Water Challenges in a Changing World

JANUARY NEWSLETTER

Hello everyone and welcome to the January edition of the Water Challenges Newsletter.

We hope you all had a joyous Christmas break and a Happy New Year. See further down in the newsletter for pictures from our end of year event, which was a great success and a lovely way for us all to spend time together.

We have an equally exciting and busy 2024 ahead of us, so carry on reading to see the various events we have lined up.

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NEW STUDENT – NASRUL HAKIM

Hello, I am Nasrul Hakim but you can call me Hakim. I am currently working under the supervision of Professor Nigel Wright and Dr. Xilin Xia on the cross-disciplinary aspects of flood risk particularly on the efficiency of early warning systems. I have a huge interest in climate change adaptation and am passionate about helping communities build their resilience and at the same time, improving the government's efficiency in service delivery.

I obtained my bachelor's degree from the Tokyo University of Agriculture and Technology and my master's degree from the Shibaura Institute of Technology, Tokyo, Japan. I have 14 years of working experience with government agencies in Malaysia namely the Ministry of Works, the Ministry of Science, Technology and Innovation, and the Public Service Department of Malaysia.

NEW VISTING STUDENT – CHANG LI

Chang Li is a PhD student at the School of Environment of Hohai University (HHU), Nanjing, China, supervised by Professor Xue Bai. She is mainly engaged in the transport and quantitative research of aquatic microplastics and has published two papers as the first student author. Chang Li comes to the University of Birmingham for a one-year exchange with Professor Stefan Krause's team through the CSC joint training program.

Chang is also interested in many kinds of sports, including running, hiking, skating, and fencing.

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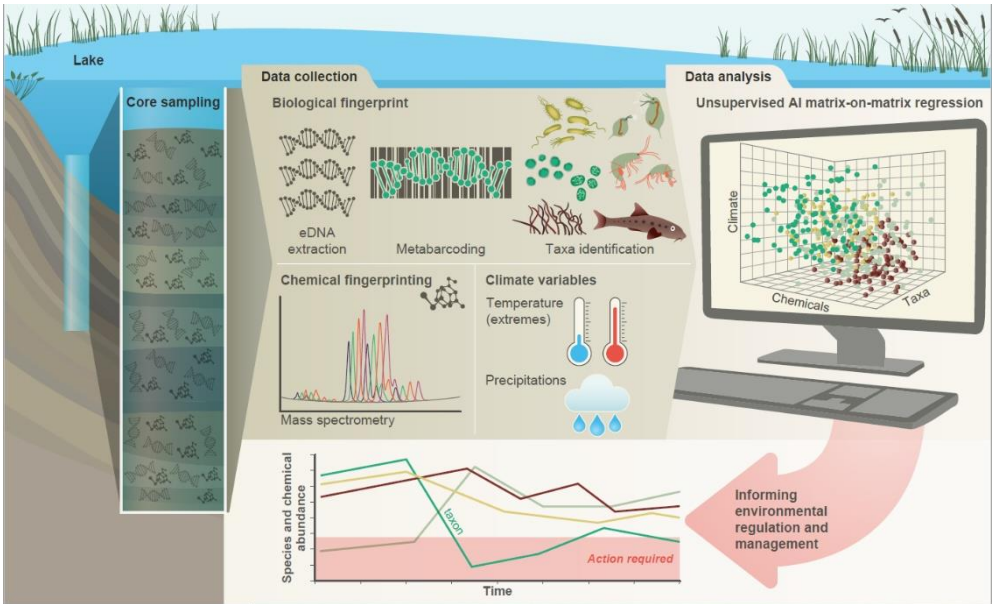
UNLOCKING ECOSYSTEM SECRETS: DISCOVERING BIODIVERSITY CHANGES THROUGH TIME-TRAVELING SEDIMENT RECORDS – BY PROF LUISA ORISINI

Over long periods, environmental changes like chemical pollution and climate shifts impact biodiversity in ecosystems. Understanding these consequences is challenging due to slow occurrences, delayed measurements, and limited historical records. Pinpointing when, why, and how changes happen becomes complex. To comprehend significant environmental shifts in the past century, a multidisciplinary team led by Professor Orsini at the University of Birmingham and featuring as lead authors Drs Zhou and Eastwood, developed a conceptual framework. This innovative approach utilizes lake sediment records like a time-traveling device, enabling the reconstruction of a comprehensive library detailing biological, chemical, environmental, and functional transformations on a yearly basis across centuries. Their recent publication in eLife (*https://elifesciences.org/articles/86576*) validates the framework, applied to a century-old freshwater ecosystem with documented human impact. The team analyzed DNA traces to measure biodiversity changes over time, biocides that leached into the sediment and could be measure years later and climate data. Despite apparent water quality recovery, the lake's biodiversity didn't fully restore due to extreme temperatures and insecticides, explaining up to 90% of changes not identified with traditional methods. The functional roles microorganisms played in the ecosystem were also altered, suggesting that loss of biodiversity leads to loss of ecosystem functions. By scrutinizing individual and combined effects of pollutants and climate change on biodiversity, the study presents compelling evidence that this innovative approach could revolutionize environmental regulation. It provides a powerful tool for understanding and managing the impacts of human activities on ecosystems, offering insights not captured by traditional techniques.



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COP28

Academic experts, students, industry leaders and policy makers came together at the University of Birmingham Dubai campus for a panel discussion to launch a new report '[Adaptation and Building Resilience in a Changing World]'.

The event was chaired by Lord Bilimoria, Chancellor of the University of Birmingham and highlighted the University's commitment to combating the climate crisis. Panellists discussed the vital role of global collaboration in generating meaningful outcomes from COP28.

Professor David Hannah commented: "There is a huge weight of expectation on this year's UN Climate Summit COP28 to deliver a clear plan of action – and this international, intergovernmental effort requires new knowledge and innovation to tackle greenhouse gas emissions and inform adaptation strategies for impacts around the world."

Throughout COP28, UoB hosted a programme of events focusing on specific challenges arising from climate change. It harnessed its pool of world-leading academics and researchers, drawing on its broad network, including UN organisations and other universities in the UAE.

Academics from the University of Birmingham were involved throughout the Summit, sharing their insights and research with policymakers and industry leaders in the Green Zone and Blue Zone.

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PLASTICUNDERGROUND TRAINING

Prof Stefan Krause will be leading an advanced training course from the 29th January to the 2nd February, for the PlasticUnderground, EU Horizon funded project. To find out more information and how to purchase tickets, please contact Suman s.hira@bham.ac.uk The course is in person only.

This project has received funding from European Union's HORIZON EUROPE research and innovation program GA N°101072777-PlasticUnderground HEUR-MSCA-2021-DN-01

January 29th to February 2nd
Birmingham,UK

ATC 1: Microplastic sampling and extraction techniques (Host UoB)
This course will focus on training in different microplastic sampling techniques in aquatic and terrestrial environments, including soil and sediment extraction and microplastic identification. This course will address the need for standardised methodologies, while providing hands-on training in novel analytical techniques such as the use of Nile Red and Raman microscopy. It will also focus on critical aspects of contamination, repeatability and reproducibility in microplastic quantification, as well as protocol versioning and integration into SciNote.

ATC 2: Entrepreneurship and Innovation – The Innovation Pipeline (Host: PolyM)
This will address how scientists can utilize scientific innovations as a basis for successful business ideas, through organizing resources and translating research results into practical tools and services. The ATC will focus on improving innovation capabilities, team-based innovation, and innovation management and will build upon ideas provided by the DCs. The leading role of non-academic partners and decision makers in delivering this ATC will ensure that the impact of the DN will be of highest practical relevance, including use of communication plans to increase visibility of research findings among non-academic stakeholders.

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15TH ANNUAL CATCHMENT SCIENCE SUMMER SCHOOL

The 15th annual Catchment Science Summer School will be running from **the 1st September until the 6th September 2024**. It is designed for PhD students and postdocs in catchment science. The course is taught by ***Jeff McDonnell*** (University of Saskatchewan and University of Birmingham) ***Dr. Chris Soulsby***, ***Dr. Jan Seibert***, ***Dr. Ilja van Meerveld***, ***Dr. David Hannah***, ***Dr. Stefan Krause*** and ***Dr. Dorthe Tetzlaff.*** It is co-hosted by the University of Birmingham and the University of Aberdeen, University of Zurich, TU Berlin and the Global Institute for Water Security.

The Catchment Science Summer School is a 5-day short course that is intended for post-graduate students and post-docs interested in a hands-on catchment science curriculum, focusing on northern catchments, runoff processes and combined hydrometric, isotope/chemical tracer and modeling techniques in catchment hydrology. The learning objectives for this short course are to understand:

- Rainfall-runoff processes
- Rainfall-runoff model development, use, and testing
- Hydrochemical and isotopic measurement and analyses
- Linking field experiments with modeling approaches
- Evolution of empirical and theoretical understanding of runoff processes
- Landscape analysis, land-use and climate change impacts on streamflow

Buy tickets for this course here. Tickets will sell out, so if you are interested in attending, please purchase tickets soon.

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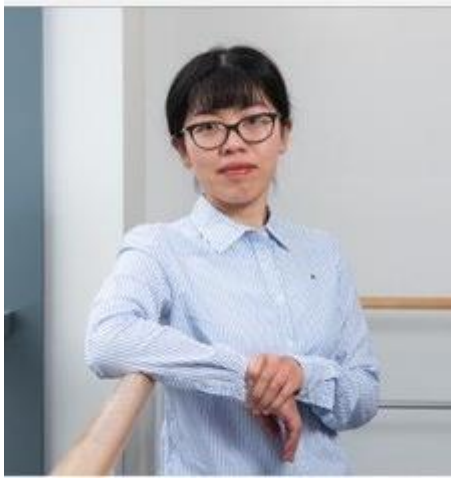
WATER SEMINAR SERIES – UPCOMING TALK

We are delighted to have Dr Sihan Li from the University of Sheffield joining us at the University of Birmingham on the 8th February for her talk titled: **Challenges and Future Outlooks of Water in High Mountains: too much, too little?**



This talk will take place at Elm house and online from 12pm to 1pm and will be followed by a networking lunch. More details will be sent around soon. We hope many of you can join us there.

Bio: Dr Sihan Li is a lecturer in Climate Science in the Department of Geography at Sheffield University. Sihan is a climate scientist specialising in using regional climate modelling and hydrological modelling to understand regional climate change and climate change impacts on extreme weather events (droughts, heatwaves, floodings, wildfires, etc.), and natural disasters (landslides due to earthquakes and heavy rainfalls). Sihan has focused on modelling regional response to anthropogenic warming in complex terrains, the changing characteristics of extreme events, and the implications for water availability.

She is especially interested in working collaboratively with other scientists across disciplines, with local partners/non-governmental organisations and humanitarian aid agencies, to plan for future disasters and reducing the consequent impacts through incorporating science-based risk information in contingency planning and emergency response preparedness planning.

Her most recent work focuses on high mountain regions over the Andes to assess the sensitivity of water resource availability in glacierized catchments to the changing supplies of snow and ice in response to climate change, and over the Himalayas to study monsoon rainfall and earth surface processes leading to landslides.

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AMERICAN GEOPHYSICAL UNION

We are delighted to announce that Prof David Hannah was awarded a Union Fellow by the American Geophysical Union (AGU) at the Honors Ceremony on the 13th of December. David said *"This accolade was only made possible due to outstanding collaborators, mentors, students, stakeholders, friends, family & other supporters. I deeply appreciate all the efforts from my nominator and letter writers in support of the application. It was wonderful to celebrate with some of these special people at the Honors Banquet"*

Watch the 2023 Honours ceremony recording here.

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CHRISTMAS GET TOGETHER

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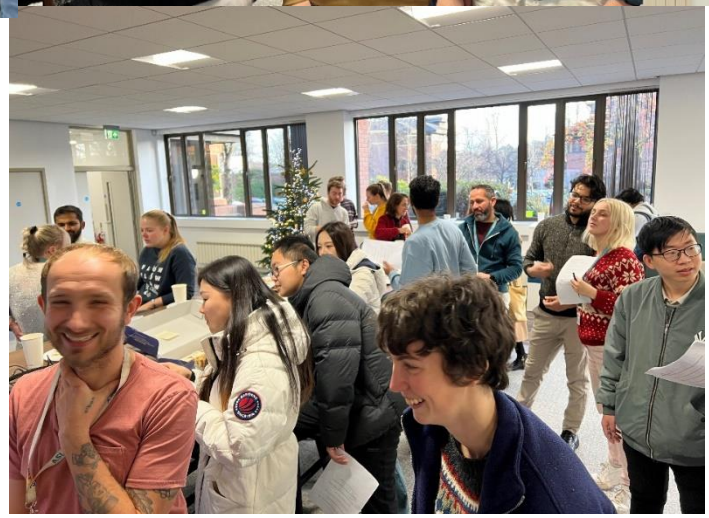

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WORLD WATER DAY 2024

World Water Day 2024 will be taking place on Friday 22nd March 2024. This year's theme is **Water for Peace**. Save the date and look out for more information about our exciting panellist discussion that will take place in recognition of World Water Day. Guest speaker names to be announced.

UN WATER
22 MARCH
WORLD WATER DAY
2024 Water for Peace

UPCOMING GRANTS

NERC – Pushing the frontiers of environmental research: Jan 2024
Deadline to apply: 23/01/2024
Award Amount: £1M
Apply for funding to pursue an ambitious, high risk and high reward project in environmental research. You must be based at a UK research organisation eligible for NERC funding.

MDPI – Water Journal Travel Award
Deadline to apply: 31/01/2024
Award amount: CHF 800
This supports PhD and postdoctoral researchers in presenting at an international conference relating to water.

UCL - Clean Tech Challenge
Deadline to apply: 03/02/2024
Award amount:£20k

The objective of the Challenge is to identify and reward innovative clean technology ideas that have been taken from a concept phase to a stage in which they would ideally attract Series A funding or otherwise be self-sustainable.

Horizon Europe: Clean Environmental and zero pollution
Deadline to apply: 21/02/2024
Award amount: €5M
This supports projects that set out a credible pathway contributing to halting and eliminating pollution to guarantee clean and health soils, air, fresh and marine water for all and ensure a sustainable and circular management and use of natural resources.

Horizon Europe: Biodiversity and ecosystem services
Deadline to apply: 22/02/2024
Award amount: €8M
This supports projects that set out a credible pathway to contributing to the objective of putting biodiversity back on a path to recovery, and preserving and sustainably restoring ecosystems and their services on land, inland water and at sea through improved knowledge and innovation.

Horizon Europe: Land, oceans and water for climate action
Deadline to apply:22/02/2024
Award amount: €10M
This supports projects that set out a credible pathway to contributing climate action on land, including forestland, grassland, cropland and wetland, ocean and water

Trinity Challenge on Antimicrobial Resistance
Deadline to apply:29/02/2024
Award amount: £1M
The Trinity Challenge on Antimicrobial Resistance seeks solutions which fall into one or more of the following Challenge Objectives: 1.Innovation to identify new sources of data, collection, and analysis. 2. Integration of existing and novel data sets with citizen-related data (CRD). 3. Implementation of more effective policy and action on antimicrobial resistance by using these tools.

International IGB Fellowship Program in Freshwater Science
Deadline to apply: 01/03/2024 (forecast)
The Institute invites excellent postdoctoral and senior scientists to apply for a fellowship at IGB. Positions are offered to enable postdoctoral scientists to further their scientific development. Senior scientists are supported for up to 12 months to contemplate and pursue new inspiring research ideas in collaboration with scientific staff at IGB.

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[Innovate UK – Environmental Monitoring Innovation]
Deadline to apply: 06/03/2024
Award amount: £450k
The aim of this competition is to fund collaborative projects that develop environmental monitoring solutions to enable improved monitoring of environmental variables.

[NERC – Large Grant Outlines]
Deadline to apply: 07/03/2024
Award amount: £3.7M
Apply for funding to support innovative, large-scale and complex projects that tackle big science questions and have the potential to produce world-leading research.

[NERC - Research biological influence on future ocean storage of carbon]
Deadline to apply: 29/03/2024
Award amount: £1.9M
This supports research providing new understanding of the role of marine life in ocean carbon storage. The aim of the call is to fund research addressing three specific challenges that will provide a fundamental understanding of key biological processes that are globally relevant.

[RSC – Water Science Bursary]
Deadline to apply: 31/03/2024
Award amount: £2k
This supports researchers engaged in projects that involve the application of chemical sciences in the management of the water cycle, and the impact these activities have on the environment.

[11th Hour Racing – Ocean Health Grants]
Deadline to apply: 31/03/2024
Award amount: $150k
As the climate crisis intensifies, so does the impact on ocean health. We need a global paradigm shift from an extractive economy that depletes our natural resources to a sustainable economy that uses resources wisely and protects our ocean. We work to facilitate this transition by supporting local solutions to global problems, led by community organizations and industry leaders.

[NERC/BBSRC - Sustainable and Resilient Aquaculture Systems in Southeast Asia]
Deadline to apply: 09/05/2024
Award amount: £3M
Apply for funding to undertake interdisciplinary research for the development of sustainable, resilient and productive aquaculture in Southeast (SE) Asia.

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[AHRC - Doctoral focal awards in the arts and humanities]
Deadline to Apply: 02/07/2024
Apply for a doctoral focal award in the arts and humanities. Formerly pre-announced as focused Centres for Doctoral Training, this is the same funding opportunity but under a new name to align it with other upcoming UKRI doctoral funding opportunities. There are two broadly defined priority research themes or areas for this funding opportunity: arts and humanities for a healthy planet, people, and place creative economy.

Open Calls with no closing date:

[UKRI – Knowledge Transfer Partnership]
Open for business and not-for-profit organisations. Partnerships can last between 12 and 36 mounts. Business provide one-third to half the project cost depending on their size.

[NERC - Work with US-based researchers on environmental science research]
Award amount: £300k Apply for funding to work with US-based researchers on an environmental science application. Collaborative work is governed by an agreement between NERC and NSF.

[Work with Brazilian researchers: NERC FAPESP lead agency]
This opportunity allows UK-based researchers and researchers in the State of São Paulo, Brazil to submit a collaborative proposal under existing NERC funding opportunities. This will go through a single review process.

[UKRI - Collaborate with researchers in Norway]
UK Research and Innovation (UKRI) and Research Council of Norway (RCN) have signed a Money Follows Cooperation agreement to reduce barriers to cross-border collaboration.

[UKRI - Collaborate with researchers in Luxembourg]
UK Research and Innovation (UKRI) and FNR have signed a memorandum of understanding (MoU) to welcome and support collaborative applications. The MoU provides for a lead agency agreement whereby UKRI will receive and assess joint applications from eligible UK and Luxembourg applicants on behalf of both organisations.

We welcome your contributions and suggestions for the newsletter. Please feel free to email Liam and Suman – l.kelleher@bham.ac.uk / s.hira@bham.ac.uk