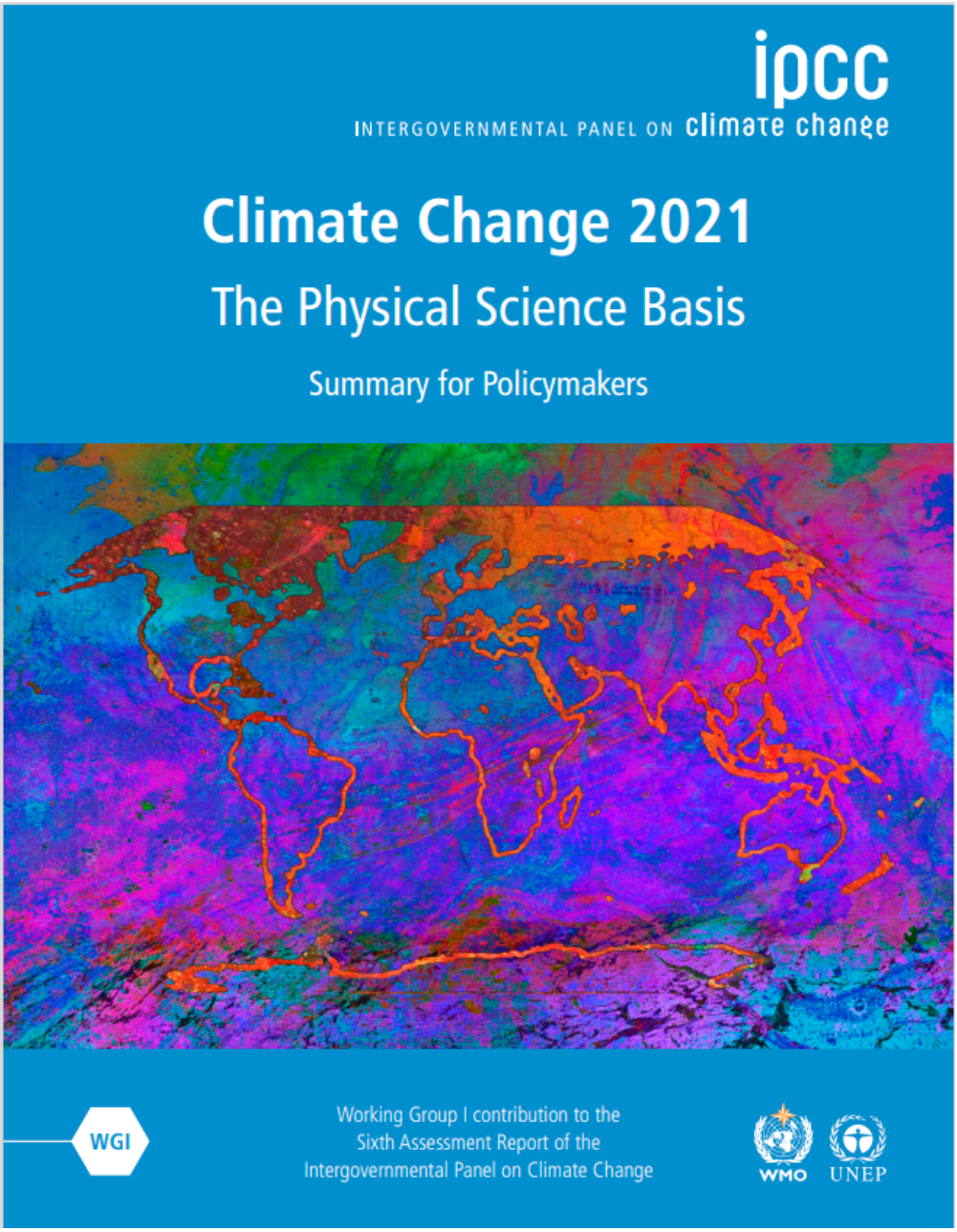
ICAS RESEARCHERS CONTRIBUTED TO THE WORKING GROUP I SIXTH ASSESSMENT REPORT OF THE IPCC

ICAS researchers contributed to the Working Group I Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which was published on the 9th August 2021.

This was the latest update on the physical science understanding of climate change since the Fifth Assessment in 2013.

Professor Piers Forster was Coordinating Lead Author and Dr Chris Smith was Chapter Scientist for the chapter on "The Earth's energy budget, climate feedbacks, and climate sensitivity".

Dr Amanda Maycock was Lead Author of the chapter "Future global climate: scenario-based projections and near-term information". Piers was also a drafting author of the Summary for Policy Makers (SPM) and was part of the two-week virtual Approval Plenary session where the 195 governments approved the SPM line-by-line.



ICAS RESEARCHERS CONTRIBUTE TO THE WORKING GROUP I SIXTH ASSESSMENT REPORT OF THE IPCC CONTINUED...

AR6 makes significantly stronger statements around the role of human activities than was possible in 2013, concluding that “human influence on the climate is unequivocal”.

It further shows that the 1.5C global warming target set out in the 2015 Paris Agreement is expected to be reached or exceeded in the next 20 years in the five illustrative scenarios used to explore future climate change. However, the 1.5C target could still be met if there are “rapid, immediate and large-scale reductions in greenhouse gas emissions”.

The report will be an important “reality check” for governments ahead of the United Nation’s Climate Change Conference (COP26) in Glasgow in November.

The release of the report was widely covered in the media, with ICAS authors being featured on several regional, national and international news outlets.

Images:
First page top: Amanda Maycock on ITV News, credit: Amanda Maycock.

First page (bottom): Front page of Working Group I Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC),

Second page (top): Piers Forster talking to Australian News, credit: Piers Forster.

Second page (bottom): ICAS IPCC authors - Amanda Maycock, Piers Forster, Chris Smith and Suraje Dessai (SRI) at Third Lead Author Meeting, Aug 2019 in Toulouse, France. Credit: Jan Fuglestvedt.

FEATURED PAPER: STRINGENT MITIGATION SUBSTANTIALLY REDUCES RISK OF UNPRECEDENTED NEAR-TERM WARMING

Hard and fast emissions cuts slow warming in the next twenty years

A new study shows that strong and rapid action to cut emissions of carbon dioxide and other greenhouse gases will help to slow down the rate of global warming over the next twenty years. This highlights that immediate action on climate change can bring benefits within current lifetimes, and not just far into the future.

Scientists already agree that rapid and deep emissions reductions made now will limit the rise in global temperatures during the second half of the century. However, pinpointing shorter-term benefits over the next few decades has been more challenging, particularly as natural cycles in global atmosphere and ocean systems can cause slow ups and downs in temperature that temporarily mask human influence on the climate.

But, by using a novel approach that combines large amounts of data from different sources, a new study from the University of Leeds has untangled human-induced warming from natural variability on much shorter timescales than previously thought possible.

The study, published in Nature Climate Change, used thousands of simulations from different climate models alongside multiple estimates of observed natural climate variability to investigate how various levels of emissions cuts could affect the speed of global warming over the next two decades.

The findings show that reducing emissions in line with the Paris Agreement, and in particular with its aim to pursue efforts to stabilise global warming at 1.5°C above pre-industrial levels, has a substantial effect on warming rates over the next 20 years, even after natural variability is taken into account.

In fact, the risk of experiencing warming rates that are stronger than anything previously seen would be 13 times lower with rapid and deep emissions cuts, compared to an "average" future that continues to rely heavily on fossil fuels. A fossil-fuel heavy future could see temperatures rise by up to 1-1.5°C in the next 20 years - meaning the Paris Agreement temperature limits will be breached well before 2050.

The study's lead author, Dr Christine McKenna, is a Postdoctoral Research Fellow at Leeds working on the EU-funded CONSTRAIN project.

Dr McKenna said: "Our results show that it's not only future generations that will feel the benefits of rapid and deep cuts in emissions. Taking action now means we can prevent global warming from accelerating in the next few decades, as well as get closer to the goal of limiting warming in the longer term.

"It will also help us to avoid the impacts that more rapid and extreme temperature changes could bring.

"With global temperatures currently rising at around 0.2˚C per decade, without urgent action on climate change we are clearly in danger of breaching the Paris Agreement. These findings are further motivation for both governments and non-state actors to set stringent greenhouse gas mitigation targets, combining a green recovery from the economic impacts of coronavirus with reaching net-zero emissions as soon as possible."

Further information

The paper Stringent mitigation substantially reduces risk of unprecedented near-term warming rates is publishing in Nature Climate Change 11 December 2020 (DOI: 10.1038/s41558-020-00957-9)

The EU Horizon 2020 CONSTRAIN project, led by the University of Leeds, is a consortium of 14 European partners working to develop a better understanding of how both natural and human factors affect the climate system, feeding them into climate models to reduce uncertainties, and creating improved climate projections for the next 20-50 years on regional as well as global scales. CONSTRAIN is also using this new knowledge to provide up-to-date scientific evidence for international climate policy and support decisions on climate mitigation and adaptation.

Image: Factory emissions, Credit: Pixabay.

SUCCESSES & CONGRATULATIONS

Declan Finney wins Royal Meteorological Society L F Richardson Prize

Dr Declan Finney has made a number of important contributions to the meteorological literature in the eight years since he published his first paper in 2012, publishing many high quality papers in leading international journals, with a focus on lightning, tropical convection and tropical rainfall variability, including analysis of how climate change may affect these phenomena.

His paper, “The effect of westerlies on East African rainfall and the associated role of tropical cyclones and the Madden–Julian Oscillation”, published in the Quarterly Journal of the Royal Meteorological Society, brings important new insights into the variability of East African rainfall.

Variability of East African rainfall on synoptic, inter-annual and decadal time-scales is still very poorly understood and predicted. Past studies had highlighted the role of the Congo airmass in enhancing rainfall, but the paper demonstrates the role of westerly winds bringing moisture from the Congo to rainfall variability across all these time-scales. It shows how remote tropical cyclones can increase or decrease rainfall, links the Madden-Julian Oscillation (MJO) to the westerlies, and the cyclones to the MJO. The paper brings together many different processes that had been discussed in the literature, but had not yet been addressed in combination. The study highlights processes, and interactions between them, that models must capture if they are to accurately capture variability and change in East African rainfall. The paper is already well cited, and given both the lack of seasonal predictability of the East African “long rains” and the apparent disagreement between recent drying and projected wetting (the “East African climate change paradox”) it is not only important scientifically, but has wider implications for improving livelihoods for vulnerable

people.

Dr Finney’s paper, where he took a lead role throughout, is clearly befitting of the Royal Meteorological Society’s L.F. Richardson prize. His wider work adds to his profile as an outstanding early career scientist. This work has included many other important and highly cited publications, mentoring and teaching of less experienced researchers and proactive involvement in scientific capacity development in Africa.

Acceptance message

Thank you, I am honoured to receive the LF Richardson prize. I have been a member of the Royal Meteorological Society for a good few years now and I was pleased to be able to publish in the society journal for the first time last year. I have recently also been a co-author on two articles in the eclectic Weather journal that the society publishes each month. I would like to thank all the marvellous people I have worked with so far in my career, especially my PhD supervisor, Ruth Doherty at the University of Edinburgh for her encouragement. I also thank **John Marsham** and the thriving atmospheric dynamics group at the University of Leeds for their guidance and inspiration. Finally, I thank the Ronin Institute for Independent Scholarship for their recent involvement in supporting my research.

Find the paper here: https://rmets.onlinelibrary.wiley.com/doi/full/10.1002/qj.3698.
Read full story here.

2021 Doctoral College Showcase Three-minute thesis competition winner

Congratulations to the winners of the 2021 Doctoral College Showcase Competitions for postgraduate researchers.

ICAS PGR Student **Fran Morris** has won the university’s 3-minute thesis competition! In the three-minute thesis competition, Fran explained her doctoral research work to a non-specialist audience in just three minutes. In a public vote, the favourite of our six finalists were chosen. To view Fran’s entry go here (opens in YouTube).

The 6 finalists were all very impressive, from very different areas of research, so this is a fantastic achievement for Fran!

Read full story here.

Alan Turing Institute Enrichment Scheme

Heather Selley and Ben Wallis have been accepted onto the Alan Turing Institute Enrichment Scheme. They will be based in the Leeds Institute for Data Analytics (LIDA) for up to a year and will be using advanced computer techniques to look at changes in the Antarctic ice sheet.

Images: Top: MetSoc L F Richardson Prize Winner Dr Declan Finney. Bottom: Three-minute thesis competition winner Fran Morris, Credit: Fran Morris.

FEATURED PAPER: SEVERE DRYING OF THE AMAZON FOREST

Amazon rain forests could be at far higher risk of extreme drought than previously thought, according to new research.

An international study led by the University warns that huge areas in the eastern part of the Amazon face severe drying by the end of the century if action is not taken to curb carbon emissions.

As a result, large amounts of carbon dioxide would be released from the forest into the atmosphere, adding to the greenhouse gas effect and driving further climate change.

The increased dryness during the Amazon dry season would further threaten the viability of large parts of the rainforest, as trees are already water stressed and there is greater risk of forest fires.

The predicted droughts could also have far-reaching consequences for the Amazon water cycle, biodiversity, and the population that lives in the region.

The findings, published in the journal Environmental Research Letters, predict reductions in rainfall that are comparable to drying seen during severe droughts in 2005 and 2010.

The research team examined factors regulating the process by which forests transfer water from the soil to the atmosphere – known as evapotranspiration.

Dr Jess Baker, from the School of Earth and Environment, led the study. She said: “People in Brazil and across the globe are rightly concerned about what the future holds for the Amazon, and its valuable store of carbon and biodiversity.

“The Amazon is at risk from the twin threats of deforestation and climate change.

“This new study sheds light on how the Amazon climate is likely to change under an extreme warming scenario. It should ring alarm bells for governments around the world that this vital global resource must not be taken for granted.

“Protecting and expanding existing forests - which absorb and store carbon - is of paramount importance to combatting climate change.”

Key role

The Amazon basin contains the world’s largest tropical rainforest and plays a key role in global carbon and water cycles.

However, existing climate models disagree on whether the Amazon will become wetter or drier. This makes it difficult for policy makers to predict future droughts, assess wildfire risks or plan climate change mitigation and adaptation strategies.

The research team analysed the results of 38 known Amazon climate models. By ruling out climate predictions from unrealistic models, the patterns of future rainfall change in the Amazon became clearer.

According to the new study, only a third of the 38 models correctly

FEATURED PAPER: SEVERE DRYING OF THE AMAZON FOREST...CONTINUED

reproduced the interactions between the atmosphere and land surface previously shown by Amazon fieldwork.

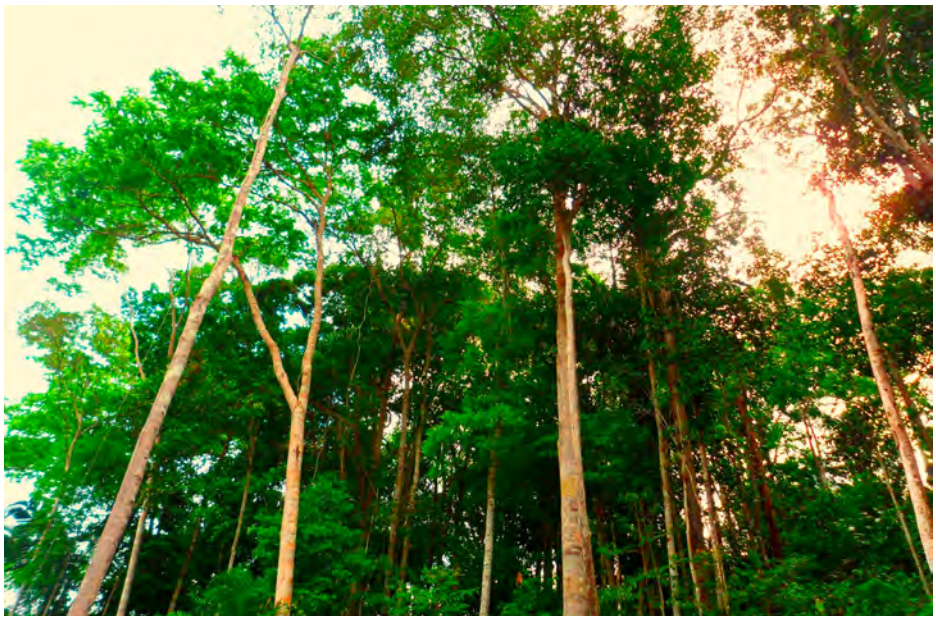
By focusing on this smaller group of models, uncertainty in rainfall changes over the whole Amazon basin was reduced by a half.

Predicting rainfall

This group showed wide agreement in predicting future rainfall changes, with severe drying expected in the eastern Amazon over the next 80 years, and, conversely, rainfall increases in the western basin.

Dr Caio Coelho, from the National Institute for Space Research in Brazil, was the study's co-author. He said: "It's important to understand how the climate of the Amazon might change in the future.

"This study shows that dry season rainfall reductions in parts of the Amazon could be similar to the drying seen during the major Amazon droughts of 2005 and 2010, which caused widespread tree mortality and had major impacts for Amazon communities."



"Robust Amazon precipitation projections in models that capture land-atmosphere interactions" by **J C A Baker**, **L Garcia-Carreras**, W Buermann, D Castilho de Souza, **J H Marsham**, P Y Kubota, M Gloor, C A S Coelho and **D V Spracklen**, 22 June 2021, Environmental Research Letters. DOI: 10.1088/1748-9326/abfb2e

Images: Previous page: Rainforest, CC 3.0BY, Previous page: Aerial Amazon, Credit: Jess Baker, This page top: Amazon Rainforest, CC 3.0BY, This page bottom: Rainforest, Credit: Jess Baker.

FEATURED PAPER: GLACIERS ACCELERATE IN THE GETZ REGION OF WEST ANTARCTICA

Glaciers in West Antarctica are moving more quickly from land into the ocean, contributing to rising global sea levels.

A 25-year record of satellite observations has been used to show widespread increases in ice speed across the Getz sector for the first time, with some ice accelerating into the ocean by nearly 50%.

The new study, led by the Institute for Climate & Atmospheric Science (ICAS) reports that 14 glaciers in the Getz region are thinning and flowing more quickly into the ocean. Between 1994 and 2018, 315 gigatonnes of ice has been lost, adding 0.9 mm to global mean sea level – equivalent to 126 million Olympic swimming pools of water.

The results, published in the journal Nature Communications, show that, on average, the speed of all 14 glaciers has increased by almost a quarter with three glaciers' speeding up by more than 44%.

This research will help scientists determine whether glaciers in the region may collapse in the next few decades and how this could affect future global sea-level rise.

Heather Selley, lead author of the study and a glaciologist at ICAS and the Centre for Polar Observation and Modelling at Leeds, said: "The Getz region of Antarctica is so remote that humans have never set foot on most of this part of the continent. Satellite radar altimetry records have shown substantial thinning of the ice sheet.

"However, the high rates of increased glacier speed – coupled with ice thinning – now confirms the Getz basin is in 'dynamic imbalance', meaning that it is losing more ice than it gains through snowfall.

"Using a combination of observations and modelling, we show highly localised patterns of acceleration. For instance, we observe the greatest change in the central region of Getz, with one glacier flowing 391 m/year faster in 2018 than in 1994. This is a substantial change as it is now flowing at a rate of 669 m/year, a 59% increase in just two and a half decades."

The research, funded by the Natural Environment Research Council (NERC) and the European Space Agency (ESA), reports how the widely reported thinning and acceleration observed in the neighbouring Amundsen Sea glaciers, now extends over 1,000 km along the West Antarctic coastline into Getz.

Dr Anna Hogg, study co-author and climate researcher in ICAS said: "The pattern of glacier acceleration shows the highly localised response to ocean dynamics.

"High-resolution satellite observations from satellites such as ESA's Copernicus Sentinel-1, which collects a new image every six-days, means we can measure localized speed changes with ever greater detail.

"Consistent and extensive sampling of both ice speed and ocean temperature are needed to further our understanding of the dynamic ice loss, which now accounts for 98.8% of the Antarctica's sea level contribution."

By examining 25 years of ocean measurements, the research team were able to show complex and annual variations in ocean temperatures. These results suggest that the "dynamic imbalance" is mainly caused by longer-term ocean forcing, where increased heat content in the ocean is interacting with the ice and enhancing melt.

Pierre Dutrieux, study co-author and climate researcher at British

FEATURED PAPER: GLACIERS ACCELERATE IN THE GETZ REGION OF WEST ANTARCTICA...CONTINUED

Antarctic Survey, said: “We know that warmer ocean waters are eroding any of West Antarctica’s glaciers, and these new observations demonstrate the impact this is having on the Getz region.”

“This new data will provide a new perspective of the processes taking place so we can predict future change with more certainty.”

The study, “Widespread increase in dynamic imbalance in the Getz region of Antarctica from 1994 to 2018”, is published 23 February 2021 in Nature Communications. DOI: 10.1038/s41467-021-21321-1

Image: Getz ice shelf photo credit: Pierre Dutrieux

UNIVERSITY OF LEEDS MACHINE LEARNING & ARTIFICIAL INTELLIGENCE WORKSHOP

The ICAS AI/ML workshop held in January 2021 showcased the diversity and exciting breadth of work using machine learning that is taking place in ICAS (if you want a refresher on the work presented the workshop webpage is still up).

Since the workshop, activity using ML has continued gathering speed. Phil Livermore led a successful bid for LIFD seedcorn funding to produce Jupyter notebooks with step-by-step demonstrations of different ML techniques in earth science applications (produced in collaborations between experts in SEE and CEMAC) - these will be circulated soon and should provide a really great resource.

The LIFD machine learning group continues to be very active, covering topics such as data-driven discovery of model equations (with SINDy), unsupervised learning of temporal evolution in satellite imagery (using energy-based methods) and error estimation using Bayesian techniques with neural networks.

The LEARN initiative led by Alex Frangi recently had their NVIDIA DGX A100 (with 8x A100 GPUs) machine learning server installed and will soon be asking for early-adopters to test the platform.

Report by Leif Denby.

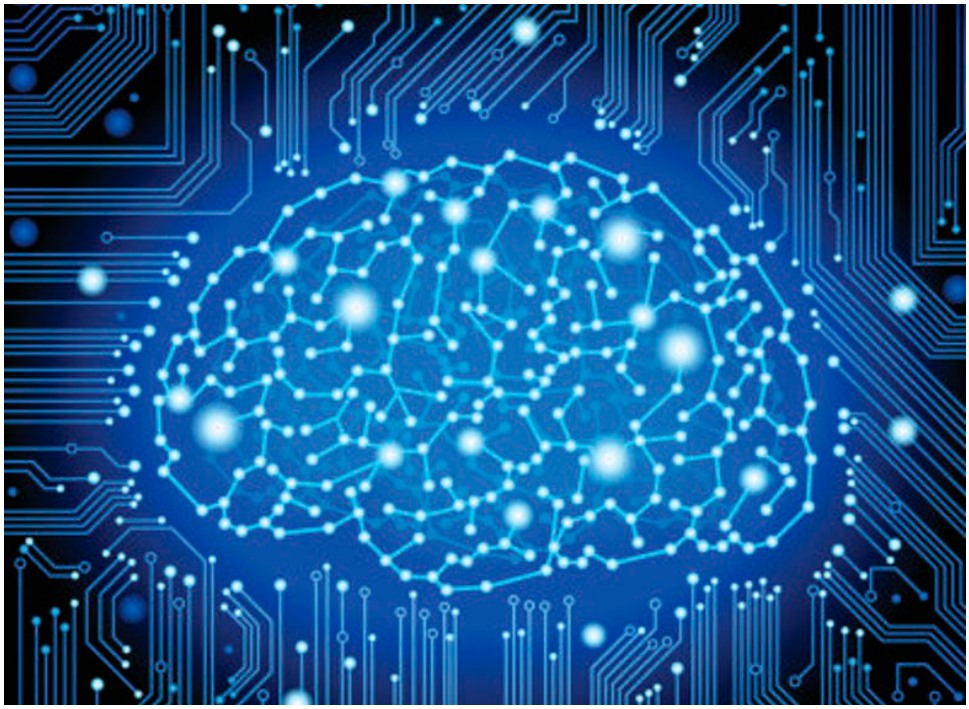


Image: AI Credit: Tej3478 CC BY-SA 4.0, via Wikimedia Commons

A WILDER FUTURE FOR YORKSHIRE

A new flagship restoration project showcasing an alternative future for the UK's uplands has been launched.

Wild Ingleborough aims to restore an iconic area in the heart of the Yorkshire Dales National Park, around Ingleborough – the second highest peak in the Dales.

The project is a partnership between the University, WWF, Yorkshire Wildlife Trust, Natural England, the United Bank of Carbon and The Woodland Trust.

It promises to be an important venture for people, nature and climate – working together with local communities including farmers to share skills and knowledge that will create a wilder future for Ingleborough.

The striking landscape includes swathes of bare limestone pavement and heavily grazed pasture. But in the future, the area will be transformed into a nature-rich haven, with a variety of rare flora and fauna to benefit from the restoration of their natural habitats.

Scientific monitoring, overseen by a research team from Leeds, will enable the project to track changes to the landscape over time.

Crucially, this monitoring will help the project team understand the way that moving to less intensive land management affects, for example, biodiversity and carbon storage across this landscape.

This scientific underpinning will provide an evidence-base for new policy to benefit rural communities and boost the recovery of UK nature.

Managing landscapes

Research team member **Professor Dominick Spracklen,** from Leeds' Institute for Climate & Atmospheric Science (ICAS) said: "A major challenge facing society is how to manage our landscapes in a way that allows nature to thrive and helps address climate change at the same time as producing food.

"We will embed monitoring in the project from the outset, allowing us to demonstrate the benefits of Wild Ingleborough for nature, climate and people."

Covering an area from the River Ribble up towards the mountain summit, Wild Ingleborough will see the restoration of peatlands and the expansion of native woodland and scrub, to remove and store carbon, helping to tackle the climate crisis.

The project will initially cover 1,200 hectares and plans to be one of the first examples in England of re-establishing the natural tree line, from broadleaf woodland to dwarf shrub, heather moorland and lichen heathlands.

Dr Cat Scott, Director of the Leeds Ecosystem, Atmosphere and Forest (LEAF) Centre at ICAS, and Scientific Lead for the United Bank of Carbon, said: "Creating new

A WILDER FUTURE FOR YORKSHIRE... CONT'D

woodlands is a critical component of efforts to mitigate climate change and reach net-zero.

"Upland areas of the UK currently have very little woodland cover. Where appropriate, we need to find ways to create more native woodland in these landscapes to help address climate change at the same time as benefitting nature and people.

"Wild Ingleborough will showcase the benefits of upland native woodland and provide vital new evidence around how we can best increase carbon storage and reverse the biodiversity decline across UK landscapes."

More space for wildlife

The programme will connect existing nature reserves in the area, creating a bigger, more joined up space for wildlife.

In some places, vegetation will regenerate naturally, while in others the project will connect areas of woodland through tree planting.

Over the next 12 months, the project will create around 40 hectares of new native woodland, with half created by planting 30,000 trees and the other half through natural regeneration.

By aiding nature's recovery, the project hopes to protect and restore wildlife-friendly habitats, home to precious animal species including black grouse, red squirrel, cuckoos and curlew – of which there are currently only two pairs within the Ingleborough project area.

The programme will also focus on plants such as juniper - most of which around Ingleborough have suffered from disease – as well as bird's-eye primrose, globeflower and the nine species of fern that can be found in the area.

In recent decades, intensive land use has had a heavy impact on the area, but now, as well as restoring the habitats of plants and animals, Wild Ingleborough will also help to protect against flooding, and improve the water and soil of the landscape.

The project will work closely with local landowners, farmers and other members of the community to share knowledge of nature conservation as well as low-intensity farming practices.

Nature at heart

Already, 300 hectares of land are being restored as part of the first phase of the project, with 3,000 native trees planted, including rowan, hawthorn and hazel, and hundreds of metres of drystone wall rebuilt.

Tanya Steele, Chief Executive at WWF, said: "Climate change and nature loss are two sides of the same coin; it's vital that any efforts to safeguard our future and stabilise our climate have nature at their heart.

"The UK, as hosts of COP26, can lead efforts to boost nature's recovery, including transforming the way we use our land – with Wild Ingleborough a blueprint for restoration.

"Through this project, we want to show that a wilder world is a more stable one, with nature more resilient and able to adapt to change.

"Together with our partners and the local community, we hope to create a rich, diverse landscape for people and wildlife to thrive."

Rachael Bice, chief executive at Yorkshire Wildlife Trust, said: "Ingleborough is one of the most iconic and cherished landscapes in our great county.

"The opportunity to support nature to flourish here is something we are incredibly proud to be involved in.

"By intervening carefully, we will see the landscape of the Dales transform - restoring natural process and communities of plants and animals, which will help to secure and enrich the future of Yorkshire's residents and visitors too."

Image: First page: Dusk at Ingleborough, Credit: SEE Photo Competition. Second page: Ingleborough. Credit: Nilfanion/ North Yorkshire, CC-BY-SA-4.0.

IN THE MEDIA

Cathryn Birch on “The Richard Stead Breakfast Show”

Dr Cathryn Birch was interviewed on BBC Radio Leeds (1hr 39mins from the start) about the July’s UK heatwave, the recent extreme weather in North America and Germany, and how they are related to climate change.

UK scientists assessing microplastics in homes from textiles

Coverage in Fibre2Fashion of Dr Kirsty Pringle,**who is working** with 40 families from Bradford to measure the level of microplastics in sampling devices placed inside their houses. It is speculated that a lot of microplastics might be from textiles.

New podcast–The Climate Press: Climate Change and the Tokyo 2020 Olympics.

The Climate Press interviewed Professor Mike Tipton (Extreme Environments Laboratory, University of Portsmouth) and our very own **Paloma Trascasa-Castro** to discuss mounting concerns and evidence of how climate change related extreme heat and high levels of humidity are posing risks and impacting athletes at the 2020 Olympic games.

@TheClimatePress
TheClimatePress.com

ICAS friend & Former ICAS member Dr Craig Poku builds a network for Black scientists

Craig was interviewed by Nature for an article; ‘Blood, sweat and tears’: Building a network for Black scientists.

“The interview was based on the activities I’ve been doing to address the representation issue of Black British scientists in academia. This has led me to giving talks on my experiences in being both Black and Queer in academia, and what is required to improve racial diversity in climate sciences.

In the summer I co-led the biggest social media campaign focused on empowering Black Geoscientists, entitled “Black in Geoscience Week”. Through this project, it aided the development of a network that Black Geoscientists were able to join and find comfort in not being the only one.”

Read the full article here: https://www.nature.com/articles/d41586-020-03279-0

Climate change summit: Cheap solar and wind power could supplant fossil fuels by 2050

There was coverage in The Times of a report by think tank Carbon Tracker that suggests falls in the cost of renewable energy could see it replace fossil fuels for global electricity generation by 2035 and all energy production by 2050. Professor Piers Forster provides his thoughts, he also writes a Conversation piece outlining how urgent action is needed by the UK to hit its target of cutting emissions 78% by 2035.

Images:
Top: Cathryn Birch, Credit: Cathyn Birch,
Middle: Paloma Trascasa-Castro -left and Bianca van Bavel - right at the Leeds Student Radio Recording Studio getting ready for an interview. Credit Paloma Trascasa-Castro,
Bottom: Wind Turbines, Near Hull, Credit: Mark Reed.

ICAS SUMMER PICNICS

On Monday 19th and Wednesday 21st July ICAS members enjoyed a summer picnic on the university campus.

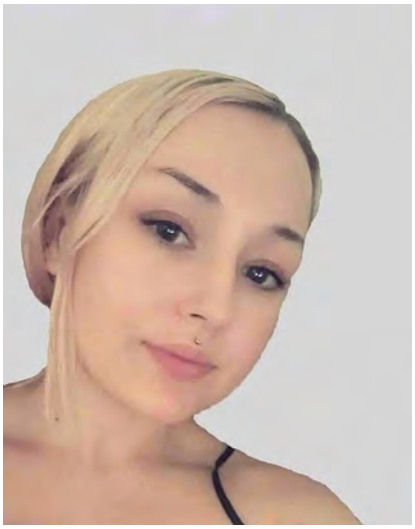
For the first time since the beginning of the pandemic, ICAS colleagues were able to meet in person. Research groups were reunited, postgraduate research students including first years met up for the first time since starting their PhD.

The picnic was help on campus in St George's Field. The weather was kind and beautifully warm. There were games of petanque and a delicious brown bag lunch provided by Opposite Cafe.

We look forward to working together in person again soon.

Images: ICAS members enjoying the ICAS Summer picnic. Credit: Amanda Maycock

FEATURED PERSON: AMETHYST JOHNSON, PGR REP



What is your role in ICAS?
I'm a first year PhD student studying the tropical cyclone boundary layer and its representation in weather models and new ICAS PGR rep.

What do you like the most about ICAS?
The research within ICAS is so diverse and there are lots of opportunities to get involved and hear about different areas of atmospheric science. Being in an environment like this helps you to get better acquainted with the whole field, which means you end up being a better-rounded scientist than if you were to be stuck in your niche bubble of expertise.

Why did you choose this career and how did you get here?
I became interested in meteorology and severe convective storms during my Environmental Science degree at the University of Manchester, where I took up a project on the European distribution of supercellular tornado environments. I found a new passion in combining my environmental fascination with programming, which allowed me to constantly challenge myself with the mental stimulation of problem-solving tasks like coding and analysing data.

What scientific achievement are you most proud of?
In early 2020 when I was nearing the end of my BSc, I took my dissertation hypothesis and methodology to the Royal Astronomical Society's Planetary Atmospheres Meeting. The work was about electrical charges near the surface of Venus and came about as a result of conversations with top researchers in the field. My appearance at this meeting led to my work being mentioned in a journal (Astronomy & Geophysics) for the first time. While it wasn't a paper I'd published, it's still cool to see your name printed in a journal, especially as an undergrad.

What does a typical working day involve for you?
Usually, I get the majority of my challenging work done in the morning (7-9am) because I find it easier to focus without distraction. This work is generally programming-based, so it can include writing, editing or debugging scripts for my data analysis. After this I take a small break and then the rest of my day is usually spent doing analysis, attending meetings, reading the literature, and doing small amounts of write-up for my project.

What's the most interesting aspect of your job right now?
It's tropical cyclone season right now in the northern hemisphere, so it's interesting to watch how that's unfolding, particularly the forecast accuracy, ground observations (and impacts), and the best thing about this season is the photos we get from the research aircraft.

What's the most challenging aspect of your job?
Lack of observational data, which is a problem all across atmospheric science. You never have enough data. In a perfect world, we'd have good observations from the whole of a tropical cyclone at lots of different times. We don't, so we need to use interpolation to fill in gaps in the data, and we also need to know how to handle errors.

How do you decompress outside work?
Good food and true crime documentaries.

What bit of information about you is likely to surprise your colleagues?
I used to play blues guitar, influenced mainly by BB and Freddie King!

Image: Amethyst Johnson

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