

Water Challenges in a Changing World

JULY NEWSLETTER



Hello everyone and welcome to the July edition of the Water Challenges newsletter, our final newsletter before the summer break. Keep reading for exciting news regarding a brand-new workshop we are launching, seminar speakers and our next theme meeting. We hope you all have a great summer break, and we can't wait to welcome you back in September!

WATER THEME MEETING

The next Water theme meeting will be held on the 4th of September from 1pm to 2pm, online and in room G08 at Elm House. This meeting will be to discuss the Water Centre development and we recently sent an email around to all asking you to update our spreadsheet with any of your Water theme generated income. This is so that we can put the best accurate case forward for the centre, so please do take the time to complete this, if you haven't already. We will also be discussing our phasing out from the extremely supportive IGI, who we have been grateful to fall under for the last 4 years. The IGI will be supporting us with £20k of funding for 2024/2025 to help us phase out and we will discuss how to best utilise this at the next group meeting.



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WATER SEMINAR SERIES RECAP

We'd like to thank the IGI and BISCA for all of the support they have provided us with this academic year to ensure that we have been able to continue to run



our Water Challenges seminars. In the past academic year, we have had **9** fantastic speakers, who have spoken to **over 150** students and staff, both in person and online. We've used rooms at the IGI, BISCA and Geography for these seminars and have been supported by staff at all locations.

We've also put on networking lunches for all in - person attendees, to ensure an opportunity for people to speak to seminar series speakers and ask any further questions/ make connections. Our guest speakers have included:

- Prof Quentin Grafton - *The Australian National University*
- Dr Gemma Coxon - *University of Bristol*
- Andras Szeitz – *McMaster University*
- David Tickner and Connor Linstead – *Rivers at WWF*
- Dr Sihan Li – *University of Sheffield*
- Sam Cusworth – *Lancaster University*
- Dr Changqing Wu - *University of Delaware*
- Dr Catherine Hirst – *Durham University*
- Dr Annie Ockelford - *University of Brighton*



They have spoken on a variety of Water Challenges related topics such as: the

world water crisis, reliable water supply, stream thermal patterns in response to climate change, freshwater sciences and the recovery of world rivers, to name a few.

We encourage all staff and students to continue to attend these valuable sessions

and to feel free to nominate speakers who they think would be useful to present by emailing Suman.



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WATER SEMINAR SERIES



Dr Annie Ockelford from the Department of Civil and Environmental Engineering at University of Liverpool joined us in July for her Seminar Series talk: *Source or Sink? Exploring the role gravel bed rivers play in modulating the flux of microplastics in the environment.*

You can find details about her talk below. If

you missed the talk and wish to watch it, please email Suman, who will send over the recording to you.

Microplastic burden in aquatic environments is increasingly recognized as being a threat to human and environmental health. To date, the focus has been on marine environments. However, up to 80% of the plastics in the oceans are believed to have been transferred from river networks. As well as acting as a source, data from the sedimentological literature points towards river beds as being resilient sinks for contaminants including heavy metals, organic contaminants and microorganisms such as viral pathogens. Research has shown this to also be the case for microplastics, where they can accumulate in sediments at an order of magnitude higher than in the overlying water column.

In gravel bed rivers, active layer dynamics will likely drive the vertical exchange of microplastics and will therefore control whether the river bed acts as a source or sink of microplastics. In sand bed rivers, microplastic flux and the source to sink transition is likely governed by bedform dynamics. However, there remains a paucity of research on the exact mechanisms of microplastic transfer in these environments.

During this seminar Annie discussed the findings from flume experiments and field surveys which serve to (i) elucidated upon the mechanisms responsible for controlling microplastic flux in gravel and sand bed rivers; (ii) identified the spatio-temporal variations in microplastic contamination in response to changes in flow regime and; (iii) identified the role microplastics play as vectors of microorganisms such as viral pathogens which are important for human health.

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HIGH FREQUENCY SESSION AT AGU

<https://agu.confex.com/agu/agu24/prelim.cgi/Session/228437>

H091 - Leveraging sensor technologies, networks and tools to rethink space-time dynamics in river water quality

Watersheds are changing at unprecedented speed and scale due to climate, land and human driven alterations. Consequently, river water quality patterns often exhibit non-stationarity, non-linear behaviours, tipping-points and other complex dynamics that are captured inadequately by standard monitoring instrumentation and networks. High frequency and spatially distributed monitoring technologies (especially when coupled with innovative data analysis approaches) provide opportunities to yield new insights into hotspots and hot-moments in water quality dynamics and, in turn, understanding of watershed processes. Such knowledge is essential to underpin evidence-based strategies for watershed management, regulation and societal behaviour to respond to current and emerging water pollution challenges. We seek contributions about high frequency and/ or spatially distributed monitoring of water quality that focus on novel: (a) sensor technologies, (b) network design, (c) analysis of space-time patterns, and/ or (d) use of observations and tools to inform sustainable management interventions - across a range of environments.

Primary convener: Prof David M. Hannah

ABSTRACTS FOR “RIVER TEMPERATURE IN A CHANGING WORLD”

On behalf of Prof David Hannah, we would like to invite you to submit an abstract (due July 31) to "River temperature in a changing world" at the AGU Fall Meeting in Washington DC in December 2024.

H117: River temperature in a changing world
(<https://agu.confex.com/agu/agu24/gateway.cgi>)

Session ID: 225919

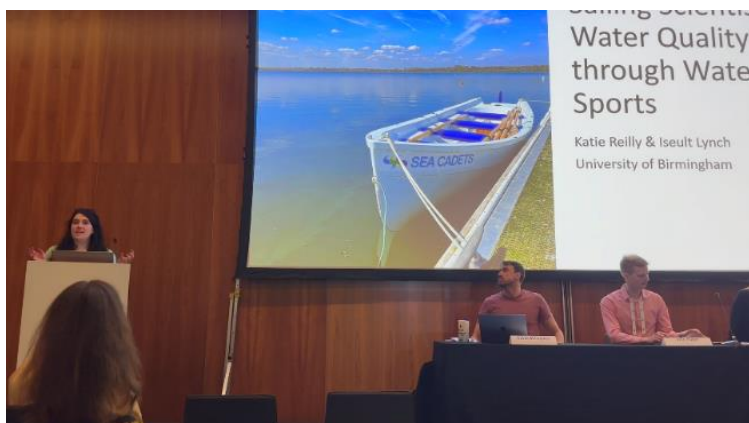
Section: Hydrology

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River temperature is a crucial water quality variable that is closely tied to climate, hydrological processes, and watershed characteristics. Human activity, infrastructure, and water management also strongly influence river temperature. Substantial evidence shows that river temperatures are increasing in response to climate and other human drivers of change. For this reason, we need to rethink how we conceptualize, monitor, and model river temperature to include the influence of human activity to mitigate and enhance our understanding of river temperature changes. We seek contributions that draw on observational, data-driven, or model-derived advancements to investigate drivers of river temperature across spatial and temporal scales. We are interested in studies within anthropogenically altered systems as well as those from more undisturbed landscapes (as sentinels of climate change). We encourage submissions that undertake comparative analysis and seek to unravel the complex, interacting controls on river thermal dynamics.

SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY (SETAC)

Our research team had a very busy week in Seville at the annual European conference for SETAC. Researchers from the groups of Prof Iseult Lynch, Prof Luisa Orsini, and Prof Stefan Krause presented research highlights. A range of oral and poster presentations were given on ongoing research around ecotoxicology, nanomaterials, biodegradable polymers, microplastics, tire wear, and science communication within the group!



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NEW WINTER WORKSHOP



We are excited to announce the launch of our new Winter workshop – Environmental Micro and Nanoplastic Identification and Characterisation Workshop. This workshop will run in person from the **27th - 31st January 2025**. It is designed for PhD students, postdocs and professionals. The

course is taught by Prof Stefan Krause (University of Birmingham) and his team. It is supported by the [Water Research Centre](#), [BISCA](#) and [IGI](#).

Our comprehensive course offers hands-on training and practical experience in various microplastic sampling, processing, and analysis techniques for aquatic and terrestrial environments. Participants will gain valuable insights into sediment extraction methods as well as advanced microplastics characterization techniques.

In the rapidly evolving field of microplastics research, standardization and robust protocols are crucial. A key focus of this course is addressing and demonstrating standardized protocols, along with in-depth discussions on contamination mitigation and control, repeatability, and reproducibility of samples for accurate quantification.

The course covers the following key aspects:

- Introduction to microplastic sampling methods in aquatic and terrestrial environments
- Overview of the microplastics analysis pipeline
- Global case studies showcasing standardized methods
- Hands-on training in microplastic sample collection methods (soil, water, and air)
- Practical experience in sample processing (density separation and digestion methods)

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- Theory and application of various quantification methods (Fluorescence microscopy, Raman and FTIR spectroscopy, and pyrolysis-GCMS)
- Identification and discussions on contamination control and mitigation strategies
- Discussions on ensuring the repeatability and reproducibility of studies
- Dedicated time for project-specific discussions with experienced microplastic researchers

Our comprehensive curriculum is designed to equip participants with the knowledge and skills necessary to conduct rigorous and reliable microplastics research. Join us and gain invaluable insights from leading experts in the field.

Register your attendance now.



EVENTS OF INTEREST

- [CHARISMA Raman School 2024](#), 28 July & 2 August 2024, Rome, Italy
- [NANOMAT2024 – 8th Annual Nanotechnology Conference](#), 25-28 August 2024, Vienna, Austria
- [EuroTox 2024](#), 8-11 September 2024, Copenhagen, Denmark
- [Microplastics workshop for Early Career Researchers](#), 8-13 September 2024, Idstein, Germany

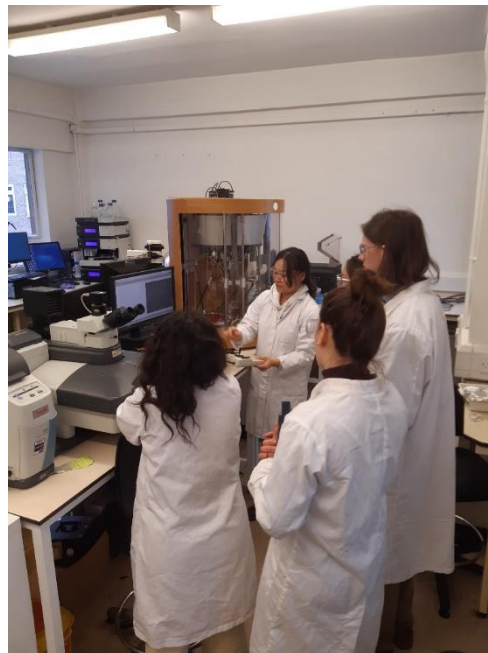
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- [NanoInnovation](#), 9-13 September 2024, Rome, Italy
- [ECCPM - From Molecules to Advanced Therapy - From Digital Tools to Advanced Hardware](#), 11-12 September 2024, Graz, Austria - [Abstract submission](#) deadline: 30 June 2024
- [BioNanoNet Annual Forum & BNN Networking Session – Satellite Event of the ECCPM Forum on “Sustainability in Pharma”](#), 12 September 2024, Graz, Austria – **benefit from a 25% discount on the ECCPM registration fee – the Annual Forum & Networking Event are free of charge!**
- [IPCEI Microelectronics Workshop @ NanoInnovation 2024](#), 12 September 2024, 14:00-17:30 CEST, Rome, Italy & online
- [The 2024 European Congress on Alternatives to Animal Testing](#), 18-20 September 2024, Linz, Austria
- [NanoTox 2024](#), 23-25 September 2024, Venice, Italy & online **(EU H2020 projects) NMBP-16 Joint Final Conference**
- [NMBP-16 joint Open Event](#), 25 September 2024, Venice, Italy & online – **SAVE THE DATE**
- [European Researcher’s Night “Life is Science in a World Turned Upside Down”](#), 27 September 2024, Graz, Austria
- [Smart Materials and Surfaces – SMS 2024 International Conference](#), 23-25 October 2024, Barcelona, Spain
- [SSbD24 Conference](#), 10-15 November 2024, Monte Verità, Switzerland
- [MEDICA & COMPAMED 2024](#), 11-14 November 2024, Düsseldorf, Germany
- [SusChem-AT Focusday 2024 & CHASE Expert Days](#), 19-20 November 2024, Vienna, Austria

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- [MADNano24 – Madeira International Conference on Emerging Trends and Future of Nanomaterials for Human Health](#), 28-30 November 2024, Funchal, Madeira Island
- [NANO.IL.2025](#), 9-11 March 2025, Jerusalem, Israel **Abstract submission deadline 5 Nov. 2024**
- [ECerS XIX – Conference of the European Ceramic Society](#), 31 August – 4 September 2025, Dresden, Germany

GOODBYE TO ALICE AND YUXIA



Alice has worked with us as a technician for just under a year, however, before this she spent some time assisting in microplastic research with members of the group. Alice is now moving on to start a PhD focusing on Arctic zoonotic diseases at Aberystwyth University. Alice's work has supported a lot of our international studies, she has worked through a range of samples from Africa to America and even the Arctic.

Yuxia has spent 1.5 years of her PhD studying with us at the University of Birmingham. Her studies focused on groundwater contamination and part of

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her visit was working through a mountain of samples using both Raman and FTIR spectroscopy. Yuxia has honed her analytical skills and we look forward to seeing her future work and a successful PhD completion!

UPCOMING GRANTS

[MRI – Young Academics Award 2024](#)

Deadline to apply: 31/07/2024

Award amount: £1,000

The 2024 edition of the Alpine Convention's Young Academics Award focuses on the issue of “Responding to environmental changes and maintaining high quality of life in the Alps.”

[Fulbright Scholar: Canada: Research Chairs in Environmental Studies](#)

Deadline to apply: 16/09/2024

Award amount: \$25k

Fulbright Canada Research Chairs are pre-arranged affiliations to host exceptional scholars who conduct research important to that university. Partner universities are excited to welcome Fulbright Canada Research Chairs into campus life and encourage them to engage with students and faculty, and the broader community.

[EPSRC - Accelerating research outcomes to deliver a prosperous net zero: full application](#)

Deadline to apply: 24/09/2024

Award amount: £100-800k

Apply for follow-on funding to build on existing engineering and physical sciences research outputs to accelerate economic, societal, policy and environmental benefits. The proposed benefits must contribute to delivering Engineering and Physical Sciences Research Council (EPSRC)'s Engineering Net Zero (ENZ) priority.

[BBSRC – Standard research grant round 3 responsive mode](#)

Deadline to apply: 25/09/2024

Award amount: £2M

Standard research grants are available for researchers at eligible research organisations. This scheme supports excellent investigator-led research across the breadth of Biotechnology and Biological Sciences Research Council (BBSRC) scientific remit.

[EPSRC - Engineering Healthier Environments: Micro Network and Micro Network Plus](#)

Deadline to apply: 02/10/2024

Award amount: £600k

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Apply for funding to develop an interdisciplinary Micro Network or Micro Network Plus focused on developing new and existing collaborations within the topic of engineering healthier environments. Your network can last up to 24 months.

[NERC - Addressing environmental challenges: NERC highlight topics 2024](#)

Deadline to apply: 09/10/2024

Award amount: £2.35M

Apply for funding to address one of five environmental research challenges. We encourage multidisciplinary research and collaborations with other UK organisations, and applications from diverse groups of researchers.

[ITPOF – R&D Award](#)

Deadline to apply: 02/12/2024

Award amount: £60k

The ITOPF R&D Award is open to any reputable R&D establishment or other organisation worldwide intending to fund a candidate (individual or project team) to undertake research. Applications are invited from all academic disciplines, although preference will be given to those with an applied scientific focus, such as marine biology, chemistry, ecology, physics, engineering and economics.

[EPSRC/NERC – Sustainable Industrial Futures](#)

Deadline to apply: 11/12/2024

Award amount: £26M

This is a £26 million (80% full economic cost (FEC)) seven year, flagship investment focused on tackling cross-sectoral research challenges rooted in excellent, leading-edge engineering, physical and environmental sciences and transdisciplinary approaches to enable the transition of UK industrial manufacturing processes and operations to net zero.

Open Calls with no closing date:

[NERC Urgency Fund \(£100k\)](#)

Apply for funding to respond quickly to transient and unexpected scientific opportunities.

[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.

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[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

