

# Water Challenges in a Changing World

## SEPTEMBER NEWSLETTER

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Hello everyone and welcome back after the summer break. This newsletter contains the latest theme news and successes. Read through until the end to find information about current grants and if you would like to contribute to this newsletter with any news or updates, please get in touch.

## NEW PGR STUDENT

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Kexin Li joins GEES as our newest PGR student. Read more about Kexin in her own words below:

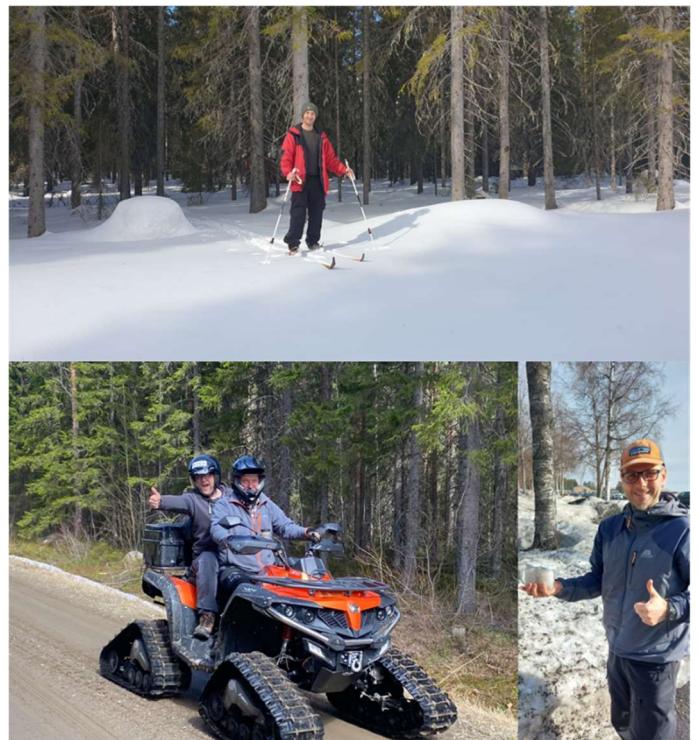
*I studied my master's degree in China and then joined Zhejiang University as a research assistant. During my master's degree, self-made iron-doped filler was used to enhance the nitrogen and phosphorus removal ability of microbial batteries. During the research assistant period, my research direction was to use iron to regulate hydrogen autotrophic sulfate reduction - extracellular electron transfer in microbial electrolytic cell for nitrogen removal and related genes.*

*My current research in Professor Stefan Krause's group combines microbial work with microbial biofilm transport and mathematical modelling, specifically the effects of microbial biofilms on the transport and transformation of microplastics in porous media.*

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## SAMPLING SNOW AND MELTWATER FOR MICROPLASTICS IN NORTHERN SWEDEN

From October 2022 to July 2023, Uwe Schneidewind, Stefan Krause and Lee Haverson sampled snow, rivers and meltwater in the Krycklan catchment for microplastics. The Krycklan catchment is a boreal catchment in Northern Sweden near the city of Umea. It is one of the best monitored catchments in Europe with previous research looking into catchment hydrology as well as climate and ecosystem changes over the last few decades. With the help of local colleagues, river water and sediment samples were collected at 13 different gauging stations throughout the catchment between October 2022 and July 2023. Additionally, snowmelt water was collected at three lysimeter stations located on open land as well as different tree cover. The area surrounding the catchment was also sampled for microplastics including the marina in Umea as well as different snow deposits throughout the city. In total, five sampling campaigns were conducted to establish conditions before winter (October 2022), during snow season (March 2023), during snowmelt season (April-May 2023) and during summer conditions (July 2023). Samples have been prepared for transport and on arrival in Birmingham will be analysed in the lab for a variety of microplastics using fluorescent microscopy, Raman spectroscopy and PyGCMS.



Fieldwork was funded by the Institute for Global Innovation (IGI-IAS ID 6078) at the University of Birmingham.

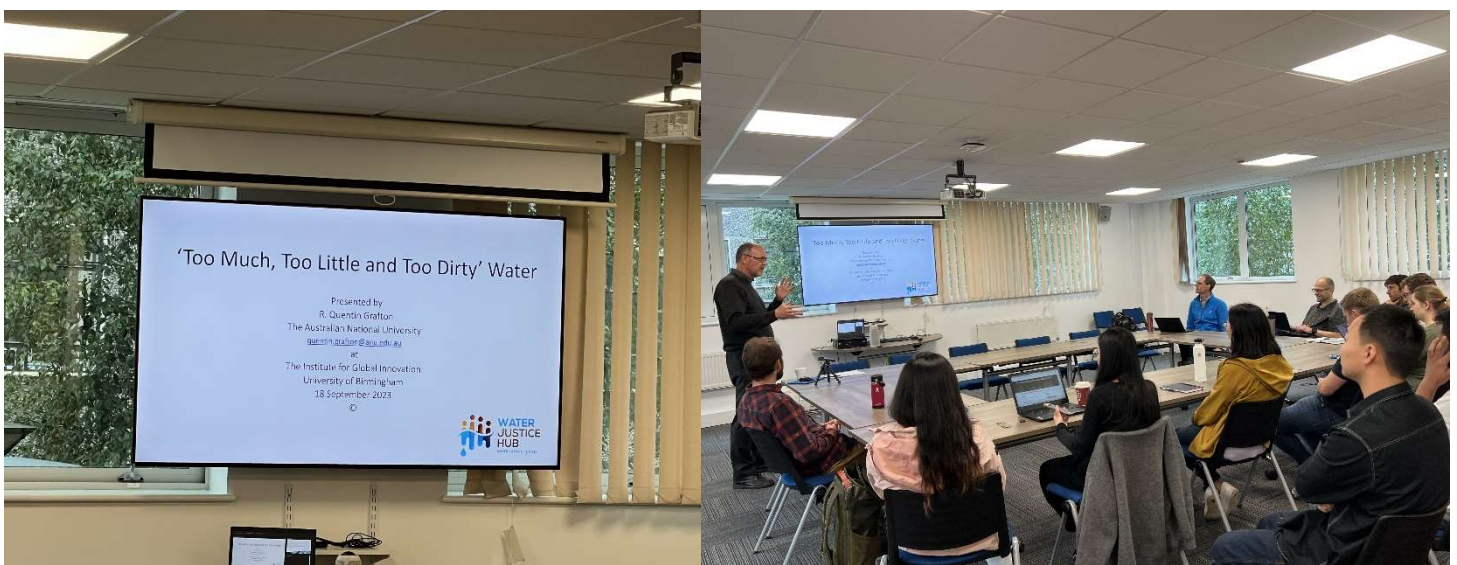
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## WATER SEMINAR SERIES

Our first Water Seminar Series of the year was carried out by Prof Quentin Grafton, Professor of Economics at the Australian National University. The title of Quentin's talk was **'Too much, too little and too dirty water'**. The talk was carried out online and in Geography 125, followed by a networking lunch. It was great to see so many of you in person as well as those of you who joined online. Please email [s.hira@bham.ac.uk](mailto:s.hira@bham.ac.uk) to be given access to the talk recording.

**Talk summary:** The world water crisis is manifest through 'Too Much, Too Little and Too Dirty' water at multiple scales from the local to the global. Understanding the key drivers and consequences of this water crisis, and who bears the biggest costs, is necessary to develop appropriate responses, at scale and over time. Using four framings: (1) water stocks and limits; (2) water rights and responsibilities; (3) water values and prices; and (4) green and grey water infrastructure, we review the challenges and possible responses. Using a water justice lens, we highlight the transitional and transformational pathways towards a safer and more just water future.

The Water Seminar Series is funded by the Institute for Global Innovation at the University of Birmingham.



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## WATER SEMINAR SERIES – OCTOBER TALK

Joining us for our next Water Seminar Series talk is Dr. Gemma Coxon from the University of Bristol. The talk will take place on the **26<sup>th</sup> Oct at 12 – 1pm** in room G05 at the IGI and will be followed with a networking lunch. Please click [here](#) to register your interest/ join the webinar online and please also feel free to share this link with anyone who you think would benefit from this talk. We hope to see many of you in person.

### ***Projecting droughts in rapidly changing human-water systems across the UK***

A reliable water supply is often taken for granted in the UK. However, decreasing water supply from anthropogenic climate change, coupled with increasing water demand from a growing population are projected to lead to frequent water shortages across the UK by 2050. This seminar will present recent advances in national-scale hydrological modelling and our understanding of human influences on river flows using a unique dataset of spatially explicit, time-varying abstractions and discharges across the UK. It will look ahead to discuss how we can better understand human impacts on river flows and droughts and provide national-scale projections of hydrological drought that consider both water supply and water demand.



Dr. Gemma Coxon is a senior lecturer at the University of Bristol and a UKRI Future Leaders Fellow. Her research focuses on understanding and predicting floods and droughts in changing environments through the simulation of water systems from local to continental scales. Gemma and her team work closely with communities, water companies, and regulatory bodies across the UK, and are currently involved in projects on (1) delivering a £38M investment in UK flood and drought research infrastructure (2) informing the development of new water supply infrastructure and (3) projecting floods and droughts in rapidly changing human-water systems.

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## CATCHMENT SCIENCE SUMMER SCHOOL

We held our 14<sup>th</sup> Annual Catchment Science Summer School between 3<sup>rd</sup> September and the 8<sup>th</sup> September. This short course is intended for Post Graduate students and Post Docs interested in a hands-on Catchment Science curriculum, focusing on runoff processes and combined hydrometric, isotope/chemical tracer and modelling techniques in catchment hydrology. <https://water.usask.ca/hillslope/teaching/catchment-summer-school/home.php>

This year we hosted a total of 29 students, who participated in lectures and classes by Prof. McDonnell, Prof. David Hannah and Prof. Stefan Krause from UoB and other guest lecturers. Welcome drinks and poster presentations started off the week and students were invited to attend the Lapworth Museum for this welcome and introduction.

Classes were then held at the IGI Building (54 Pritchatts Road) and with unusually hot weather the entire week, students enjoyed the wonderful open space back garden that allowed them to break out and have further discussions in the sunshine. Students also visited the Plynlimon catchment in Wales for an exciting field day of lectures and learning in the field.



We received excellent positive feedback from students regarding the course and we look forward to holding the Catchment Science Summer School again next year.

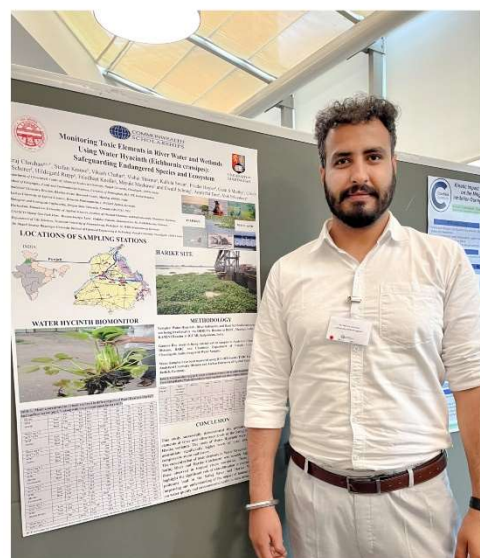
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## EBNET ECR23 POSTER COMPETITION WINNER

### Thank you note from Mr. Neeraj Chauhan:

I am delighted to share the exciting news that I have been honoured as the overall winner of the poster competition at the 5th Annual Early Career Researcher Conference (EBNET ECR23). I presented a poster on ***“Monitoring Toxic Elements in River Water and Wetlands Using Water Hyacinth (*Eichhornia crassipes*): Safeguarding Endangered Species and Ecosystem”***. This prestigious event, organized by THE ENVIRONMENTAL BIOTECHNOLOGY NETWORK with support from United Kingdom Research and Innovation’s (sponsored by the Department for Science, Innovation and Technology, Govt. of U.K.) Biotechnology and Biological Sciences Research Council (BBSRC) and the Engineering and Physical Sciences Research Council (EPSRC) NIBB, was held at Heriot-Watt University, Edinburgh from August 30th to September 1st, 2023.

### EBNET ECR Conference 2023



I extend my sincere gratitude to my esteemed mentors, Prof. Alok Srivastava from the Chemistry department, Prof. Amrit Pal Toor from Dr. S.S.B. UICET from Panjab University Chandigarh, and Prof. Stefan Krause from School of Geography, Earth and Environmental Sciences, University of Birmingham, U.K. Their unwavering guidance and support has been instrumental in enabling in achieving this honor.

I would also like to express my heartfelt thanks to the Commonwealth Scholarship Commission for providing me with the CSC Split-Site Scholarship, which enabled me to pursue my research here in the United Kingdom. This scholarship has been instrumental in making this journey possible. I want to acknowledge Panjab University, India & University of Birmingham, U.K. for providing me with the essential research environment and resources that have played a crucial role in my academic pursuits.

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## PROF. DAVID HANNAH ELECTED TO THE AMERICAN GEOPHYSICAL UNION

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Our very own theme stream lead, Prof. David Hannah, has been elected to the American Geophysical Union. He joins 53 others in the 2023 Class of Fellows at AGU, who are the world's largest earth and space sciences association, who recognise individuals for its highest honours.

Prof. Hannah was selected for his “ground-breaking contributions to our understanding of the links between river flow, temperature, ecohydrology and climate”

Prof. Hannah comments “I am very honoured & privileged to receive recognition by the AGU. This accolade is only made possible due to wonderful collaborators, mentors, students, stakeholders, friends, family & other supporters. Looking forward, I hope to continue to advance the boundaries of knowledge in hydrology and water science, to develop the next generation of (inter disciplinary-minded) researchers, and to continue to disseminate the societal relevance of our research to a wide range of stakeholders.”

Congratulations to David for this amazing achievement.

Read the full article published by UoB [here](#).



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## UPCOMING GRANTS

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### [Sea-Changers, GB – Innovation Fund](#)

Deadline to apply: 28/09/2023

Award amount: £10k

This supports ideas that are new or experimental solutions in the field of marine conservation. This includes innovations that address the root causes of marine conservation threats and challenges in the UK, prevent or reduce negative impacts on UK coastal and marine environments or species, or add to the body knowledge about marine conservation and threats.

### [Stockholm Water Foundation – Stockholm water prize](#)

Deadline for nominations: 30/09/2023

This recognizes people and organizations who have made outstanding contributions to the sustainable use and protection of the world's water resources. The main achievements of the candidate should be within one or both of the following categories: policy and practice - covering achievements that have improved the governance and management of water, as a natural and economic resource and as a human right and basic service; research - covering basic and applied research to develop new knowledge and scientific leadership.

### [Understanding geohazard processes and their impacts across India](#)

Deadline to apply: 03/10/2023

Award amount: £1M

Apply for funding for a collaborative UK-India project to improve understanding of geohazard events in India and its neighbouring countries.

### [Resilient UK coastal communities and seas Network Plus](#)

Deadline to apply: 12/10/2023

Award amount: £1.8-2M

Apply for funding to develop a Network Plus to enhance the resilience, health and wellbeing of UK coastal communities and seas. The network will provide a coordinating function across projects funded through the complementary resilient UK coastal communities and seas research programme.

### [NERC - Tools for automating image analysis for biodiversity monitoring](#)

Deadline to apply: 18/10/2023

Award amount: £500-750k

Apply for funding to develop software systems, which will help to improve biodiversity monitoring by automating the analysis of images and videos.



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## [Akademie Schloss Solitude – Fellowship](#)

Deadline to apply: 30/10/2023

Award amount: €14.4k

The Akademie Schloss Solitude invites applications for its fellowship. This enables international artists, scientists, scholars and business representatives to attend the Akademie Schloss Solitude to devote themselves to their research projects

## [UKRI Creating Opportunities Evaluation Development Fund](#)

Deadline to apply: 31/10/2023

Award amount: £100-250k

Apply for up to 12 months of funding to undertake evaluation activities that improve our understanding of interventions that increase opportunities and reduce disparities in economic, health and social outcomes for people and places across the UK.

## [DEFRA: Emissions of intentionally added microplastics](#)

Deadline to apply: 09/10/2023

Award Amount: £200k

This project aims to improve our understanding of the potential socioeconomic, environmental and human health impacts of intentionally added microplastics in the UK. This project will then consider the impacts of some different potential policy actions, including placing controls on emissions of intentionally added microplastics.

## [Irish Research Council: Environmental Protection Agency postgraduate scholarships](#)

Deadline to apply: 12/10/2023

Award amount: €28k per annum

These awards will support suitably qualified research master's and doctoral candidates pursuing, or intending to pursue, full-time innovative research to provide evidence to support environmental policy in Ireland.

## [British Council: Regional collaborations in academic water research](#)

Deadline to apply: 15/10/2023

Award Amount: £20-55k

The British Council and the UK Science and Innovation Network in Israel invite applications for its regional collaborations in academic water research call. This supports projects that aim to strengthen collaboration between the research institutions in the UK, Israel, and the Middle East and North Africa (MENA) region in the field of water research. Projects must fit one or more of the themes of water research, including but not limited to, research pertaining to irrigation, water purification, groundwater studies, sanitation, biological and physicochemical water and wastewater treatment, food security, education, monitoring,

## [European Space agency: Natural Capital](#)

Deadline to apply: 11/11/2023

Award Amount: €60k

The European Space Agency invites tenders for its natural capital call. This aims to foster new state-of-the-art services combining space-based assets to enhance the natural capital management and monitoring. Key focus areas are:

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nature based interventions - land use change; nature based interventions - water marine environment

## [Pre-announcement: NERC strategic capital funding opportunity 2023](#)

Deadline to apply: 05/12/2023

Award amount: £350-£750k

\*Call opens in September. Apply for funding to improve the environmental research landscape through new or improved equipment.

## [Innovate UK - UK - Singapore Collaborative R&D Call Sustainability and Net Zero](#)

Deadline to apply: 06/12/2023

Award amount: £750k

*UK registered organisations* can apply for a share of up to £5 million as part of a collaboration with a Singapore partner for industrial research projects that develop sustainable technologies helping reduce emissions and achieve a net-zero future.

## [US - Postdoctoral and Visiting Research Scientist Program](#)

Deadline to apply: 08/12/2023 (forecast)

The Atmospheric and Oceanic Sciences program provides a stimulating and supportive environment for career development of both early career and established researchers. Postdoctoral and visiting research scientists have access to collaborators from a pre-eminent government laboratory in NOAA-GFDL, as well as Princeton University research collaboration and training opportunities.

## [UK Space Agency – Climate Services](#)

Deadline to apply: 30/12/2023

Award amount: £10k

The UK Space Agency is looking to provide small grants to help the UK develop business-viable ideas that use space data in a climate-related application.

## [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.

## [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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## 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 months. 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](mailto:l.kelleher@bham.ac.uk) / [s.hira@bham.ac.uk](mailto:s.hira@bham.ac.uk)