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THE NEWSLETTER OF THE BRITISH HYDROLOGICAL SOCIETY

Circulation

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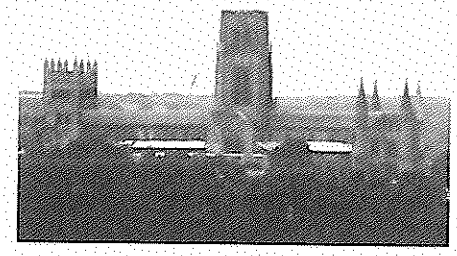
Diary of forthcoming events

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- Membership enquiries: Tim Fuller, BHS Secretary, Institution of Civil Engineers, 1-7 Great George Street, London SW1P 3AA. *Tel 0207 665 2234, Email bhs@ice.org.uk.*
- Editor: John Griffin, CEH Wallingford, *Tel 01491 692395, Email jhgr@ceh.ac.uk.*
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Notes from Durham



The National Hydrology Symposium was opened on the Monday morning by **Frank Farquharson**, the President Elect, standing in for **Rod Hawnt**, who arrived a little later after a weekend celebrating his daughter's wedding.

Chris Spray (SEPA) got the proceedings off to a good start with an interesting keynote paper on land management from the regulator's point of view: not just policing legislation, but working to understand the scientific basis for decisions — a quarter of SEPA's staff are scientists.

Enda O'Connell (Newcastle University) gave an overview of land management and flood risk. **Louise Heathwaite** (Lancaster University) reviewed sustainable water management in the face of the complexity of diffuse pollution. **Hayley Fowler** (Newcastle University) outlined progress with regional climate models and their effectiveness in predicting extreme rainfall events under global warming.

Other speakers covered a range of hydrological topics, from complex modelling techniques to working with farmers: I learnt that a healthy bog does not act as a sponge, and that you can (almost) describe your latest piece of kit without giving a sales pitch.

The Symposium award for the best presentations at Durham went to **Lucy Dugdale** (impact of land management on salmonids in the Eden catchment) and **Zoë Wallage** (drain blocking to reduce organic carbon runoff and discoloration).

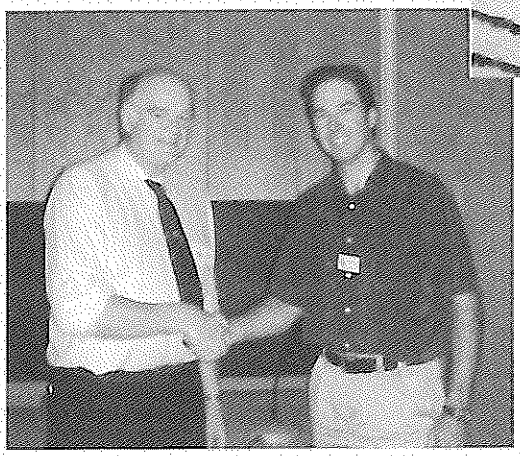
There was some good discussion, and much more of it in the bar in the evenings. The conference dinner was in the panelled splendour of Durham Castle, overlooked by portraits of bishops going back several centuries.

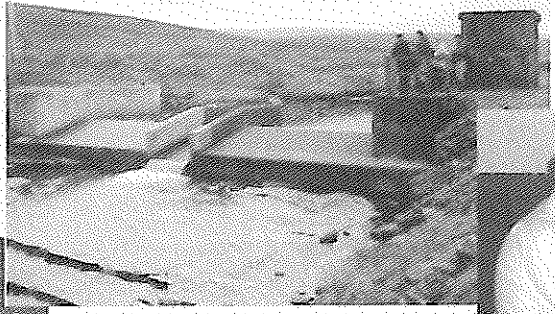


We were delighted to have as our Penman lecturer this year **Professor Jeff McDonnell** of Oregon State University (below), a "card-carrying experimentalist" whose field equipment includes a JCB. We hope to give more detail of Jeff's Penman Lecture in the next issue, but he built on benchmark papers such as Penman (1948), Beven & Kirkby (1979) and Dunne (1983) to outline the importance of the IAHS Prediction in Ungauged Basins initiative. The first International Hydrological Decade (1965–74) had been all about data: the PUB decade (2003–12) was moving towards reducing uncertainty in estimates.

The Symposium concluded with a field trip to the Trout Beck catchment in the north Pennines, part of the Moor House National Nature Reserve, although sadly only a small group stayed on to experience this interesting day out.

John Griffin, Editor







Photos: Durham Cathedral; the dinner in Durham Castle; Rod Hawnt with Jeff McDonnell; Trout Beck gauging station; the President congratulates Lucy Dugdale on her presentation

President's Piece

As Autumn sets in, spells of stormy weather have returned, with October's rainfall being well above the long-term average in most catchments in England and Wales, causing soil moisture deficit values to plummet. Drought concerns have already being transformed into flood warnings in some areas. The hydrologist's job is never dull!

The biennial BHS National Symposium was held at Durham University from 11-13 September. Although the turnout was a little disappointing, with only 90 registrations, there were some excellent sessions of papers ranging from diffuse pollution processes to land management and climate change.

Our thanks go to the local organising committee led by Profs Tim Burt and Stuart Lane, who also laid on a memorable symposium dinner in the mediaeval splendour of the Great Hall of Durham Castle, after which we ended up in the student bar down in the dungeons.

This year's symposium theme "Land Management and the protection of the water environment" held in a Department of Geography illustrated the diversity of disciplines now sheltering under the learned society umbrella that is BHS. Prior to the society being established in 1983, hydrology was often seen as a subject within Civil Engineering, but now the 'geographer' is having a much stronger role in more and more key research themes, with topics such as land-use management and hillslope processes having greater prominence within catchment hydrology.

For instance the demands of the Water Framework Directive are forcing Environment Agency planners and farmers alike to think about how to improve runoff management from land in order to meet the demands of the new environmental cross compliance regime. I wonder how well the traditional engineering hydrologist's skills will transfer from applying hydrodynamic modelling techniques for flood risk assessment, to simulating pesticide leachate risks for different crops?

Which brings us nicely on to the Chartered Hydrologist debate. The questionnaire sent out in July has yielded a very healthy 230 responses to date, more than 20% of the membership. We are still analysing the results but the response was such that we believe we have captured a representative sample of the membership. More than 70% of those responding were not already Chartered, and 30% felt that none of the existing Chartered routes was suitable. Two-thirds of all respondents indicated that they would go for Chartered Hydrologist status.

So where to next? The Main Committee are agreed that there is sufficient demand, expressed through this questionnaire, for the society to begin an in-depth feasibility study on the benefits and costs of CHydrol for our members. We do not intend to rush this process and want to make sure we have covered all the angles and learned from the recent experiences of Chartered Environmentalists and Meteorologists. We want to be in a position to make a recommendation to the next AGM in September 2007, on whether or not we should apply to the Privy Council for recognition of Chartered Hydrologist status.

The AGM was held at Durham on 12th September and the Officers' Reports are included in this issue. The most noteworthy item on the agenda was the unanimous approval for the proposal that BHS should recruit its first paid official, a Technical Secretary who will assist the Main Committee in some of the ever-increasing tasks that the Society is asked to undertake. The advert contained in this issue, and also posted on our website, gives further details of this position. The successful candidate will be employed in a part-time capacity and will be co-opted onto the Main Committee, reporting direct to the President.

The AGM also formally approved the recent Main Committee changes already announced in *Circulation 90*. At our committee meeting on 5th October, we welcomed Dr Claire Walsh from Newcastle University, Dr Claire Samuel from Peter Brett Associates and Dr Kelvin Limbrick from Hyder Consulting. Retiring from the committee are Prof. Louise Heathwaite, Suzanne Paget and Joe Pearce. On behalf of all the members of the society, I would like to thank the retiring members for their time and contribution to the society. In particular I would like to

record my thanks to Joe, who has served on the committee with distinction for the last two years as Honorary Secretary and before that as an elected member, sometimes also standing in as the South East Section representative.

Frank Farquharson is now installed as President Elect and he will now be taking on extra responsibilities such as the planning the next National Symposium. Frank has decided to relinquish his duties as the Water Board member appointed by ICE and **Neil McIntyre** now takes over this role.

November is a busy month with a torrent of events, with a Flood Forecasting conference (ICE Water Board, 14th), a Water Resources Planning meeting (SE Section, 23rd) in London, a meeting on Ecohydrology (Pennines, 8th) in Leeds, all kicked off on 6th/7th by a combined Postgraduate Symposium and Groundwater conference held this year at Lancaster University.

Whether you are heading north or south, or looking for learned debate on droughts or floods, BHS has it all in one month during one of the warmest autumns on record, following on from one of the longest droughts!

Rod Hawnt

BHS 24th Annual General Meeting

The 24th Annual General Meeting of the British Hydrological Society was held during the National Hydrology Symposium at Durham on Tuesday 12th September 2006.

President's introduction

Rod Hawnt, BHS President, opened the meeting by stating that he was pleased to report that after his first year in office BHS was still in a healthy state. It had been a real honour to serve the membership as President and he repeated his main objective in his term of office was to raise the profile of hydrology as a profession.

The number one issue for the Main Committee and many members was improving professional development for hydrologists. Rod was pleased to report that some progress had been made on providing better guidance for members on routes to Chartered Status. A successful National Meeting in February had provided a great deal of information on different routes, which in turn has led to better guidance being posted to the website.

ICE had launched a new associate membership category, AMICE, which specifically mentions hydrologists as one of the target professional groups. Many members were also becoming Chartered Environmentalist or Chartered Scientist, through ICE, CIWEM or IWO, but Rod questioned whether these really met the aspirations of most hydrologists in the UK.

For many the Holy Grail was Chartered Hydrologist, and the recent questionnaire sent out in August was designed to extract more detail from members about their views and aspirations on this issue. The return so far (nearly 20% of members) had been encouraging and Peter Ede would give a short verbal summary report to the AGM. However, the Committee were only just starting to analyse the results in more detail and responses were still trickling in, and some more time was required before a full report could be prepared. If the initial results were confirmed then it was likely that the next stage would be the preparation of a detailed feasibility study into the costs and benefits and likely take-up of CHydrol, so that a recommendation could be put to the next AGM (in September 2007) on whether the Society should proceed with an application to the Privy Council.

Another initiative where some progress had been made was the forging of closer links with CIWEM. There was a particular need to liaise more closely on planning meetings programmes, so as to avoid duplication of themes and clashes of dates. This was embarrassingly illustrated by the clash of this Symposium with the CIWEM AGM just up the road in Newcastle, where a BHS member, **Bob Sargent**, was being inaugurated as the new President of CIWEM on the same day as our AGM. Both events were planned over a year ago and so this particular clash could only have been prevented by closer liaison at that time, but in future it should be avoidable.

On the subject of eminent hydrologists attaining high office, Rod congratulated **Professor Paul Jowitt** on his appointment as a Vice President of ICE, which means that Paul will become President of this august institution in 2009, exactly ten years after the last hydrologist to become ICE President, **Professor George Fleming**. The statisticians amongst you will argue that two such events within 10 years does not constitute a frequency of occurrence of 1 in 5 years, but it sounds good nonetheless!

Rod reported that membership was still rising and that we were tantalisingly close to welcoming our 1000th member. Although BHS was clearly still providing good value for money to its membership, Rod was concerned that the burden of work was becoming too demanding for a voluntary committee. For the Honorary Secretary's role in particular there was a need to provide more secretarial support.

This was highlighted during the year by a flood of consultations from government departments on issues and legislative changes such as River Basin Planning, PPS 25 Flood Risk Management policy, CEH Reorganisation and Water Framework Directive policy. As busy professionals who do BHS committee work on a voluntary basis, meeting once a quarter, there is a limit to what can be achieved. Consequently BHS only managed to respond to two of these consultations. Yet other bodies with paid officials respond to all such relevant consultations, thereby raising their profile.

The Main Committee has therefore proposed that BHS appoint its first paid official and there was a proposal before this AGM that a vacancy for a Technical Secretary be advertised through BHS channels. Rod indicated that the cost would be about £5000 per annum, which the latest accounts showed the Society could readily afford. He strongly believed that this would assist the committee greatly to deliver even greater value to the membership. He commended this proposal to the AGM, and it was supported.

Finally he thanked the current committee for their support and encouragement during the last year. He also thanked the retiring committee members for their contributions: **Professor Louise Heathwaite** and **Suzanne Paget** (elected members) and **Professor Paul Bates**, who had retired as Chairman of the South West Section. Rod paid particular tribute to **Joe Pearce**, retiring Honorary Secretary, for all his hard work over the last two years, as well as acknowledging his contribution to the society as a committee member over many years.

Report of the 23rd AGM

The Report of the 23rd AGM held on 21st September 2005 (*Circulation* No. 87, November 2005) was agreed.

Honorary Secretary's report

Joe Pearce began by acknowledging the support the Society gets from staff at the Institution of Civil Engineers, particularly the Society's Secretary **Tim Fuller**, who had helped and assisted

him, the Society and its members again throughout the year.

A wide range of regional and national meetings had again taken place. Following the last AGM, held at the LOCAR meeting in London last October, there had been a further five national meetings. A joint meeting on recent advances in flood risk mapping was held with Floodrisknet at the University of Newcastle upon Tyne in November.

In February **Neil MacDonald** hosted a meeting at Imperial College London on routes to Chartered status, which outlined professional development options for hydrologists. A guide for hydrologists pursuing professional development was written up following this important meeting and made available on the Society's website in the Education and Training pages.

On World Water Day in March, Cranfield University hosted a national meeting at Silsoe, exploring the effect of land use on flood risk. This topical subject attracted a good audience to hear the latest research and policy developments in the area, and allowed former student **Henry Gunston** to mark the end of hydrology teaching at the Silsoe campus.

A meeting on hydrometric data quality and availability, held at ICE in London in April, stimulated debate as ever, notably on the availability of data on-line. ICE also hosted the June meeting, on the UK contribution to the Predictions in Ungauged Basins (PUB) decade, a theme which was discussed further at the Durham Symposium.

Successful meeting programmes have been run in the regions, attracted varying numbers of people. A wide range of topics had been presented in the Pennines, South West, Midlands and South East Regions and in the Scottish Hydrological Group of the ICE. Day, afternoon and evening meetings and two field visits were held at venues around the country.

Unfortunately no BHS meetings had been held in Wales, following problems in the previous year and changes in jobs for the representatives, although it was hoped that the next year might see a revival in the Welsh Section. The next Postgraduate Symposium was planned for 6–7 November at Lancaster, to follow on from the meeting there on uncertainty in groundwater modelling.

Joe thanked all of those involved in organising, speaking at, chairing and administering national and regional meetings, without whom the Society's programme would not run, and the meeting recorders who had reported the events for *Circulation*.

The charging policy for national meetings had continued, granting membership to those paying full delegate rates. This had resulted in many new members but the long-term effect was still to be seen. The Society responded to two requests for consultation during the year and Joe thanked those members who had put views forward for incorporation in the BHS statements.

Joe also thanked **Andrew Black** and **Amy Tavendale** at Dundee University for their ongoing efforts in looking after the Society's publications and promoting sales.

Finally, he thanked the committee for all their help and support. As he retired from the Hon. Secretary role, he repeated the appeal made by **Andrew Black** when he had handed over the job two years previously: for members to be actively involved in the Society if they are able to, by organising or participating in meetings, or by raising or becoming involved in specific issues.

Report of the Honorary Treasurer

In presenting his first report as Honorary Treasurer for the Society, **Peter Ede** was pleased to be able to follow his predecessors in reporting a healthy financial position.

In last year's report, **Steve Parsons** had raised a query as to whether the financial position of the Society might in fact be too healthy. The Main Committee discussed this last October and agreed that our reserves are at least at a sufficient level for our current activities, and that we should preferably be aiming just to break even. In fact the reserves rose by just over £5000 during the year, so we have perhaps done too well. However, the increase was modest when consideration is made for inflation and the increasing membership of the Society.

At the end of June 2006 we had 951 paid-up members, compared to 875 at the same time in 2005. A higher figure reported previously had included non-payers who were about to be removed from the database. The ICE changed its system this year to remove non-payers in April/May instead of July. Every year there are some removals (and later reinstatement) of people who had no intention of leaving the Society but had simply forgotten to send the cheque. Paying by direct debit avoids such problems for members and reduces administrative work for the Society, and Peter urged members who did not already pay by direct debit to consider doing so in the future.

The increase in membership during the year was almost 9%, following increases of 6% and 7% in the previous two years. We could expect a further increase in the coming year, and the Committee has planned a prize to mark our 1000th member. In the week before the AGM the total membership stood at 967.

We might have to make a small change to our Statutes due to forthcoming age discrimination legislation, but concessionary rates for students and retired members would continue.

Peter presented the Statement of Financial Activities for the year ended 30 June 2006, the accounts of the Society that were to be audited and submitted in the Trustees Report of the Society to the Charity Commissioners. A more detailed breakdown of income and expenditure was shown in the separate Financial Report. The reports showed a generally healthy picture, with a surplus for the year. Points to note included:

- A small increase in subscription income, reflecting higher membership numbers
- Significant gain over a series of National meetings, where income (£15,865) exceeded expenditure (£10,639): however, these costs do not include anything for room hire for meetings held at ICE, which is part of the package of services for which we paid ICE £5000 in the past year.
- Final income from the international conference held at Imperial College in July 2004, with some minor associated expenditure.
- Significant "one-off" expenditure on the new website. Ongoing costs of the website will be at a relatively low level, thanks in part to the work undertaken by the Honorary Editor of *Circulation* and the Honorary Secretary. The new website has also seen a significant increase in job advertisements, the increased income from which should show more clearly in next year's accounts.
- An increase in travel awards from general funds: there were eleven awards totalling £4090.
- An overall increase in general funds of just over 5%.
- A significant increase in the value of investments held by the Exeter Fund. It is important to note that these funds do not belong to the Society and the income from the investments can only be used to support attendance at IAHS events. There were no travel grants from this fund this year but there are expected to be applications in the coming year.

Most of the assets of the General Fund are held in high interest accounts in the Northern Rock Bank, whilst the Exeter Fund assets are invested in the Charities Official Investment Fund.

Peter thanked his predecessor, Steve Parsons, and his colleagues on the National Committee for their support, and acknowledged the work of the staff of the Institution of Civil Engineers who handled the real business of running the Society. He believed that the finances of the Society were on a sound footing for the years ahead.

Survey on Chartered status

Peter Ede reported initial results from the survey on Chartered status.

Response to date had been a little disappointing at around 16% of the membership, but there was clearly a significant body of members who find the existing options unsuitable.

A majority of respondents would pursue "Chartered Hydrologist" if this option were to become available. The Main Committee would review the results and determine how best to proceed.

Editor's report

The editor reported on the four issues of *Circulation* published since the last AGM, averaging over 12 pages. They had included articles on South East England's water resources in the light of proposed development and a Wiki experiment in uncertainty analysis, as well as reports on international, national and regional meetings, news of members' achievements and views on how the Society might develop.

John Griffin encouraged members to submit news, views and articles for *Circulation*. He would soon have edited 50 issues of *Circulation*, and while he enjoyed doing it, he noted that other roles in the Society changed every 2 to 3 years and there might be others with fresh ideas to improve the newsletter.

The new user-friendly BHS website appeared to be well used, with 137 people registered to receive e-news, and advertising had been steadily growing: about 30 job vacancy adverts had been posted this year so far. Interactive parts of the site already allowed members to submit on-line details of meetings and events, and there was scope for more of the committee and regional sections to help in developing the content and checking that it was still valid. News needed regular updating and members could help by submitting items.

The meetings listing on the web would soon distinguish between BHS meetings and others that we advertise as a service to members. Further improvements could include web-based services to members and better access to publications.

Changes in committee roles

Within the Main Committee, **Frank Farquharson** is now President Elect. His former role representing the ICE Water Board has been taken over by **Neil McIntyre**, who will also represent BHS at the Water Board meetings.

Copy deadline for *Circulation* No. 92 6th January 2007

New committee members

Suzanne Paget and **Louise Heathwaite** both came to the end of their three-year elected terms on the committee and **Joe Pearce** ended his two-year term as Honorary Secretary.

Nominations were received from three members for committee posts and just one for Honorary Secretary. **Hayley Fowler**, who was already an elected committee member, took up the Hon. Secretary position, leaving three vacancies to be filled. Therefore all three nominees — Claire Samuel, Claire Walsh and Kelvin Limbrick — were elected to the Committee.

Claire Walsh is a research associate in the Water Resource Systems Research Laboratory (School of Civil Engineering and Geosciences) at Newcastle University, where she has worked on two Environment Agency projects, looking at incorporating climate change into river typologies and setting flow targets for salmonids.

She graduated in 1999 from the Department of Geography at Newcastle and then did her PhD on *"Simulation and analysis of river flow regimes: implications for sustainable management of Atlantic salmon under climate change"* in Civil Engineering.

Claire is a core researcher at the Tyndall Centre on the Engineering Cities Programme and also works on the EPSRC project Sustaining Knowledge for a Changing Climate. She is a committee member on the Pennine's Hydrological Group.

Claire Samuel is currently working for Peter Brett Associates in Reading as a Senior Hydrologist. Claire gained an MSc and PhD from Imperial College in continuous rainfall simulation in Walnut Gulch, Arizona, and has since worked for the Environment Agency at the Thames Barrier, and for Halcrow in Swindon. Her current interests are both low and high flow hydrology, continuous simulation methods and water resources modelling.

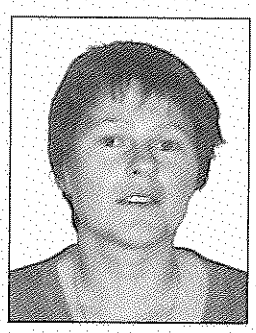
Kelvin Limbrick is a senior hydrologist for Hyder Consulting (UK) Ltd in Bristol. After a BSc in physical geography he took his PhD in hydro-geochemical variability in the Chalk aquifer.

Kelvin is an experienced hydrologist with particular expertise in flood risk assessment, flood estimation, EIA and hydraulic and rainfall-runoff modelling. Before 2005 he worked at Applied Environmental Research Centre Ltd and before that he spent three years at the Centre for Ecology and Hydrology at Wallingford.

Kelvin has undertaken EU-funded research on the relationship between basin-scale hydro-chemistry and climate and land-use change and worked on the application of recent World Meteorological Organization trend analysis procedures.



Claire Walsh



Claire Samuel



Kelvin Limbrick

Can you help tomorrow's hydrologists?

As the BHS Committee Representative for Young Members, I receive a number of enquiries from young people hoping to embark on a career in hydrology. One question that always crops up is, "How can I gain some hands-on experience in hydrology?"

This is where I hope that BHS members may be able to help. I would like the BHS to hold a list of people and organisations who are willing and able to provide some work experience to the hydrologists of tomorrow. The details of what you might be able to offer would be entirely up to you, and you would be under no obligation.

If you would be able to help with this, in any way, then please contact me by email *(tim.norton@environment-agency.gov.uk)* or phone *(01903 832390)*.

Tim Norton

Vacancy for a Technical Secretary for BHS

The British Hydrological Society would like to appoint a part-time, paid official to provide technical assistance and support to elected officers and to work with sub-committees tasked with undertaking various initiatives such as those outlined below.

The successful candidate will be co-opted onto the Main Committee and will be expected to attend quarterly meetings in London. He or she must be IT literate with excellent communications skills, and will report directly to the President.

The position will probably suit a semi-retired, self-employed individual who will be able to demonstrate considerable working experience in the field of hydrology and be thoroughly knowledgeable about the key issues facing the professional hydrologist in the UK today.

Remuneration will be paid on a self-employed basis at a nominal rate of £50 per day plus actual expenses, and it is expected that the position will involve 1-2 days' work per week on average, up to a maximum payment per annum of £5000, including expenses.

Duties and tasks to be undertaken will include:

- Organising and drafting responses to consultations by Government and other bodies;
- Assisting with the preparation of a feasibility study into the benefits and costs of applying for Chartered Hydrologist status to the Privy Council;
- Providing information, advice and guidance to the Society and its members on professional development and chartered route options generally;
- Improving communications media for members including expanding the scope of the website;
- Assisting the Honorary Secretary with the planning and scheduling meeting and events including liaising with other professional bodies such as CIWEM and RMetSoc;
- Other duties required from time to time to assist the elected officers and Main Committee to fulfil their obligations to the Society.

Please send applications in writing via email, including an up-to-date CV, to the BHS President, **Rod Hawnt**, at *rhawnt@hydro-logic.co.uk.*

The closing date for applications will be **Monday, 11th December 2006**.

Letter to the Editor

from Professor Paul Jowitt, BHS Member and ICE Vice President

Re: Hydrologists and Membership of the ICE, *Circulation No. 90*, August 2006

Dear Editor

I would like to reiterate Rod Hawnt's comments *[in Circulation 90]* about the ICE's changing attitude in recent years to hydrologists (and other non-traditional engineering professions) becoming Members of the Institution of Civil Engineers.

The ICE has recently undertaken a complete revision of its Routes to Membership (the "3000 Series") which are specifically geared to encouraging people with a broad range of academic and professional backgrounds to seek Membership of the Institution. The criteria are much less prescriptive, either in terms of specific academic content or time served, but are instead based on evidence of competence. And in that regard I am confident that many fellow members of BHS should have little difficulty in demonstrating their suitability to become Members of ICE.

Where possible, the ICE tries to match the interests of Reviewers with those of the candidate, so it is important that BHS members who are also members of the ICE should offer their services as ICE Reviewers.

Yours sincerely

Paul Jowitt
Director, SISTech, Heriot-Watt University
email paul.jowitt@sistech.co.uk or p.w.jowitt@hw.ac.uk

New members

A warm welcome to the following new members of the Society. We hope they will play an active part in BHS and contribute occasionally to *Circulation*: we always welcome news and views from members, old and new.

Marc Becker	SEPA, East Kilbride, Scotland
Ruben Breuls	W A Fairhurst & Partners Ltd, Glasgow
Simon Driscoll	Cardiff University
Clare E Deasy	Department of Geography, University of Sheffield
Lynsey S Holt	Environment Agency, Buckley, Flintshire
Max Kigobe	Dept of Civil & Environ. Engineering, Imperial College London
Dimitrios Linardatos	JNP Group, Amersham, Buckinghamshire
Kalmond Kai-Chi Ma	Queen Mary, University of London
Nicholas Martin	YSI Hydrodata, Letchworth, Hertfordshire
Dr Natalie C Mountain	Environment Agency, Bridgwater, Somerset
Nicholas P Riess	Kroto Research Institute, University of Sheffield
Neil G Ryan	Environment Agency, Leeds
Dr Frank Schlaeger	KISTERS, Germany
Dr Robin I Sutton	Jacobs Babtie, Glasgow
Oliver M Taylor	Environment Agency
Johan T Veldema	Jacobs Babtie, Manchester
Carolyn J H Walker	Consultant, Birmingham
Andrew Woodliffe	Scott Wilson Water, Mansfield, Nottinghamshire

Exeter Fund

The Exeter Fund is administered by BHS to support British hydrologists to attend IAHS/IUGG events, primarily the biennial IAHS General Assembly (see *www.iahs.info*). The next of these takes place in Perugia, Italy, in July 2007. Applications for support should be received by **15th December 2006**.

To apply please complete the form on the BHS website at *www.hydrology.org.uk/about_awards.htm* and send it to the Honorary Treasurer, **Peter Ede**, Mott MacDonald Group, Demeter House, Station Road, Cambridge, CB1 2RS *(tel 01223 463690, email peter.ede@mottmac.com)*. If you do not have web access, please ask Peter or the Editor to send you a form.

Chilterns chalk streams forum 2006

High Wycombe
14 June 2006

The Chilterns Chalk Streams Project is a partnership of about 15 organisations including water companies, regulators, conservation and wildlife groups and local authorities, led by the Chilterns Conservation Board.

The annual forum was held at the Environment Centre in High Wycombe on 14th June and focused on the effects of drought as well as looking at some aspects of hydro-ecology.

The speakers and discussion were followed by an afternoon walk down the Hughenden Stream (dry since 2003) from the National Trust property at Hughenden back into High Wycombe and its urban confluence with the Wye.

Chalk streams are a special environment, mostly found in the UK, with high biodiversity that is threatened by loss of habitat. The main areas of study in the Chilterns are the rivers Ver, Gade, Bulbourne, Chess, Misbourne and Wye, plus the Hughenden Stream, the Hambleden Brook and spring-fed brooks on the scarp slope of the Chiltern Hills, for example at Ewelme and Wendover. A key part of the project is education and raising public awareness in and around the Chilterns.

Work in 2005-6 (coordinated by the new project officer **Allen Beechey**) had included river restoration on the River Bulbourne at Berkhamsted, narrowing the channel and pollarding or thinning trees that shaded the bank. Similar work on the Chess was also aimed at improving access and recreating habitat for water voles.

Peter Greenaway (Veolia Water, owners of Three Valleys Water) spoke about managing water demand in the face of winter drought in this groundwater-dependent supply area. He commented that three successive dry winters was unknown territory. A hot summer also increased demand, but he praised Veolia's customers for responding to constraints: metered water use had been 10% down in the past week's hot weather. Domestic consumption per capita was broadly linked to affluence, and Three Valleys had the highest UK figures of around 170 l /day.

Proposed housing growth in the south-east and east (see **John Rodda**'s article in *Circulation 89*) meant that making new homes (at least) much more water-efficient was a priority in building regulations, as well as increasing metering and encouraging a change of attitude.

Vicki Kidney (Environment Agency, North-East Thames) is a technical specialist on the Restoring Sustainable Abstraction programme. Study of low flows since the drought of 1989/92 had led to a government commitment to restore flows by addressing over-abstraction. This was linked to biodiversity action plans as well as to EU directives. She was looking at 24 sites, eight of them in the Chilterns, with the aim of controlling abstraction (where necessary) rather than trying to tackle drought.

The Restoring Sustainable Abstraction programme followed a three-stage process of investigation (including objective-setting), identification of the preferred solution (following appraisal of options on environmental criteria), and implementation (which could comprise licence changes, engineering and substitute supply sources, plus monitoring).

Several Chiltern streams were at the first stage in this process, although the Ver and the Misbourne had already had an Alleviation of Low Flows scheme, which was now being assessed.

The Gade was at the second stage, where channel modifications had been identified as the way to improve habitat, since it was impractical to close the main abstraction.

Two rivers, the Bulbourne and the Wye, had reached the implementation stage, and in each case a pumping station would be closed, switching to an alternative supply. From 2008 the Agency would move on to look at British Waterways' abstraction for the Grand Union Canal.

The first questioner asked the speakers why water grids could not redress the balance of resources across the country. Peter Greenaway said that there was now a consensus that the overall costs, including energy and environmental impacts, would have a greater impact than other technical solutions, including desalination. However, transfer did already take place on a regional scale (e.g. into Three Valleys from Grafham Water).

Adrian Bayliss (Centre for Ecology and Hydrology) commented that there was a danger in using 30-40 year records for water resource planning and that three successive dry winters was not unprecedented. He pointed to longer flow records from the National River Flow Archive, particularly for the spring-fed Wendover stream, where a drought in the 1880s had depressed spring flow for more than 15 years.

Catherine Shellswell (Berks, Bucks and Oxon Wildlife Trust) introduced the water vole recovery project, which followed surveys that had shown a decline of over 90% nationally. Reasons included loss of river bank habitat and predation by escaped American mink.

A three-year survey on the Chess showed a decline from about 360 in 2001 to 11 in 2003, and mink were seen in this area. Mink control used rafts at 1 km intervals to detect their presence, followed by traps, and by 2005 the number of water voles had risen to 65. The programme continues and there will be another survey in 2007, as well as extending the work to other areas including the Misbourne and parts of the Grand Union canal.

Prof. Roger Wotton (University College London) gave a fascinating talk on rooted macrophytes as ecosystem engineers. He began by explaining the title to the audience, and then gave a very clear account of how water crowfoot (ranunculus) helps to change the hydrology and ecology of chalk streams. Ranunculus beds raise stream level and affect flow velocity, and provide an important habitat for fish, freshwater shrimps and blackfly larvae. There can be up to 100 000 larvae per m^2, processing organic matter into faecal pellets that provide a slow-release nutrient source that makes water meadows so fertile.

Questions were mainly on the



The Hughenden Stream in June 2006 (left), and the same scene in 2003 (right)

water vole presentation. Catherine said that complete eradication of mink was unlikely and control measures would have to continue.

Allen Beechey (Chilterns Chalk Streams Officer) outlined the Chalk Streams Project programme for 2006-7, which was fully funded, although habitat restoration could be extended if more resources were available. As well as continuing work on the Chess, the National Trust was talking to the Environment Agency about a proposal to improve the Hughenden Stream.

After lunch, we walked with Neil Harris of the Trust from Hughenden along the dry valley and heard how they planned to remodel the channel with a reduced width, so that when it flows again it would appear more "natural", although it would then be less like the succession of ponds that Prime Minister Benjamin Disraeli would have seen in the 19th Century.

For more information about the project see *http://www.chilternsaonb.org/caring/chalk_streams_project.html* or contact Allen Beechey at the Chilterns AONB Office on 01844 355502.

John Griffin
Chilterns Conservation Board member

Sediment dynamics and the hydromorphology of fluvial systems

IAHS/ICCE International Symposium
University of Dundee, Scotland
2–7 July 2006

This is the second report* from the International Symposium on Sediment Dynamics and the Hydromorphology of Fluvial Systems. It was organised by the International Association of Hydrological Sciences and the International Commission on Continental Erosion and hosted by the University of Dundee. Over 100 researchers from over 25 countries took part.

This symposium brought together researchers from disciplines including geomorphology, hydrology, geology and ecology. It focused on the importance of sediment dynamics within the hydromorphology of the fluvial system, with sessions focusing on specific aspects. There were over 70 oral papers and many posters, providing a detailed and insightful examination of many different case studies and concepts.

The first day, with 18 papers from 9 countries, focused on the importance of extreme events in fluvial sediment dynamics. The topics covered included methods of suspended sediment yield estimation and measurement, sedimentation rates in upland lakes, sediment dynamics in urban systems, the value of historic extreme events, hydromorphological adjustments to extreme events, the impact of impoundment on transport rates and glacial erosion rates and subsequent sediment yield and transport.

In the evening a civic reception was held in Dundee City Chambers where delegates met the Lord Provost.

The second day addressed the structure, functioning and management of fluvial systems, beginning by addressing hydraulic diversity as a management tool, hydromorphological adjustments in a coastal lagoon in response to changing use, within-river island development, fluvial modelling, floodplain land use and sediment management.

The afternoon papers covered pathogen-sediment interactions, biofilm importance, fluvial morphology, floodplain diversity and interactions between biology and hydrology. After a poster session, there was a 'taste of Scotland' whisky and cheese reception in which we were shown how we should be drinking whisky!

The field excursion on the Wednesday took us up the River Tay, from the lower reaches of the estuary to the headwaters. In a series of stops along the river we looked at different issues, from estuary sediment dynamics to stories of the infamous Tay bridge disaster. Moving on to the city of Perth, we admired its impressive flood defences and the epigraphic flood markings on Smeaton's Bridge.

Crossing the Highland Boundary Fault from the lowlands to the highlands, we visited the Pitlochry hydropower station and its famous salmon ladder, before heading further north into the Cairngorm Mountains to the Allt Dubaig, possibly the most intensely studied section of stream in the UK.

The day finished with a tour of the Bell's distillery, where the finer aspects of distilling were absorbed.

The third day consisted of papers on unlocking the stratigraphic record and a second poster session. The papers covered topics such as heavy metal adsorption in sediments, dating of sedimentary deposits, sediment transport rates, sediment storage rates on floodplains, the role of floodplains as carbon sinks, debris flows in the Scottish highlands, the importance of fine sediment in fish spawning, the use of fine gravels in unravelling flood histories and reconstructed Holocene sediment rates for the Rhine delta.

This day concluded with the conference banquet at Discovery Point and a tour of *RRS Discovery*.

The final day considered experiment-based and modelling approaches to sediment research. The topics ranged from phosphorus dynamics, nutrient modelling and contaminant enrichment to experimental studies of mudflow following dam failure, modelling of climatic variability and its impact on sediment availability and channel morphology modelling.

The symposium proceedings, containing over 60 reviewed papers, were pre-published in the IAHS Red Book 306**. A poster booklet was provided containing extended poster abstracts.

The organisation of the conference was superb and the accommodation very comfortable. It was good to see that almost all the papers were presented and I would like to thank the convenors for a most enjoyable and enlightening symposium.

Neil Macdonald
River Basin Dynamics and Hydrology Research Group,
Institute of Geography and Earth Sciences, University of Wales, Aberystwyth

* *See also Deborah Ballantine's report on this symposium in Circulation 90.*

** Rowan J.S., Duck R.W. & Werrity A. (eds.) (2006) *IAHS/ICCE International Symposium on Sediment Dynamics and the Hydromorphology of Fluvial Systems*, IAHS Publ. 306, 630 pp. IAHS Press, Centre for Ecology and Hydrology, Wallingford, UK. ISBN 1-901502-68-6

East meets west at the AGU in Beijing

Western Pacific Geophysics Meeting
Beijing, China
24 – 27 July 2006

This meeting was hosted by the American Geophysical Union in Beijing. It attracted a vast array of excellent Chinese scientists along with many interesting international visitors. Amongst hundreds of oral sessions, 30 were concerned with hydrology.

I was invited to present a study in session H15A, *"Advances in characterization and modelling of field-scale groundwater flow and solute transport in complex aquifer systems III"*.

My talk was about an analysis of flow processes in fractured chalk under ambient and pumped conditions. Flow in the Chalk primarily occurs through a network of conductive fractures within a low permeability matrix. Consequently, bulk transmissivity is a complex integration of individual fracture permeabilities and their connectivity.

This is further complicated, when seeking to undertake aquifer measurements, through vertical connections via open boreholes. Furthermore, such bulk transmissivity values are almost invariably obtained under stressed (i.e. pumped) conditions, but generally applied to model simulations of the natural (i.e. unstressed) behaviour of the aquifer.

To explore these issues we carried out geophysical logging and dilution testing of an observation well, in close proximity to an abstraction well, both under pumped and ambient conditions. Pumping caused horizontal flow to increase threefold. Pumping was also found to induce different flow horizons. The findings suggest that we should be cautious when extrapolating parameters derived from pumping tests to ambient conditions.

This study is being written up as one of the many scientific outcomes of the NERC LOCAR Project NER/T/S/2001/00941 "Investigation of groundwater flow heterogeneity in Chalk aquifers using detailed borehole arrays and stochastic modelling techniques".

Session H15A contained talks on many other interesting and complex subsurface hydrological issues including: modelling the transport of chlorinated hydrocarbons by **H. Chen** (China University of Geosciences, Beijing), a novel technique for performing falling head tests by **C. Chen** (National Cheng-Kung University, Taiwan), an illustration of how hypercomplex filtering can improve numerical simulations of non-linear water flow problems by **L. Traversoni** (Universidad Autonoma Metropolitana, Mexico), and an interesting comparison of fracture network and equivalent continuum modelling approaches by **M. Wang** (Chinese Academy of Science, Beijing).

There were numerous other sessions relevant to aquifer characterisation and modelling, notably session H22B *"Advanced Characterization Approaches in Hydrogeology III"* and sessions H44E & H45A *"Advances in Subsurface Flow and Transport: Eastern and Western Approaches II & III"*.

W. Illmann (University of Iowa) presented model comparisons with transient hydraulic tomography data for flow through a sand box. **K. Karasaki** (Laurence Berkeley National Laboratory) showed how temperature and salinity data can be used to reduce uncertainty regarding the large-scale permeability of heterogeneous rock formations.

D. Benson (Colorado School of Mines) presented a field application of the continuous time random walk method using a fractional rate and fractional dispersion model.

L. Ren (Chinese Agricultural University) presented a geostatistical study of field-scale spatial variability of nitrate in the Northern China Plain. **G. Huang** (Chinese Agricultural University) presented a new analytical solution for radial non-Darcy flow to a large diameter well using the Izbash equation. **H. Zhan** (Texas A&M University) derived some useful formulae for calculating pump induced leakage from an aquitard. **Y. Wu** (Laurence Berkeley National Laboratory) outlined the many unsaturated flow process studies that have been undertaken as part of the Yucca Mountain project.

All the abstracts are available online and well worth browsing at *http://www.agu.org/meetings/wp06/*.

I am very grateful to BHS for enabling me to attend this interesting meeting. Something that made all the sessions I attended special were the pertinent and deep post-presentation questions asked by the eminent Chinese professors from the very many excellent and exciting Chinese institutions.

Dr Simon Mathias
Imperial College London

Wetland systems for water pollution control

Centro Cultural de Belém, Lisbon, Portugal
24–29 September 2006

The 10th International Conference on Wetland Systems for Water Pollution Control was co-hosted by the Portuguese Ministry for Environment, Spatial Planning and Regional Development and the International Water Association (IWA) specialist group on the use of macrophytes in water pollution control.

Constructed wetlands are regarded as an ecological, cost-effective and aesthetically pleasing alternative to conventional wastewater treatment. There is considerable research interest around the world in the development of constructed wetland technology and the associated treatment processes and design criteria for a range of waste streams.

The conference brought together over 300 scientists, engineers,

managers and entrepreneurs from over 40 countries, offering 128 oral presentations and 98 poster presentations. The conference proceedings comprised 183 full text papers covering various topics on wetland systems for water pollution control. They included removal of nutrients, heavy metals and pathogens; agricultural wastewater, industrial wastewater, landfill leachate, stormwater and sludge treatment; design criteria, operation, performance, optimisation, modelling and ecological considerations.

The six-day programme started with a Sunday cultural visit to a medieval city, Évora, south of Lisbon. The excursion set an informal and friendly atmosphere for everyone to renew old acquaintances and make new ones before we engaged in academic exchange in the following days. The conference was opened on the Monday by officials from the Portuguese government and IWA.

Jan Vymazal (Czech Republic) was the first speaker in the plenary session. He gave an historical overview of constructed wetlands for wastewater treatment with *Constructed Wetlands with Emergent Macrophytes: from Experiments to a High Quality Treatment Technology*. He took the audience to revisit Dr. Käthe Seidel's first experiments on the use of wetland plants to treat wastewaters carried out in the early 1950s in Germany.

All through the decades, various technologies and designs have evolved which could be combined to complement each other to achieve higher treatment efficiency. I particularly liked his remarks on researchers who use confusing terminology to describe various constructed wetland systems.

The longest description for a constructed wetland he noted was 'an artificial vegetated intermittently-fed vertical sand root zone filter treatment system'! He concluded that despite some shortcomings of constructed wetlands, they have been widely accepted as a viable solution to treat many types of wastewaters.

Hans Brix (Denmark) spoke on *Twenty years' experience with constructed wetland systems in Denmark – what did we learn?* Interestingly he pointed out that willow systems are common in Denmark in which water loss at evapotranspiration is larger than wastewater input and natural rainfall into the systems so they result in no net outflow. He stressed that new research focus should be put on using constructed wetlands to treat non-point source pollution.

Carla Canseiro (Portugal) gave a similar account for Portugal entitled *Constructed wetlands for wastewater treatment in Portugal: a global review*. She emphasised the selection of appropriate wetland media to enhance treatment efficiency. In *The Constructed Wetland Association UK Database of Constructed Wetland Systems*, Paul Cooper (UK) introduced a database which has gathered together information from nearly 1000 sites in the UK.

It would provide a useful tool to the local water industry as a method of demonstrating what is possible with good design. However, only members of the Constructed Wetland Association can gain access to the database.

The last speaker in the plenary session, **Elif Asuman Korkusuz** gave an overview on the 'Manual of Practice on Constructed Wetlands for Wastewater Treatment and Reuse in Mediterranean Countries' in her presentation *A closer look at constructed wetland applications in the Mediterranean Basin*. The manual has been prepared to provide a broad outline of the technology in rural areas of the Mediterranean region.

She remarked that decentralised treatment systems such as constructed wetlands play a vital role in water resources management and sustainability in the Mediterranean Basin where severe water supply and demand imbalance is taking its toll.

The Portuguese are well known for treating meals seriously and this was realised in our sumptuous two-hour lunch provided by the conference organiser, with an abundant supply of Portuguese *vinho tinto* and *vinho branco*. Three concurrent sessions then began which lasted until 6.30 p.m. Conference participants were busy running from one session to another choosing from over 30 topics.

To end a very thought-provoking day, we were brought to Estufa Fria, Parque Eduardo VII (Lisbon's central park) for the conference banquet. We had to walk through a cold greenhouse before entering into the banquet hall where we had another Portuguese meal with live *fado* music, and of course a further abundant supply of local wine. The evening did not close until 11.30 p.m. and we were sent back to the official hotels by coaches.

On the Tuesday and Wednesday we were treated with more concurrent sessions with interesting talks. Presentations focused on optimisation and modelling, ecological considerations, design criteria, operation and performance, and various wastewater treatments under different wetland flow regimes. During these couple of days there were two formal poster sessions that provided delegates an opportunity to talk about the work presented.

Robert Kadlec chaired the plenary session on Thursday which included five keynote presentations. My favourite presentation that day was from Hans Brix (Denmark) who opened the session with a heart-warming project on *Reestablishment of wastewater treatment in tsunami-affected areas of Thailand by the use of constructed wetlands*.

Constructed wetland technology can be used to replace conventional 'steel and concrete' treatment plants as an ecological alternative, which may give rise to future business potential. Yet, the natural and on-site wetland treatment perfectly merges with the needs of developing countries, where a decentralised system could provide an immediate solution to pressing sewage treatment problems.

One of the most impressive systems he introduced was a butterfly-resembling unit built on Phi Phi Island of Thailand after the devastation of the 2004 tsunami. It covers 6000 m^2 and can handle 400 m^3 of mixed black and grey water per day. The beauty of the system lies in the fact that it has vast community and stakeholder involvement. Treated water is reused for irrigation and the only one pumping station is powered by solar panels.

The butterfly-shaped system also acts as a water park to nearby residents. Systems of this sort have already inspired many people to use and appreciate the capacity to purify provided by Nature. Constructed wetlands used to be thought as black-box systems that people did not get to understand the contaminant removal mechanisms within. However, with recent research efforts, we have a better knowledge of what is going on within these systems and these 'green boxes' may bring about a paradigm shift in wastewater management.

The official programme of the conference ended on Friday with a technical visit to two constructed wetlands at Alcochete and Beja. The one in Beja is massive, consisting of a facultative aerated pond, a facultative pond, a maturation pond and 32 macrophyte ponds. It occupies an area of 17.3 ha and can treat wastewater to a load of 23 000 PE (population equivalent). These are living examples of how the technology can be put into practice, if provided with good design and reasonable maintenance.

After the technical visit, it was time to say goodbye and we departed. The stimulating experiences enhanced my enthusiasm as a PhD student and I felt really privileged to have attended such an important meeting. For this, I would like to express my heartfelt gratitude for the BHS Travel Grant which made this trip possible.

Kalmond Kai-Chi Ma
Department of Geography
Queen Mary, University of London

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Water resources management towards sustainable growth and poverty reduction

3rd AHPW conference
Bangkok
16–18 October 2006

The Asian Pacific Association of Hydrology and Water Resources (AHPW) organised their 3rd international conference from 16 to 18 October this year, together with the National Research Council of Thailand. Concurrently, a symposium on "Managing Water Supply for Growing Demand" was organised by IHP-UNESCO in the same venue.

It may seem a bit strange to find a researcher who is dedicated to solving water problems in the South American highlands attending a conference that focuses on Asia and the Pacific.

However, there are some good reasons. First, I have worked intensively with people from ICRAF on tropical mountain hydrology and the impact of land use changes, specifically forestry activities, on the hydrological response. The conference provided an excellent opportunity to compare results from Ecuador with their experiments in Indonesia, to share ideas and information.

But there is a more fundamental reason. Both regions share common problems. Their hydrology is forced by a highly variable and dynamic, tropical climate. Long-term trends, most importantly the Asian monsoon and the ENSO/El Niño phenomenon, are rather unpredictable and are more likely to cause extreme events compared to moderate climates.

In tropical regions, many people are living on fragile, hilly and mountainous slopes, often characterised by volcanic activities, or on alluvial plains formed by the flooding of sediments transported from the fragile upper reaches of river basins. Particularly in Asia, many of these regions are densely populated. Natural hazards such as floods, landslides and soil erosion can have a devastating effect on people's lives and the local economy and need sound prevention and mitigation.

On the other hand, continuous water resources management to safeguard water supply for irrigation and consumption provide continuous challenges. As methodologies of hydrology and water resources management have mostly been developed for temperate regions and application in the tropics is not always evident, sharing expertise, data and experience is crucial.

The conference covered a broad range of water management topics, ranging from complex technical problems (hydroinformatics, hydroclimatological forecasting) to political and management questions (water law, conflict management), resulting in as much as five parallel sessions. For the first day, I have focused on the special session about forest hydrology and integrated watershed management, chaired by **Nick Chappell** of Lancaster University. The next days, my interest went to topics related to hydrological modelling and climate variability.

The first part of the forest hydrology session focused on rainfall and evapotranspiration of tropical catchments, where I want to highlight a presentation by **Giambelluca** (University of Hawaii) about radiation and water balances in a tropical catchment undergoing land-cover conversion in Northern Thailand. They measured radiation fluxes and the water balance in an experimental catchment and used DHSVM to model the impacts.

Surprisingly, little impact was observed on the mean discharge, but the timing of peak flows proved far more sensitive. Several other presenters assessed water fluxes in experimental catchments such as throughfall (**Ziegler**, USA; **Nanko**, Hawaii), and for interception (**Tanaka**, Japan).

The afternoon session focused on soil and sediment processes. **Agus** (Indonesia) for instance, gave an interesting presentation on identifying problematic erosion areas in coffee plantations. He explained the development of a "negotiation support system" to improve communication between farmers, scientists and local authorities. Other presentations about the link between research, management and legislation were given by **Lorsirarat** (Thailand) on flood warning systems and **Enters** (FAO, Thailand) on discrepancies between perceptions and science, for instance in the link between forest and floods. **Peter McKornick** (IWMI) touched upon a similar topic in his keynote speech, discussing the problems involved in addressing an ever increasing water demand, in particular in developing countries.

The session about climate change was largely dominated by Japanese scientists. They presented several interesting advances in climate modelling, especially over the Indochina peninsula and the Pacific. For instance, **Miyakawa** (Japan) analysed data from a NOAA mission in 1998 1999 in the Bay of Bengal to predict mesoscale cloud cluster movements.

Many presentations discussed intraseasonal precipitation variability and mechanisms (e.g. **Wu**, **Yokoi**, **Tantanee** and **Li**). At least as many presentations tried to tackle the complex problem of climate change impact on various hydrological processes. **Rahman** (Bangladesh) analysed the impact of climate change on the ecohydrology of his country; **Ngo-Duc** (Japan) studied the effects of climate change on global sea level change; **Singh** (India) discussed how climate change vulnerability can be mitigated in the Himalayan-Ganga basin, and **Keisuke** (Japan) investigated the effect of global change on irrigation projects in Turkey.

It is obvious that many hydrological problems are tackled by the use of computer models. Many different models were used in the studies presented at this conference, including global climate models (T106 AGCM, **Dairaku**; MRI/JMA, **Kitoh**), erosion models (SedNet, **Hartcher**), rainfall-runoff models (SWAT, **Yongxin**; Xinanjiang, **Chen**; VIC, **Jayardena**; 2D-FEM, **Shimizu**). Nearly as many new or specifically tailored models were used (e.g. by **Dutta**, **Chen**, **Machida**, **Soria** and others).

However, one of the major absences was the use of a proper uncertainty technique. Over the last years, several uncertainty techniques were developed and described in hydrological literature, but they seem to trickle down only very slowly to more applied research. Obviously there are several reasons.

The most practical constraint seems to be the (perceived?) lack of readily available tools for uncertainty and/or the fact that uncertainty techniques are not commonly built into popular hydrological models. Another often heard argument is the lack of expertise, both to apply an uncertainty technique and to interpret the results.

These arguments are not new, and in fact were recently discussed by Pappenberger and Beven (2006)*. And in itself, the topic will undoubtedly spark enough discussion for a conference on its own.

Wouter Buytaert
Lancaster University

* Pappenberger, F. and Beven, K. (2006) Ignorance is bliss, or seven reasons not to use uncertainty analysis. Water Resources Research 42, W05302.

News from members

ICE roles for Paul Jowitt

Professor Paul Jowitt has been elected a Vice President of the Institution of Civil Engineers and will become the 150th ICE President in 2009, exactly ten years on from the last hydrologist, Prof. George Fleming. Paul is Director of the Scottish Institute of Sustainable Technology at Heriot-Watt University, host to the 1995 National Symposium.

Paul is busy giving the ICE's Brunel International Lecture "Engineering Civilisation from the Shadows" to influential engineers, parliamentarians and business leaders in Africa, Asia and the UK. The lecture aims to raise the profile of civil engineering's capabilities and responsibilities to get involved in tackling poverty and climate change.

Tim Jolley moves on from SEPA

After nine years with the Scottish Environment Protection Agency and five as SEPA's Head of Hydrology, BHS Committee member **Tim Jolley** has moved to consultants Carl Bro, as a Technical Manager based in Glasgow.

Tim will be focusing on developing water resources expertise in Scotland and England to meet the challenges of recent legislation and associated standards.

Drought — where are we and what's happening?

BHS South East Section meeting 26 October 2006

In light of recent drought conditions, this meeting proved to be very topical and served to summarise recent experiences. Speakers from both the Environment Agency and the water industry described the challenge of handling the current situation and considered where we go from here in resource management.

Andy Willo, Southern Region Drought Coordinator from the Environment Agency, began by focusing on the drought activities across the Southern and Thames Region and set the scene perfectly for the second presentation.

The drought publicly started in November 2004, since when there has been a series of two dry winters and there is now talk of a possible third one. There is no indication of which way the winter of 2006/07 will go, and because of this uncertainty the worst case scenario needs to be planned for. In each of the years 2004-2006, October has been very wet, but in 2004 and 2005 it has been followed by a run of dry months.

In February 2006 it was only really the South East of England which had been affected by the drought. By May the focus had shifted away from the South East slightly and the drought had spread to other parts of the Thames Region and further towards the South West. In May, the region was hit with some late and useful rainfall, which increased groundwater recharge and took a considerable amount of pressure off the water resource situation this summer.

Andy summarised the drought permits and orders that had been applied for on both the supply and the demand side. Drought permits this year include Hardham and Bewl Reservoir, operated by Southern Water, and Bough Beech Reservoir operated by Sutton and East Surrey Water. Three water companies (Sutton and East Surrey Water, Mid Kent Water and Southern Water) have been granted Non-Essential Use Drought Orders, although Sutton and East Surrey Water were the only ones to implement this.

The water situation in river and reservoirs in the South East has now improved and levels and flows are currently within the normal range, but the groundwater has been severely affected. Different areas responded differently because of their different geology: this message has been difficult to convey to the public.

The current drought has resulted in numerous associated environmental incidents. The low rainfall has led to low river flows and consequently high nutrient loadings and algal blooms. Low dissolved oxygen levels have caused fish distress in some rivers.

Andy detailed the current activities at the Environment Agency including planning for a third dry winter, using the rainfall-runoff model Catchmod to support short-term forecasting and using regional groundwater models to run scenarios. Currently, three drought permit applications are under consideration. The successes of recent drought activities include strong communication leading to demand reductions, the use of local water transfers for short periods, forward planning and the sharing of information amongst various organisations. Throughout the presentation, Andy stressed the importance of effective communication and managing public perceptions throughout the recent drought.

The second presentation was by **Gavin McHale** (Folkestone and Dover Water Services) and provided a useful insight into the drought experience from a water company perspective. Folkestone and Dover is a relatively small water company but has still had to face the whole range of issues resulting from the drought and the management of it. These include the uncertainty of forecasts and therefore the difficulties in supply management, numerous environmental impacts, and complying with environmental and water resource legislation.

The resource zones in the Folkestone

and Dover supply network are all interconnected, which proved to be a benefit in the recent drought. The flexibility to move water around the network enabled the pressure on supply to be reduced, but there have also been issues with managing contamination, the mixing of different water types and various treatment issues.

Water resource planning is difficult during drought periods: a judgement has to be made about the timing of certain actions, and assumptions have to be made in order to plan ahead.

Gavin discussed Drought Management Plans, which are now a statutory requirement for water companies. These plans are built around the concept of a series of zones and triggers and a plan of phased actions to take once the onset of drought occurs. Considerable planning, resources and investment is required as part of this process, including significant data requirements, and often most of this has to take place in advance of any drought signals occurring. Again, the importance of effective communication with customers was stressed, which requires a large amount of consideration, effort and money, as well as good timing. Numerous legislative tools exist to aid in this process including hosepipe and nonessential use bans, but Folkestone and Dover have found communication with the customers to be more effective.

Folkestone and Dover were the first water company to be granted "Water Scarcity Status", and in their strategy for the supply and demand balance, the company placed particular emphasis on the leakage control activities and the compulsory metering powers that have resulted from the granting of this status.

The two presentations stimulated a good debate at the end of the evening. The main points that came out of the discussion included metering forecasts, the need for water resource planning in terms of housing demand and new development, the expectations of customers in terms of supply and the willingness to pay, the usefulness of meteorological forecasts, and the importance of water efficiency.

Helen Procter
Secretary, BHS South East Section

Membership directory: send in your details

The BHS Membership Directory was issued in August 2006, but unfortunately many members were not listed in it. In some cases this was due to problems (now being resolved) with the membership lists held at ICE, but in other cases it was because members had not given approval for their details to be listed. This approval is essential in order that we comply with Data Protection legislation.

If you were not listed in the 2006 Directory, please complete the form enclosed with *Circulation* so that you can be included in the reissue planned for early 2007.

If you were included in the 2006 directory, please check your details and advise **Tim Fuller** (see front page) of any corrections needed.

Real-time flood forecasting

ICE / BHS joint conference London, 14 November 2006

Flood forecasting is growing in importance in overall flood risk management. With budgetary constraints, non-structural measures to mitigate the risk of flooding are becoming ever more relevant. At the same time, technological improvements in hydrometeorology and flood forecasting are leading to more accurate forecasts and also to modelling output that is better understood and more integrated. So it is not surprising that this conference was fully subscribed, with 50% more delegates than expected.

The morning sessions were chaired by **John Lawson** (ICE Water Board). They were on challenges and policy progress in flood forecasting and the forecasting infrastructure in England and Wales.

The first session began with a thought-provoking keynote speech by **David Rooke**, Head of Flood Risk Management at the Environment Agency. David stressed the need for good quality, accurate and timely flood warnings from flood forecasting and referred to recent severe events such as the Carlisle floods of January 2005 and the Boscastle event in August 2004. One of a number interesting points he made was that the concept of the 'false alarm' (i.e. a flood warning issued when an event did not actually occur with the forecast severity) is regarded in the USA as a form of useful training for people to react. Rather than assuming all such 'near misses' are poor forecasts, the emphasis is more on the benefit such events can bring, by learning how responses are made when warnings are issued. David was in favour of a similar change in culture in the UK to promote training for flood warning response.

Ben Lukey (Flood Forecasting Team Leader, Environment Agency North West Region) gave a very interesting presentation on the Carlisle flood event in January 2005. Extraordinary flows were experienced through the city of Carlisle — up to 1500 cumecs — thought to be the largest gauged flows in England and Wales. Ben discussed some of the challenges facing flood forecasting staff, including the difficulties experienced with stage-discharge ratings for high flows and the complexity of real flood events in which specific features within the catchment (such as blockages) can upset the predictions made by models.

Mike Cranston (Senior Flood Warning Hydrologist, SEPA) and **Pascal Lardet** (Market Sector Manager, Halcrow) gave a presentation on specific challenges in Scotland and discussed recent models developed for the Clyde, Kelvin, Irvine and White Cart catchments. Mike described the way many flood forecasting models are based on simple level-to-level trigger models in Scotland, and while these have been shown to work well, there has been a need to develop more sophisticated models for specific catchments. He emphasised the importance of radar for flood forecasting and welcomed the two new Scottish radars that were replacing the Corse Hill radar imminently.

Pascal described how three specific models have been developed this year for the Clyde, Kelvin and Irvine, using PDM models where necessary to increase forecast lead time. Support and maintenance were important in

such commissions to allow model updates to be made and to give duty staff appropriate support in running the models.

The second morning session began with a presentation by **Micha Werner** (Senior Hydrologist, Delft Hydraulics) on the Delft Flood Estimation Warning System (FEWS) and its application in the National Flood Forecasting System (NFFS). Micha described some of the background to NFFS being implemented in England and Wales and the need for harmony of systems, which have traditionally been developed differently in different regions. He stressed the importance of an open systems approach, with established standards across regions where possible and a degree of interchangeability within models, to allow different teams to work on models as and when required.

Murray Dale (Market Sector Manager, Halcrow) presented on a case study of development of the Bristol Avon Flood Forecasting model. Specific modelling challenges included multiple models being distilled into one cascading system, revising and developing new ratings, flood mapping with 1-D models and developing the system to run with *all* available data. Specific lessons learnt included the requirement to concentrate on station ratings as a priority, how and where new rainfall-runoff models can be developed, and model calibration using extreme flood events from historic records, even where these events have limited data.

Bob Potter (Water Resources Software Developer, Halcrow) described how real-time updating has been developed for hydrodynamic models, using the example of the Nene catchment in East Anglia. Updating is the automatic correction of a model during run time by comparison to suitable real-time data. Bob explained how he and colleagues have developed an Updating Gauge Unit within iSIS operating in two ways: for state updating and for forecasting. Bob made the point in his conclusions that updating was not a substitute for careful calibration but has been shown to improve real-time flow forecasts.

Frank Farquharson (Head of the Water Resources Group, Centre for Ecology and Hydrology) took the chair for the afternoon, which was split into two sessions: developments in precipitation forecasting and developments in river flow forecasting.

Brian Golding (Head of Forecasting Research at the Met Office) gave a presentation covering improvements in radar data, the UK Post Processing model (UKPP, a continuation from models such as Nimrod), detecting extreme events and high resolution Numerical Weather Prediction (NWP) modelling. In doing so he brought the delegates up to date with how rainfall is forecast and detected at the Met Office and where new challenges lay.

Of key importance appears to be the advent of 1km resolution NWP, to become an operational product by 2009. 1km NWP data are able to resolve (and therefore predict) small-scale rainfall events such as thunderstorms, which previous NWP models could not, and this development signals a step change in accurate quantitative rainfall forecasts for flood forecasting.

Ken Mylne (Ensemble Forecasting Manager at the Met Office) gave a stimulating presentation on how ensemble methods are used to provide probabilistic forecasts of rainfall at different forecast lead times, citing the 2005 Carlisle event as an example. He also raised the issue of how such probabilistic output could be used, referring to risk being the product of probability and consequence of an event.

Bob Moore (Head of the Hydrological Modelling and Forecasting Group at CEH) introduced a novel method for 'relocating' an intense localised convective event over a test catchment in different places as a method of 'destruction testing'. He described how rainfall-runoff models such as PDM work and the concept behind their development. Some key challenges for future research were to improve area-wide distributed models using more datasets, initialisation of distributed forecasting models and data assimilation for these models.

In a thought-provoking presentation, **Peter Young** (Emeritus Professor, Flood Risk Management Research Consortium, Lancaster University) argued that data-based mechanistic modelling and real-time adaptive flood forecasting that related rainfall to a flood level at a specific site could be used in place of more complex hydrodynamic models coupled with rainfall-runoff models. He showed examples of how his DBM model had provided good hindcasts of flood events on the Leaf River and the River Severn at Bewdley.

The second afternoon session began with **Chris Whitlow** (Independent consultant with EVMS) speaking on risk-based flood forecasting improvements. An appreciation of flood risk was a vital starting point in focusing the needs for modelling, in particular in model complexity and model resolution or scale.

Chris stressed the need for closer harmonisation between flood risk managers and hydrometric teams within organisations, in order to ensure data are of good quality for high flow events and available in real-time when necessary. He described several case studies and tried to dispel some 'urban myths' for forecasting: among them that large hydrodynamic models are too slow for flood forecasting, that they can't be updated in real time, that 2-D modelling is impossible and that open systems are infeasible.

A team from Jacobs comprising **Simon Bailey** (Technical Director) and **David Cobby** (Senior Analyst) presented a Flood Depth Estimation System they have developed in partnership with the Environment Agency's Thames Region. This tool can be used off-line to derive flood warning areas and estimate property flood depths, and on-line to predict these elements in forecasting mode. The tool uses output from flood forecasting models and adds property inundation detail to the Agency's flood forecasting maps.

Bridget Woods-Ballard (Principal Engineer, HR Wallingford) described a project to assess the benefits of flood warning, carried out for SNIFFER (Scotland & Northern Ireland for Environmental Research). The project assessed the tangible and intangible benefits of flood warning, quantifying the cost saving of flood warning by property and awarding scores to different warnings depending on their effectiveness in preventing flooding damage. Her headline conclusion was that the overriding justification for flood warning should be to mitigate risks to life or serious injury.

Finally, **Chris Haggett** (Business Change Manger, Environment Agency) reviewed how advances in flood warning dissemination have improved the effectiveness of warnings. In many ways this was a good place to end, as the usefulness of flood forecasting must be placed in context with the effectiveness of flood warnings. Chris presented the results of a long, complex project to develop the new Floodline Warnings Direct service, the first integrated multimedia warning system in the UK. It aims to warn hundreds of thousands of persons at risk of flooding by improving public perception and confidence in flood warnings. The service is due for public launch in spring 2007. Chris indicated that the new service will put increased pressures on flood forecasting to deliver accurate and timely forecasts for existing as well as new locations in the country.

If you have read this far wondering whether there were discussions on these presentations, you might be relieved to know that there were. These were numerous and lively and covered a wide range of topics, including the importance of developing good, appropriate stage-discharge ratings (and the use of R&D literature on rating development for flood forecasting); the concept of risk-based approaches to flood warning that enables extreme events of low probability to be 'managed' by determining the probability multiplied by the consequence of that event to provide a risk level (acceptable or otherwise); the priority that should be placed on data, particularly high flow data and its collection; the use of

transfer-function models against more complex integrated hydrodynamic models coupled with rainfall-runoff models; and, of course, the impact of climate change.

Murray Dale
BHS South West Committee Secretary

BOOKS

The Soil Hydrology of the Plynlimon Catchments by John P. Bell, Institute of Hydrology Report No.8, Centre for Ecology and Hydrology, 2005. ISBN 1 903741 130; 52 pp. Available free as a PDF file at *http://www.ceh.ac.uk/products/publications/CEHPublications-H-Downloadable.html*

The Plynlimon experimental catchments in mid-Wales, the largest field laboratory in UK hydrology, were set up by the Institute of Hydrology (IH) in the late 1960s. They continue to provide data, although the monitoring is now much reduced.

This document is the formal publication of an IH Report prepared in 1968/69, distributed internally but not published then because of the cost of reproducing the many colour photographs that are a key component. The report has recently been revised by the author and his photography has been retrieved for electronic publication.

The substance of the report is an account of the soils, their topographic distribution and the water flow pathways they offer to rainfall, as observed in the field, and a conceptualizing of relations between these.

Excellent photographs illustrate the solifluction and colluvial soil parent materials and soils: solifluction deposits are more prevalent on northerly-aspect slopes than on those with a southerly aspect, where colluvium is common.

Three principal soil types are identified and described: podzols, creep brown earths and peaty gley/peaty gley podzols. Their relationships with slope characteristics and parent material are explained and then systematized by tabulation. Five principal soil water pathways are identified: overland flow, subsurface lateral flow on impeding interfaces within the soil profile (e.g. iron and clay pans), subsurface pipe flow on impeding surfaces, lateral flow through the base of the weathered rock zone, and, potentially, fissure flow through unweathered rock: photographs illustrate the first three of these.

Cross-sectional diagrams of the postulated soil water pathways on northerly and southerly aspect slopes place them in the catchment context. A brief section considers the role of groundwater in the catchments and restates the reasons for assuming them to be watertight. However, the possibility of water storages within the frost-shattered rock of the hilltops feeding significant downslope flow through shallow fissures to the valley bottom streams is not precluded.

The final section proposes how it might be possible to model the soil information to provide a soil map for the catchments as a precursor to defining "hydrological domains". A modeller might be disappointed not to find a soil map and values of soil depth and hydraulic conductivity, but this work preceded much soil and catchment modelling.

The Glossary is important as the terminology used is not always current, but the clear definitions enable the reader to reconcile the terms with his/her more familiar lexicon.

The Introduction describes the raison d'être of this soil hydrology study: to provide a framework of information on the soils and their influence on the hydrological study.

Would that more catchment research could invest in such studies. However, the photographs will remind the reader just how complicated the detail of field hydrology is. The conceptualization is a coherent rationalization of what the soils have to tell us.

This report is important as a part of the Plynlimon literature, but is also well worth browsing (access is free) for an appreciation of UK upland soil hydrology.

Catriona M.K. Gardner
IAHS Press, CEH Wallingford

The Royal Meteorological Society Special Interest Group on Observing Systems welcomes new members

The Special Interest Group on Observing Systems publishes a newsletter twice per year and organises select meetings and tours of interest for its members.

Although it is affiliated to the Royal Meteorological Society, full membership of the RMS is not a pre-requirement of membership of the Special Interest Group.

The current membership consists of employees of the Met Office and companies who manufacture meteorological equipment, academics involved in meteorology, amateur observers and individuals.

Recent meetings have included tours of the Norman Lockyer Observatory, the new Met Office site in Exeter and the facilities at the British Antarctic Survey in Cambridge. There was also a well attended Saturday meeting on "Amateur Observing into the 21st Century".

Membership is a very reasonable £5 per year.

The Chairman is Jonathan Shanklin from the British Antarctic Survey.

The treasurer and membership secretary is Mike Brettle of Vaisala.

Please contact Mike at *mike.brettle@vaisala.com*

The other committee members are

John Prior	The Met Office
Richard McKay	BIRAL
Mike Bennett	UMIST
Stephen Burt	Fellow RMetS
Andrew Overton	Fellow RMetS
Dick Saffell	Campbell Scientific
Ian Strangeways	Terradata

RMetS
ROYAL METEOROLOGICAL SOCIETY

HSJ special issue on Historical Hydrology

Historical hydrology — reconstructing temporal and spatial patterns of runoff conditions and extreme hydrological events (floods, ice phenomena, hydrological droughts) for the period before national hydrological networks — is the theme of a Special Issue of *Hydrological Sciences Journal* (Vol 51(6), October 2006, 253 + iii pp, £38.00, guest editor Rudolf Brázdil).

The 14 papers include statistical analysis of long-term flood series and extreme events from documentary sources. The volume defines a research field which has potential for studying hydrological extremes in Europe.

e-News to combine with BHS Mailbase

About 175 people, including many of you, as well as non-members in the UK and worldwide, have registered on the BHS website to receive news from the Society by email.

This e-News system will shortly be merged with the BHS Mailbase, an email group with 400 members that many of you already belong to.

As well as a means of circulating news from the Society, the Mailbase is a self-contained email group that allows its members to send out their own messages relevant to hydrology.

The BHS committee has decided that it would be better to combine the two systems, making it more efficient to send out news and avoiding duplication of messages. The mailbase is preferred because it gives members the chance to post your hydrological questions, news or opportunities to other list members, whereas e-News is one-way only.

If you are not already on the BHS Mailbase, you are encouraged to join it now. To join, simply send an email to *LISTSERV@jiscmail.ac.uk* — leave the subject line blank and in the message write *subscribe BHS-HYDROLOGY FIRSTNAME LASTNAME* replacing *"FIRSTNAME"* and *"LASTNAME"* with your own names.

If you have any difficulty, please contact the list owner, Joe Pearce, at *joe.pearce@environment-agency.gov.uk* and he can add you to the Mailbase.

Meetings

European Geosciences Union
EGU General Assembly
Vienna, Austria, 15 – 20 April 2007

If you are attending the EGU next year, these are the deadlines announced:

Deadline for financial support applications: 8 December 2006 *(http://meetings.copernicus.org/egu2007/financial_support.html)*

Deadline for receipt of abstracts: 15 January 2007 *(http://www.cosis.net/members/meetings/programme/overview_db.php?m_id=40)*

You are invited to organise a "townhall" or a "splinter" meeting during the General Assembly (see *http://meetings.copernicus.org/egu2007* under Requests in the menu).

For further information, contact *egu.meetings@copernicus.org* or via *http://meetings.copernicus.org/egu2007/*

ModelCARE2007
Copenhagen, Denmark
9–13 September 2007

Abstracts are now invited for the sixth international conference on *Calibration and Reliability in Groundwater Modelling: Credibility of Modelling*, organised by IAHS/ICGW.

The deadline for submission of abstracts is **1 February 2007**.

For further information please visit *http://www.polytec.dk/modelcare2007* or contact Karel Kovar at the Netherlands Environmental Assessment Agency *(tel +31 30 274 3360, fax +31 30 274 4435 info@mnp.nl)*

Diary

6th December 2006
Scottish Hydrological Group meeting
"Exploring social impacts of flooding and flood risk in Scotland"
Venue: Edinburgh University
Time: 18.00
Contact: Michael Cranston *(tel 01738 627989, email michael.cranston@sepa.org.uk)*

17th January 2007
Scottish Hydrological Group meeting
"Climate change and hydrology in Scotland"
Venue: Glasgow University, Time: 6pm
Contact: Michael Cranston *(see above)*

18th January 2007
BHS South East Section meeting
"Desalination — is it the answer?"
Venue: ICE, 1 Great George St, London
Time: 6 p.m.
Contact: Helen Procter *(tel 01372 754201, email helen.procter@atkinsglobal.com)*

8th February 2007
BHS National meeting
"Drought forecasting"
Venue: ICE, 1 Great George St, London
Contact: Robert Grew *(email robert.grew@environment-agency.gov.uk)*

14th February 2007
NERC/IGBP meeting: "Understanding land-ocean-atmosphere interactions in the climate system: the role of earth observation from space"
Venue: Royal Society, London
Contact: Dr John Gash, CEH *(tel 01491 692331, email jhg@ceh.ac.uk, web http://classic.nerc.ac.uk/IGBP.php)*

21st February 2007
BHS Pennines Hydrological Group
"Issues in practical hydrometry"
Venue: United Utilities, Warrington
Contact: Janet Bromley *(email janet.bromley@uuplc.co.uk)*

28th February 2007
Scottish Hydrological Group meeting
"Wetland systems to control urban runoff"
Venue: Edinburgh University
Time: 18.00
Contact: Michael Cranston *(see above)*

1st March 2007
BHS National meeting
"Underpinning science for the Water Framework Directive, focusing on REBECCA (relationships between ecological and chemical status of surface waters)"
Venue: ICE, 1 Great George St, London
Contact: Mike Dunbar, CEH *(tel 01491 692403, email mdu@ceh.ac.uk)*

28th March 2007
Scottish Hydrological Group meeting
"Fluvial geomorphology for EIA and flood defence work"
Venue: Glasgow University
Time: 18.00
Contact: Michael Cranston *(see above)*

15th – 20th April 2007
EGU General Assembly
Venue: Vienna *(see Meetings above)*

18th April 2007
BHS National meeting
"Water resources and conservation management: recent developments in hydroecology"
Venue: ICE, 1 Great George St, London
Contact: Katie Fawcett *(tel 01792 325622, email katie.fawcett@environment-agency.wales.gov.uk)*

5th June 2007
BHS National meeting
"How can we trust models?"
Venue: CEH Wallingford
Contact: Gareth Old *(tel 01491 692486, email gho@ceh.ac.uk)*

2nd–13th July 2007
XXIVth IUGG General Assembly
"Earth: our changing planet" including an IAHS scientific programme
Venue: Perugia, Italy
See *http://www.iugg2007perugia.it* and *http://www.iahs.info*.
Deadline for abstracts of papers for some symposia: **31 December 2006**.

1st July 2007
5th Interceltic Hydrology Colloquium
Venue: Dundee, Scotland
Contact: Alan Werrity *(tel 01382 385084, email a.werrity@dundee.ac.uk)* or Andrew Black *(a.z.black@dundee.ac.uk)*

4th July 2007
BHS South East Section meeting
"Water resources in the South East" — lunch followed by a site visit to Bewl Water reservoir in the High Weald
Contact: Helen Procter *(see above)*

Copy deadline for *Circulation* No. 92
6th January 2007