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The European FLOOD-CBA project



CIRCULATION – THE NEWSLETTER OF THE BRITISH HYDROLOGICAL SOCIETY 1

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CORRECTION

In the last issue of Circulation *the caption for the beautiful photo of a volcano in the Chilean uplands was wrongly labelled 'Volcan Villarrica: it is in fact "Volcán Osorno and the Petrohue Waterfalls"*

My apologies – Ed.

The FLOOD-CBA project

IS A EUROPEAN INITIATIVE FUNDED BY THE Civil Protection Financial Instrument of DG-Humanitarian Aid and Civil Protection. It aims to establish a sustainable Knowledge Platform for the use of stakeholders dealing with the cost-benefit analysis (CBA) of flood risk management measures in the context of different socio-economic environments within the EU.

The project involves a consortium of six partners from Greece, UK, Romania, Portugal, Germany and Spain and has a duration of 24 months starting from the 1st of January 2013. Currently the project team is involved in consulting those involved with investment appraisal in their countries as to their needs for models and data to improve decision making. This will be followed in 2014 by the design of the web-based 'knowledge platform' making data and methods freely available to all across Europe.

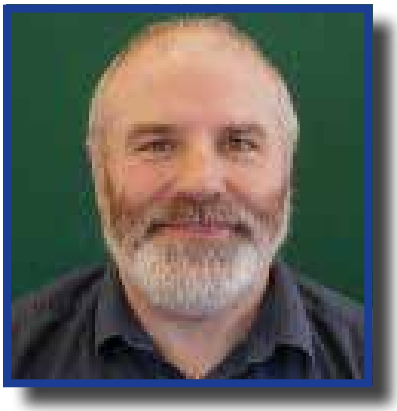
A website describes the project (**www.floodcba.eu**) and members of the BHS and others are invited to study the project's specification and become involved in its activities.

Register of Consultants 2014

Members are reminded that they can advertise their services on the BHS Web Site (www.hydrology.org.uk), whether as an Independent Consultant or as part of a larger company, with the opportunity to update the advertised information annually. For this service we charge the modest fee of £30 and £150, respectively.

Further details can be obtained by contacting Tim Fuller (Tim.Fuller@ice.org.uk).

President's piece



HELLO!

For those of you who don't know me (and unfortunately maybe providing ammunition for the future to those of you who do) I thought I'd better introduce myself, as your newly elected President. To me falls the honour and privilege of heading-up your Society for the next two years.

Before I start, however, I'd like to take this opportunity to personally thank Bob Sargent for his work as President for the past two years. Bob's support for BHS activities extends back many years (at least to 2000) but his association with our Main Committee is not wholly exhausted since, following changes to the Statutes agreed at the AGM in Birmingham on 11 September, he may be called upon to assist myself and the Committee as Past President during this coming year, during which I then need to think about my own successor and the new President Elect.

As you can see from my photo, I'm no 'spring chicken'. My career in Hydrology started (directly after a BSc in Environmental Sciences from University of East Anglia) at the height of the drought in 1976. I set the precedent for many to follow as the first graduate to be employed by Anglian Water as a Field Technician. I spent nearly five years changing charts (this was the pre-digital age) and punched-tapes, dipping wells, down-hole geophysical logging and monitoring borehole pumping tests, before being moved into the office to do some analysis of the latter. I spent almost a year trying to reconcile the flow data records held by Norfolk & Suffolk River Division with those held by the Water Data Unit (now the National River Flow Archive – appropriate to recall at this time as we celebrate 30 years of the NRFA) filling data gaps and correcting periods of inappropriate rating application, before moving on to model (on an IBM mainframe running Fortran programs as batch processes overnight – no desktop computers yet available to provide instant answers or flag programming errors!) the potential impacts of abstraction from the River Gipping to augment the water supply to Ipswich.

In 1985 I was offered the opportunity to take my first steps into management: the only problem was that this required me to move my family from Norfolk (and some of the slowest rivers in the country) to north-east Scotland (and the fastest — the Spey). But move we did, and for six years I led a small Hydrometry team operating out of Elgin before further promotion to Chief Hydrologist for North East River Purification Board, in Aberdeen. My tenure covered the period when flood risk assessment was first rolled out in Scotland through PPG7.

In 1996, the Scottish Environment Protection Agency was formed, bringing together staff from 63 predecessor bodies: the management structure may have changed but my own role changed little until the Water Framework Directive (2001) forced Scotland to consider comprehensive control of abstraction and impoundment for the first time, and I was tasked with developing a team of surface- and ground-water hydrologists to establish the hydrological rules to inform the new regulations.

Internal restructuring of SEPA Hydrology brought me back full circle in 2009 when I was appointed to manage the Hydrometry Unit, with a staff of 48 undertaking the hydrometric monitoring across Scotland.

So, I'm a practitioner: with a lowly academic record but still the interest and passion for the broad church that we call 'hydrology' to keep myself (and those around me) informed of ongoing research and new technologies and developments in our science.

I do not have any great vision for the coming two years: one of my colleagues on Committee asked me recently what is my 'mission statement' for my term as your

President? I have to say that I have none, other than to uphold the Statutes of the Society:

- To promote interest and scholarship in both the scientific and the applied aspects of hydrology and to foster the involvement of members in activities directed to the promotion of such scholarship.

As I stated at the outset, I consider it an honour and privilege to act as your President.

But, enough about me!

One of my first duties is to bring to your attention the next National Symposium. BHS2014 is scheduled to be held 2–4 September 2014 at the University of Birmingham. The main conference theme has been made deliberately broad and controversial to promote interest from hydrology practitioners as well as academics. I hope that "Challenging Hydrological Theory and Practices" will prompt many of you (academics and practitioners alike) to submit abstracts, develop presentations and posters, and (maybe) even submit a paper for a proposed Special Issue of *Hydrology Research: an International Journal*. Planning is still in the early stages so, if you have any ideas as to themes for sessions, or even the vestige of your own presentation already, please inform either myself, your Hon. Secretary (Harry Dixon), or the local organisers at Birmingham (see later article) as soon as possible. One change that is already planned is that, rather than 'field visits' we hope to have an afternoon of practical Hydrometry, offering the chance for hands-on experience as well as simple demonstrations.

The times we live in are becoming very demanding of hydrologists: whether it's concerns over increased demands for water supply to service the rising population, assessment of flood risk and provision of warning services, assessing the impacts of our changing climate, or the environmental impacts of human activities, the hydrology and water resources of our planet are so varied, and changing, that our advice is being increasingly sought and the need for hydrologists will continue to grow. Our meetings (especially these larger symposia which attract speakers and listeners alike from around the world) offer opportunities to communicate more widely and to learn from each others' experience (and mistakes): I look forward to meeting many of you there.

I almost started this article with the gaffe that this was the President's Peace: I don't expect much of that for the next two years! I only hope that, when I hand over to my own successor, your Society is as healthy then as it is now.

Nigel Goody
President

BHS 31th Annual General Meeting

The 31st AGM of the British Hydrological Society was held on 26th September 2013, at Birmingham University

President's Introduction

Bob Sargent welcomed members to the AGM, thanking those who had made the effort to attend. He went on: "It is my pleasure to give my second, and final, President's report to the AGM. During the year the Society has worked to provide help and benefit to its members, increase the profile of hydrology, and benefit society through its work.

We have re-launched the BHS website in the past year and refreshed its appearance and functionality. This remains an ongoing task and we hope to include regional pages and a mobile version in the near future. Your help and feedback would be greatly appreciated so that we can continue to provide a useful website that members and other can use as a resource for British hydrology.

I am very pleased that we have been able to continue with MSc studentships for members studying hydrology in a British university and this year a further six students received support. We are very grateful to the JBA Foundation for their contribution to the studentship funds and remain hopeful that others will see the value of supporting the

next generation of hydrologists.

Increasing the profile of hydrology in the minds of the media and the general public remains an aim of the Society and we have started an initiative to provide hydrologists to speak to journalists and help with interpretation of hydrological events for the media. We asked for volunteers to offer their help and expertise on a range of hydrological subjects and if you would like to help with this initiative, please contact any committee member.

On the international side, the Society has contributed to the formation of a network of national hydrological groups as part of an IAHS initiative, and has also linked with individual national societies including Germany and Malaysia. I hope these links will develop in the coming years and provide useful to our members. The BHS Linked-In discussion group shows how little hydrologists regard national boundaries and the value BHS can add to hydrology in a global context.

This is my second and final year as President and I want to take the opportunity to thank the many people who have helped and supported me in the last two years. The committee has taken on a range of initiatives and committee members have been invaluable in providing a wide range of hydrological experience for the Society to draw on. Tim Fuller, Celia Kirby and John Griffin have provided excellent support and put up with my variable input without any complaint. And I want to give special thanks to the many people who work to provide regional BHS events and provide members with local meetings and visits and effectively support the national event programme. I am also very grateful to Nigel Goody who has continued to be our treasurer whilst also taking on the role of President Elect over the past year and I wish him every success in his term as President over the next two years.

Finally, the outgoing President is permitted to award the President's Prize to a hydrologist who he feels has advanced hydrology significantly. It is therefore my great pleasure to award the 2013 President's Prize to **Keith Beven**, Distinguished Professor at Lancaster University, for his work in hydrological modelling , particularly rainfall runoff modelling, and uncertainty prediction. Keith has advanced our understanding of these crucial issues significantly over the years he has been at Lancaster and I am delighted to be able to recognize his work."

Bob Sargent
Past President

[Post meeting note: the President's award includes a modest cash prize and Keith has generously donated this to the MSc scholarship fund. We are very grateful for this kind gesture which will go to help the Society support next generation of hydrologists.]

Report of the 30th AGM

The report of the 30th AGM held on 26th September 2012 was published in *Circulation No 115* (pages 15-17). The report was approved by Bob Sargent and Nigel Goody.

Honorary Secretary's Statement 2012-2013

The last year has seen a range of BHS National and Regional meetings. The 2012 AGM was held in Newcastle in September during a National meeting on 'Hydrological Challenges and Emerging Solutions in Urban Areas'. Since then there have been six National meetings organised or supported by the Society. A meeting on 'Urban Aquatic Ecosystems' was convened jointly with the RGS Biogeography Research Group in April in Loughborough. A meeting on 'Ecohydrology' was held in Birmingham later in April and a July meeting in Lancaster focused on 'Data-based mechanistic methods for hydrological modelling and forecasting'. Added to these, and the meeting on 'Wetland Hydrology' being held in tandem with this 2013 AGM, the Society has supported a National meeting on the 'Impacts of changes in the hydrological cycle' convened jointly with the Royal Meteorological Society in June and a one-day conference in Oxford on 'Changing Extremes in Hydrology' organised by Hydro-GIS. Over the year there have been a total of 17 regional meetings organised by the Regional Sections and Scottish Hydrological Group.

The Peter Wolf Early Career Hydrologist's Event was hosted by Imperial College in March this year, attracting attendees from across the UK and oversees. Preparations are already underway for the 2014 event which is to be held in Cardiff, the 14th different University to host the

event since the Society's first postgraduate symposium was held in 1990.

On behalf of the Society, I would like to thank all of those involved in organising, speaking at, chairing, administering and reporting on meetings. Without their efforts the Society would not be able to offer its regular programme of meetings on a broad range of topics. Thanks must also go to all Members who have attended meetings over the year. The majority of meetings attracted strong audience numbers, with 87 people attending the 'Ecohydrology' meeting in April. Again, without such support, the Society would not be able to offer its meeting programme.

The meeting programme for 2013-2014 is becoming populated both national and regionally, with the Society convening or supporting meetings on a wide range of topics including: 'groundwater flooding'; 'hydrometric data'; 'hydroecology and water abstraction'; 'hydrology for flood risk management'; 'surface runoff and bathing water quality' and 'London's sewers'. Full details are available on the website and in *Circulation*. However, there remains plenty of space in the calendar and I would encourage Members to suggest topics for meetings so that we may offer a programme that matches the needs and interests of the whole Society. The Committees are always keen to hear from Members who would like to help convene meetings and I urge you to contact either myself or one of the Regional Meeting Secretaries if you would like to volunteer.

This year's Student Award for the best undergraduate dissertation was launched in April and 11 entries were received by the July deadline. A judging panel made up of members of the Society's Main Committee considered the entrants over the summer and I am grateful for their assistance in assessing the projects. This was the 11th year of the Award and I'm pleased to report that the quality of submissions to the competition remained very high. Entries were received on topics which included: 'downstream changes in water quality'; 'the impact of motor boat wash on river bank erosion'; 'the water balance of the Amazon' and 'channel pattern analysis'. The winners were announced at the AGM (see separate report on page 16).

Further development of the Society's new website, launched in 2012, continued through the year. Changes have been made to, amongst other areas, the regional and meetings pages and the publications section has been greatly enhanced through the scanning and uploading of every past issues of *Circulation*. We hope Members find this an interesting and useful resource and I would like to record thanks to John Griffin and Celia Kirby for their work maintaining and developing the site. Thanks also go to Joe Pearce for continued maintenance of the Society's Mailbase facility.

The Society's publications have continued with four interesting and informative editions of *Circulation* published. On behalf of Members I would like to thank Celia Kirby for her continued editorial work. The Committee would like to remind Members that contributions to *Circulation* are encouraged. The newsletter is authored by Members, for the interest Members, and articles on all matters hydrological are welcome.

Ian Littlewood's appointment as BHS Editor of Hydrology Research is to come to an end soon. The Society's thanks are registered to Ian's for his work on the journal. The Main Committee are now seeking a Editor to take over the role from Ian and those interested are asked to contact the President.

Finally, I'd like to thank both the Main and Regional Committees for their considerable efforts over the year, without which the Society would not be able to function.

Harry Dixon
Hon.Secretary

Honorary Treasurer's Report

Nigel Goody presented the draft financial statement for the end-of-year 2012-13. There were no queries raised.

In presenting the draft budget for 2013-14 Nigel sought the agreement of members attending the AGM for proposed amendments to fees, notice of which had been previously circulated with the AGM papers. There was unanimous agreement to these proposals, for which Nigel thanked all attending on behalf of his successor, Claire Samuel.

Amendment of Society Statutes

Bob Sargent informed the meeting of the proposed changes to the Society's Statues, details of which had been circulated to Members in August with *Circulation No. 118* along with ballot

papers. The Statues of the Society had last been updated in September 2007 and the Committee felt that minor amendments were needed. The proposed changes were as follows:

(i) Following increased scrutiny by Charity Commissioners, recognition of the public benefit offered by the Society.
(ii) Clarification of Committee representation: enabling the Past President to attend Committee, if required, to ensure business continuity for a period of up to 1 year following their term of office.
(iii) Noting the need for independent review of the accounts and Annual Report prior to submission to the Charity Commissioners.

In line with Statue 11, amendments require the approval of 60% of members voting in a postal or electronic ballot. Bob reported that 30 votes had been cast in the postal ballot and that the motion was carried by 29 votes to 1. The Charity Commissioners would now be informed of the changes.

Changes to Committee

Bob Sargent informed Member of changes to the Committee which came into effect at the AGM. A call for nomination to the Main Committee was circulated to all Members with the May edition of *Circulation*. Under the Statutes of the Society the following elected officers and members of the Main Committee are due to retire at the 2013 Annual General Meeting:

Bob Sargent, President
Nigel Goody, Honorary Treasurer
Edmund Penning-Rowsell, Ordinary Committee Member

In addition, **Neill Brauders** has resigned his current Ordinary Committee Member position on the Committee to take up the role of ICE Representative, acting as the Society's link with the Institute's Water Panel.

The position of Honorary Secretary was also due for election as it was unfilled following retirement of the Claire Walsh at the Annual General Meeting in September 2012. Harry Dixon had been co-opted into this position since December 2012.

One nomination for each of the Honorary Treasurer and Honorary Secretary positions were received, namely **Claire Samuel** for Honorary Treasurer and **Harry Dixon** for Honorary Secretary. As no alternate nominations were received for these positions Claire Samuel is duly considered elected to the role of Honorary Treasurer for a period of two years. Similarly, Harry Dixon is considered elected to the role of Honorary Secretary for the remaining one year portion of the term of office. Only one nomination, that of **Tim Hess**, was received for the Ordinary Committee Member positions. As this position was unopposed, we are pleased to welcome Tim to the Main Committee as an Ordinary Member.

The lack of nomination this year for the Committee Member positions is very disappointing. Members are reminded that the Society is reliant on the efforts of its Committees both National and Regional and it is only through the willingness of Members to give up their time to these roles that BHS continues to function.
Members were informed that the one remaining Ordinary Committee Member position remained unfilled and, in line with the Statues, volunteers for the position were asked to contact the President. Ordinary Committee Members' contributions to the work of the Committee vary according to their own interests, experience, skills and affiliations, but might include the planning and delivery of a national technical meeting, leading on a consultation response, liaison with other bodies and/or undertaking research to prepare a Committee paper. Any Member wishing to take on the role would be co-opted onto the Committee pending election next year and would serve until 2016.

The final change to the Committee reflects the approved amendment to the Statutes to allow the past-President to remain a Member of the Main Committee for a period of one year after their term of office. As such, Bob Sargent will remain a Committee Member for the coming year.

Thanks are recorded to Edmund Penning-Rowsell who is stepping down this year and also to those Members moving to new positions, namely Nigel Goody, Bob Sargent and Neill Brauders. On behalf of the Society, Claire Samuel, Harry Dixon and Tim Hess are welcomed to the Committee.

[Note: since the AGM, **Jo Cullen** has volunteered to take on the remaining Ordinary Committee Member position.

In line with the Statues, Jo will be co-opted onto the role for 2013–2014 and we hope that she will seek election for the remaining two years of the position at the 2014 AGM.]

Any Other Business
Nigel Goody thanked Bob Sargent on behalf of the Society for his hard work and leadership over the last two year as President of BHS.

Reminder!
The Peter Wolf Early Career Symposium is to be held at Cardiff University next spring.
More details to follow soon - see web site

Land Use and Water Quality: reducing effects of agriculture

The Hague, the Netherlands 10–13 June 2013

GROWING WORLD POPULATION AND increasing living standards result in a greater demand for food and more intensive food production. Agricultural intensification over the past 50 years has led to a degradation of natural ecosystems, including the impairment of water bodies through diffuse water pollution. This conference, organised by the Dutch National Institute for Public Health and the Environment, Geological Survey of Denmark and Greenland, Environment Agency Austria and Aarhus University, discussed the successes and failures of mitigation of diffuse water pollution from agriculture in Europe and overseas over the past three decades.

The conference provided a forum for exchange of scientific knowledge, research on system knowledge, modelling and uncertainty; discussed the entire policy cycle for water quality improvement and promoted collaboration between soil, water, agricultural and social scientists, water managers and policy makers. Themes covered included:

- Research for increasing system knowledge: understanding and modelling the hydro(geo)logical, geochemical and biochemical reality;
- Assessment of effects of Programmes of Measures on water quality on a regional and national scale: monitoring and modelling changes in water quality;
- Field research & modelling for quantifying effects of farming practices and changes in land use;
- Monitoring, modelling and management of water quality in protected areas and
- Decision-making on and implementation of Programmes of Measures: role of policy, stakeholders and science, social and economic incentives and constraints.

A number of talks focused on the successes of the implementation of National Action Plans to comply with the requirements of the EU Nitrates Directive. In Denmark, successive Action Plans since 1980 resulted in the reduction of N surplus by 30–55% and reversal of the upward trend in nitrate concentrations in groundwater (**Hansen** *et al.*, GEUS DK). Notable local successes have been achieved, as illustrated by the case study of Island of Tuno, Denmark, where a protection zone around a drinking water supply led to significantly reduced nitrate concentrations over the past 25 years (**Thorling and Thomsen**, Geological Survey of Denmark). However, the presentation emphasised the need for long term monitoring and patience in the anticipation of expected outcomes, a sentiment echoed by in the presentation by **Burt**, **Howden**, **Worrall** *et al*. (Universities of Durham and Bristol) who found

that response time of catchments to nitrate pollution in the UK can be of the order of decades and that restoration of nitrate concentrations to pre-World War II levels would require very severe changes in land use and land management, potentially compromising efforts to safeguard food supplies. However, failure to act would have serious consequences for the ecological status of freshwaters and emission of greenhouse gases to the atmosphere. **Ward** *et al*. (British Geological Survey) also modelled the temporal loading of nitrate in groundwater across the UK and showed that for about 60% of the unsaturated Chalk aquifer, peak nitrate input has yet to reach the water table and concentrations will continue to rise over the next 60 years.

Conversely, **Broers** *et al*. (Deltares, The Netherlands) reported on rapid response of nitrate in surface waters to Action Programme measures, concluding that young and shallow groundwater flow in saturated aquifers can discharge previously applied N effectively, resulting in quick surface water response, especially in areas with pronounced groundwater-surface water interactions such as the Netherlands delta and the Danish estuaries.

Velthof *et al*. (Alterra, Wageningen) evaluated environmental policies for the implementation of the Nitrates Directive in the 27 EU Member States for the period 2000–2008 and found that the measures led to decreases in N leaching losses to ground and surface waters as well as gaseous emissions to the atmosphere and that further reductions can be anticipated with even stricter implementation of the Nitrates Directive measures.

In contrast to a blanket-application of the Action Plan measures, a more spatially targeted approach is now recommended (presentation by **Gertz**, Knowledge Centre for Agriculture, Crop production, nature, environment and landscape, Denmark, and **Grant** *et al*., University of Aarhus). **Buis** & **Bumans** (RIVM, The Netherlands) found that the derogation to apply an increased amount of manure up to 250 kg N per hectare on grassland farms in the Netherlands between 2006–2009, did not lead to an increase in nitrate concentrations in the water leaching out of the root zone, thus justifying a tiered risk-based approach to setting of environmental limits.

Finally, several presentations emphasised the importance of involving stakeholders in successful implementation of Action Plan measures (e.g. **Grant** & **Mathiesen**, University of Aarhus; **Matin-Ortega** *et al*., James Hutton Institute).

From a global perspective, **Stephen Foster** (IAH Past President and GWP Senior Adviser) observed that the lessons learned from and the approaches adopted by the EU policy to constrain leaching of nutrients and pesticides to groundwater are highly relevant and worthy of adaptation and application in the developing world.

Several contributions evaluated the effectiveness of individual mitigation measures, including innovative approaches such as deployment of mobile fences to mitigate soil erosion in the aftermath of potato harvest (**Vinten** *et al*., James Hutton Institute) and the use of iron bags in small ditches to reduce P runoff from farmland (**Van de Weerd**, Arcadis, The Netherlands).

The conference output can be found on **www.luwq2013.nl/**. I am grateful to BHS for enabling me to attend this broad-ranging and stimulating conference.

Miriam Glendall
University of Exeter

New members

Maria Blumstock.....Aberdeen University
Lee Clarke.....Envireau Water, Derby
Natasha Clarke.....Bristol
Steve Conway.....Waterco Ltd, Ruthin
Dennis Hellema.....Laval University, Quebec
Jodie Hall.....Barnsley
Andrea Kirkpatrick.....Environment Agency, Leeds
Anna Minchinton.....Mott Macdonald, Glasgow
Chris Paton.....Dundee University, Perth
Matthew Rugan.....Manchester University, Crewe
Sarah Shaw.....Environment Agency, Leeds
Maiko Tanguy.....CEH Wallingford
Russ Wilkes.....Hydro-Logic Ltd, Bromyard
Thomas Windus.....Chelmsford

The IAHS Scientific Assembly

Gothenburg, Sweden
22–26 July 2013

A FLIGHT FROM BRISTOL TO SWEDEN ON JULY 20th this year provided a welcome escape from the high temperatures that were being experienced in southern England at that time. The weather in Gothenburg, my destination in Sweden, was good, but considerably cooler. I travelled to Gothenburg to attend the IAHS Scientific Assembly. IAHS Scientific Assemblies are held every four years, between General Assemblies and this Assembly was somewhat unusual in that it was staged jointly with IAPSO (The International Association for the Physical Sciences of the Oceans) and IASPEI (The International Association of Seismology and Physics of the Earth's Interior (IASPEI). These are two of the seven other Associations within the International Union of Geodesy and Geophysics (IUGG) to which IAHS belongs.

The overall theme of the Joint Assembly was 'Knowledge for the Future' and this aimed to direct attention to the importance of a knowledge of geophysical processes for predicting and managing the consequences of natural hazards such as earthquakes, tsunamis, floods and droughts. Each Association staged its own programme within the Joint Assembly, but the links between the Associations were exploited by joint Symposia and the combined Plenary session that followed the opening ceremony and which featured three plenary lectures by guest speakers from each of the Associations.

The Assembly was held in the very large Swedish Exhibition and Conference Centre, Svenska Mässan, close to the city centre. It claims to be one of the largest Conference Centres in Europe and this was brought home by long treks through the complex to reach the rooms allocated to different sessions. Overall, the venue worked well, but use of a Conference Centre of this nature inevitably impacts on the registration fee and IAHS are looking to ensure that some future Scientific Assemblies are held at Universities, where costs are likely to be lower.

As a member of the IAHS Bureau, I participated in the Bureau Meeting held on Sunday 21st. I also attended the IAHS Plenary or business meeting, which took place during the early evening of Wednesday, and a meeting of Editors of Hydrology Journals, in my capacity as an editor of *Hydrological Processes*, which was organized on Thursday evening.

However, the main purpose of my attending the Assembly was to participate in the scientific sessions and more particularly the joint IAHS/IAPSO symposium on 'Deltas: Landforms, Ecosystems and Human Activities', where I was one of the keynote speakers and presented a paper on 'Changing fluvial inputs to the world's deltas'. This Symposium was organised as a contribution to the International Year of Deltas (2013–4) and to support the proposals from the international scientific community for a Global Delta Sustainability Initiative. Deltas occupy only 1% of the earth's land area, but are home to over half a billion people and have been identified by the ICSU Future Earth Programme as one of the four critical zones for coordinated international research initiatives linked to global environmental change. The other three critical zones are the arctic, tropical forests, and cities.

The symposium included a keynote paper on 'A vision for a coordinated international effort on delta sustainability' presented by **Efi Foufoula-Georgiou**, that was presented during the IAHS Plenary. Professor Foufoula-Georgiou is spearheading the proposal for a Global Delta Sustainability Initiative and her presentation demonstrated very effectively the importance of the world's deltas as areas of high population density and for food production, as well as their sensitivity to many facets of global environmental change including, sea level change, climate change and changes within their upstream drainage basins leading to changes in water and sediment inputs.

Other papers dealt with

developments in our current understanding of delta dynamics, case studies of deltas in arctic regions and West Africa, human impacts on deltas and the geomorphology and ecology of deltas, and together provided a very good overview of the symposium topic. It is difficult to highlight particular papers, as all were highly informative and important, but, in addition to the keynote paper by Efi Foufoula-Geogiou referred to above, another keynote presentation by **James Syvitski**, the current chair of the ISCU International Geosphere-Biosphere Programme, provided an excellent synthesis of the social and economic importance of deltas and their sensitivity to global change.

The programme of symposia and workshops within the 5-day Assembly was very full, with many parallel sessions, and it could be suggested that the number of parallel sessions should be reduced. It is good to have a choice of sessions to attend, but in my own case the two other elements of the programme that I really wanted to attend were scheduled at the same time as the Deltas symposium. One was a workshop on 'Anthropogenic radionuclide contamination of water and sediment', which included papers on the impact of the recent Fukushima accident in Japan and the other a workshop on 'Characterizing water quantity and water quality'. However, later during the week I was able to attend the symposium on 'Understanding water quality problems in a changing world', which proved very successful and informative.

Other notable elements of the Assembly for me included the IAHS lecture delivered during the combined Plenary Session during the afternoon of the first day by **Kuni Takeuchi**, a past-president of IAHS. This had the title 'Geo-sciences for proactive disaster risk reduction' and focused on the need for a shift from emergency humanitarian response to reducing risk before disasters actually occur. He stressed that geoscientists have an important role to play in developing improved prediction techniques, but that for many hazards, such as flash floods, landslides, debris flows and earthquakes, prediction remains difficult. Here, emphasis must be placed on hazard mapping, early warning systems and risk assessment.

The opportunities to catch up with old friends and contacts at the opening reception, the coffee breaks and the IAHS dinner were also greatly valued and are an important part of a large conference such as this, which brings participants from all areas of hydrology and many different parts of the world.

The support provided by BHS from the Exeter Fund, which helped me attend the Assembly, is greatly appreciated. On my return to England it was raining. The heat wave was over and it was back to more normal English summer weather.

Des Walling

International Society for River Science 3rd Biennial Symposium

Beijing
5–9 August 2013



THIS SYMPOSIUM TOOK PLACE AT THE School of Environment, Beijing Normal University. The theme was 'achieving healthy and viable rivers' which focused on natural and anthropogenic impacts that affect river systems while also promoting multi-disciplinary approaches to protect and restore these systems.

The keynote speakers providing insights into the various aspects of this symposium theme included **Yihui Ding**, **Geoffrey Petts**, **Stuart Bunn**, **Brian Richter**, **Martin Doyle**, **Geoff Syme** and **Daniel Campbell**. I attended a number of interesting sessions throughout the week that

covered various topics such as assessment of ecosystem health, environmental flows, water quality management, river restoration and regional/basin river management to name but a few.

I presented my paper at the Hyporheic Exchange in Rivers session which was held on the 7th of August 2013 and chaired by **Takashi Asaeda**. The paper, 'Spatio-temporal variability of dissolved oxygen within the hyporheic zone of a freshwater pearl mussel bed' (co-authored by **I.A. Malcolm** and **C.N. Gibbins**) was one of the first studies that attempted to continuously assess the variability of dissolved oxygen within the streambed of a Freshwater Pearl Mussel (*Margaritifera margaritifera*) habitat using high resolution in-situ optical logger and sensor technologies. All previous studies of dissolved oxygen within mussel beds have used either ex-situ spot sampling which suffers a variety of problems or have used redox as a surrogate for dissolved oxygen. These new technologies can provide the potential to greatly improve our understanding of the spatial and temporal variability of dissolved oxygen within the shallow depths of the hyporheic zone as well as provide insight into the dissolved oxygen requirements of this threatened species. Afterwards, I enjoyed an informal discussion about some of the technical aspects of this particular work of my PhD project while also discussing various issues related to freshwater pearl mussels.

This session included very interesting talks concerning the hyporheic zone. **Roger Haro** of the University of Wisconsin discussed the work that is being carried out to understand the distribution of an invasive snail species which is impacting native biota in the Upper Missssissippi River and which is also responsible for the death of thousands of waterfowl through its transmission of parasites. The work focuses on the possible effect of a habitat rehabilitation programme that may have acerbated the spread of this species.



From Europe, **Rosa Casas-Mulet** (Norwegian University of Science and Technology, Trondheim) presented her work on the effects of salmonid egg survival in response to changing hyporheic conditions that occur at low flows due to hydropeaking. **Zhixin Wang** from host university (Beijing Normal University) presented her work on the presence and distribution of ammonia-oxidising microorganisms in the hyporheic zone and the potential that they may play in nitrification processes within this zone.

I am very grateful to the British Hydrological Society for their financial support so that I could attend this important symposium. I found it to be a great learning experience as well as a chance to showcase my work at an international level. As a PhD student, it was a fantastic opportunity to meet and listen to internationally esteemed researchers as well as other like-minded students.

Emma Quinlan
University of Aberdeen

Editorial

Our Hon. Sec. Harry Dixon made a plea in his report to the AGM that we should like to make sure that Circulation is of interest to members. All contributions, especially news of members' activities, are therefore always welcome.

Also, can we remind you that we are continuing to develop our BHS web site as a useful tool for the profession so, again, feed-back from users will be much appreciated.

Celia Kirby

Groundwater Flooding: modelling and management

BHS Pennine Group Meeting 1st October 2013

THIS CONFERENCE, ORGANISED BY **Maxine Zaidman** of JBA and held at the EA Lateral offices in Leeds was attended by over 50 delegates drawn from the EA, consultancies, academics and researchers. The nature of the presentations matched this range in the delegates and ensured wide discussions on both theory and practice. Some consistent messages came through the six presentations:

- That data on groundwater flooding events were very limited (more flooding events are needed to allow calibration and understanding);
- Boreholes are rarely in the best place for monitoring impending groundwater flooding at critical locations;
- Water resource groundwater models struggle to depict high groundwater levels sufficiently well for use in understanding groundwater flooding;
- Weather forecasts are insufficiently accurate locally to allow provision of a reliable groundwater level forecasting system;
- Advances in groundwater flood mapping are needed that link groundwater emergence volume estimates to surface routing.

Ruth Buckley and **James Finigan** from the EA demonstrated the difficulties of managing groundwater flooding in two contrasting catchments in the Chalk and the Corralian Limestone of the Yorkshire Wolds. Recognising that their ideal of a customised borehole network fitted with level alarms along with detailed numerical and conceptual models depicting surface water groundwater interactions was unlikely to be made available under the EA remit, they showed how existing resources could be used to assist in warning and managing groundwater flooding. They recognised the value of liaising with the LLFA and providing the science support where funding would allow.

Steve Buss (ESI) reported on his work to link the Hull fluvial flood model with a groundwater model to improve the representation of groundwater accretion from the Yorkshire Wolds aquifer. This proved to be highly effective, and led on to being able to assign return periods to groundwater flood events. However, he noted that further joint probability work is needed to appreciate the inter- relationships between fluvial, surface water, groundwater and tide locking.

Andrew McKenzie (BGS) demonstrated how various research programmes and projects undertaken since the 2000/01 groundwater flooding event had improved the understanding of the processes and complexities of groundwater flooding. These ranged from the detailed analysis of unsaturated zone processes (Flood1) to catchment scale studies (LOCAR). However, further work is required to link with surface water routing, to match the sensitivity of groundwater models to that of groundwater flooding and to forecast rainfall to allow the provision of



Groundwater flooding in Burton Flemming, Yorkshire, 2012
Courtesy of the Environment Agency



Groundwater flooding in Winterbourne Steepleton, Dorset, 2012
Courtesy of the Environment Agency

reliable near real-time flood warning models. Andrew outlined the data holdings available through BGS.

Guy Parker and **Jim Grundy** (EA) reported on the reality of managing groundwater flood warnings in Dorset. Notably, 100 properties were flooded from groundwater in July 2012, three days after 48 hours of intense rainfall. This rainfall raised groundwater levels by 12 m in 36 hours, thus challenging the widely held belief that there is always plenty of time to respond to rising groundwater levels. This sobering event has led them to reconsider their telemetry groundwater level network, review their mapping and flood warning areas and to call for improved rainfall forecasting. They also recognised the importance of close community involvement so that the flood warnings and advice meet the real needs of the community. One major improvement has been in the provision and use of a standard proforma used by all involved with the collection of data. This has resulted in very rapid data processing and better quality data.

David Cobby (Jacobs) reported on a proposed methodology to be trialled in Buckinghamshire and West Berkshire to produce the next generation of groundwater flooding maps. The need for the maps was determined following discussions with the LLFAs and the sewerage providers. Working with JBA and BGS, these maps would provide location, depth, flow, duration and return period for Chalk aquifers by linking a detailed groundwater model with JFlow+ to route the flow from the aquifer. The maps will be calibrated on 2000/01 and 2012/13 mapped flood extends. In parallel, a more simplistic approach will also be trialled to enable extrapolation to aquifers where detailed hydrogeological models are not available.

Geoff Parkin (Newcastle University) demonstrated the capabilities of integrated surface water- groundwater modelling applied to two hypothetical catchments. The SHETRAN surface-subsurface model incorporates BGS geological information and can operate on a sub-metre resolution to produce hourly time step simulations of flood propagation. This approach meets the demanding situation where flooding is from multiple sources (including piped networks). The collection of data using a flood capture app to enable detailed flood information to be rapidly uploaded to a website is currently under trial and may improve data collection for all future flood events.

Sue Morris
Jacobs

Aquator® User Group

THE SEVENTH AQUATOR® USER GROUP Meeting was held on 10th October 2013 at The Bond in Digbeth, Birmingham. Jointly promoted by Oxford Scientific Software and Hydro-Logic Services, the event was attended by 30 delegates drawn from regulators, water companies, consultants and academia.

The meeting started with an overview of the future direction of development of the Aquator platform. This was followed by presentations of a range of Aquator case studies. These included:

Doug Hunt and Dan **Wykeham** of WS Atkins on the use of stochastically generated long time series in Aquator.
Charles Malcolm and **Ellen Willmott** of SEPA on modelling large hydro-electric schemes in Scotland.

Claudio Arena and A**ntonino Fortunato** of the University of Palermo on the modelling of water resource systems in three distinct regions in Italy.

Ron Manley of WRA on recent projects using HYSIM.

The keynote address was delivered by **Adam Comerford** of the Canal & River Trust on the subject of water management and hydrological modelling within the Trust. This was followed by **David Mould** who gave an overview of the ongoing work of modelling the country's canal network using Aquator.

The User Group meetings provide an opportunity for users to meet and discuss their experiences of working with Aquator.



For further information on the User Group, and Aquator in general, contact **Paul Roberts** at proberts@hydro-logic.co.uk or 01189 331325.

Continued funding for MSc students

THE FIFTH SCIENCE AND TECHNOLOGY REPORT published in 2003 by the House of Commons Science and Technology Select Committee concluded that: "The fact that skills shortages in the earth sciences have developed suggests that National Environment Research Council (NERC) has not been giving sufficient priority to this part of its mission over recent years…We recommend that NERC takes immediate action to focus its support for masters students to support those disciplines in which there are clearly identified and agreed shortages".

One of the current Government's stated goals is to make Britain's economy greener. In order for the UK to make the transition to a strong and sustainable green economy, a workforce with the right technical skill is required. In 2011 the UK Government's report entitled "**Skills for a green economy - A report on the evidence**" stated that "many of the industries that are key to the green economy appear to be reliant on an ageing workforce" and "that this issue is particularly concerning in areas such as the power sector and water management, where a large percentage of the workforce is forecast to retire over the course of the next ten to 15 years".

That same year NERC made the decision to stop providing funding for the places on Masters' courses.

Following this change in the funding environment, the British Hydrological Society set up a funding mechanism to support potential MSc students wishing to pursue the development of their academic expertise in hydrology. Since 2011 the Society has provided a small number of studentships (a small bursary of up to approximately £1,500) towards the costs of the Master's degree tuition costs for British students at UK Higher Education Institutions.

Since 2012 the JBA Trust has worked in partnership to support the British Hydrological Society's funding scheme by doubling the size of the fund. In August this year the Society received 27 applications to the fund, all of which were of a high quality. Members of the BHS committee, together with Alex Scott and Professor Rob Lamb of the JBA Trust, selected the ten best candidates: these were then whittled down to the final six students with the assistance of an independent assessment by an academic. The diversity of the candidates is borne out by the range of courses on which candidates received funding, as

Research-based Masters in Hydrology — University of Salford
Water Science, Policy and Management — University of Oxford
Environmental Water Management — University of Cranfield
Sustainable Water Management — University of Lancaster
Catchment Hydrology and Management — University of Dundee
Hydrology and Climate Change — University of Newcastle

detailed above.

The British Hydrological Society wishes to express its thanks to the JBA Trust for assisting with funding the scheme and to Alex Scott and Rob Lamb for help with the evaluation of the candidates.

The scheme will continue next year. However, in these times of austerity funding is as ever limited, so if anybody wishes to help fund the scheme or knows of funding streams that we may be eligible for, please do let us know!

Darren Lumbroso

Student Award 2013

THIS YEAR'S STUDENT AWARD SAW 11 entries from across the UK and the winners were announced during the AGM in Birmingham in September. The award, which was launched in 2002, is given to the best dissertation from a final year undergraduate on a hydrological subject. The quality of submissions remained very high and the judging panel, made up of members of the Main Committee, once again had a difficult job choosing the winners. As normal, one winner and two runners up were selected. The winner receives a prize for £400 and trophy and each of the runners-up prizes of £200.



President Bob Sargent presented awards to Rachel Shepherd and Andrew Williamson at the AGM in Birmingham in Sptember

Following careful deliberations three outstanding dissertations were selected. This year's winner was **Hannah Barrett** from the University of Manchester. This year's runners-up were, in no particular order, **Andrew Williamson** from the University of Cambridge and **Rachel Shepherd** from the University of Southampton. We were pleased that both Andrew and Rachel were able to join us at this year's AGM to receive the award in person — see photo.

Details of all this year's entries and the abstracts of the three winning dissertations are given below. Congratulations are extended to all our entries, and especially to our three winners.

Harry Dixon

WINNER: Hannah Barrett (University of Manchester)

"An investigation into the interannual variability of winter snowfall in southern British Columbia and its relation to El Niño Southern Oscillation, 1951-2011"

Hannah's investigation was considered to be an interesting extension to the traditional studies of the implications of ENSO. The research structures and methodology were considered very strong and a clear understanding of the hydrological processes involved was demonstrated.

Abstract: Winter snowfall variability in British Columbia, Canada is analysed and related to El Niño Southern Oscillation and to a lesser extent Pacific Decadal Oscillation. Previous investigations have shown that climate variables in southern British Columbia are modulated by natural modes of large-scale ocean-atmosphere variability. To add to previous work, this study focuses specifically on snowfall because it is an important climatic variable for southern British Columbia but it has received less attention than other parameters such as temperature and precipitation. Within the study area, three regions were investigated, namely Vancouver Island, Lower Coastal Mainland and the Southern Interior. Using the best available secondary data from 1951 to 2011, statistical methods of analysis were employed. Results show a distinct pattern of below average snowfall totals for winters following the onset of El Niño and above average snowfall totals following the onset of La Niña. The strength of this signal was shown to decrease with distance from the Pacific Ocean, therefore in a west-to-east gradient across the province. The signal associated with La Niña was shown to be more consistent than with El Niño. Anomalously high winter snowfall totals were also related to negative phase of Pacific Decadal Oscillation and anomalously low winter snowfall totals with its positive phase. Understanding how large scale climate oscillations are linked to climatic parameters in British Columbia helps to develop and improve seasonal forecasting and contribute to future climate projections in respect to anthropogenic climate change.

RUNNER-UP: Rachel Shepherd (University of Southampton)

"Modelling the effects of climate change on high discharge events of the Upper River Swale, North Yorkshire"

Rachel's dissertation topic was one the judges considered particularly interesting. Her dissertation was well planned and the clarity with which the research was presented was impressive.

Abstract: The projected increase in precipitation resulting from climate change is likely to have a pronounced impact on fluvial systems, especially in highly-responsive upland catchments. In this study, hydrological modelling is combined with downscaling of climate projections to investigate how high discharge of the Upper River Swale, North Yorkshire may be affected by future climate.

The landscape evolution and flow model CAESAR-Lisflood was used with inputted rainfall records of Baseline, Future Mean and Future Extreme scenarios. Observed precipitation data formed the baseline scenario (1966–1995) and climate projections were downscaled from HadCM3 using SDSM to establish scenarios of future river flow (2066–2095). Despite poor validation of CAESAR-Lisflood and climate downscaling uncertainty, relative comparisons between baseline and future scenarios still provide a useful indication of possible impacts. The magnitude of discharge is projected to rise with a two-year flood event augmenting from 45.5 m^3s^{-1} to 54.1 m^3s^{-1}. In general,

a greater than proportional increase was observed at higher discharges. Heightened seasonality is projected with Mann-Kendall tests revealing statistically significant increases in winter and spring flow maxima and a decrease in summer. The results are supported by studies of other upland catchments or those in Northern England, although discrepancies over the magnitude of changes exist.

RUNNER-UP: Andrew Williamson (University of Cambridge)
"The Subglacial Drainage System Structure and Morphology of Storglaciären, Sweden"

Andrew's study considered a topic of water resources interest in many parts of the world. As well as demanding an impressive fieldwork campaign, the project demonstrated a clear understanding of glacial hydrology and strong analytical work.

Abstract: Hydraulic potential is calculated using Digital Elevation Models of the surface and bed topography of Storglaciären, Sweden, for 11 assumptions of subglacial water pressure from atmospheric to ice overburden. Comparison of these assumptions with dye-tracing results and proglacial and ice-marginal stream locations in 2012 yields an estimate of likely subglacial drainage system structure. Surface melt is calculated from Storglaciären's summer mass-balance data. Subglacial and proglacial stream discharges are modelled with melt data, which is assumed to accumulate at the bed in situ, and compared with empirical proglacial-discharge observations in 2012. A series of 25 dye-tracing tests using 12 injection sites was conducted on Storglaciären during August 2012 to determine subglacial drainage system morphology. Comparison of theoretical reconstructions with observed data suggests that the glacier-wide steady-state water pressure beneath Storglaciären is 70–80% of ice overburden. Use of the melt model failed to constrain water pressure to a more precise value, likely to be due to Storglaciären's polythermal regime and its extensive englacial network feeding the proglacial stream Nordjåkk. Dye-tracing results suggest that Storglaciären's lower ablation area has two drainage areas: a somewhat hydraulically efficient homogeneously braided stream, observed to evolve over the field season's course, which drains only a few spatially isolated injection sites, and a central axis that drains all other injection sites in a hydraulically efficient system. The importance of supraglacial recharge is also highlighted and it is suggested that use of breakthrough curves to infer a change from a channelised to a distributed system may need reconsideration.



This year's entries:

University	Author	Title
Southampton	Rachel Shepherd	Modelling the effects of climate change on high discharge events of the Upper River Swale, North Yorkshire
St Andrews	Bertie Welch	Seasonal and annual chemical change in Scottish rivers
Birmingham	Amy Searle	An investigation into downstream changes in stream water quality: from raindrop to catchment outlet along the River Cam, Gloucestershire.
Durham	William Nicholls	The impact of motorboat wash on riverbank erosion for the River Avon, Warwickshire
Cambridge	Andrew Williamson	The subglacial drainage system structure and morphology of Storglaciären, Sweden
Queen Mary, London	Andreea Miu	Impacts of micro-hydropower plants on the lotic system
Bristol	Nicholas Bone	The Amazon basin water balance: a multivariate analysis
Bangor	William Halliday	A multiproxy approach to channel pattern in two Welsh rivers
Imperial College	Shahid Padhani	The extraction of geothermal energy from chalk
Liverpool	Naomi Wardle	Reconstructing major flood events, a geochemical analysis of the 'Bloody Inches', River Tay, Scotland
Manchester	Hannah Barrett	An investigation into the interannual variability of winter snowfall in southern British Columbia and its relation to El Niño Southern Oscillation, 1951–2011



UK Hydrological Bulletin: August – October 2013

In the first nine months of 2013, rainfall for Britain exceeded the 1971–2000 monthly average only in May and the driest summer since 2003 contributed to significant rainfall deficiencies, particularly over timespans of four and eight months, by the end of September. Estimated outflows from Britain were the third lowest since 1972 for the beginning of October and, with soils notably dry, especially in many central and eastern areas, no early recovery in river flows and aquifer recharge rates was expected. However, a decisive synoptic change then allowed a sequence of active Atlantic frontal systems to cross the UK: these had a transforming effect through October. Steep runoff recoveries occurred in most northern and western catchments during the fourth week and wild weather conditions on the 27/28th were accompanied by very widespread flood alerts. In most regions, the water resources outlook is healthy but seasonal recoveries in groundwater levels are still awaited in the less responsive aquifers.

August was the warmest since 2004, and rainfall totals were below average across most of the country — appreciably so in parts of England and eastern Scotland. A sustained dry spell through the latter part of the month concluded the driest summer for a decade, and one that contrasted markedly with the run of wet summers since 2006. The settled spells during August were punctuated by some wet interludes. River flows responded briskly on the 5th with notable summer spates in western rivers, including the Cynon (Wales) and Lune (north-west England) and, on the 15th, when the Tywi (Wales) exceeded its previous highest August flow by a significant margin. On the 24th, a locally intense downpour in south Essex (at Shoeburyness 58 mm was recorded — much of which fell in four hours) caused significant surface flooding and transport disruption.

Reservoir stocks at the end of August were above average for England and Wales as a whole and very healthy in some impoundments in Wales and northern England; in contrast, stocks in some reservoirs in southern England (e.g. Ardingly, Clatworthy and Wimbleball) and eastern Scotland (where stocks have been affected by maintenance works) were around 10% below average. Generally, groundwater levels continued to follow typical summer declines but there were exceptions; in south Wales, levels in the very responsive Carboniferous Limestone boreholes were considerably below their normal range.

Synoptic patterns across most of the country during September were typically autumnal. After a dry and warm start to the month, cyclonic conditions brought locally torrential downpours late in the first week: on the 6th, 24-hr rainfall totals of 62.8 mm at Durham and 71.2 mm at Nunraw Abbey (East Lothian) were reported. More extensive heavy rainfall occurred around mid-month when, driven by a vigorous Jet Stream, a sequence of active frontal

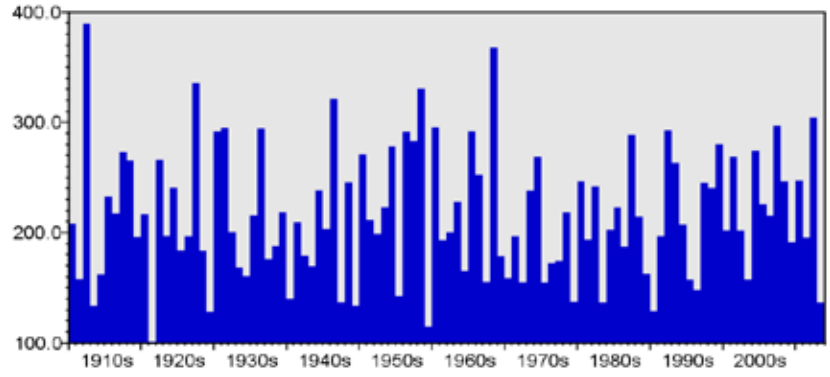


Fig 1 *Annual June-September rainfall totals (mm) for the Anglian Region*

systems crossed the UK; in north-west Scotland, Cluaunie Inn reported a two-day rainfall total of 82 mm. Thereafter, persistent high pressure, centred on Scandinavia, restricted the easterly penetration of Atlantic frontal systems and monthly rainfall totals were generally modest, mostly 50–80% of average at the regional scale.

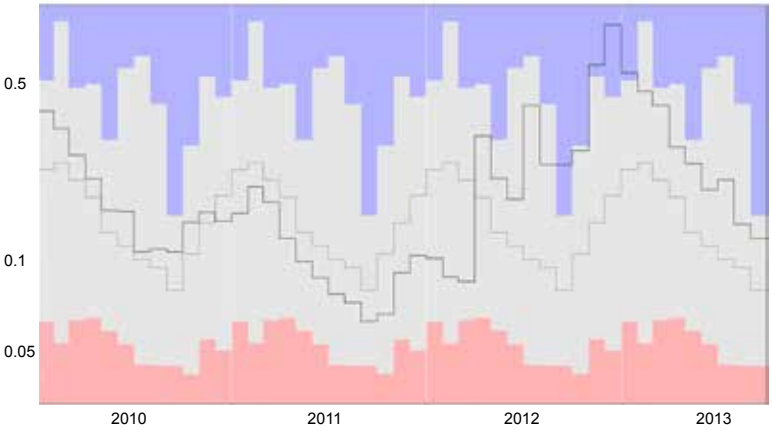


Fig 2 *Monthly mean flows (m^3s^{-1}) for the Dover Beck*

Across much of the country, September was the fourth successive month registering below average rainfall and, for the UK, the June–September period was the driest since 2003. Particularly notable rainfall deficiencies characterised parts of eastern and southern England (in Anglian region it was the driest for 23 years – see Figure 1). More extended rainfall deficiencies characterised much of northern Scotland: the Highland Region reported its third lowest January–September rainfall since 1984.

A few flood alerts were in operation on the 7th September in southern Scotland and north-east England (in Redcar, flash flooding required the evacuation of 60 homes) but estimated outflows from Great Britain remained below the long-term daily average throughout the entire month (with the exception of the 16th) and sustained recessions over the final fortnight saw flows in responsive rivers (from the Dee in Grampian Region to the Tone in Somerset) approach the lowest on record, for the time of year. An interesting exception was the Dover Beck (Nottinghamshire) where the September runoff total was close to 150% of average and flows have remained well above average throughout a relatively dry 2013 (see Figure 2) – a consequence of sustained high baseflow, itself a legacy of the extreme recharge to the Permo-Triassic sandstones during 2012 .

With soil moisture deficits well above average across much of eastern Britain, and notably high in central and eastern areas (see Figure 3), the expectation was for a considerably delayed seasonal recovery in runoff and recharge rates. However, with low pressure now dominating synoptic patterns, a cluster of Atlantic frontal systems brought heavy rain to western areas on 2/3rd triggering several flood alerts, e.g, in south Devon and Glen Lyon (Tayside).

Further heavy rainfall, reaching daily totals of >40 mm in parts of Gwynedd, occurred on the 4th and a strong northerly airflow on the 9th brought snow to the Cairngorms and a wintry blast across much of the country. On the 21/22nd, with soils close to saturation

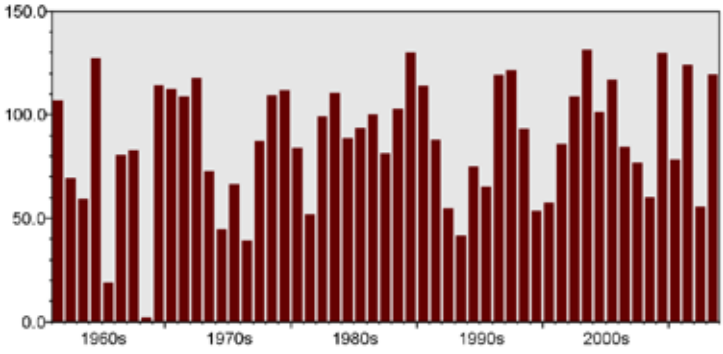


Fig 3 *End-of-September soil moisture deficits (mm) for the Chalk outcrop area*

away from the English Lowlands, exceptional two-day rainfall totals (Blencathra in Cumbria reported 93.8 mm) triggered widespread spates and extensive flood alerts throughout much of western and northern Britain. An exceptionally unsettled interlude culminated in the 'St Jude's Day storm' (27/28th) which brought damaging winds and sustained heavy rainfall. The latter triggered more than 140 flood alerts with floodplain inundations reported from all regions of England and Wales. Across most of the country reservoir replenishment was very healthy in October but groundwater level recessions have yet to be arrested in some eastern and central areas.

For more details of the National Hydrological Monitoring Programme, please visit:

www.ceh.ac.uk/data/nrfa.nhmp

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29/10/13

Hydrology Research: an international journal



Volume 44 Number 5 Special Issue

Large-scale hydrology: observations and modelling

Editorial: New category of Invited Papers

We are pleased to announce the launch of a new category of Hydrology Research paper – the Invited Paper. The Editors encourage submission of manuscripts under this category from experienced research hydrologists, especially those with an international profile. The aim is to establish a series of prestigious papers that will contribute to the continuing development of research and applied hydrology.

An Invited Paper can cover a topic of the author's choice and need not necessarily include new research. In this respect it will be different from a Research Paper. We are seeking substantial, well-written essays on topics of interest to research and practicing hydrologists. An Invited Paper should, of course, review published research and discussions of relevance to the topic being addressed. It will provide an opportunity for the Author to present arguments in a way that may not be acceptable in a Research Paper. It can include personal opinions, based on the arguments presented, in a way that might stimulate further published discussion (in Hydrology Research or elsewhere).

The manuscript will typically be sent to two highly experienced Reviewers who will advise the Editors and the Author in terms of its being attractive to readers of Hydrology Research and becoming a valuable contribution to the literature more generally. The Author may express views and opinions different from those of the Reviewers; the Editors will moderate the review process for Invited Papers accordingly.

The Editors will contact potential Authors of Invited Papers. However, Authors not approached in this way who are interested in submitting a manuscript under this new category should contact the Editors directly with an outline proposal. Ideas from third parties about topics for, and potential Authors of, Invited Papers are welcome at any time. Jointly-authored manuscripts are welcome (not more than three co-authors as a guideline).

This Issue of Hydrology Research launches the Invited Paper series with "Reconciling hydrology with engineering" by Prof Demetris Koutsoyiannis of the National Technical University of Athens, Greece. It is an excellent example of the sort of Invited Paper we are seeking.

Ian G. Littlewood *Editor (BHS)* Chong-Yu Xu *Editor (NHF)*

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Travel grants

Travel grants are awarded from the Society's general funds to help BHS members whose travel expenses to attend scientific meetings are not met by an employer. Applicants should have been members of the Society for at least six months. The amount will depend on the nature and location of the meeting and the case put forward. Priority is given to members under 35 or retired from employment, who are presenting papers and who have not previously received support from BHS. Successful applicants will be expected to write a short report for *Circulation*. Travel grant applications should be made to the Hon Treasurer at least two months before the conference or meeting.

The Exeter Fund, administered by the Society, offers grants to British hydrologists to take part in IAHS / IUGG events.

To apply, use the form at *www. hydrology.org.uk/about_awards.htm* or contact **Claire Samuel**, CH2M Hill, Burderop Park, Swindon SN4 0QD *(tel: 01793 816430, email: claire.samuel@ch2m.com)*.

Copy deadline for* Circulation *No. 120 23rd January 2014

Diary

18th November 2013
London's sewers: "Bazalgette to Super Sewer"
BHS South East Section Meeting
Location: ICE : 6.30 p.m.

18–19 November 2013
Water systems and watershed modelling using SWMM5/ PCWMM
BHS 2-day workshop
Imperial College, soth Kensington campus
see website for further details

21st November 2013
Hydrology for Flood Risk Management
Joint BHS National and South East Section Meeting
Location: ICE
10.30–16.30
See website for further details

18th December 2013
Hydroecology & water abstraction: science, practice and licence reform
BHS National Meeting
University of Birmingham, Edgbaston, B15 2TT
see website for more details

13th January 2014
Surface Runoff and Bathing Water Quality - Scottish Hydrological Group
Scottish Hydrological Group - Technical Meeting
Location: Stirling Smith Art gallery & Museum, Dumbarton Road, Stirling : 6.30pm

5th February 2014
Coastal Erosion - Scottish Hydrological Group
Scottish Hydrological Group - Technical Meeting
Location: Wolfson Medical School Building, University Avenue, Glasgow : 6.30pm

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■ Web pages: **http://www.hydrology.org.uk/**

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12th British Hydrological Society National Symposium

BHS 2014

Challenging hydrological theory and practice

University of Birmingham
2nd – 4th September 2014

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BHS National Meeting

Hydrological impacts of energy projects

Thursday 5 June 2014
CIWEM, 106-109 Saffron Hill, Faringdon, London EC1N 8QS

Call for abstracts
Abstracts on the topic of hydrological impacts of energy projects are invited. Those interested in presenting at the meeting should email an abstract to **Duncan Faulkner** (duncan.faulkner@jbaconsulting.com) by 31 March 2014, including the presentation title and the names and institutions of the contributing authors. Prospective speakers are encouraged to contact Duncan informally in advance of the deadline to discuss potential topics. There may also be opportunities to present posters at the meeting.

Convener:
Duncan Faulkner, JBA Consulting, duncan.faulkner@jbaconsulting.com, phone 01756 799919