Fourteenth National Hydrology Symposium @ Lancaster University (BHS2022)

BHS2022

Theme 1: Future hydrology	Theme 4: Ecohydrology & water quality
Theme 2: Floods & droughts	Theme 5: International hydrology
Theme 3: Natural flood management & partnership working	

(numbers of oral presentations shown in parentheses)

Parallel session (room 1) — *Parallel session (room 2)*

Mon 12 Sep

Time	Session	Room 1	Room 2
09:00-10:00	**Refreshments and setup**		
10:00-10:25	**Welcome & keynote**	Keynote: **Katy Peat**, Head of Adaptation Science (Climate Change), Department for Environment, Food and Rural Affairs	
10:25-11:15	Session 1 & 2	**Session 1: Data science in hydrology** (Chair: Matt Fry) (4)	**Session 2: Community response to flooding** (Chairs: Ann Kretzschmar and Ewan Larcombe) (4)
11:15-11:30	**Break-posters-demos**		
11:30-12:30	Session 3 & 4	**Session 3: Innovative approaches for testing and understanding NFM & nature-based solutions** (Chairs: Kate Heal, Leo Peskett, Josie Geris & Megan Klaar) (5) 1 of 2	**Session 4: Impact of flooding on critical infrastructure & the built (urban) environment** (Chairs: Maria Pregnolato & Lindsay Beevers) (5)
12:30-1:15	**Lunch**		
1:15-3:15	Session 5 & 6	**Session 5: Estimation of extreme floods in a changing environment** (Chair: Thomas Kjeldsen) (10)	**Session 6: International hydrology** (including From hillslopes & wetlands to mega rivers: advances in tropical hydrology and Use of UK-based knowledge overseas e.g., flood forecasting (Chairs: Evangelia Kordomenidi and Rory Walsh) (9)
3:15-3:40	**Break-posters-demos**		
3:40-5:30	Session 7 & 8	**Session 7: Future hydrometry & hydrological monitoring** (Chair: Nick Everard) (10)	**Session 8: Ecohydrology & water quality** (Chairs: Clare Rowland, Sarah Halliday & Sayali Pawar; including Ecohydrology and biogeochemistry open session; Use of UK Land Cover Map data for hydrological applications; Water Futures: surface water quality challenges in a changing climate) (10)
5:30-6:30	**Free social time**		
6:30-7:00	**Reception (with dinner booking)**		
7:00-9:00	**Symposium dinner (optional)**		

Tues 13 Sep

Time	Session	Room 1	Room 2
09:00-10:20	Sessions 9 & 10	**Session 9: Next generation of land-surface and hydrological modelling** (Chair: Simon Dadson) (7)	**Session 10: Risk estimation for droughts, including extreme droughts** (Chairs: Jamie Hannaford, Rob Wilby & Geoff Darch) (7) 1 of 2
10:20-10:50	**Break-posters-demos**		
10:50-11:50	Sessions 11 & 12	**Session 11: How valuable is hydrology in flood warning systems?** (Chair: Linda Speight) (4)	**Session 12: Trees, forestry and NFM** and **Co-producing a monitoring framework for evaluation of Nature-based Solutions for Flood Management** (Chairs: Tom Nisbet and Paul Lunt) (5)
11:50-12:30	**AGM**		
12:30-1:15	**Lunch**		
1:15-2:25	Sessions 13 & 14	**Session 13: Future of the UK flood warning service – how best to expand & standardise approaches** (Chair: Vicky Shackle) (5)	**Session 14: Rainfall–streamflow modelling at ungauged sites for assisting with UK dam spillway flood safety assessments** (Chair: Ian Littlewood) (6)
2:25-3:30	**Flood and Drought Research Infrastructure (FDRI) panel discussion**	FDRI is a once in a generation investment into UK observational hydrology and associated digital infrastructure that will enable research and innovation.	This panel discussion (chaired by Hayley Fowler) will explore how FDRI can help bring transformational change to UK hydrology.
3:30-4:00	**Break-posters-demos**		
4:00-5:30	Sessions 15 & 16	**Session 15: Innovative approaches for testing and understanding NFM & nature-based solutions** (Chairs: Kate Heal, Leo Peskett, Josie Geris & Megan Klaar) (8) 2 of 2	**Session 16: Risk estimation for droughts, including extreme droughts** (Chairs: Jamie Hannaford, Rob Wilby & Geoff Darch) (8) 2 of 2
5:30-6:30	**Free social time**		
6:30-8:30	**Evening meal (optional)**		

Wed 14 Sep

Time		
09:00-3:00	**Hydrology field visits in SE Cumbria (via coaches) for those booking 3 days**	

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List of contributing speakers (co-authors will be shown in the BHS2022 Book of Abstracts) and presentation titles per session

Session 1: Data science in hydrology (Chair: Matt Fry) 10:25-11:15 Mon 12 Sep

Felipe Fileni	Quality control methods for the 15min flow and levels datasets in the UK
Thomas Kjeldsen	On the use of NRFA peaks-over-threshold data for design flood modelling
Georgios Sarailidis	Integrating Scientific Knowledge into Machine Learning using Interactive Decision Trees
Tess O'Hara	Bringing the Crowd to the Cloud - WOW!

Session 2: Community response to flooding (Chair: Ann Kretzschmar) 10:25-11:15 Mon 12 Sep

Ewan Larcombe	The problems with maintenance of land drainage within a complex, urbanised environment at risk of flooding - and associated legislative shortcomings
Dr Rhian Thomas	Climate extremes: risk perceptions, mitigation drivers, public health impacts and experience
Ewan Larcombe	The problem of maintaining flow and quality of ordinary watercourses within an urbanised environment.
Sevilay Topcu	A Comparative Study on Community Risk Perceptions and Infrastructural Measures for Floods

Session 3: Innovative approaches for testing and understanding NFM & nature-based solutions (Chairs: Kate Heal, Leo Peskett, Josie Geris & Megan Klaar) 1 of 2, 11:30-12:30 Mon 12 Sep

Elizabeth Follett	Investigation of varying channel and barrier physical properties on outflow from series of barriers using a sparse input 1D model
Angus Middleton	Low cost optimisation and comparison of NFM options at landscape scale
Keith Beven	The importance of retention times in Natural Flood Management interventions
Stephanie Bond	A hillslope flume for measuring surface roughness
Marianne Piggott	The Natural Flood Management Manual: A framework to use hydrology to deliver effective NFM

Session 4: Impact of flooding on critical infrastructure & the built (urban) environment (Chairs: Maria Pregnolato & Lindsay Beevers) 11:30-12:30 Mon 12 Sep

Maria Pregnolato	Identifying flood and droughts hotspots under global change: a worldwide review
Sarah Johnson	Global analysis of emergency service provision to vulnerable populations during floods of various magnitude under climate change
Hazel Long	Translating new climate projections into guidance for land use planning in Scotland.
Sevilay Topcu	Flash Floods and Their Effects on Critical Infrastructure and Urban Areas in Turkey
Giuseppe T Aronica	Prioritization of Infrastructures' Criticality: A Multi-criteria Decision Analysis vs. Using Vulnerability Curves

Session 5: Estimation of extreme floods in a changing environment (Chair: Thomas Kjeldsen) 1:15-3:15 Mon 12 Sep

David Cameron	Evaluation of the FEH Rainfall Runoff and ReFH2 methods for a gauged catchment in north east Scotland
David Archer	The characteristics of 'Walls of water' floods on Pennine catchments and their transmission downstream
Duncan Faulkner	Non-stationary flood frequency with physical covariates: bridging the gap between theory & practice
Anthony Hammond	A region of influence approach to estimating flood frequencies for climate change scenarios
Zijie Wang	Temporal scaling properties of extreme rainfall and intensity-duration-frequency curves in the UK
Adam Griffin	How do you model or generate 1000 1000-year events?
Catherine Sefton	Recent hydrological extremes in the UK: the 2018/2019 drought and 2019/2020 floods
Gemma Coxon	Using UKCP Local for Pluvial and Fluvial Flood Hazard Estimation Under Climate Change
Gianni Vesuviano	The FEH22 rainfall depth-duration-frequency model
Simon Moulds	Skillful decadal flood prediction using a mode-matching approach

Session 6: International hydrology (including From hillslopes & wetlands to mega rivers: advances in tropical hydrology (contributed by Ian Douglas); Use of UK-based knowledge overseas e.g., flood forecasting (contributed by Matthew Cowdell) 1:15-3:15 Mon 12 Sep

Mike Law	Pragmatic hydrology in data-poor environments for Pacific islands infrastructure projects
Fazir Khan	A novel framework for the application of this NOAA hydrological data with for use in the Caribbean.
Daryl Hughes	Improving hydrological predictions in the data-sparse Essequibo River basin, northern Amazonia
Eva Kordomenidi	Multi-objective optimisation for reservoir management -A case study in tropical South East Asia
Paul Wass	Real time reservoir control on the River Lee using a forecasting system
Linda Speight	Using global flood forecasts to support international humanitarian operations for tropical cyclones
Tom Beskeen	The Black Drin basin: A panoply of hydrological modelling challenges in the Balkans
Eva Kordomenidi	Multi-objective optimisation for reservoir management -an industry perspective
~~Cordula Wittekind~~	~~Challenges and opportunities for climate-safe environmental flow protection; lessons from England~~
Rory Walsh	Hydrological implications of changes in rainstorm size-frequency in Sabah (Malaysian Borneo)

Session 7: Future hydrometry & hydrological monitoring (Chair: Nick Everard) 3:40-5:30 Mon 12 Sep

Robert Wilby	How hard can it really be to sustain a national water temperature indicator?
Richard Dallison	Future water availability for run-of-river hydropower in the UK and Ireland under climate change
Nick Everard	What if we could measure streamflow from space...?
Matt Fry	A hydrological data commons for research
Mike Summers	Exploring the current and future user requirements for water quantity data
Dr Gareth Old	Floods and droughts research infrastructure (FDRI): enabling the hydrological research community
David Fadipe	Developing new pluvial flood maps for Scotland
Dr Annie Ockelford	Get HIP! - the EA's Flood Hydrology Improvements Programme (FHIP)
Dr Jonathan G Evans	COSMOS-UK: The National Soil Moisture Observation Network – Available Data and Applications
Harley Dixey	Investigating the effectiveness of image enhancement for improving tracer detection in LSPTV

Session 8: Ecohydrology & water quality (Chairs: Clare Rowland, Sarah Halliday & Sayali Pawar; including Water Futures: surface water quality challenges in a changing climate; Ecohydrology and biogeochemistry open session; Use of UK Land Cover Map data for hydrological applications) 3:40-5:30 Mon 11 Sep

Nadeem Shah	The effects of land use, and particularly forestry, on aquatic carbon transport
Rosie Hampson	Hydrology for intertidal habitat restoration
Tamsin Lockwood	The role and impact of Community Flood Groups for effective NFM management and maintenance
Dr James Miller	FEH and land cover map – improving and exploring new methods for estimating floods
Clare Rowland	An introduction to the UK Land Cover Map
Shaini Naha	Modelling climate change impacts on water quality at catchment scale using HYPE
Karolina Krupska	Forecasting of bathing waters quality in England – improving the present by looking ahead.
Ben C Howard	Restoring the liver of the river: instream wood as a nature-based solution to nutrient pollution
Muyeol Jung	The impact of the construction of eight barrages on water quality and diatom assemblages in the Nakdong River, South Korea
Benjamin Exton	An overdue revisiting of sewage fungus: Hydrological, water quality and microbial controls on growth

Session 9: Next generation of land-surface and hydrological modelling (Chair: Simon Dadson) 09:00-10:20 Tue 13 Sep

Simon Dadson	Hydro-JULES: Next generation land-surface and hydrological predictions
Piotr Morawiecki	A mathematical framework for the unification of rainfall-runoff models
Keith Beven	When might a model be considered as fit-for-purpose (or not)?
Michael Eastman	Assimilating observed flows to improve rainfall-runoff simulation
John Wallbank	X-band radar precipitation estimates assessed using a hydrological model for mountainous catchments
Ben Smith	National-Scale Physically-Based Hydrological Modelling with UKCP18 Climate Projections
Rhiannon Bryan	Grand Union Canal Strategic Resource Option Modelling

Session 10: Risk estimation for droughts, including extreme droughts (Chairs: Jamie Hannaford, Rob Wilby & Geoff Darch) 1 of 2, 09:00-10:20 Tues 13 Sep

Mike Law	Climate Change Adjustment of Long Time Series Rainfall
Amulya Chevuturi	Drivers of extreme UK droughts
Adam Griffin	Generating widespread drought event sets for present and future using empirical copulas
Ali Rudd	Hydrological drought characteristics at different levels of warming
Maliko Tanguy	How will climate change affect spatial coherence of droughts?
Ellie Willmott	Drought risk assessment tool – DRAT – hydrological data use in regulatory decision making
Tom Beskeen	Development of a rainfall-runoff model based drought forecasting tool applied in the Anglian region

Session 11: How valuable is hydrology in flood warning systems? (Chair: Linda Speight) 10:50-11:50 Tues 13 Sep

Charlie Pilling	Surface Water Flooding: Identifying and warning for extreme events now and in the future
Paul Wass	Forecasting to support reservoir infrastructure repair and development
Paul Wass	Real time reservoir control on the River Lee using a forecasting system
Dr. Helen Griffith	The role of land surface in enhancing or suppressing Atmospheric River driven floods
~~Joy Ommer~~	~~A need for strengthening community resilience: insights from the floods in Germany in 2021~~

Session 12: Trees, forestry and NFM and Co-producing a monitoring framework for evaluation of Nature-based Solutions for Flood Management (Chair Tom Nisbet) 10:50-11:50 Tues 13 Sep

Dr Paul Lunt	Benefits of partnership working to co-produce a county flood management monitoring strategy
Sarah Collins	Modelling the impact of land use change on floods and drought in a large, permeable catchment
Tom Nisbet	An evaluation of the flood regulation service of GB woodlands
Steve Birkinshaw	The effect of forest on river flows over a 55-year growth cycle in the Coalburn catchment
Thomas Myerscough	Working Title - Wyre Catchment NFM - The development of the UK's first green investment NFM project.

Session 13: Future of the UK flood warning service – how best to expand & standardise approaches (Chair: Vicky Shackle) 1:15-2:25 Tues 13 Sep

Neil Ryan	Developing the future flood forecasting and warning service in England
Rob Lamb	The UK Flood Hydrology Roadmap: a 25-year plan of action.
Jo Cullen	The EA Flood Hydrology Improvements Programme's pathway to reducing uncertainty in flood hydrology
Paul Smith	Build your own flood forecasting system
Lucile Verrot	Evaluating operational flood forecasts and alerting systems: methods, challenges and opportunities
~~Lucile Verrot~~	~~Evaluating operational flood forecasts and alerting systems: methods, challenges and opportunities (in twice)~~

Session 14: Rainfall–streamflow modelling at ungauged sites for assisting with UK dam spillway flood safety assessments (contributed by Ian Littlewood) 1:15-2:25 Tues 13 Sep

Dr Nick Mandeville	Reversing the traditional sequence of the two main modules in quickflow rainfall-runoff models
Duncan Faulkner	Options for improving probable maximum flood estimates for UK reservoir safety
Ian Littlewood	Unit Hydrographs and UK reservoir spillway flood hydrology
Tracey Haxton	Exploring the estimation of the PMF using ReFH2
Andrew Black	Rain gauge under-catch and catchment water balance in the mountainous hydrometric wilderness
Amy Green	PYRAMID: Platform for dYnamic, hyper-resolution, near-real time flood Risk AssessMent Integrating repurposed and novel Data sources

Session 15: Innovative approaches for testing and understanding NFM & nature-based solutions (Chairs: Kate Heal, Leo Peskett, Josie Geris & Megan Klaar) 2 of 2, 4:00-5:30 Tues 13 Sep

Nick Chappell	Cumbrian NFM effectiveness monitoring network
Josh Wolstenholme	Modelling the efficacy of leaky dams using a Landscape Evolution Model
Tim Howson	The evolution of stone and timber dams, as part of peatland restoration, in eroded gully systems
Emma Shuttleworth	A ten-year trajectory of hydrological recovery in a restored blanket peatland: implications for NFM
Tim Allott	Peatland gully blocking and natural flood management: a micro-catchment study
Salim Goudarzi	Natural Flood Management through Peatland Restoration: Scenario Modelling in the Glossop catchment
Wouter Buytaert	Innovation in hydrology: from low cost sensor prototypes to FDRI
Imogen Barnsley	Testing the application of Natural Flood Management in a groundwater-dominated catchment and its resilience to future climate changes using the SHETRAN model.

Session 16: Risk estimation for droughts, including extreme droughts (Chairs: Jamie Hannaford, Rob Wilby & Geoff Darch) 2 of 2, 4:00-5:30 Tues 13 Sep

Steven Wade	Regional Climate Data Tools: Using stochastic data and UKCP18 to understand drought risks
Simon Parry	The future of UK drought: Contrasting fortunes projected for low river flows and groundwater levels
Wilson Chan	Current and future extreme UK droughts
Timo Kelder	UNSEEN approaches to generating extreme droughts for resilience planning
Lucy Barker	Making sense of drought risk: current and future approaches to communications in England and Wales
Robert Moore	Recent developments of the PDM rainfall-runoff model for flood and drought management
Gordon Aitken	Partitioning Model Uncertainty in Multi-model Ensemble River Flow Climate Change Projections
Sayali Kunal Pawar	What does the future hold? Using Standardised Precipitation and Evapotranspiration Index (SPEI) to project drought in Scotland.

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