

Water Challenges in a Changing World

NEWSLETTER

Hello and welcome to our freshly revamped and exciting newsletter. Here you will find information related to the Water Challenges in the Changing World theme group. We encourage you to be active and participate in sending us your latest news and achievements. This newsletter will showcase new group members, grant information, and general news from the group.

WATER CHALLENGES UPDATE

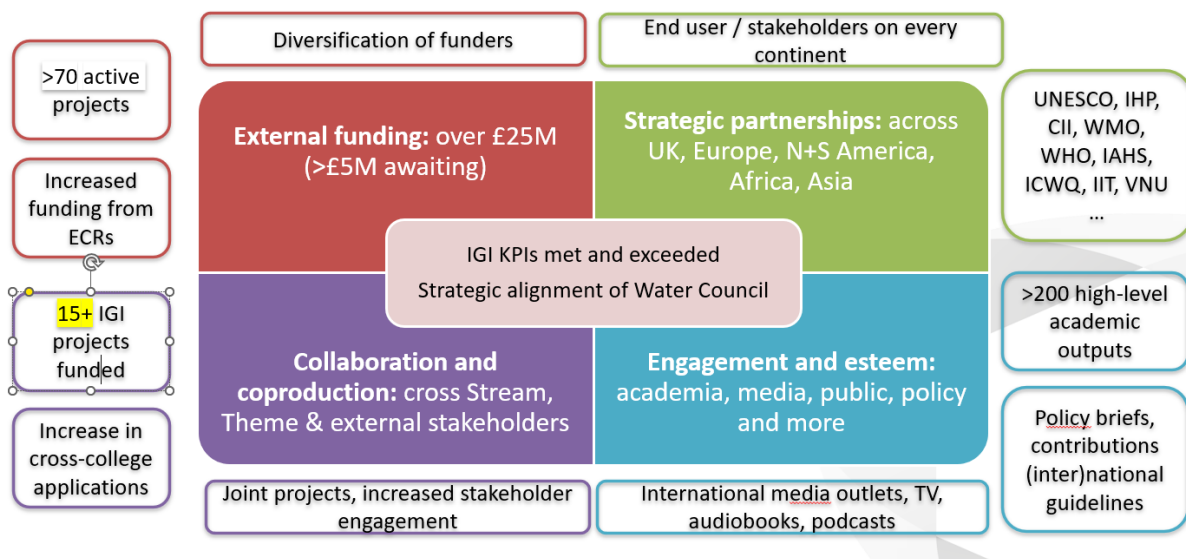
The second theme appraisal was carried out to report on activities from 2020-2022 where we reported on activities including number of projects commissioned along with their associated outputs, external grant capture, connecting with other University departments, along with other markers of development relating to outputs and esteem. Needless to say, it has been a great year and we have appreciated everyone's continued support since the Water Challenges theme was first created. Much of the achievements listed below have been carried forward to our more recent presentation with the IGI management team.

Some highlights from the appraisal and presenting include a combined grant capture over £24M awarded to theme members and relating to activities, this does not include grant bids that were in development at the time, some of which have been awarded! In terms of embedding ourselves across the University colleges and further afield we have continued to support and run the World Water Day events, which have been carried out in online or hybrid format. We have also had the pleasure of being award studentships for visitors from both China and India with several studies visiting each year and completing water linked projects. Across the colleges we have had more of a focus in MDS, where we feel the links of water and health can be explored further. In terms of publication output we have accumulated a total of over 120 published peer-reviewed articles. Throughout the 2-year period we have also had over 20 speakers both from the University and internationally.

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The number of projects funded by the theme have varied, with funds used to develop pilot data or proof of concept. Without distracting from the other notable work completed a great use of funds was made by Luisa Orsini who utilized funding to test routes to market for Daphne Water solutions that assisted in further developed and securing of a patent. To quickly summarise other markers of esteem, we have also recently led the launching of the UNESCO UNITWIN in Ecohydrological Interfaces together with other international university partners. We have hosted visiting IGI-IAS Vanguard Fellows and Fulbright Professorship visitors, along with our own, David Hannah, being listed in The Reuters Hot List for the world's top climate scientists. This short synopsis does not do justice to the range of activities and achievements of members within the theme and once again we would like to thank you for your work and support.

Overview of theme outputs and activities, 2019 – 2022



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NEW CSC PGR STUDENTS

We are pleased to announce the arrival of our 2 new Commonwealth Scholar Commission students, Neeraj and Jaswant, who arrived earlier this year.



Jaswant Singh joins GEES from the Indian Institute of Technology Roorkee, India. He is an environmental hydrologist specializing in the comprehensive assessment of microplastics movement in and around a dumpsite. His research focuses on advancing our understanding of how microplastics migrate through various subsurface profiles. Jaswant is particularly interested in studying microplastics pollution and finding effective mitigation strategies. During his time at GEES, he will be conducting research on the conservative and interactive transport of microplastics through unsaturated zone.

Neeraj Chauhan is a PhD candidate from the Panjab University, India. His research focuses on the radioecological and physicochemical aspects of materials used in energy production. He emphasizes the importance of mitigating heavy elements in energy materials and understanding their mobilization in the surrounding aquatic and terrestrial environments. Neeraj is collaborating with Prof. Stefan Krause to investigate the role of geochemical and physicochemical characteristics of terrestrial and aquatic bodies in the mobilization of the radio carcinogen and other heavy toxic elements. This research aims to enhance our understanding of the factors influencing the spread and impact of these contaminants, thereby contributing to effective mitigation strategies and environmental management.



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WATER & HEALTH WORKING GROUP IN NEW IAHS SCIENTIFIC DECADE

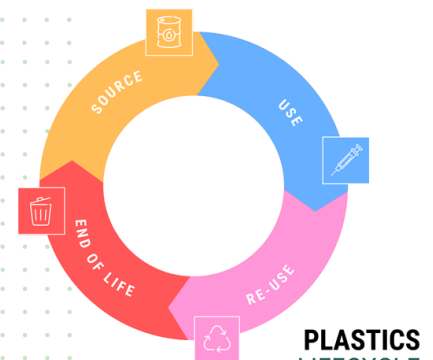
Together with Alena Bartsova (SMHI) and Wouter Buytaert (Imperial College London) we have initiated a working group targeting integrated solutions at the Water and Health Nexus in the next IAHS (International Association of Hydrological Sciences) Scientific Decade on HELPING (Hydrology Engaging Local People IN one Global world).

The WG description is available [here](#) and we would like to encourage you to sign up for this following the link and hope you will follow us in this endeavour to make water a central element of One Health solutions. More information and a co-creation workshop to be announced. We hope you have capacity to join us on this important venture!

BIRMINGHAM PLASTICS NETWORK

The [Birmingham Plastics Network](#) is an interdisciplinary community of academics working collaboratively across all Colleges to find whole-systems solutions to the plastics problem. They are running an internal workshop on 18 July 10am-1pm for interested academics to learn more about the network, contribute to the development of research and other projects, and discuss opportunities to join the wider team. Lunch and refreshments will be provided.

Academics in all stages of their career are welcome to attend; The Network is particularly interested in hearing from early career researchers. [Register via Eventbrite](#). If you have any questions, [please contact the team](#).



*References for data can be located in the Call For Action report, 2023

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GU SESSION H081 ON RIVER TEMPERATURE REGIMES AT AGU

David Hannah, Christa A. Kelleher, Emily Baker, and Erin Bray are convening a session on water temperature at the AGU in December. They'd love to see you and/or your mentees there! Their invited speaker is Dan Moore - stay tuned for their other invitee. The abstract deadline is **Wednesday, August 2**.

H081 - Advancing Understanding of River Temperature Regimes

River temperatures vary from diel to multi-decadal scales and through the river network in response to drivers, including hydrology, meteorology, and local channel and riparian characteristics. While research continues to clarify the relationships between river thermal regimes and the influencing conditions, advancements are needed to disentangle the complex, spatio-temporal interactions between hydrological processes, the exchange of energy at the surface and in the subsurface, and the surrounding environment. We seek submissions leveraging observational, data-driven, or model derived advancements to investigate drivers of river temperature regimes across spatial and temporal scales. Submissions should explore the role of hydrology in shaping river temperature regimes, explore novel observational or numerical techniques for observing and/or predicting stream temperatures, or relate river temperature regimes to water management, stream restoration, and climate change. We are interested in studies within anthropogenically altered streams and watersheds as well as those from more undisturbed or natural landscapes.

Link to Session: <https://agu.confex.com/agu/fm23/prelim.cgi/Session/185973>

AGU23

WIDE. OPEN. SCIENCE.

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DELPHIS LEVIA VISIT

Delphis (Del) Levia is visiting from University of Delaware (under the IAS-DVF scheme) until 15 August.

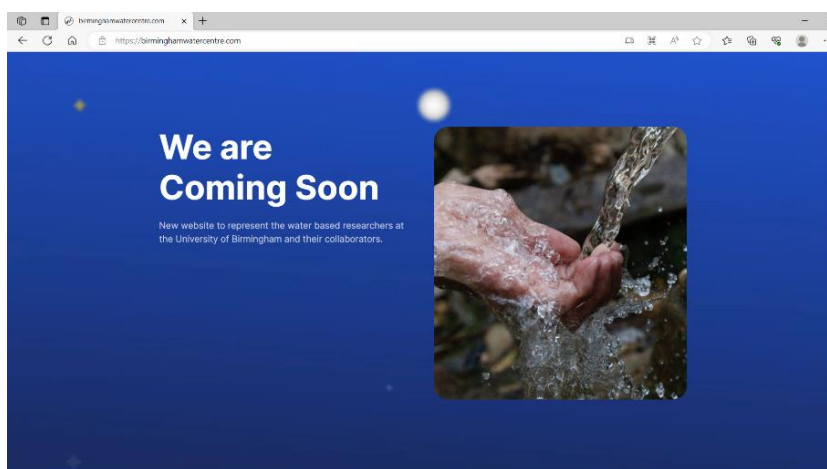
Del's research is on ecohydrology; trees; stemflow; biosphere-atmosphere interactions; field methods and instrumentation under forested canopy; microscopy and bioimaging of soils-plant-water interactions.

Del would be very pleased to meet for a coffee/tea to discuss research and education collaborations. He can be contacted at: dlevia@udel.edu



BIRMINGHAM WATER CENTRE WEBSITE

We will be launching our new website soon so add birminghamwatercentre.com to your bookmarks. This will be a place for us to further showcase our research and talents outside of the University of Birmingham website. More details to follow soon.



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WATER SEMINAR SERIES

As the year comes to an end, we can look back at our most recent Water Seminar Series guests, courtesy of the IGI. All of our Water Seminar Series talks are hybrid and we have a mixture of online and in – person attendees.

15th June 2023 - Dr David Lavers - Climate monitoring activities and forecast diagnostics at ECMWF – [Watch the talk here](#)

In this seminar, two main topics were presented, climate monitoring and forecast diagnostics at the European Centre for Medium-Range Weather Forecasts (ECMWF). Climate monitoring activities undertaken as part of the Copernicus Climate Change Service (C3S) were introduced. These activities included the publication of the monthly climate bulletins and the annual European State of the Climate report. Second, forecast diagnostics, and in particular the use of observations collected during the Atmospheric River Reconnaissance observational campaign in the northeast Pacific were discussed. This topic provided an overview of observations gathered from dropsondes, radiosondes, and ocean buoys and present some of the main results found with these data, including the latest research on the jet stream.



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7th June 2023 - Prof. Dr. habil. Mario Schirmer - Impact of Urbanization on Groundwater Recharge – [Watch the talk here](#)



Groundwater, as the world's most important reserve of available fresh water, is known to be affected by urbanization. Managing this resource in a sustainable way is critical for water resource management. Groundwater recharge rates in urban areas remain however still poorly understood and knowledge about these rates and their expected changes under increasing urbanization is therefore of primary

importance. Our studies aim to give insight into urban groundwater recharge by performing water budget calculations for four different time periods for an urban study site in northern Switzerland.

Our work highlights a strong positive correlation between groundwater recharge rates and the extent of the urban area. In detail, at the study site urban areas expanded from 6% in 1880 to 44% in 2009, leading to an increase in the mean groundwater recharge rate. However, the increase amount in recharge remains uncertain and varies between 29% and 67% depending on the parameter combination originating from the MC approach. Based on our water budget calculations, the transformation of natural landscapes into impervious areas leads to an increase in groundwater recharge rates due to the reduction of evapotranspiration that more than compensates for the increase in runoff. Furthermore,



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water main leakages contribute to an increase in recharge rates. Overall, we demonstrate that a better understanding of groundwater recharge changes in urban areas is required to move towards a sustainable water management. We hope that this example will encourage the hydrogeological community to pay more attention to urban groundwater recharge.

25th May 2023 - Dr. Pedi Obani - Sanitation, Human Rights and Governance: A Critical Perspective

Sanitation has increasingly become a major development concern following the evolution of human civilizations into more complex and larger societies.



Today, Africa is rapidly urbanising and most parts are plagued with poor access to basic services and related human rights violations. Sub-Saharan Africa, with a population of around 1 billion, has the highest proportion of people living without access to clean water and sanitation globally. The sustainability of interventions geared towards addressing the sanitation crisis will depend on the extent to which the gap in access is reduced for poor and vulnerable persons especially. This presentation reflects findings from a study on the challenges and prospects for advancing inclusive

access
to

sanitation services in Nigeria, as a case study. It highlights salient contradictions and incoherence in the socio-legal construction of sanitation among various stakeholders, and in the regulatory approaches and governance instruments, to an extent that reinforces power



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asymmetries, dissuades the enforcement of sanitation regulation and compliance, and inhibits inclusive access.

17th March 2023 – Dr Sophie Comer-Warner – Drivers of greenhouse gas fluxes and nutrient processing in coastal wetlands under global change



Coastal wetlands, such as mangroves and salt marshes, provide many ecosystem benefits including carbon sequestration and potential nutrient filtration.

However, carbon and nitrogen cycling in these wetland soils may release greenhouse gases and partially offset some of the value of the sequestered carbon. Despite the importance of these coastal ecosystems they are under threat globally from multiple pressures including deforestation, aquaculture, sea level rise and high nutrient loading. This seminar explores the effects of global change on soil greenhouse gas fluxes and nutrient filtration potential of coastal wetlands due to different environmental drivers. Case studies from mangrove and melaleuca wetlands in Vietnam and salt marshes in Canada, U.S. and U.K. will be presented with drivers including restoration class, nitrogen

loading and temperature to investigate some of the expected effects of future global change on these important coastal wetlands.

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3rd March 2023 – Dr Manish Kumar - Hydrological partitioning in contrasting tropical montane forests types in Eastern Himalaya



Studies describing runoff processes from different forest types are rare in tropical montane forests (TMFs). The study compares the hydrological functioning of three wet (3750–4900 mm precipitation) headwater catchments (temperate broad-leaved and sub-alpine conifer-mixed forests), ranging from 1800-4050 masl in Eastern Himalaya using a physically-based, data-driven mechanistic baseflow-separation filter developed by Furey and Gupta (2001). The study provides a mechanistic understanding of vegetation-streamflow interactions in wet high-elevation TMFs in Eastern Himalaya, one of the 30 global biodiversity hotspots and global 200 ecoregions of importance.



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UPCOMING GRANTS

[Innovate UK - AgriFood Africa innovation awards](#)

Deadline to apply: 04/08/2023

Award amount: £30k

Innovation Awards support collaborations between organisations in the UK and Africa to address African AgriFood challenges. Successful UK-registered applicants will receive a grant of up to £30,000 for a 5-month project to be completed by 30 January 2024.

[Grand Challenges Canada - Creating Hope in Conflict: A Humanitarian Grand Challenge - Round 4](#)

Deadline to apply: 22/08/2023

Award amount: CAD 250k

Grand Challenges Canada seeks bold, life-saving or life-improving innovations that better meet the needs of the most vulnerable and hardest-to-reach people impacted by humanitarian crises caused by conflict. Proposed innovations must be relevant to one of three focus areas: 1) access to energy, 2) lifesaving information, or 3) health supplies and services.

[Hudson River Fund Call for Proposals](#)

Deadline to apply: 27/08/2023

The Foundation seeks to elucidate the dynamic interactions among the biological, chemical, physical and human processes that are important to the Hudson River ecosystem. In particular, the Foundation encourages research in areas that are both scientifically important and relevant to current or anticipated public policy and resource management issues affecting the River and its watershed.

[HORIZON-CL5-2023-D6-01 - safe, resilient transport and smart mobility services for passengers and goods](#)

Deadline to apply: 05/09/2023

Horizon Europe, under Global Challenges and European Industrial Competitiveness, and its climate, energy and mobility cluster, invites applications for HORIZON-CL5-2023-D6-01 - safe, resilient transport and smart mobility services for passengers and goods. Please see [Climate resilient and safe maritime ports](#) and other specific streams on webpage.

[EIT RawMaterials-Eramet water resource innovation challenge 2023](#)

Deadline to apply: 13/09/2023

Award Amount: €50k

The European Institute of Innovation and Technology, under EIT RawMaterials, in partnership with Eramet, invites applications for its water resource innovation challenge. This supports breakthrough solutions designed to deliver rapid, transformative change towards a sustainable mining and metals industry in the focus areas of water use and quality, and environment. The primary focus of the challenge is to minimize the environmental impact of the mining and metals industry, and to promote sustainable development through technology. The proposed solutions should be scalable, technically feasible, economically viable, and environmentally sustainable.

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[HORIZON-HLTH-2024-ENVHLTH-02-two-stage - environment and health](#)

Deadline to apply: 19/09/2023

Award amount: €8M

Horizon Europe, under Global Challenges and European Industrial Competitiveness, and its health cluster, invites applications for HORIZON-HLTH-2024-ENVHLTH-02-two-stage - environment and health. Call round is: The role of environmental pollution in non-communicable diseases: air, noise and light and hazardous waste pollution.

[HORIZON-MISS-2023-OCEAN-SOIL-01 –](#)

Deadline to apply: 20/09/2023

Award amount: €8M

mission ocean and waters and Mission Soil Deal for Europe Joint demonstration of approaches and solutions to address nutrient pollution in the landscape-river-sea system in the Mediterranean sea basin. This supports proposals that address the objectives and impacts of these three missions ocean, water and soil.

[NERC - Engaged Environmental Science](#)

Deadline to apply: 20/09/2023

Award amount: £800k

Apply for exemplar projects that demonstrate excellence in engaged environmental science research (with bursary to develop equitable public partnerships).

[Hello Tomorrow, FR – Deep Technology Global Challenge](#)

Deadline to apply: 23/09/2023

Award amount: €100k

Hello Tomorrow invites applications for its deep technology global challenge. This supports scientists and entrepreneurs in developing new deep technology research and projects. Challenges include sustainable construction and infrastructure, environment, food and agriculture + more.

[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

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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.

[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.

[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.

[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

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to collaborators from a pre-eminent government laboratory in NOAA-GFDL, as well as Princeton University research collaboration and training opportunities.

[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.

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.

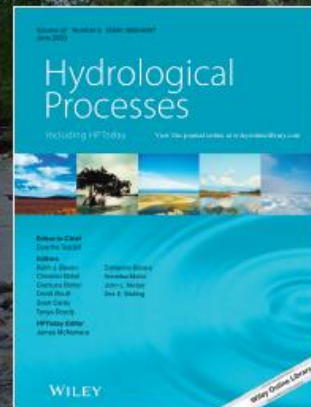
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WILEY

ENABLING DISCOVERY | POWERING EDUCATION | SHAPING WORKFORCES

Hydrological Processes

Hydrological Processes is an international journal that publishes original scientific papers advancing understanding of the mechanisms underlying the movement and storage of water in the environment, and the interaction of water with geological, biogeochemical, atmospheric and ecological systems. We seek papers that clearly articulate the role(s) of hydrological processes.



Impact factor	Journal Citation Indicator	Full Text Views	Submission to First Decision	Submission to 1 st Online Date	Acceptance to Online Publication
3.784	0.9	616,180	6 days	under 6.5 months	24 days

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