Circulation

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'Father of British Hydrology'

PETER OTTO WOLF

FREng, FICE, FCIWEM, FASCE

It is with great regret that we have to announce that Peter Wolf sadly and unexpectedly died last month. BHS owes Peter a great deal and we will miss him greatly.

Born in 1918, Peter graduated from Queen Mary College in 1941 and was appointed Lecturer in fluid hydrodynamics and mechanics at Imperial College in 1949. In 1955 he established an MSc course in Engineering Hydrology at Imperial and the following year was made Reader and Head of the Hydrology Section. He then moved to City University in 1966 as Professor and Head of Civil Engineering. Peter's support for hydrology within the Institution of Civil Engineers helped us considerably in the setting up of BHS and he was President of the Society from 1987–1989. In 1994 he was made an Honorary Member, one of the many honours and awards he received during his life, including being the first recipient of the prestigious Ray K. Linsley award in the USA.

Peter felt strongly about encouraging 'promising

youngsters' and in 2002 generously set up the funding each year of annual BHS subscriptions for three people identified by the BHS committee. This year we changed the title of our Post-graduate symposium to the 'Peter Wolf Young Hydrologists Symposium' with Peter funding the prizes awarded during the event— see report on page 14.

One of Peter's notable achievements was his hydrological analysis of the 1953 Lynmouth flood, which was one of Britain's worst flood disasters with 34 people killed. He was also a leading figure in helping to establish the Flood Studies team at the Institute of Hydrology, and sat on the steering committee leading to production of the Flood Studies Report in 1975.

Peter was a 'gentleman' of the old school, unfailingly polite and courteous, and having wonderful manners. He can indeed be considered the father of British Hydrology, and will be very sadly missed by all within BHS who were privileged to know him.

AQUATOR User Group Meeting

The first AQUATOR User Group Meeting was held at the Falcon Hotel in Bromyard, Herefordshire on 16th October. Twenty-five attendees from Water Companies, Regulators and Consultants were briefed on the new partnership between Oxford Scientific Software and Hydro-Logic and on the features of version 3 of the software, due for release shortly. There were also four presentations from users. Anyone interested in the User Group or Email Forum should contact Will Clark (will@oxscisoft.com) or Paul Webster (pwebster@hydro-logic.co.uk) for more information.

New members

Jimena Alonso.....University of Republic of Uruguay
Lenka Anstead.....University of East Anglia
Chris Beales..... Environment Agency, Reading
Jamie Blackwell.....SLR Consulting, Shrewsbury
Andrea Silke Blatter..... University of Karlsruhe
Katie Bunting.....Capita Symonds, Sheffield
Sarah Louise Cadbury.....Environment Agency, Solihull
Harriet Frances Carlyle.....Grontmij Ltd, Leeds
Vicky Greest.....Environment Agency, Cardiff
Simon Harrow.....British Waterways, Cardiff
Alistair David Headley.....Grontmij Ltd, Leeds
Marcus Hrachowitz.....University of Aberdeen
Simon James.....Grontmij Ltd, Leeds
Caroline Jeanne.....Bureau Veritas, Kent
Megan Klaar.....University of Birmingham
Eunice Lord.....ADAS, Wolverhampton
Ken MacDonald.....British Waterways, Warwick
Sarah Mason.....URS Corporation, Leeds
Tasmin Morey.....JDIH (Water & Enironment) Ltd, Derby
Barry Rodgers.....ENTEC UK, Shrewsbury
Rachel Stubbington.....University of Loughborough
Caroline Wallis.....University of Worcester
Ryan Wilson-Parr.....Bureau Veritas, Maidstone
Lisa Jane Worledge.....University of Birmingham

Editorial

Yes, well I'm still sitting in the Editor's chair. Thanks to all those who commented on our new layout: we hope to improve on this with experience.

In between doing *Circulation* and professional development issues, as reported last time and also at the AGM, I've been busy with coordinationg the Society's responses to departmental and Agency consultations –a good thing – which seem to come thick and fast now – a bad thing (difficult to keep tabs on them all). We plan to put our responses up on the web so that all members can keep abreast of important proposals which may affect our future professional activities.

Finally, all contributions to *Circulation*, especially news of members, are always welcome.

Celia Kirby

President's piece

Well here it is, my first 'President's Piece', and let me start by giving the Society's wholehearted thanks to Rod Hawnt, who has done such sterling work on our behalf over the past three years. Yes, I know he was only President for two years but, as I found out, the work starts as soon as you become President Elect! Rod has devoted a huge amount of time to the Society, and been particularly energetic on the issue of establishing a professional qualification for hydrologists (see previous entries in *Circulation*, and further comments below).

I should perhaps explain who I am to the many of you who don't yet know me. I obtained my first degree in Environmental Sciences at the University of Lancaster in 1970, followed by an MSc (through research and thesis), also from Lancaster in 1972. I then joined Thames Conservancy (TC) as an Assistant Engineer (Hydrologist), working on development of the first operational real-time flood forecasting models for the Thames and its tributaries, following the major floods of September 1968, and assisting with development of the Lambourn groundwater augmentation scheme. The job title was a tale in itself, as you will see later, and when I asked how do I get from being an 'Assistant Engineer (Hydrologist)' to 'Senior Assistant Engineer(Hydrologist)', I was told "by becoming a Chartered Civil Engineer". Well this was a potential problem for me, and for a number of fellow 'Assistant Engineer(XXX)s', with TC employing hydrogeologists, computer programmers, water quality scientists, a statistician etc, all within the all-embracing 'Assistant Engineer(XXX)' umbrella. Civil engineers joined TC straight from university with a bachelor's degree aged 21 or 22, entered a training scheme, and could attain membership of the Institution of Civil Engineers (MICE) within three or four years, i.e. by 25 or 26 years old. I was nominated by this disparate group of fellow specialists to challenge the Chief Engineer of TC over career structure, and pointed out that all us specialists had at least an MSc, or in many cases a PhD, and hence were implicitly better qualified than the graduate civil engineers, and that even for those of us who might eventually achieve MICE by a specialist route such as hydrology, this would take a minimum of five or six years, meaning we would be 29 or older before promotion was possible. The Chief Engineer would not change the stance that TC (which became part of Thames Water Authority in April 1974) was "an engineering organisation" and hence the need for chartered civil engineers. Well, I then started on the tortuous route to MICE, but decided that career prospects within TC were pretty poor, and left for pastures new at the Institute of Hydrology at the end of 1974, where I worked for over 32 years before taking early retirement in December last year. I did persevere with the chartered exercise and did eventually attain MICE, CEng.

So, what is the moral of this tale? Well for me back in the early 1970s the water industry was dominated by civil engineers, and there was no recognised career path for hydrologists. After formation of the multi-functional Water Authorities, things changed and, for a period, the industry was dominated by economists and financial managers, with still no career for specialists such as us. The Water Authorities then broke up into the National Rivers Authority and the Water Utilities, and matters did not improve significantly, nor did they as far as I could see when the NRA became the Environment Agency.

However, a recent turning point in career development for hydrologists came out of the Easter 1998 and Autumn 2000 floods, with the Institution of Civil Engineers publishing its "Learning to live with Rivers" report, and the subsequent Defra report "Making space for water". There was a recognition within the EA that there were insufficient experienced flood hydrologists within the EA to be able to manage effectively their flood defence programme, and they set about establishing a core of flood risk staff, all of whom had to be — wait for it…., chartered civil engineers! Well, the EA soon discovered that they did not have enough staff with MICE or MCIWEM qualifications, and further, that many of their younger staff tended to leave the EA for jobs with consultants within two to four years of joining the Agency because of a lack of an

obvious career path for hydrologists. This situation has shaken the EA out of its complacency, and there is now a recognition within the EA — and we think within SEPA also — that hydrology is a core specialist skill that it must maintain in order for them to be able to deliver their core business; hence their willingness to join in a BHS led Professional Development forum, as explained below.

How is BHS contributing to this debate on career development and professional recognition of hydrology? As has been reported in previous *Circulations*, the committee has been actively investigating the issue of professional development and qualifications for hydrologists for some time, led very energetically by Rod Hawnt. Unfortunately he, and we, have now had to accept that the 'Holy Grail' of CHydrol. cannot be achieved, but we believe that we are slowly moving towards a clearer route to enabling hydrologists to gain an appropriate Chartered qualification if they so wish. We now believe that there are four possible chartered routes that hydrologists can aspire to:

- CEng Chartered Engineer, for those working in applied or engineering hydrology;
- CIWEM Chartered status within CIWEM, for those working within the water industry who see themselves more as water managers, (although at present only the title 'Chartered Water and Environmental Manager' is allowed until the Privy Council grant CIWEM the right to the *post-nominal* CWem);
- CEnv Chartered Environmentalist, for those working within hydroecology, or perhaps on delivery of the Water Framework;
- CSci Chartered Scientist, for those from a more academic, or research background.

There is still work to be done on this topic, and I will try to maintain the momentum that Rod has built up over the past two years. I will be working with Rod in establishing a Working Group on Professional Development for Hydrologists, and we have support for this proposal from a wide range of bodies:

- representing public sector employers: the EA, SEPA and CEH,
- two representative firms of consultants: still to be finalised
- two representative Universities: Imperial College and Lancaster
- and finally, two Learned Societies: the Institution of Civil Engineers and CIWEM.

The plan is to "To prepare a guidance document on a Professional Development Training Scheme for hydrologists that will gain immediate acceptance by the major employers of hydrologists in the UK". Thus the Society is still working on the matter of a professional qualification for hydrologists, 24 years after BHS was formed with one of its goals to try to establish such a qualification.

To complete the tale of my career, am I new to BHS – hardly ! I was involved in the formation discussions at Exeter University in 1982, where it was clear that at that time the only active forum for hydrologists to meet and discuss new research findings or report on results of studies and projects was the Hydrological Group of ICE. Those who thought of themselves as hydrologists, but who worked within fields such as fluvial morphology, water quality modelling, and the growing field of ecological or environmental flows, did not feel that they could relate to the engineering hydrological focus of the ICE Hydrology Group.

Hence BHS was formed in 1983, with the aim of acting as a focal point for the ever broadening field of hydrology. I have acted as an ordinary committee member for two years, before being persuaded to take of the job of Hon Treasurer for three years from 1986–89, and have then been a co-opted member (the BHS representative on the ICE Water Board from 2003 to 2006) and President Elect from 2006 to this year, and now will serve two years as President. Thus I think I have been on the committee for over a third of the life span of BHS!

It will be a matter of pride to be serving as President during the 25th anniversary of BHS formation, and I look forward to meeting as many members as possible whilst I attempt to attend as many national and regional meetings as I am able.

Frank Farquharson
President

British Hydrological Society Student Awards

We are pleased to announce the results of the 2007 BHS Student Awards – congratulations to Gunnar Mallon, Charlotte Lloyd and Robert Hughes



Gunnar, Charlotte and Robert with the BHS Presidents (Frank on the left, Rod on the right)

Set up to raise the status of hydrological education in Britain as well as to encourage hydrological study among undergraduates, these are awarded to undergraduate students who have demonstrated outstanding personal initiative and innovation in research/design projects in hydrology.

This year we had a number of excellent submissions from universities around the UK. The quality was high and we awarded a winner and two runners-up prizes. Congratulations to **Gunnar Mallon** (BSc Environmental Science, Stirling) for his winning dissertation on 'Controls on water quality of surface coal mining pit lakes in Germany and Scotland' (see abstract below). He will shortly be receiving a trophy, and was presented with a cheque for £400 at the AGM in September.

Congratulations also to the runners up: **Charlotte Lloyd** (MSc Geography, Bristol) for her dissertation on 'Development of a coupled erosion-carbon model to investigate the implications of future land-use and climate change' and **Robert Hughes** (BSc Geography, Birmingham) for his dissertation on the 'Association between summer monsoon precipitation in Nepal and several large scale climate diagnostics'. They each received cheques for £200 at the AGM in September.

We hope to continue to receive such high quality pieces of research work in next year's competition.

Hayley Fowler
BHS Hon Sec

Abstract:

The water quality of German and Scottish surface coal mining lakes was analysed to establish the impacts of the underlying geology, flooding mechanisms and national and EU policies. Three lakes in the Lusatian and Central German coalfields were contrasted with three lakes in the Scottish Lanarkshire and Ayrshire coalfield using a series of chemical and physical parameters. Sampling and analysis of all lakes was carried out between June and August of 2006, and results were compared with existing environmental quality standards. The exceptionally hot conditions during the summer months were taken into consideration in the interpretation of the results. German lakes showed alarming concentrations of cadmium and manganese, while Scottish lakes showed elevated concentrations of copper and, in the case of one lake, dangerously high concentrations of fluoride. Analysis of different flooding mechanisms did not conclude that these influenced water quality of the mining lakes significantly and it was shown that the main controls on water quality are current EU and national policies and the underlying geology. None of the German lakes was suited for their end-use, and reclamation of the mines could only be considered to have been successful for half of the lakes. A series of improvements to the project design and methodology are proposed, and a list of possible future research topics is outlined.

Gunnar Mallon (g.mallon@soton.ac.uk)

Wetland pollutant dynamics and control (WETPOL)

2nd International Symposium
Tartu, Estonia, 16th – 20th September 2007

WETPOL 2007 was a follow-up to the first, hugely successful meeting in Belgium in 2005, with conference topics including biogeochemical processes in natural and constructed wetlands, hydrological and ecological processes, heavy metals and organic pollutants in wetlands and the restoration of degraded wetlands.

The symposium opened on the Sunday evening with a wine reception. The Monday morning session consisted of an introduction to the wetlands and lakes of Estonia by **Ülo Mander** and **Tiina Nõges**, followed by several keynote presentations. **Robert Kadlec** presented an interesting review on free water and horizontal subsurface constructed wetlands for the removal of nutrients and other pollutants. After a short coffee break, **William Mitsch** spoke about the restoration of coastal and riverine wetlands. He referred to several case studies, including restoration projects in the U.S. and the Mesopotamian marshlands in Iraq.

Monday afternoon consisted of four parallel sessions: N, P & C cycling in constructed wetlands, heavy metals in constructed wetlands, N, P & C cycling in natural wetlands and a workshop on pesticide removal in constructed wetlands. **Ellis** and **Freeman** presented work on the export of carbon from peatlands under a scenario of increased atmospheric CO_2 and a reduction in water table height. Experimental results revealed that the combined effect of these changes in climate led to an increase in dissolved organic carbon concentrations. Continuing on the theme of climate change impacts on wetlands, **Craft *et al***. presented work on the likely impacts of accelerated sea level rise on C, N and P retention by tidal marshes in the southeast U.S. Using a combination of field and lab measurements and simulation modelling it was shown that a 70 cm rise in sea level could substantially reduce C and N sequestration due to a reduction in tidal freshwater marshes and brackish water marshes. Under the constructed wetlands theme, **Søvic** and **Mørkved** showed how the use of stable nitrogen isotopes (^{14}N and ^{15}N) fractionation, which is an innovative technique used in natural sediments or floodplain soils, can be used to estimate denitrification in small constructed wetlands treating agricultural runoff. Following the poster session there was a guided tour around Tartu.

The parallel sessions continued on Tuesday – starting at 8 am! The session on heavy metals and metalloids in natural wetlands kicked off with a talk by **Ukonmaanaho *et al***. on the effect of heavy metal loading on organic matter accumulation in ombrotrophic peat bogs in Finland. **Rinklebe *et al***. presented work on the dynamics of arsenic in floodplain soils at the Elbe River, Germany. These floodplain soils contain very high concentrations of arsenic in the bulk phase, but also in soil solution. During inundation of these floodplain soils, groundwater and soil solution concentrations of arsenic increased. **McNamara *et al***. from CEH Lancaster gave a very interesting presentation on how plant diversity can affect methane emissions in peatland ecosystems. Their preliminary results concluded that peatlands rich in *Eriophorum* spp. exhibit both highest CH_4 emissions and highest CH_4 oxidation potentials. Before lunch, **Mayes *et al***. talked about the role of constructed wetlands in the treatment of extremely acidic effluent from mine drainage and extremely alkaline leachates from steel slag/ lime spoil. It was concluded that constructed wetlands can be used to treat extreme pH waters. In the afternoon there was a workshop on wetland modelling. **McKergow *et al***. showed that terrain indices extracted from a digital elevation model of an agricultural catchment draining into Lake Taupo, New Zealand, can be used to predict the form and areal extent of wetlands. In the parallel session on molecular/ microbial advances in wetland research, **Milenkovski *et al*.** presented their findings on the effect of pesticides on denitrification

activity, using the isotope pairing technique in microcosms from constructed wetlands. This indicated a negative impact of the fungicide on the denitrification rate after 70h incubation, whereas the herbicide and the insecticide did not affect the process.

The symposium dinner was held on the Tuesday evening in the history museum of the University (a converted old cathedral) and entertainment included a steel drum band and Estonian folk dancers. After the dinner many of the delegates sampled the local beers in the pubs and bars of Tartu.

On Thursday the parallel sessions included wetland restoration and biogeochemical processes, wetlands' role in catchment management and hydrological and ecological processes in constructed wetlands. **Gudkov & Nazarov** presented the results of a study investigating the radioactive contamination of closed wetlands in the Chernobyl exclusion zone. After the Chernobyl accident a complex of flood protection dams was constructed to prevent the mobilisation of radioactive substances from contaminated soils. Waterlogging of soils behind these embankments has led to an increase in mobile radionuclide forms in bottom sediments which could be released if these closed wetlands are breached by flood waters. After the parallel sessions, there were several keynote presentations. These included a talk by **Nancy Dise** on the impact of atmospheric deposition of reactive sulphur and nitrogen on methane emission from wetlands and a talk by **Jos Verhoeven** on wetland restoration.

After the symposium an optional two-day tour of Estonian wetlands was organised. Approximately 40 people attended the tour. One of the stops was at the Kuresoo raised bog in the Soomaa National Park. After a packed lunch the tour headed to the Nigula Nature Reserve. This reserve



The slippery board walk at Nigula Nature Reserve, Estonia

consists of swamp forests occupied by wild boars, bears and wolves and an extensive raised bog with over 300 pools that often reach 5m deep. A wooden walkway crosses the bog, but with heavy rainfall this walkway became extremely slippery and waterlogged in places. There were a few scary moments and the group nearly lost a few members to the peaty pools! Although all the tour attendees got soaked in the heavy rain, spirits were high. After an overnight stay in Parnu, the tour visited wooded meadows and the Matsalu National Park — a haven for migrating birds. The trip ended in Tallinn with a drop off at the airport.

WETPOL 2007 was a great symposium. The combination of keynote talks, varied parallel sessions and field visits exposed delegates to a wide spectrum of issues in wetland science. Thanks to Ülo Mander and the Tartu University team for organising a successful and interesting symposium. The next WETPOL conference will take place in September 2009 in Barcelona.

James Rothwell, Manchester Metropolitan University
Fotis Sgouridis, Queen Mary University of London

BHS Statutes

Members will recall that we recently proposed a few changes to our statutes concerning composion of the main Committee and the use of electronic ballots. These proposed changes received unanimous support from those members who voted, as reported at the AGM (see page 18). Our Statures have been amended and the Charity Commission notified accordingly.

International Union of Geodesy and Geophysics (IUGG)

XXIV General Assembly, Perugia, Italy 2–13 July 2007

Kindly sponsored by the Exeter Travel Fund of BHS, we joined many thousands of delegates of the various Associations of IUGG and also participants in a concurrent Jazz Festival in the Italian medieval hilltop city of Perugia. The event as a whole was huge (with some 4,400 attendees over the two weeks!); however, with 302 attendees plus 185 students, IAHS was the third best attended Association. With numerous parallel sessions for the IAHS symposia and workshops, it was in theory possible to 'pick and mix' from the programme and to move between papers in different sessions. However, last-minute changes to the schedules due to 'no-shows` and differences between the programme distributed by the IUGG Local Organising Committee and that published previously on the IAHS website, meant that it was in practice difficult to move between the concurrent symposia and workshops.

The contribution of UK-based hydrologists to international hydrology was evident in the IAHS activities at Perugia. Convenors included **Corinna Abesser** (British Geological Survey), **Jim Freer** (University of Lancaster), **Des Walling** and **Bruce Webb** (both University of Exeter) and **Richard Essery** (The University of Edinburgh). During the meeting **Corinna Abesser** was elected a vice-president of the International Commission on Groundwater (ICGW) and **David Hannah** (University of Birmingham) and **Kate Heal** (The University of Edinburgh) secretaries of the International Commissions on Surface Water (ICSW) and Water Quality (ICWQ), respectively. **Frank Farquharson** (CEH) participated in the IAHS Board meeting on 8th July, as did Des Walling. **Kate Heal** also chaired the IUGG Young Scientists Event during the assembly. However, most noteworthy was the award of the 2007 International Hydrology Prize to **Des Walling,** see 'News from Members' on page 11.

Overall, the conference provided an excellent opportunity for researchers to meet, talk and discuss in an informal setting that facilitated useful networking. It allowed us to take stock of our current understanding of hydrology and provided delegates with a wide and stimulating agenda and renewed motivation and enthusiasm for future research. As always in such large conferences, only a relatively small number of talks in the total programme can be attended and the following summarises some personal highlights and impressions.

Impact of environmental change on sediment sources and sediment delivery

This two-day workshop, convened by **Des Walling** (University of Exeter), **Jim Bogen** (Norwegian Water Resources and Energy Directorate, Norway) and **Paolo Porto** (Università Mediterranea di Reggio Calabria, Italy) provided a focus for participants from the International Commission on Continental Erosion (ICCE), as well as proving of interest to other members of IAHS. It was attended by about 50 persons and the programme included 23 oral presentations and 10 posters.

The contributions were truly international, and included work in Canada, USA, Brazil, Ecuador, China, Japan, Korea, Russia and Australia and New Zealand, as well as many countries in Europe. The workshop aim was to provide a forum for presentation and discussion of recent work on the impact of environmental change on catchment sediment dynamics and it succeeded in highlighting both new findings from different areas of the world, and the development of new approaches and techniques for investigating this important issue. Although several of the contributions to the workshop highlighted the potential impact of climate change on catchment sediment dynamics, most emphasised the overriding importance of human impact as a driver of change.

A new focus on integrated analysis of groundwater/surface-water systems

The oral sessions for this three-day symposium convened by **Corinna Abesser** (BGS, UK) were very well attended and the talks presented a balanced mix of topics. The first part of the symposium concentrated on the understanding of processes and their conceptualisation, with the audience introduced to a wide range of physical, geochemical and ecological methods for investigating the interactions between surface water and groundwater. Speakers included **Andrew Love** (CSIRO, Australia), **Chris Soulsby** (University of Aberdeen) and **Marie-José Dole-Olivier** (CNRS, France) who all emphasized the importance of integrating methods from different science disciplines and pleaded for better cooperation between scientists from different backgrounds.

The second part of the symposium concentrated on the modelling of surface water–groundwater interactions in different geographical and climatic environments as well as at different scales. Many speakers identified the need for developing integrated modelling approaches and also underlined their importance as concept development tools. The audience was invited by keynote speaker **Ana Barros** (Duke University, USA) to take on the challenge of downscaling models to a scale that adequately captures the relevant processes within the systems studied. In the third part of the symposium practical applications and specific case studies were presented. The participants agreed that there is a need for more specific process studies to improve the understanding of surface water–groundwater interactions in different landscapes and climates and also to provide a better basis for the development of integrated modelling systems. The popularity of the symposium demonstrates the



increasing interest in the topic of surface water–groundwater interactions and the case studies and modelling applications presented confirmed that a better understanding of the interactions between surface water and groundwater is key to the protection and effective management of our water resources, qualitatively as well as quantitatively.

Water quality and sediment behaviour of the future: predictions for the 21st century

This symposium convened by **Bruce Webb** (University of Exeter, UK) and **Dirk de Boer** (University of Saskatechewan, Canada) contained a diverse range of presentations around three broad themes: sediment and nutrient behaviour in surface waters; metals and other water quality problems; and management issues, groundwater contamination and soil erosion. The first theme focussed initially on catchment-scale hydrological and sedimentological processes and interactions. Of particular interest in the first theme was **Adrian Collins**' (ADAS, UK) presentation on predicting the effects of changes in agriculture on suspended sediment concentrations in England and Wales, whilst at the smaller-scale, **Kate Heal** (University of Edinburgh) presented results from **Catherine Morgan**'s (Heriot-Watt University) research into modelling the performance of retention ponds designed for different purposes in attenuating flow and water quality in urban runoff. Providing the US perspective on the effects of urbanisation on local watercourses, **Arthur Horowitz** (USGS, Atlanta) presented the joint USGS and City of Atlanta water-quality/water-quantity monitoring programme implemented since 2001. These studies were an excellent introduction to the second theme which focussed primarily on metals and water quality.

Doerthe Tetzlaff (University of Aberdeen)

emphasised the importance of long-term data sets to be able to assess climatic variability and land use change on water quality. **Martin Thoms** (University of Canberra) presented a thoroughly interesting study of the distribution of heavy metals in the highly regulated River Murray, Australia. It was demonstrated that impoundments along the course of the Murray act as traps for sediment (particularly finer-grained fractions) resulting in a high degree of sediment metal enrichment at these locations. However, a vitally important point raised by Martin was that although we have considerable knowledge of sediment–water interactions, there is no routine monitoring of the quality of fluvial deposits throughout Australia (and indeed in many other countries). This point was also highlighted in many presentations throughout the symposium: although we have a workable science with which to understand the hydrological and fluvial environment, this is not necessarily reflected in local (or, indeed, global) policy and practice.

Towards improved evaluation of hydrological models: the need to understand and characterize uncertainties in the modelling process

Throughout this two-and-half day session workshop convened by **Jim Freer** (Lancaster University), **Thorsten Wagener** (Penn State University) and **Erwin Zehe** (Universität Potsdam, Germany) the room was full/busting. There were many excellent presentations and posters and only some of the talks are highlighted below. The workshop had four themes: (1) Input uncertainties and ensembles, (2) General approaches to assessing overall uncertainties, (3) Land use, internal information, scale issues and regionalisation, and (4) Water quality modelling and the use of multi-criteria methods.

The largest theme was the first one, perhaps reflecting the difficulties we still have in characterising reasonable input errors into our models! Talks ranged from those that took quite formal Bayesian approaches to error characterisation (i.e. **Ashish Sharma** – UNSW, Australia) to those who tried to quantify errors in inputs from their own catchment data (i.e. **Jerome Latron** – Institute of Earth Sciences, Spain). The most striking aspect of these talks was that the 'general assumptions' of error often enshrined in the formal and/or other approaches did not correspond with the potential for errors (and their non-stationary characteristics) as assessed with actual field data. Jerome gave the clearest example of this where he showed that the variability of rainfall inputs to their 4 km^2 catchment could be up to 55% in summer but dropped to <9% in winter due to storm type character-istics. The issue of data error also arose from **Amengual Arnau**'s (Universitat de les Illes Balears, Spain) talk in which the extreme flood peak was shown as if the measurement of the discharge at this time was 'true'. This apparent level of accuracy was also tackled by the audience and certainly we all need more realism in our ability to monitor extremes of hydrology and our treatment of such data.

Theme 1 also contained some interesting studies that used radar rainfall data (**Zhu Dehua** – University of Bristol, and **Guiseppe Mascaro** – Università di Cagliari, Italy) and techniques for downscaling coarse data (i.e. **Boni Giorgio** – CIMA, Italy) to show how this altered model predictions and parameter distributions. An important point arising from the downscaling studies was: how can we determine scales at which we can be more or less sure of input forcing data? Also, when assessing input errors to models, most talks only considered one model structure. It would be interesting in a future grand modelling experiment to consider multiple structures and how the same ensemble of input realisations affects the prediction uncertainties.

Holly Hartman (University of Arizona) kicked off the second theme by reminding us of the many possible metrics that could be used to define a 'good' model, especially for certain operational purposes, such as flood risk studies. **Bettina Schaefli**'s (Universität Potsdam, Germany) recent research on assessing models in the wavelet (frequency) domain suggests an evolving new way of looking at model performance which has some advantages over the typically used Nash-Sutcliffe measures. It appears that the community is moving away from just applying standard performance measures to problems and thinking in more detail about the information content in data, especially when using multiple sources of data, as discussed in talks by **Hoshin Gupta** (SAHRA, USA) and **Martyn Clarke**

(NIWA, New Zealand). Finally, two speakers who got to grips with some of the main PUB-related science questions were **Thorsten Wagener** (Penn State University) and **Wouter Buytaert** (Lancaster University). Thorsten addressed the important issue of regionalising predictions using some new regression techniques for a number of UK catchments and Wouter examined using the knowledge of 'parameter drift' for predicting land-use change.

Two main points emerged from the workshop for improving environmental model diagnostics in the future. Firstly, we need to improve our knowledge of errors in our observed data and how non-stationary they are for different data. This should involve better practice, both in the field to assess the natural variability (and limitations of our monitoring approaches) of measurements, and in including these characterisations in model evaluations. Hence more appropriate model performance measures should arise which relate to the potential errors in the observations, a practice which is generally done very poorly at present. **Neil McIntyre** (Imperial College) gave some great examples from his recent experiments that are trying to characterise the uncertainties in observational data. Secondly, we need community experiments that apply common models/data/techniques to better assess our predictive capabilities and to benchmark 'where we are' for different climatic and hydrological regimes. This point was also raised at the plenary of the IAHS Prediction in Ungauged Basins (PUB) initiative held during the conference.

Patterns, thresholds and non-linearities: towards a new theory of catchment hydrology

Mid-way through the week, this workshop, convened by **Peter Troch** (University of Tucson) as part of the PUB initiative, was a highlight for many delegates. It brought together an exciting and dynamic range of talks presenting possible new ways of dealing with complexity in hydrological processes. The workshop was opened by a keynote by **Murugesu Sivapalan** (University of Illinois) presenting "Behavioural Modelling: a new theoretical framework for hydrological predictions". The second keynote speaker in this session was **Jeff McDonnell** (Oregon State University) "Patterns, thresholds and non-linearities at the hillslope scale: testing the fill and spill hypothesis". Other speakers were **Thorsten Wagener** (Penn State University), **Enrique Vivoni** (New Mexico Tech, USA) "Advances in catchment theory from ecohydrological patterns and feedbacks in complex

News from members

IAHS 2007 International Hydrology Prize has been awared to **Des Walling**. In his citation for the award, Arthur Askew (IAHS President) noted Des' role in the highly successful 1982 Exeter Conference the legacy of which is still apparent 25 years later through providing funding for UK-based hydrologists to participate in international hydrology meetings.

Professor Louise Heathwaite has been appointed one of NERC's 'Science Champions', specifically for Sustainable Use of Natural Resources. Louise joins six other 'theme leaders' who will champion major environmental science themes and encourage partnerships across the research and stakeholder community. This new venture is at the heart of NERC's revised science strategy (due to be published in November) which plans to deliver the science needed to provide solutions to the global environmental challenges facing the world.

Ian Strangeways, ex-head of Instruments at the Institute of Hydrology and Director of TerraData, has a new book out. *Precipitation** is written for both students and professionals and is an exhaustive review of what we know (and don't know!) about this fundamental climate variable and how to measure it (**not** easy to do accurately!) which is key to all hydrological studies. I enjoyed reading the book and will be passing it on to a lucky BHS member to do a proper review for the next issue. *Ed.*

*published by Cambridge University Press. ISBN 0-521-85117-3
Price £70.00

terrain", **Erwin Zehe** (Universität Potsdam, Germany) "Patterns of predictability in hydrological threshold systems" and David Post (CSIRO, Canberra, Australia) "Predicting the daily stream flow of ungauged catchments by regionalising rainfall-runoff parameters".

Loss of knowledge

This one-day workshop was convened by the IAHS President, **Arthur Askew**, and, although it was not particularly well attended, those that did participate heard a number of thought-provoking presentations and contributed to several lengthy and constructive discussion sessions. The workshop was an opportunity to debate why hydrological data collection, processing and archiving were in decline worldwide and, to a lesser extent, to consider loss of well trained hydrologists to other, better paid jobs. The initial assumption of the convenor was that the problem related primarily to developing countries, and particularly to Africa, yet **Ian Cordery** (UNSW, Australia) opened the day by bemoaning the decline of basic hydrological data collection in Australia over the past 20 years. Nevertheless, the bulk of other speakers referred primarily to African problems, although **Avinash Tyagi** (WMO) also emphasised the problems in his own country, India. Did the workshop identify any firm solutions to this problem? Not really, although a number of issues were considered such as the need for decision makers and politicians to recognise the economic value of hydrological data and to allocate sufficient funds and resources; the need for donors to move away from short-term (2–4 year) support programmes towards longer-term capacity-building roles; and finally the possible model of the World Bank-funded Hydrology Project in India as one sustainable solution.



Hydrology in mountain regions: observations, processes and dynamics

In this symposium convened by **Danny Marks** (USDA Agricultural Research Service) papers were presented around themes such as climate change impacts, catchment hydrology, environmental assessment, model applications and integrated water management. The studies presented included the integration of many techniques, for example **Doerthe Tetzlaff's** (University of Aberdeen) paper on "Towards minimal calibration of process-based rainfall runoff models in mountainous watersheds integrating tracer data into geomorphic instantaneous unit hydrographs". Contributions also stressed the significant role for water resources of montane areas, where rivers and streams originate. Such areas are often sensitive to a variety of problems affecting not only the people in the headwater region itself, but communities and river systems downstream.

After five days of many stimulating presentations and posters, the conference ended with an excellent workshop on *Isotope Tracing of Water Balance, Hydrodynamics and Hydrological Processes* with many well-known isotope hydrologists including **John Gibson** (University of Waterloo, Canada) and **Piotr Maloszewski** (GSF München, Germany).

Corinna Abesser, BGS
Frank Farquharson ,CEH
Jim Freer, University of Lancaster
Kate Heal and Alan Jones, University of Edinburgh
Doerthe Tetzlaff, University of Aberdeen
Des Walling, University of Exeter

2007 Peter Wolf Young Hydrologists Symposium

Newcastle University, 28/29 June 2007

This year the former Postgraduate Symposium was re-scheduled to fit within the academic year better and aimed to attract more delegates from industry. The symposium was renamed the 2007 Peter Wolf Young Hydrologists Symposium to reflect the support that Peter* has given to the Society's young members over the years through donations of free memberships and to reflect the fact that the symposium is intended for all young hydrologists – not just postgraduate students.





The best presentation prize was awarded by President Rod Hawnt to Dan Boswell (top right) from the Environment Agency with the runners-up prizes being awarded to **Mark Franklin** from the Environment Agency and **Marie-Pierre Gosselin** from the University of Birmingham. The best poster prize was awarded to **Neil Mullinger** (right) from Lancaster University and the runner-up prize was awarded to **James Glover** from Mott MacDonald.

Claire Walsh
Newcastle University

*in view of subsequent events, how nice that the name change took place this year. - *Ed.*

Review of the Symposium

Enda O'Connell introduced **Paul Younger** who opened with a picture of Lord Kitchener saying "Hydrologists: your planet needs you!" and this was the theme of his talk. He highlighted how we should use more engineering approaches to tackle problems in hydrology using examples such as community water development in developing countries, wetlands created around mine water pollution sites and the 'cooling the tube' project in London. Asked if he saw interdisciplinary projects working well in academia, he replied that the idea is good but costly and it is hard to publish interdisciplinary papers.

Emma Gozzard (Newcastle University) kicked off the first session on ground water hydrology by talking about her work on mine water pollution in the Allen catchment and how diffuse sources increase the percentage of zinc which is a clear issue for WFD compliance. Among the problems faced are the lack of proven 'passive' technologies for metal mine water remediation and that the site is a heritage site so that it is difficult to build intrusive structures. Asked about the ecological impact of this pollution, she said the catchment supports a large variety of wading birds because even though there are high zinc concentrations, the catchment is clean.

Renji Remesan (University of Bristol) spoke on groundwater vulnerability studies and water quality

mapping using GIS. His work is based on India where there is a large population but access to clean water is low, and groundwater plays a major role in water supply. Groundwater risk maps have been drawn up which incorporate areas with high pesticide usage. More reliable maps can be attained by incorporating the land usage DRASTIC model but as the predicted areas do not match real results in all cases, there is a need to change the model parameters.

Erling Dalen (University of Leeds) talked about runoff generation in S.E. Spain. where steep-walled gulleys cut into the flat landscape are a common feature. Runoff in these areas creates bare patches. His work is developed around a simple model which calculates runoff totals. Conclusions are that geology and soil type are less important than previously thought in runoff generation and there is a large overlap between different HYSS categories. When asked if he plans to use hydrometry for calibration of his model, he replied yes, there are eight raingauges and other sources of rainfall data but that rainfall data are a problem as they are inconsistent.

The next presentation, by **Lenka Anstead** (University of East Anglia), was on the impact of water transfers on river morphology in the River Stour (Suffolk and Essex). which is causing erosion to the river banks; water transfer is set to increase with demand. She plans to examine bank cross-sections and profiles every six months for signs of erosion. This will also be followed by a laser scan survey of banks. A solution to the problem is the use of gabions but she recommends bioengineering (plants on banks).

The final talk of this session was by **Marie-Pierre Gosselin** (University of Birmingham/University of Worcester) on aquatic habitat characterization, flow variability and habitat use by Brown Trout and Bullhead based on work on the River Tern, Leigh Brook and Dowles Brook. A fish habitat survey was conducted at different flows to examine the change in river habitat, using a simple but effective technique of snorkelling. This was also done in different seasons to investigate spawning. It was found that mesohabitat composition is simpler and more stable in groundwater-dominated streams. Fish are also consistent in their habitat selection. Marie was asked if electro-fishing would help and if results from this would differ. She replied yes, they would, as electro-fishing surveys do not examine the fish behaviour.

After lunch attention turned to the issue of flooding and flood prediction. An informative talk was given by **Frances Elwell and Hayley Mizen** (Mott MacDonald & Environment Agency) on the 2000 flood on the River Mole in Surrey, the largest flood on the river since 1968. The flood was the cumulative result of a series of rainfall events. The catchment wetness during the flood, calculated from an antecedent precipitation index over the preceding five days, was calculated to have had a return period of 49 years.

Dan Boswell (Environment Agency) gave a talk entitled "A pragmatic approach to rating extrapolation: some case studies" and managed to hold the audience's attention on the potentially rather dull subject of rating curves, earning him the prize for the best talk. The main problem surrounding rating curve development is the difficulty in gauging high flows and the need to develop a reliable method for extrapolating curves. He also discussed the issues surrounding flow gauging structures and the need to accommodate conflicting interests when installing these.

Following on from Dan, **Mark Franklin** (Environment Agency) talked about operational flood forecasting techniques in the North West where the EA is continuing to develop a range of different techniques to predict floods. The more sophisticated techniques, such as hydrodynamic catchment models, can give advance warning of up to nine hours but rely on good input data. Simpler techniques, such as linear rate of rise models are valuable because they need less data and have been proven to be successful. Mark was asked whether the recent flood in Sheffield had been forecast and he replied that flood warnings had been issued and that the model forecast had been sent to local teams to make a judgement.

Justine Jones (SLR consulting) gave an interesting account of flood risk assessment from an industry perspective. She discussed the various methods used to keep runoff at existing levels when new buildings are constructed and those used to ensure that new developments are only built on land with a flood risk of greater than 1 in

100 years, a legal requirement. One question was whether the high resolution models developed to predict flood dynamics at a site could be pooled and Justine said that the Environment Agency do collect the models so there might be potential for collating the information.

The final session of the day, Water resources and catchment management was kicked off by **Jodie Whitehead** (ADAS) with "WagriCo (Water resources management in co-operation with agriculture)". It was interesting to learn about new schemes to encourage farmers to reduce the export of nitrates into watercourses. As well as carrying out farm audits and water quality analysis, this involved changing the perceptions of the farmers so that they realised the benefits both to themselves and to the environment. Over the long-term, schemes such as this are more sustainable than treating the polluted water.

The issue of climate change, a current concern in most aspects of hydrology, was addressed by **Lucy Manning** (Newcastle University) with a talk on using probabilistic climate change information from a multi- model ensemble for impact-sensitive decision making, with a water resources example in the Thames basin. Her modelling technique predicted that by 2080 lower flows in the River Thames would mean water abstractions would be severely restricted. Lucy discussed the issue of uncertainty in the model and how a business plan for the water authority could be made which took the uncertainty into account.

Simon Harrow (British Waterways) gave the last talk of the day entitled "British Waterways national water resource model – functionality and applications", informing everyone of how the canal system operates and the important issues. British Waterways uses a model of the canal network to predict water levels and where abstraction should occur. There was some speculation at the end as to whether increasing the proportion of freight transported by canal would reduce our carbon dioxide emissions or whether the resulting need for increased back-pumping of water would add to emissions.

The subsequent poster session and drinks reception had many and varied contributions, demonstrating the wide range of applications and studies with which young hydrologists are currently engaged. After a long but stimulating day delegates had dinner at El Torero tapas restaurant where conversation and drinking progressed with some of the delegates even dancing!

The next day lots of weary heads boarded the bus to head to the first field site, Nafferton Farm, a typical farm where there are issues surrounding the water quality of streams as a result of diffuse pollution from the farmland. **Paul Quinn** (Newcastle University) showed delegates the trial wetlands created to improve water quality and also to slow down flood peak movement. Wetlands included an Ochre pod (a waste mining product which strips phosphorus), and willow strips and barriers made from recycled farm plastic which slowed down the flow. At the end of the wetland system, water samples monitor how the wetland system is improving water quality. Delegates were also shown ponds in corners of two fields which capture runoff from storm events, laden with phosphorus-rich sediment. In storing storm runoff, the ponds 'cut off' the peak of flood events by storing runoff from the land surface. More about the site can be found on www.ncl.ac.uk/iq or videos on the proactive inter-ventions can be viewed at www.youtube.com/proactivefarms.

The next visit was to the Leaplish Waterside centre, Kielder Water. The setting was magnificent, with views across Northern Europe's largest man made reservoir, supplying water to the Tyne, Wear and Tees. After seeing a video on the reasons for Kielder Water being built, construction of the reservoir and issues surrounding the reservoir, a short questions session followed before heading on to the Kielder salmon hatchery.

The fish hatcheries at Kielder were constructed to help keep salmon stocks in the River Tyne at a stable level after the construction of Kielder Water because the reservoir acts as a barrier. They are also able to stock other rivers with low salmon populations. A visit to the Dam wall and spillway concluded the field visit. The long journey back allowed a lot of the delegates to catch up on some sleep in what was two very interesting and successful days.

Carolyn Mills and Mark Wilkinson
Newcastle University

Hydroecology: putting theory into practice

BHS National Meeting
University of Birmingham
19 September 2007

This one-day meeting was organised by **David Hannah**, **Jon Sadler** (University of Birmingham) and **Paul Wood** (Loughborough University). The papers and posters presented highlighted recent advances in hydroecological theory and practice, and considered the application of hydroecology to sustainable management of water resources across a range of environments, biotic groups and methodological approaches. The meeting was well attended, with 90 delegates from academic, public and private sector organisations.

The talks began with a short introduction by **David Hannah** to provide a context for the meeting. The first invited paper *Applying principles of ecological optimality to the design of dryland revegetation strategies* was presented by **Keith Smettem** (University of Western Australia). Keith described the use of areal planting to ameliorate the conditions of dryland salinity in Western Australia, whereby increased evapotranspiration may be optimised to restore groundwater recharge to pre-clearance levels.

Gilles Pinay (University of Birmingham) spoke next on *Diffuse nitrogen pollution control: how much water do riparian zones need?* He discussed the need to couple hydrological and biogeochemical models of river floodplain systems to address issues at the landscape scale and used the nitrogen cycle as an example of how this could be done.

After coffee and poster browsing, **Ian Cowx** (University of Hull) addressed the relationships between fish, habitat and river flow, presenting *Establishing flow and water level criteria for the maintenance and conservation of fish assemblages in rivers*. Ian described how data on hydrology, habitat and fish community types have been combined to produce a model which relates component parts of flows to life stages and habitat requirements and can be used to support conservation programmes.

The last paper of the morning was presented by **Paul Wood** (Loughborough University) on *Benthic and hyporheic invertebrate community response to supra-seasonal drought: is the hyporheic zone a refuge?* Paul's study found differential responses between the benthic and hyporheic communities to supra-seasonal droughts in chalk streams. He described how, in addition to low flow, water temperature and dissolved oxygen levels were apparent factors in triggering use of the hyporheic zone by benthic fauna.

Achim Paetzold (University of Sheffield) presented the first paper of the afternoon *Hydro-morphological controls on riparian biodiversity of gravel-bed rivers*. Achim spoke about the impacts of flow regulation and channelisation on the riparian arthropod fauna of Alpine river systems subject to different levels of modification, from unaltered braided rivers to heavily modified systems. He identified the differential responses of taxa to river modifications as providing the potential for certain riparian arthropods to be used as environmental indicators to assess impact of hydro-morphological changes.

Braided rivers also appeared in **Alexander Milner's** (University of Birmingham) talk on *The hydroecology of cold streams*. He described the spatial and seasonal changes in dominant water sources of cold streams and how biotic communities vary in relation to these changes. Sandy argued that near-pristine, highly sensitive cold river basins can be used as indicator systems of hydrological and ecological response to climate change.

Following afternoon tea and a further opportunity to look at posters, the final two papers considered the regulatory applications of hydroecology. **Mike Acreman** (Centre for Ecology and Hydrology) spoke on *Environmental flows in UK to implement the Water Framework Directive*. Mike explained how flow regime is an important part of achieving Good Ecological Status as required by the

Water Framework Directive. He set out how the thresholds have been determined with the input of leading aquatic scientists and the challenges faced in implementing the new standards.

The final presentation also related to flows but from the perspective of abstraction management. **Kathryn Charles** (Environment Agency) spoke on *Applied hydroecology in water resource management,* identifying the challenges in balancing environmental requirements with water resource licensing and legacy issues. She highlighted the need for practical hydroecological tools to support decision-making.

The last part of the meeting was a discussion session chaired by the organisers **David Hannah**, **Jon Sadler** and **Paul Wood**. David and **Keith Smettem** began by talking about the development of hydroecology (or ecohydrology?) as a discipline (in response to an earlier query from Rob Hawnt) before the discussion was opened up to the delegates. A key discussion point was on developing the hydroecologists of the future and the diverse backgrounds of people now entering the field. **Frank Farquharson** closed the day by thanking the organisers, speakers and delegates for an interesting and informative meeting.

Sarah Henshall, Chris Mellor, Matthew O'Callaghan and Lisa Worledge
University of Birmingham

Alan Gustard awarded President's Prize*



Alan, flanked by Presidents Frank and Rod, at the AGM in September when he was awarded the President's Prize.

Alan is one of the founding members of BHS and is currently a Director of Wallingford HydroSolutions; he is also an Honorary Research Fellow at the Centre of Ecology and Hydrology.

After an initial research position in the Transport and Road Research Laboratory, he moved to the Institute of Hydrology where he was appointed head of the low flow and environmental management section in 1984. Alan has specialised in estimating the frequency of low flows at gauged and ungauged sites, resource estimation for water supply and small hydropower schemes and developing techniques for estimating the impact of river abstrac-tions on stream ecology. He is the author of over 100 scientific publications in this field.

He has been very active in international hydrology and initiated and directed the global FRIEND programme of UNESCO and was elected President of the Surface Water Commission of the International Association of Hydrological Sciences in 1999. In 2003 he was awarded the prestigious International Hydrology Prize by UNESCO, WMO and IAHS for his outstanding contribution to hydrological sciences, becoming only the second UK hydrologist to receive the award.

We understand that being a low-flow specialist does not stop Alan having 'an influence' when it comes to storms and floods. We not sure what the influence is 'upstairs' and whether there is some strange ES affect at work here, but it is a fact that after Alan moved to his present home in Chieveley in Berkshire there have been no less than three major extreme rainstorm events centred on his house, where he just happens to have a raingauge.

- 10/09/1995 72 mm in 24 hours
- 10/09/2005 87 mm in 2 hours (4 mm in 1 hour) and exactly ten years after the big one in 1995
- 20/07/2007 111 mm in 24 hours

In amateur meteorological circles this is well known as 'the Chieveley effect/triangle' and reported as such in *Weather* in 2006.

*awarded biennially in recognition of work that has advanced hydrology significantly.

BHS 25th Annual General Meeting

The 25th Annual General Meeting of the British Hydrological Society was held during the National meeting on Hydroecology, University of Birmingham, 19th September 2007

The formal business of the Society was conducted, including agreeing the Minutes of the 24th AGM held on 12 September 2006, published in *Circulation No. 91*, and with reports from the President, Secretary and Treasurer (Claire Walsh standing in for Hayley Fowler who could not be present on the day). Full reports will appear on the BHS web site.

President **Rod Hawnt** opened the 2007 AGM by stating that it had been an interesting year for hydrologists! He observed that at the start of his career there was an expectation that 1 in 100 year events occurred rarely. When he started his career in the Lea Valley of the Thames Water Authority in 1973, the flood alleviation scheme was still being constructed to cope with another 1947-scale flood, with adjustments being designed in for another major event in September 1968. Suddenly in 1976, the first major drought for generations occurred and the focus switched to water resources for more than a decade. Floods become a distant memory until the 1998 and 2000 year floods shifted political focus back dramatically, with a consequent massive investment in the new mantra of Flood Risk Management, replacing Flood Defence.

By 2007 the switch between droughts and floods seems almost immediate. Almost as soon as the threat of major drought in the SE in 2006 subsided with good recharge last winter, the spring of this year gave way to the wettest summer in centuries, including two 1 in 200 year floods in less than one month — in the middle of summer for goodness sake!

But whilst we navel-gazed about climate change and hydrological extremes in the UK, the EU was in the process of moving the goalposts onto a completely different playing field, deciding that under the rigours of the Water Framework Directive what hydrologists should really be most concerned about is 'Good Ecological Status'. That is why the title of this meeting, 'Hydroecology', was highly topical even though it was a term that we had never heard of 30 years ago.

Rod went on to discuss the progress BHS had made during his two year term of office. His main objective from the outset had been to improve professional development opportunities for hydrologists. A lot of effort had been put into reviewing and publicising Chartered Status routes (see *Circulation No. 94*). As a result we have now shifted our attention to improving Professional Development Schemes for hydrologists, particularly those in the public sector.

Following discussions with the Nordic Hydrology Association, BHS decided to jointly sponsor the re-launch of their successful journal as *Hydrology Research* with the first issue to be produced in early 2008. The Main Committee appointed Ian Littlewood as the BHS nominated joint Editor, who will share the duties with Dan Rosberg from Denmark. It is an exciting venture for BHS to have a share in a respected journal, so if members want to publish a paper on a research topic or share their practical experiences on an interesting project then they should send in their abstracts direct to Ian (see page 27)

BHS have been seeking to strengthen links with other organisations, partly linked to the professional development drive, and efforts with CIWEM have produced a much stronger relationship for the future. Links have also been helped by the outgoing CIWEM President, Bob Sargent, being a founder member of BHS. In addition, the Chairman of the Water Resources Panel, Colin Fenn was persuaded to re-join BHS and also take up the position as the CIWEM rep on the Main Committee.

The Honorary Secretary will report on the success of two Postgraduate Symposiums during the year, the most recent one being hosted at Newcastle University in June (see page 13). Rod attended both events and he was struck by the

very high standard, not only of the presentations but also of the questions and debate stimulated in the young and enthusiastic audience. This was highly encouraging for the future of British Hydrology.

The Main Committee awarded Honorary Membership during the year to Dr Susan Walker. The award was made to Susan not only for her long-standing service to BHS, as a committee member, Honorary Treasurer and President, but also for her important contribution to public service in her various positions over the years.

The committee had also been trying to choose a new, fresh logo and Rod displayed three alternative designs. The final choice would be made by the new Committee in October [*see back page, Ed.*]

Prior to presenting his summary of the progress on Professional Development and Chartered status for hydrologists, Rod thanked the main committee members and his executive committee of Peter Ede, Hayley Fowler, John Griffin, Celia Kirby and Frank Farquharson, for all their support and encouragement. It had been a privilege to serve as President and he hoped that he had been able to make a small difference. Rod felt that he was passing on the batton of the Society in a healthy state of affairs onto the next President, Frank Farquharson, to whom he offered his very best wishes for the future.

The Secretary's report covered the meetings conducted during the year including the two postgraduate symposia. The first, the 2006 BHS Postgraduate Symposium, was held in Lancaster University on 7th November 2006 on the theme of 'Questioning existing hydrological concepts', organised by Daniel Kaeser and Tobias Krueger. Despite a small attendance of only seven speakers, it was deemed to be a rewarding experience. Clare Deasy from Sheffield University was awarded the overall best speaker prize of £200 for her outstanding presentation on "Multi-Scale Hydrology, Sediment and Phosphorus Dynamics of Small Agricultural Catchments."

For the 2007 Postgraduate Symposium — reported on page 13 — we decided to change the timing of the symposium to coincide better with the academic year and to try to attract more delegates from industry. On behalf of the Society, Hayley thanked all of those involved in organising, speaking at, chairing and administrating meetings and also those who produce write-ups for *Circulation*. It is only through their efforts that the Society is able to continue to offer its large and varied programme of meetings each year.

Hayley also took the opportunity to acknowledge the support the Society gets from the Institution of Civil Engineers and particularly from our Secretary, Tim Fuller, who has been a great help to the Society again this year.

Pete Ede, recently re-elected as Treasurer, was pleased to once again be able to report a healthy financial position, with the accounts showing virtually break-even over the year, in line with the Main Committee's target. The financial position is underpinned by solid membership figures. At the end of June 2007 we had 1039 paid-up members, compared to 951 at the same time last year. Over the past four years the membership has increased by more than one-third. The milestone of our 1000th member was marked with a presentation to Laura Herrington at the National meeting in February.

The financial reports show a generally healthy picture. A number of specific points are highlighted in the report on the website.

The initial forecast for 2007/08 shows a small deficit for the year. At present there is no indication of a need to change subscription rates, but this is of course kept under review. The forecast includes an increase to £6,000 in the charge for ICE services set out in the new Service Level Agreement which started in January 2007. Under this agreement we receive an agreed amount of secretarial/accounting support, plus room hire at ICE of up to £12,000 per calendar year.

Peter thanked colleagues on the National Committee for their support and, like Hayley, acknowledged the work of the staff of the Institution of Civil Engineers who handle the real business of running the Society. He believes that the finances of the Society are on a sound footing for the years ahead, and looks forward to continuing his role for the next two years.

New BHS Main Committee members



Coln Fenn has joined the Committe as our CIWEM (Water Resources Panel) representative. Colin has over 30 years experience in the water sector, in research, teaching, consultancy, managerial and business development capacities. He is currently the Chief Executive of Anser UK Ltd, a start-up flood products company, Principal Director of his own consulting company, CFonstream, an Associate Lecturer at Oxford Brookes University and a Non-Exec Director of two companies, Hydro-Logic Ltd and EnviroGene Ltd. He was previously Managing Director of HR Wallingford Ltd, and Managing Director of WS Atkins Water. Before that, he was the Hydrology & Water Resources Consultancy Manager at Southern Science Ltd, having moved from the academic sector into consultancy in 1990. His PhD — at Southampton — was in hydrology, glaciology and statistics.

Nigel Goody has a BSc in Environmental Sciences from UEA, Norwich and joined Anglian Water Authority in 1976 where he worked for many years before moving to Elgin as Senior (later Chief) Hydrologist with North East River Purification Board. Nigel transferred to SEPA upon its formation in April 1996 as manager NE Hydrology section in North Region. In 2000, Nigel was asked to head up development of capacity within Hydrology to meet challenges of WFD: initially a small unit creating databases and tools for water resources management, now expanded to include hydrologists providing the water resources advice to regulatory staff and continued development of modelling capacity.





Neil Macdonald has a BSc in Geography from the University of Salford and an MSc in Environmental Assessment and Monitoring in Drylands from the University of Sheffield. In 2000 he took up a NERC-CASE funded PhD at Dundee, examining the application of historical flood information in re-assessing flood frequency analysis in Britain, during which time he acted as the publication sales officer for the BHS. Since then he has moved to posts at Birmingham and then Aberystwyth before taking up a lectureship in Environmental Management in September this year with the Department of Geography at the University of Liverpool. His current research interests focus on the use of historical information in improving understanding of past climatic variability, with particular reference to flood frequency, magnitude and seasonality; other interests include fluvial geomorphology and the use of Sustainable Drainage Systems.

Effluent re-use: an important issue

BHS South East Section meeting
ICE, London, 4th October 2007

Increasing pressure on water resources is leading to an increased need to develop more innovative water resource solutions in various parts of the world. This pressure presents a particular challenge for the south-east of England where, even with a strong focus on demand management, there will be a need for new water resources in the future. As part of the Ofwat Asset Management Process (AMP 4), many water companies are considering effluent reuse as an option for resource development. Speakers from Thames Water and EA discussed the challenges, viability and sustainability of desalination as an answer to future water resource demands and detailed experiences to date from an international perspective and the Essex and Suffolk Langford scheme case study.

Sian Hills (Sustainable Resources and Customer Research Mmanager, Thames Water) provided an overview of effluent reuse options including large and small scale planned direct and planned indirect reuse schemes. The issues of treatment requirements, public acceptability (the 'yuk' factor) and cost implications of the various technologies were discussed. Sian discussed options from Singapore and Australia, which highlighted the contrasting views on acceptability from the respective local communities. The option was better received in Singapore where a much greater effort had been made to engage with the local population on the issue. In contrast, the example from Australia highlighted that it is possible for a small minority who are against the option to galvanise much more widespread opposition to the scheme.

Sian finally discussed the pilot plant that Thames Water are developing and the extensive research being carried out into the various treatment streams that might be required as well as the options for return to the river/ reservoir network at different points. This research is being complemented by a programme of stakeholder engagement with work to determine the public view in relation to the acceptability of the options.

The second presentation was given by **John Daniels** (Water Quality Regulation Technical Specialist, Environment Agency) who detailed a specific UK case study. John was involved in the consenting for the Essex and Suffolk scheme at Langford involving the River Chelmer. John outlined the details of the scheme and provided background to the development of the scheme which involves the diversion of STW effluent from its original destination so that it enters the R.Chelmer upstream of an existing intake.

Extensive stakeholder dialogue was undertaken in advance of the scheme to explain it to the local population. This was shown to pay dividends in that the major anticipated concerns were addressed. However, the scheme acceptability was undermined by a locally-based objection on the grounds that the reduced effluent loading to the river discharging to the estuary could reduce the capacity for silt scouring and exacerbate the siltation problem leading to increased dredging requirements.

A modelling exercise was undertaken which demonstrated that there was negligible risk of this happening but Essex and Suffolk Water are still required to carry out dredging on a regular basis entailing significant expenditure.

The meeting provided an insight into the development of effluent reuse and outlined how the UK Water Industry is embracing reuse. The two presentations proved that effluent reuse is currently an important and viable option for water resource development.

Steve Tuck
Thames Water

Incorporating climate change in hydrological analysis and design

Scottish Hydrological Group Evening Meeting
Royal Over-Seas League, Edinburgh
11th October 2007

Robin Wardlaw (University of Edinburgh) presented some recent applied research he led with the help of undergraduate students, **Neil Nutt**, (now at Halcrow), **Damian Wheeler** and **Chris Wray**, (now at Mott MacDonald). Attended by over 70 people, the evening meeting was introduced by **Tim Jolley**, the new chairman of the Scottish Hydrology Group. The purpose of Robin's talk was to examine how we can improve our approaches to incorporating the impact of climate change in hydrological analysis and design. Current hydrological analyses for water resources and flood mitigation design are generally based on assessments of expected changes in *mean* characteristics of climate. Can we do better, as the resolution of global and regional climate models improves, and their physics base is refined and more reliable simulations of the *extremes* are possible? The presentation was illustrated by case studies for the Tay and Clyde catchments. Robin also provided some insights into the next generation of climate models offering improved resolutions, a better quantification of uncertainties and more and more data and scenarios.

Robin introduced his presentation by an overview of recent and on-going development in the climate change sphere. There is a plethora of information available: more than 500 pages on the BBC website; the recently published IPCC Assessment Report 4 is a set of amazing documents; last year the Stern report provided the first economical assessment of climate change and provided a wake-up call for those still doubting about the significance of the issue. In Scotland, a new and excellent website was launched earlier this year, the Scottish Climate Change Impacts Partnership (SCCIP) http://www.sccip.org.uk

There are two key hydrological impacts associated with climate change: changes in flood risk, and changes in drought risk. To quantify these changes, we use the output of climate models, which have seen a fantastic progression over the last 30 years. However, there are still two significant issues to address when using output from climate models: model and emissions uncertainty; and downscaling model predictions.

Focusing on the issues of scale, Robin explained that most Global Circulation Models (GCMs) have a resolution in range of 1.5° to 3°. The UK is covered by six grid squares in HadCM3 (the Met Office Hadley Centre model used to derive UKCIP02 scenarios). Regional Climate Models (RCMs) operate at a finer resolution with their boundary conditions defined by GCMs. For example, HadRM3H from the Met Office operates with a 50 km grid. Unsurprisingly, different models lead to different results and the inter-model variability is currently greater that than the inter-emissions scenario variability.

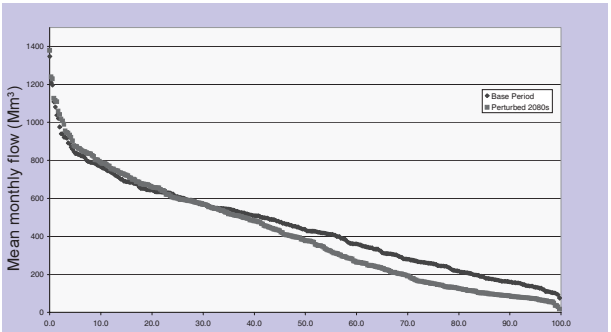
Another issue with climate models when assessing the impact on water resources is that precipitation has been an uncertain parameter in climate models. UKWIR have produced guidelines to assess the effect of climate change on river flows and groundwater recharge (2003 and 2007). UKWIR2006 scenarios take account of climate modelling uncertainty, are based on projection of six GCMs, and provide changes in precipitation and temperature monthly means.

Robin then presented case studies for the Tay and Clyde catchments. Using scenario output from UKCIP02 (HadRM3H simulations), both for the reference period 1961–1990 and for the 2080s horizon with A2 emission scenario (medium high), Robin showed that for the Tay:

- Evapotranspiration computed from the HadRM3 simulated climate for the 1961–1990 reference period

compared very well with that computed from the Met Office 5 km gridded data. Looking at the 2080s horizon, there was a 25% shift with increased PET.

- Modelled rainfall did not compare very well with observed records for the reference period, with a 20% overestimation. Looking at the 2080s horizon, there was an increase of 10–15% of winter rainfall, and a decrease of 30–40% of summer rainfall.
- Drought duration could increase from 50 days to 80 days for a 50-year return period drought.
- Incorporating these rainfall and PET parameters into a hydrological model, Robin showed first an excellent comparison for the reference period and then highlighted a possible shift of the flow duration curve (see figure) and 50% reduction in dry weather flow.



River Tay at Lalathie: simulated Flow Duration Curves Delta shift in ET and precipitation (Dark line = Base period, Grey line = Perturbed 2080s)

Similar results were obtained for the Clyde, with 25% increase in PET, 20% increase in winter rainfall and 30% decrease in summer rainfall. This resulted in increased drought duration and also a reduction of dry weather flow.

Clearly climate change could result in a significant impact on water resources in Scotland!

Turning to the other extreme, Robin showed that HadRM3 extreme rainfall (annual 1-day maximum and annual 5-day maximum) for the reference period compared remarkably well with FEH data. Then, looking at 2080s projections for the Tay catchment, there is a possible 15% to 20% increase in annual maximum 1-day rainfall for 10 to 100 year return periods.

The current pragmatic approach is to translate this shift in extreme rainfall into a shift of flows. However, should we start to work from RCMs-simulated rainfall more directly? Robin did not think we could at present but this may become possible with expected new scenarios from UKCIP08.

Robin then presented a number of recent or on-going UK and European relevant research projects with imaginative names such as MICE, PRUDENCE, STARDEX, ENSEMBLES. The latter is co-ordinated by the Met Office and will provide a probabilistic assessment of model uncertainty and will be linking outputs to various applications, including water resources and weather risk management. Other related research includes DEFRA reports FD2105 (Improved methods for national spatial-temporal rainfall and evaporation modelling for BSM) and FD2113 (Spatial-temporal rainfall modelling with climate change scenarios). He saw potential in linking these to the forthcoming UKCIP08 data.

The latest IPCC report (AR4) highlighted that models have recently improved significantly. Inter-model variability will be incorporated into UKCIP08 scenarios. Probabilistic climate projections based on high resolution RCM (25-km grid) and a monthly timestep will be provided. We can also expect a weather generator providing statistical representation of short duration weather on a 5-km grid. Full details are available at http://ww.ukcip.org.uk/scenarios/ukcip08.

Robin expects that future impact studies based on UKCIP08 should be able to use better estimates of precipitation extremes under climate change and incorporating uncertainty. Time series projections should also be available for use in water resources assessment. UKCIP08 scenarios will require to be evaluated against present climate, but then they could provide vast opportunities for hydrologists, such as the incorporation of simulated climatic data directly into our models or through related downscaling studies to the creation of regional growth curves adjustments within FEH-CDROM.

Concluding his presentation, Robin summarised his findings. UKCIP02 simulations do not provide output for direct simulation of river flows; however precipitation and evapotranspiration were remarkably good for the Tay and Clyde, which bode well for UKCIP08. With the release of UKCIP08 scenarios, there will be huge potential for developing more engineering tools to inform the design process in both water resources and flood mitigation. We could be moving from policy advice to adaptation design tools.

Clearly we should also certainly look at the implication of climate change on water resources in Scotland.

Tim Jolley (Grontmij) asked if there was a scale issue with current model outputs. Robin recognised that existing GCMs are not good at simulating extremes; however they are improving.

Alistair Cargil (SEPA) noted that there have been a number of recent wet summers, which somewhat contradicts the climate model predictions; he also asked if the hydrological model of the River Tay included the existing reservoirs in the catchment. Robin replied that we should recognise both climate variability and model uncertainty. The hydrological model of the Tay catchment does not include a representation of reservoirs and the modelling exercise therefore provides only an indication of what might happen; however, he accepted that the reservoirs could mitigate partly the effects on drought, but that has not been assessed.

David Martin (Grontmij) was interested in inter-model variability and asked if various organisations were working together to produce results similar to the UKCIP08 scenarios. Robin pointed to the ENSEMBLES project, co-ordinated by the Met Office, which involves a number of European organisations.

Syin Yi Phoon (EnviroCentre) was impressed by the HadRM3 results in Scotland, as her own experience of using climate model results in Africa was less encouraging. She also asked about the representation of convective storms which have led historically to some disastrous flood events in Scotland. Robin replied that he also has experience of working in the Caspian Sea area where climate models were good; however he accepted that other areas in the world, maybe towards the tropics, may not be as well represented. As for convective storms, these have only local effects, such as the event of July 2002 in the East End of Glasgow and are presently difficult to capture with climate models.

There was a last question about the impact of climate change on hydro-schemes, as these are sensitive to the entire flow duration curve, and not solely the extremes. Robin recognised that he has not looked at it: possibly the impact could be positive with more winter rainfall.

Nigel Goody (SEPA) closed this very successful and interesting evening meeting by a vote a thanks to Robin. Joking about using undergraduate students to conduct such remarkable research, he thought that the future of hydrology is in good hands. We all look forward to the release of UKCIP08 scenarios and a future similar review of the impact of climate change on water resources and extreme events in Scotland.

Pascal Lardet
Halcrow

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 **Peter Ede**, Mott MacDonald Group, Demeter House, Station Road, Cambridge, CB1 2RS *(tel 01223 463690, email peter.ede @mottmac.com).*

A surprisingly early hydrometrist and catchment planner

In the printed *Minutes of Proceedings of the Institution of Civil Engineers* Vol 27 (1867/68), there is a discussion on Fresh-Water Floods of Rivers. Captain E.R.James, R.E., "stated, as an officer employed on the National Survey, that he had, three or four years ago, made a proposal to include within the survey...watershed lines...the areas of all such divisions; and ..rainfall and outfall observations ...for a period of one year, at the public cost; but the usual financial difficulties were made in opposition to this scheme.."

However on his own initiative he resolved to establish a balance for a basin and he commenced in 1864 with the Eden "near Carlisle; and his first results, based on very few observations, seemed so strange that he could not trust them. The outfall [i.e. the run-off] was found to largely exceed rainfall."

Undeterred "He determined to be more careful in the next experiment; but the results were still difficult to understand. He chose the upper basin of the River Wey, which has its outfall through the gorge of the chalk hills at Guildford..The area of the district drained was 229.4 square miles". Using 15 raingauges well spread spatially and over an altitude range of 120 feet to 814 feet a.s.l., he found an areal rainfall of 18.10 inches from 1 May to 31 Dec, 1867; the corresponding run-off was 3230 million cu. ft. based on about a daily velocity observation at one or other of two river sections half a mile apart at Guildford. "In round numbers 2/3rds of the rain had been absorbed or evaporated."

Capt Evans concluded with comments on basin geology and the problems of irregular flows due to mill operations. Nathaniel Beardmore added his view that "even on so large a river as the Thames a continuous gauging was rendered necessary" because of mill and lock operations, adding that "the best example of gauging the flow of a district was that of the Commission Hydrometrique de Lyon."

The whole discussion, pages long, is tantalising to those of us hoping to produce longer time series of river flows to test climate change impact theories. Does anyone know where the National Survey notebooks of Capt Evans were archived? If anyone is interested in researching this topic and related Victorian gauging matters can they email Felicity Sanderson at CEH Wallingford (fjs@ceh.ac.uk) who has the best national list of old flow gauging time series.

Frank M. Law

International Prize for Water 2006–2008

We have been informed that Wessex Institute of Technology is cooperating with the Prince Sultan Bin Abdulaziz International Prize for Water. This prestigious International Prize consists of five different awards in separate fields of water resources:

● Surface Water ● Ground Water ● Alternative (Non-Traditional) Water Resources ●Water Resources Management and Protection

each worth around $150,000, plus a special new Creativity Prize, worth more than a quarter of a million dollars. This will be awarded to any original work (research, invention, technique etc) which is considered a breakthrough in any water-related field. The work must be practically applicable, economically feasible and environmentally friendly. Winners will also receive a gold medallion, a trophy and a certificate will be presented at a special award ceremony. The Prize Council will announce the winners in September 2008.

All relevant details for nominations can be found on the Prize website at www.psipw.org. For further information contact tnolan-shaw@btconnect.com.

Nomination deadline: End of December 2007.

ENVIROS

TODAY'S BUSINESS TOMORROW'S WORLD



Enviros is one of the largest multidisciplinary environmental consultancies in the UK and part of the Alfred McAlpine group. We are seeking to significantly grow our Water Resources and Hydrology team across a number of our UK offices. The Water Resources & Hydrology team operates within the Land and Water Division and serves a wide range of clients including developers, regulators and water companies.

The range of work undertaken within the team is interesting and varied covering almost every aspect of the water environment such as groundwater, wetlands, rivers, lakes/reservoirs, transitional waters and marine waters. Projects include water resource studies, sustainable water/drainage management, flood risk assessment and management, EIA, R&D, industrial compliance, water company investigations and developing/implementing water related policy (particularly for the Water Framework and Habitats Directives). The work undertaken embraces the traditional areas associated with hydrologists, hydrogeologists and water quality experts but there is an increasing need for hydroecological skills and strategic/policy related expertise and therefore we are looking for a wide range of specialists to join our team.

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Consultant Ref 435
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For further information on any of the above roles and to apply online please visit the careers section at www.enviros.com or if you would like to discuss any of the above positions contact Angelo Papaioannou (Technical Director) on 01743 284880.

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Forthcoming Events

BHS 2008

Sustainable Hydrology for the 21st Century
15–17 September 2008

It's not too soon to start thinking seriously about this event. The link on the BHS web site will give you more details about submission of Abstracts: don't be bashful — let's make this the biggest BHS Symposium ever!

Just to remind you, Technical sessions will be divided into eight sub-themes, as follows:

- Water Resources
- Flood Risk Management
- Climate change and Water
- Hydrometeorology
- Urban Water
- Ungauged Catchments
- Hydroecology
- Water Quality

This is the first call for abstracts for papers - see also the flyer coming round with *Circulation.*

Abstracts are to be up to **150 words** in length and must be sent to bhs_symposium_2008@ex.ac.uk by **15 January 2008** at the latest.

Call for papers

We have kindly been notified about two meetings running back to back next year which appear to have quite a lot of hydrology in their programmes.

Ninth International Conference on Modelling, Monitoring and Management of Water Pollution

9 - 11 June 2008, Alicante, Spain

Second International Conference on Sustainable Irrigation Management, Technologies and Policies

11 - 13 June, 2008, Alicante, Spain

Full conference information is available at: www.wessex.ac.uk/water2008rem2a.html and www.wessex.ac.uk/irrigation2008rem2a.html or you can submit an abstract directly by sending an email to: krobberts@wessex.ac.uk

Hydrology Research

- the official Journal of BHS and the Nordic Association of Hydrology

As reported at the AGM as well as in the last newsletter, *Hydrology Research* will supersede *Nordic Hydrology* in 2008. Having worked so hard to get this joint venture off the ground, we want to make this journal a success so members are urged to submit manuscripts via the online Editorial Manager at http://www.editorialmanager.com/hydrology. Note that this website currently indicates that submissions are to *Nordic Hydrology* but rest assured that papers accepted for publication from now on will appear in *Hydrology Research.*

Please note also that we are now able to announce four additional UK names for the *Hydrology Research* Editorial Board:

Dr Ann Calver, *CEH, Wallingford*
Prof Ian Cluckie, *University of Bristol*
Dr Alan Gustard, *CEH, Wallingford*
Prof Paul Whitehead, *University of Reading*

Prof Howard Wheater, *Imperial College*, makes the fifth UK member as he is already a member of the Editorial Board for *Nordic Hydrology* and will continue in that role for *Hydrology Research*

Scottish Hydrological Group

The SHG Committee, from 5 September 2007, is as follows:

Tim Jolley (Grontmij) – Chairperson
Manuela Toth (ArupScotland) – Honorary Secretary
Nigel Goody (SEPA) – Treasurer and BHS representative
David Martin (Grontmij) – ICE Glasgow and West of Scotland representative
Pascal Lardet (Halcrow) – ICE Edinburgh and East of Scotland representative
Michael Cranston (SEPA)
Hilary Smithers (SEPA)
Julie Hawkings (Mott MacDonald)
Miklas Scholz (Edinburgh University)
Paul Hart (Royal Haskoning) (making a welcome return after a career break)

Due to the recent changes at the 'helm' of SHG (i.e. new Hon Sec and new Chairperson) the Committee has been asked to come forward with comments or suggestions on how things could be done better/more effectively, etc. SHG members are encouraged to contribute any of their own ideas through any Committee member. The duties of Hon Sec are to be shared amongst other Committee members between October and April while Manuela takes maternity leave. She asks that while she is temporarily unavailable from November 2007 through to probably April 2008 please contact either Tim Jolley or Paul Hart (p.hart@royalhaskoning.com).

Diary

14th Nov 2007
Scottish Hydrological Group and SHSG
"Postgraduate research in Hydrology and Hydraulics"
Venue: Rankine Building, Glasgow University
Time: 6 for 6.30pm
Contact: Paul Hart (p.hart@royalhaskoning.com)

15th Nov 2007
BHS South East Section
"How green is your water?"
Venue: ICE, London
Time: 6.30 pm
Contact: Helen Procter (Tel: 01372 754201)

16th Jan 2008
Joint SHG & CIWEM meeting
"Coastal flooding in Scotland"
Venue: Wolfson Medical Building, Glasgow University
6 for 6.30pm
Contact: Paul Hart (p.hart@royalhaskoning.com)

17th Jan 2008
BHS Pennines Hydrological Group
"In-situ hydrological monitoring" (including site visit to Hatfield Moors, South Yorkshire)
Venue: Leeds University
Contact: Claire Walsh (Tel: 0191 222 6618)

24th Jan 2008
BHS South East Section
"River restoration and naturalisation"
Venue: ICE, London
Time: 6.30 pm
Contact: Helen Procter (Tel: 01372 754201)

20th February 2008
BHS &Royal Met Soc
"Climate change: Scenarios, Impacts and Adaptation"
Venue: Newcastle
Contact: Claire Walsh (Tel: 0191 222 6618)

27th Feb 2008
Scottish Hydrological Group
"Delivering CAR in practice: challenges at the beginning of implementation of abstraction and impoundment regimes in Scotland"
Venue: Royal Over-Seas League, Edinburgh
Time: 6 or 6.30pm
Contact: Paul Hart (p.hart@royalhaskoning.com)

13th March 2008
BHS South East Section
"Urban Flood Risk and PPS25"
Venue: ICE, London
Time: 6.30 pm
Contact: Helen Procter (Tel: 01372 754201)

British Hydrological Society

Copy deadline for Circulation No. 96 18th January 2008