British Hydrological Society

Peter Wolf Symposium

3rd & 4th May 2017

Centre for Ecology & Hydrology

Wallingford

Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

British Hydrological Society

Contents

Organising Committee

Lucy Barker, Olivia Hitt and Steve Turner

Centre for Ecology & Hydrology, Wallingford

Useful Telephone Numbers

CEH Reception	01491 838800
Shillingford Bridge Hotel	01865 858567

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Programme – Wednesday 3rd May

10.00 – 10.30	Registration
10.30 – 11.00	Welcome and Introductions
	Prof. Alan Jenkins: Deputy Director, Centre of Ecology & Hydrology
	Peter Ede: President-elect, British Hydrological Society
11.00 – 11.35	**Keynote:** Hydrology in the Anthropocene
	Dr. Anne van Loon: University of Birmingham
11.35 – 12.35	Session 1 – Chair: Lucy Barker
	Miles Clement: Multi-temporal flood mapping from space: Insights into the 2015-16 winter storms
	Christopher Rhodes: How can we assess the resilience of our current water supply system against droughts not previously observed?
	James Fidal: Comparative performance of rainfall-runoff models on urban catchments
	Florence Lloyd: Quantile regression technique for trend analysis of precipitation for flood risk assessment in South Wales, UK
12.35 – 13.35	**Lunch**
13.35 – 14.35	Session 2 – Chair: Olivia Hitt
	Ioanna Panagea: Yield response of Mediterranean rangelands under the effect of climate change
	Santos José González-Rojí: Evaluating daily precipitation downscaled using SDSM and WRF + WRFDA models over the Iberian Peninsula
	Harriet Robson: Anglian Water system supply forecasting using AQUATOR water resource modelling software
	Josie Baulch: Mechanisms of drought in sub-Saharan Africa
14.35 – 15.10	**Keynote:** The dirty dozen of freshwater sciences
	Prof. Rob Wilby: Loughborough University
15.10 – 15.35	Tea/Coffee
15.35 – 16.10	**Keynote:** Hydrology with impact: how does hydrological science inform decision-makers?
	Dr. Glenn Watts: Environment Agency
16.10 – 17.00	Session 3 – Chair: Steve Turner
	Fergus McClean: Large scale 2D Flood modelling using cloud computing
	Ben Smith: Identifying areas at risk of multisource flooding
	Iskra Mejía-Estrada: Modelling and interaction of meteorological, hydrological and hydrodynamic processes in a flash flood event
17.00 – 19:00	Poster Session
19.00 – 22.00	Symposium Dinner
	The Queen's Head, 72 The St, Crowmarsh Gifford, Wallingford OX10 8ER

List of Posters

Understanding drought propagation in the UK in the context of climatology and catchment properties
Lucy Barker *Centre for Ecology & Hydrology*

Obtaining natural flow series data in a modified upland catchment: A comparison of different techniques
Dominic Carver *Newcastle University*

Modelling flow towards a radial collector well: a comparison of analytical and numerical approaches
Sarah Collins *British Geological Survey*

Data assimilation for fluvial inundation forecasting
Elizabeth Cooper *University of Reading*

Seasonal forecasting of reservoir inflows in Central Asia
Sam Dixon *Loughborough University*

Water Management at Canal & River Trust
Sarah Edwards *Canal & River Trust*

Evaluation of Seasonal Ensemble Streamflow Prediction Skill for the UK
Shaun Harrigan *Centre for Ecology & Hydrology*

Defining the Hydrology of Heavily Urbanised Catchments: The Corn Brook, Manchester
Holly Hart *JBA Consulting*

Benchmarking hydrological model predictive capability for UK River flows and flood peaks
Rosie Lane *University of Bristol*

Observations relating extreme multi-basin river flows to very severe gales
Paolo de Luca *Loughborough University*

Flood Forecasting at the Environment Agency
Rosie Peel *Environment Agency*

Methods to assess uncertainties in flood forecasting: a Malaysian case study
Francesco Rossato *HR Wallingford*

Investigating uncertainties in ensemble hydrological reconstructions of drought events
Katie Smith *Centre for Ecology & Hydrology*

Data Assimilation for REsilient City (DARE): urban flooding
Sanita Vetra-Carvalho *University of Reading*

Uncertainties and limitations of 2D-only breach hydraulic modelling: a case study of Thorpe Bay, Southend-on-Sea
Natalie Yates *Peter Brett Associates LLP*

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Programme – Thursday 4th May

08.45 – 09.00	Arrival and registration. Tea/Coffee.
	Conference Centre, Howbery Business Park, Crowmarsh Gifford, Wallingford OX10 8BA
09.00 – 09.05	Welcome and briefing
09.05 – 10.15	Presentations
	Sam James: Overview of HR Wallingford
	Darren Lumbroso: Water management – translating research into practice
	Ralph Ledbetter: Water resources modelling at HR Wallingford
10.15 – 10.30	Tea/Coffee
10.30 – 11.50	Delegates break into three groups for tours around physical modelling laboratories and ship simulator suite
11.50 – 1200	Closing remarks and group photograph
12.00 – 13.15	Lunch
	CEH Conference Room
13.15 – 13.30	*Nick Everard:* Introduction to ADCP gauging with the ARC-Boat
13.30 – 15.45	Demonstration at Wallingford Bridge, River Thames
15.45 – 16.00	Close

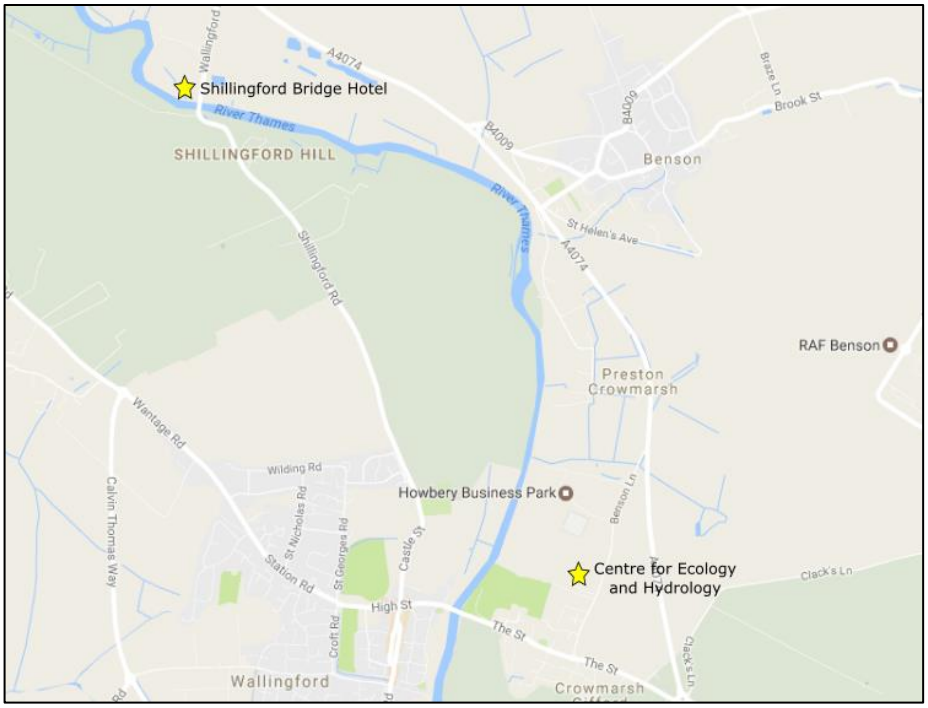
Locations

Centre for Ecology & Hydrology Maclean Bldg., Benson Ln, Crowmarsh Gifford, Wallingford OX10 8BB

HR Wallingford Howbery Business Park, Crowmarsh Gifford, Wallingford OX10 8BA

The Queen's Head 72 The St, Crowmarsh Gifford, Wallingford OX10 8ER

Shillingford Bridge Hotel Shillingford Rd, Oxon OX10 8LZ



Getting to CEH Wallingford

Centre for Ecology & Hydrology
Maclean Building, Benson Lane
Crowmarsh Gifford
Wallingford
Oxfordshire
OX10 8BB

By road

CEH's Wallingford site is in the village of Crowmarsh Gifford, about 20-30 minutes drive from the following motorway junctions: M4 J8/9, M4 J12 & M40 J6 (from London and the south-east); M4 J13 (from the west/south-west), and M40 J8 (from the midlands/north). From the Crowmarsh Roundabout (junction of the A4130 and A4074), travel west towards Wallingford and then turn right at the mini-roundabout in Crowmarsh Gifford, signed Maclean Building. Express bus services (X39/X40) run twice an hour from central Oxford (journey time 25 minutes) and Reading station (40-45 minutes) to Crowmarsh Gifford.

By rail

The nearest mainline station is Didcot Parkway (six miles). Didcot is about 40 minutes from London Paddington Station. Taxis are available at the station.

By air

London Heathrow airport is about 40 miles / 65 km away. There is a rail-air coach link to Reading station (on the London Paddington to Didcot line) or the Heathrow Express train goes to London Paddington.

About CEH

The Centre for Ecology & Hydrology (CEH) is a world-class research organisation focusing on land and freshwater ecosystems and their interaction with the atmosphere.

Uniquely, CEH integrates UK-wide observation systems and curiosity driven research, from the smallest scale of genetic diversity to large-scale, whole-Earth systems. We work across disciplines and facilitate academic, public, private, and voluntary sector partnerships. CEH's extensive, long-term monitoring, analysis and modelling deliver UK and global environmental data, providing early warnings of change and management solutions for our land and freshwaters.

Services CEH offers include:

- flood risk modelling
- air quality measurements and modelling
- hydrometeorology
- water resources management
- ecology and land management
- environmental data management
- information products
- air sampler systems

CEH has a range of expertise across topics and different spatial scales. We take an integrated approach to research and learning on soil, water, air, and biodiversity. Our training is solutions-focussed in response to issues such as flood risk management, pollution control or sustainable land management. Our training is applied and can be tailored towards your needs.

Keynote Speakers

Dr. Anne van Loon *University of Birmingham*

Anne is a hydrologist that has been researching drought around the world for more than 10 years. In her PhD and postdoctoral projects, both at Wageningen University in the Netherlands. She works on understanding the propagation from meteorological to hydrological drought in different climates and catchments on a range of drought-related projects, as well as lecturing at the University of Birmingham. Currently, her focus is on the feedbacks between drought and society, by investigating the influence of human activities on drought and the response of society to drought impacts. Before going into the drought world, she worked for a consultancy company on projects about water management in Kenya and Turkey, for an NGO investigating the effect of forest plantations on soil and water in Ecuador, and on an MSc project on mangrove restoration in Vietnam. Anne says, "I have a very broad interest and always try to combine sound science (by using robust data-analysis and modelling approaches) with societal relevance (by focussing on local people's needs)."

Prof. Rob Wilby *Loughborough University*

Rob's research focuses on the management of risks to freshwater and city environments under climate variability and change. Part of this work is about reconstructing drought and flood indices to assess the severity of extreme events or undertaking high-resolution monitoring of water temperatures to evaluate measures for keeping rivers cool. He also co-developed the Statistical DownScaling Model (SDSM). This public domain scenario generator has been used in numerous climate change impact assessments. His latest research is exploring smarter approaches to climate risk assessment and decision making under deep uncertainty about the future climate. This shifts the focus onto better understanding then managing the climate vulnerability of human and natural systems. Other live projects include seasonal river flow forecasting for hydropower plants in Central Asia, modelling extreme rainfall hazards in East Africa, or forecasting surface water flooding and human heat stress at city scales. His recently published book Climate Change in Practice seeks to provoke readers into thinking more deeply about the technical, socio-economic, and moral questions surrounding the deployment of climate science.

Dr. Glenn Watts *Environment Agency*

Glenn is Deputy Director for Research at the Environment Agency. His team commissions applied research and provides scientific and technical advice and analysis across a wide range of scientific subjects, including water, waste, biodiversity, land, and air quality. Glenn's PhD from the University of Bristol was in modelling hydrology and soil erosion in semi-arid environments. After a post-doc looking at gully headcut recession, Glenn worked as a regional hydrologist before moving into water resources planning at the Environment Agency. He led the development of the Environment Agency's 2001 water resources strategy and introduced consistent approaches to water supply and drought planning. He led the Environment Agency's response to the 2004-06 drought. In 2009 Glenn moved to the Environment Agency's research group, specialising in climate change impacts and adaptation, particularly in water. He developed the LWEC water climate impact report card and is leading the user needs component of an EU-funded project looking at new ways to make information on climate change impacts available across Europe. Glenn is a visiting senior research fellow in the Department of Geography, King's College London.

Field Visits

HR Wallingford

HR Wallingford is an independent civil engineering and environmental hydraulics organisation. They deliver practical solutions to the complex water-related challenges faced by their international clients. Their unique mix of know-how, assets and facilities includes state of the art physical modelling laboratories, a full range of numerical modelling tools and the world-renowned skills and expertise of our staff.

Their state of the art physical modelling facilities include: wave basins, wave-current or current only basin, wave flumes, general purpose flow flume, hydraulic structure and river floodplain modelling area and specialist facilities for tsunami generation, flood protection product testing, air in pipelines and aircraft ditching studies.

ADCP Boat Demonstration

Nick works in the Hydrometry (Science and Operations) team in Monitoring Technical Services, which is part of National Operations at the Environment Agency. Nick is the lead for technologies used to make measurements of river flow rates (gaugings) – the primary indicator of the severity and likely impact of both flood and drought, and crucial for the successful management of rivers for ecology, water quality, navigation, and recreation.

Nick introduced to the Environment Agency Acoustic Doppler Current Profiler (ADCP) technology, which has transformed their ability to measure rivers, making the task faster and safer for field staff and greatly improving the quality of results. Nick joined Thames Water in 1987, and was then with the NRA, then the Environment Agency, always working in Hydrometry and Telemetry, observing and practising the skills. Fascinated by gadgets and technology, Nick has been leading for the Agency on ADCP technology since its introduction in 2002. The ADCP uses pulses of sound to measure the depth and speed of water in the river. It also tracks its own position across the river, using both acoustics and high-precision GPS.

Note:

The field trips will involve walking and a period of time outdoors. You should come prepared with waterproofs, sturdy shoes, sun cream, and a sun hat.