No. 84 February 2005

THE NEWSLETTER OF THE BRITISH HYDROLOGICAL SOCIETY

# Circulation

## Contents

**Past trends and future directions in British hydrology**
Report of our 21st birthday meeting

**BHS welcomes 39 new members**

**Email network — BHS mailbase**

**Travel grants and the Exeter Fund**

**New Zealand Hydrological Society**
Harvey Rodda's report on the Annual Conference, 16-19 November 2004

**President's piece by Bruce Webb**

**BHS 21st birthday questionnaire**
Have your say on the Society's future

**Saving the Severn — sustainable management of the River Severn**
Report on the BHS Midlands Section meeting, 15 December 2004

**Catastrophic flooding incidents on Scottish railways 1830–2003**
Jeremy Benn's talk to the Scottish Hydrological Group, 13 October 2004

**Development in the South East: water and sustainable construction needs**
A report on the South East Section Meeting, 25 November 2004

**Flood mapping for Scotland**
Scottish Hydrological Group and Scottish Hydraulics Study Group joint meeting, Glasgow, 19 January 2005

**Sir Charles Pereira (1913–2004)**
Hydrologist, agronomist and Chief Scientist, who died last year, aged 91

**New committee members**

**Flood management and floodplain development**
Paul Bates represented BHS at the *New Civil Engineer* conference in December

**News from members**
Honours and geothermal exploration

**Diary of forthcoming events**

*Circulation* is published quarterly. It is free to members of the British Hydrological Society and costs £25 to nonmembers on annual subscription.

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

*Circulation* is produced at CEH Wallingford and indexed in *Geosystems' Hydrotitles* & *GeoArchive* and *NISC HydroROM.*

# Past trends and future directions in British hydrology

## *BHS 21st birthday meeting*

### BHS National Meeting
### Institution of Civil Engineers, London
### 10 November 2004

**This meeting marked and celebrated the 21st anniversary of the formation of the British Hydrological Society in November 1983. The format comprised a dozen keynote presentations in which leading UK hydrologists had the opportunity to reflect in their own specialist areas, both academic and applied, on how hydrology has developed over the past 21 years and on how the discipline should develop in the coming decades. There was also a more general discussion during which members of the large audience put forward their views on future trends and needs in hydrology.**

The meeting was introduced in a most appropriate manner by **Jim McCulloch** (BHS Honorary Member), who in his talk, *All our yesterdays*, reminded us of how hydrology in the UK had developed over the last 40 years and how the climate was right in 1983 for the formation of the British Hydrological Society as the 'intellectual home for all those involved in hydrology, irrespective of their basic scientific discipline'. In a presentation that worked in quotations from Cicero and Shakespeare, Jim reviewed the progress of UK hydrology as a multi-disciplinary science from the time of meetings of the joint Hydrological Group in the 1960s, and highlighted the major role played by the Institute of Hydrology (formerly the Hydrological

Research Unit and now part of the Centre for Ecology and Hydrology) as a focus for the discipline of hydrology and a key sponsor of BHS.

The wider context of the achievements of British hydrology was reviewed by **John Rodda** (Honorary Member) in his presentation *On the British contribution to international hydrology*. Drawing an analogy from studies of runoff production, John suggested that the British 'contributing area' to international progress in the discipline could be equated with the saturated/unsaturated zone near to the river bank, which added 'flow' for much of the time. In trying to quantify this contribution more precisely, he gave a succinct survey of the historical development of British hydrology from the late 17th century to the present day. He considered the positions held by British hydrologists in international governmental and non-governmental arenas and focused on the UNESCO/IHP FRIEND programme as a good example of the UK input to international hydrology. In looking ahead, he saw the production of a 'British Hydrological Atlas' and the involvement of British skills to generate a World Hydrological Summary as ways in which British hydrology might continue to play a leading role in the international arena.

In the first presentation devoted to a specific sub-area of hydrology, **Chris Collier** (University of Salford) addressed the topic of *Hydrometeorology (including remote sensing)* and reviewed major developments relating especially to satellite and surface-based remote sensing. He highlighted improvements in rainfall measurements using attenuation along microwave links and radar systems, and exciting advances in polarization techniques and assimilation of reflectivity and radial wind information. With respect to soil moisture, Chris explained the structure and performance of the new Met Office Surface Exchange Scheme (MOSES) and the advantages it has over the past operational calculation method (MORECS). He reviewed the level of performance reached by satellite systems in improving rainfall measurement and estimating energy balance. Exciting developments were under way to improve precipitation forecasts over all time scales, from hours to decades and beyond, including the Met Office Unified Model (UM), soon to run operationally at 4 km grid resolution. The use of ensemble forecasts in a Europe-wide flood forecasting system and the impacts of climate change on severe weather and rainfall occurrence were covered. Chris concluded that hydrometeorological research in the next several years is likely to focus on the NERC FREE research programme.

**Howard Wheater** (Imperial College), in his presentation on *Storm, flood and drought*, reviewed historical developments in hydrological practice for flood and low flow estimation in the context of progress in hydrological science and modelling. Having demonstrated the developing scope of hydrology from flood and water resource design in the 1950s to eco-hydrology and integrated catchment management at the present day, Howard went on to discuss technical progress in data assimilation in two areas. The first was regional analysis of rainfall and flow statistics as represented by the *Flood Studies Report*, *Flood Estimation Handbook* and *Low Flow Studies*, while the second was rainfall-runoff modelling using approaches that have evolved from metric methods in the 1930s to the recent use of stochastic modelling frameworks and the representation of uncertainty, including development of hybrid metric-conceptual (HMC) models and toolkits. Turning to current research challenges, Howard identified four areas: the spatial dimension, climate change and extreme events, land use and land management change, and integrated catchment modelling. Meeting those challenges would require experimental research into catchment processes, in particular data to support analysis of scale-dependence of response, improved understanding of the role of physics-based models and their parameters, and a framework for model integration across space and time-scales.

Addressing *Subsurface hydrology*, **Rae Mackay** (University of Birmingham) described the 1980s as a period in which, for groundwater flow, concepts and models matured and numerical methods multiplied as computer power increased exponentially. At the same time, modelling of groundwater pollution was undergoing significant development and forcing a re-evaluation of how internal processes within aquifers should be quantified; this led to the development of the dual porosity model and stochastic hydrogeology. Rae pointed to a number of issues emerging during the 1980s and 90s which, as they have been tackled, have advanced our understanding of flow and chemical transport in the subsurface. These included disposal of nuclear waste, urban and agricultural pollution, groundwater remediation, aquifer storage recovery and aquifer protection. He identified more recent concerns relating to groundwater sustainability, the Water Framework Directive and an urgent need to quantify the ecological impact of interactions between surface and subsurface water systems. Future developments could usefully focus on quantification of unsaturated zone fluxes, improving spatial articulation of stream aquifer fluxes, better assessment of geological variability for major aquifers, data integration, improving stochastic methods for practical application, and hydrogeoecology.

**Alan Jenkins** (CEH Wallingford) gave a presentation on *Water chemistry and quality*. He reviewed the major scientific advances over the past 21 years that have supported significant new legislation. This period was characterised by an explosion of data in space and time, providing new insights, strengthening understanding and underpinning model testing. Examples included long-term studies of land-use/management impacts on nitrate fluxes in the Plynlimon research catchments, investigations of eutrophication in Loch Leven over 35 years and the extensive research into land-ocean interactions carried out during the NERC LOIS thematic programme from 1992-97. Alan suggested that, in the past, work on water quality problems, including surface water acidification, phosphorus loadings from point sources, nitrate sensitive areas and control of bathing water quality, had guided the development of legislation. The difference at present is that the Water Framework Directive is driving ahead of the underpinning science to make the legislation effective. Alan argued that future water quality studies should focus on ecology and on understanding the whole catchment system and the impact of global change. In particular, there was a need to look more deeply into physical domain linkages (e.g. fields to rivers; rivers to inter-tidal zone), to place greater emphasis on field experimentation rather than monitoring, and to engage in integrated modelling approaches. These were seen as promising avenues for future research.

After lunch, **Des Walling** (University of Exeter) spoke about *Erosion and sedimentation*. He explained that in the late 1960s there was relatively little interest in the fine sediment carried by UK rivers. This reflected a perception of limited relevance in the absence of visible soil erosion and reservoir sedimentation problems. During the 1970s and 80s there was an increase in studies collecting basic data, elucidating relevant processes and investigating sediment quality as well as quantity, but the absence of a national sediment monitoring programme slowed the assembly of information on sediment loads and erosion and delivery dynamics of British catchments. However, a major change took place in the 1990s, when the wider environmental significance of fine sediment in nutrient and contaminant transfer, and in the degradation of aquatic habitats, was increasingly recognised. This has engendered a recent focus on the catchment-wide assessment of sediment sources, slope-channel connectivity and sediment sinks in the establishment of sediment budgets. Des highlighted the important role of

environmental radionuclides as sediment tracers in improving our understanding of sediment mobilisation and transfer. He suggested that EC Directives will continue to focus attention on sediment as a key control of ecological status and that there will be increased emphasis on sediment management in the future, necessitating establishment of critical loads and implementation of catchment sensitive land use/management initiatives. Improved understanding of catchment sediment systems will underpin the development of a new generation of models, and recent international initiatives will continue to enhance the importance of erosion and sedimentation within hydrology.

**Geoff Petts** (University of Birmingham) started his presentation on *Progress in hydroecology* by drawing a distinction between ecohydrology, which is concerned with the interaction between hydrology and plants, and hydroecology, which focuses on integration of hydrology and biology to manage water resources and protect water-dependent ecosystems. He outlined how the sub-discipline had evolved from research in applied freshwater ecology during the late 1960s and 70s and was influenced seminally by the First International Symposium on Regulated Streams in 1979 and the International Large Rivers Symposium of 1986, which spawned major concepts relating to fisheries management, flood pulses and rivers as 4-D ecosystems. By the mid-1990s sufficient knowledge was available to determine environmentally acceptable flow regimes for management purposes, but Geoff contended the underpinning science remained 'black box'. However, recent years have seen advances in fundamental understanding relating to flow variability, hydrologic connectivity, surface water – groundwater interactions, hydraulic habitats, physical 'habitat' requirements of life stages, biotic interactions and food webs and feedbacks, which Geoff illustrated with case studies, mainly from Birmingham. Despite this progress, even better integration of hydrology and biology is required to develop the next generation of tools for water managers, including more active cooperation between BHS, the Freshwater Biological Association and CIWEM to advance a shared research agenda.

In introducing his talk on *Catchment experiments*, **Enda O'Connell** (University of Newcastle upon Tyne) proposed a clustered point process model of hydrological knowledge generation by which brain-storms occur randomly in time and generate a random number of published papers. Each of these is associated with a random increment of knowledge that diffuses into the scientific community, and the knowledge generated at any time is the sum of all the contributing pulses. In this context, Enda reported the results of an informal survey among UK hydrologists which aimed to identify the past achievements of UK catchment experiments in terms of advancing knowledge of water balance, runoff generation, water quality and sediment regimes and highlighted more than a dozen, often long-running, investigations. Turning to the major challenges for the present and future, Enda focused on multi-scale catchment experiments which are generating results to inform sustainable management, and pointed to LOCAR and CHASM as providing major examples of such initiatives in the UK. In the USA, the Consortium of Universities for the Advancement of Hydrologic Science Inc (CUAHSI) has made major investment ($100 M) in 'hydrological observatories' to study mesoscale catchments ($10^4$ km$^2$). Enda argued that multi-scale catchments will benefit from recent technological developments in stream gauging and concluded that the UK will need to develop a national science programme in hydrology, to take a community approach to developing and maintaining catchment infrastructure and to engage in multi-scale experiments.

After tea, **Keith Beven** (Lancaster University) addressed the question *Have hydrological models come of age?* Although computer modelling of catchment hydrology began some 40 years ago, computers have got faster, distributed models have been developed, GIS has facilitated modelling and models are used routinely in many different applications, he observed that the answer to this question is no! In particular, the critical analysis of modelling that would mark the attainment of maturity is lacking, and it is rare, even in academic literature, to see the basis and assumptions of models discussed and the alternatives evaluated. Constraints, such as the importance of hydrology in the sub-surface, where observation is difficult, and the unique characteristics of every point in the landscape, which may not easily be represented by general effective values of model parameters, mean that hydrological models will inevitably be approximate and their predictive capability generally overestimated. Keith suggested, therefore, that future modelling, for example to couple water quality and ecological models with hydrological predictions, should fully evaluate uncertainties in model inputs and outputs and should also be aware of the 'equifinality issue', whereby multiple representations of model structures and parameter sets are expected to be consistent with observational data. In these circumstances, modelling should be a *learning process* with identification of testable hypotheses to differentiate amongst possible models, the collection of suitable data sets for testing the hypotheses, and a measure of acceptability or rejection of models based on the hypothesis.

The last two talks were devoted to discussing past and future trends particularly from the perspective of the practitioner rather than the academic. In *The government agency view*, **Andrew Skinner** (Environment Agency) reviewed the challenges and achievements in hydrology and related fields of water management and regulation since the 1963 Water Resources Act. He identified the monitoring, planning and public participation legacies of integrated river basin management in the UK. Through the impact of privatisation and other factors, this has posed challenges in terms of optimising a huge investment, developing clear, long-term multi-sector plans, and incorporating new models of regulation, along with the views of NGOs and others. The Agency was rightly proud of its achievements in monitoring, catchment planning and in some aspects of research, but he highlighted risks of being short of the right modelling capability to meet its planning and communication needs and of lacking some of the right professional skills. Implementation of the EU Water Framework Directive would provide a major challenge, and there would be a need, amongst other things, for integrated land and water management that was informed by sound science, accessible modelling and social learning, delivered by partnerships, and underpinned by regulation, motivated, in turn, by outcomes.

**David MacDonald** (Black & Veatch) concluded the presentations with his talk on *Design flood estimation — a consultant's view*. Drawing on experience from the last 20 years, David described the more common types of problem encountered by hydrological consultants, including inadequate local drainage, river flooding, reservoir flood safety, the impact of new urban developments and the potential effects of climate change, and he outlined what is required to help solve them. He also examined how well the data, design methods and software packages from government agencies and research projects have served engineering hydrologists in their efforts to solve their client's flood problems: he suggested the methods and tools available included both excellent and disappointing examples. He concluded with a 'shopping list' of items that are urgently required by consultants. These included the maintenance and refinement of the HIFLOWS-UK database, an updated FEH CD-ROM, a new QMEDCD equation for ungauged catchments, an improved version of WINFAP-FEH, more reliable long-return-period rainfall estimates, a revitalised unit

hydrograph rainfall-runoff model, better definition of runoff from small catchments and improved estimation of 'region specific' climate change effects.

Despite the large number of full and rich presentations — The presentation slides will be posted on the BHS website — the audience still had sufficient energy and enthusiasm at the end of a long day to engage in a wide-ranging general discussion session led by **Mike Hamlin** (Honorary Member and former President).

In conclusion, **Bruce Webb** (BHS President) thanked everyone who had participated in making the day a success: the event had shown the Society at the age of 21 to be in good health. A reception followed, with speeches from **Mike Mansell-Moullin** (Honorary Member and first BHS President), and — on behalf of the Society's principal sponsors — by **Quentin Leiper** (Institution of Civil Engineers) and **Alan Jenkins** (CEH). Mike cut a splendid Anniversary cake (see *Circulation No. 83*), which participants enjoyed while taking the opportunity to catch up with many old friends from the BHS.

*Bruce Webb, Exeter University*

## Email network

Keep in touch with other hydrologists in Britain through the BHS electronic mailbase.

To join this free service, see the website or contact Jenny Thorne *(jthorne@south-west-water.co.uk)*.

# New members

A warm welcome to the following new members of the Society:

| | |
|---|---|
| Richard T J Amos | Environment Agency, Wallingford |
| Deborah J Ballantyne | Exeter University, Exeter |
| Douglas Barker | University of Birmingham, Birmingham |
| Ian Bentley | University of Newcastle upon Tyne |
| Edward Bond | University of Birmingham |
| Dr C Isabella Bovolo | University of Newcastle upon Tyne |
| Ruben W M Breuls | Envirocentre, Glasgow |
| Daniel Burbridge | Environment Agency, Hatfield |
| Robert Burton | Hydro-Logic Ltd, Reading |
| Tony Bryne | Environment Agency, Worthing |
| Dr Susan T Casper | Environment Agency, Solihull |
| Niall Clarke | United Utilties, Warrington |
| Helen J Clayton | Imperial College London |
| Dr Steven Cole | Centre for Ecology and Hydrology, Wallingford |
| Leonor C Cortes | Atkins, Peterborough |
| Claire L Cox | Cambridge University |
| Alexandra V L Currie | Environment Agency, Tonbridge |
| Lucy Freeman | University of Birmingham |
| Jane C Garner | Atkins, Peterborough |
| Dr Keith J Garrett | Environment Agency, Exeter |
| Giorgis Hadzilacos | Atkins, Peterborough |
| Helen Primrose | University of Newcastle upon Tyne |
| Dr Christel Prudhomme | Centre for Ecology and Hydrology, Wallingford |
| Philip J Prydderch | Environment Agency, Tonbridge |
| Claire L Quarmby | Environment Agency, Leeds |
| Kelly Rains | United Utlities, Warrington |
| Ian Ringer | Environment Agency, Darlington |
| Matthew G Scott | Halcrow, Swindon |
| Christopher A Smith | Environment Agency, Worthing |
| Mark A Smith | University of Birmingham |
| Maria A Solera Garcia | Lancaster University |
| Nicholas R Stokes | Black & Veatch, Chester |
| Jeremy Stopford | University of Birmingham |
| Michael F C Thorn | Wallingford Research Consultancy, Wallingford |
| Chris D Ward | T A Millard Consulting Engineers, Norwich |
| Mark E Wilkinson | University of Newcastle upon Tyne |
| Richard D Williams | Lancaster University |
| Paul Wyse | Environment Agency, Reading |
| Richard J Yates | Environment Agency, Leeds |

# Travel grants & Exeter Fund

Travel grants are available to help BHS members whose travel expenses are not met by an employer to attend scientific meetings. The amount will depend on the nature and location of the meeting and the case put forward.

Grants are mainly intended to help younger members, but are open to all. Successful applicants will be expected to write a short report for *Circulation*.

The Exeter Fund offers grants to British hydrologists to take part in IAHS events, such as the forthcoming IAHS Scientific Assembly in Brazil next April. Registration is still possible up to 30th March (see *http://iahs.info*).

Apply to the Hon. Treasurer, **Steve Parsons**, Mott MacDonald Ltd, Demeter House, Station Road, Cambridge, CB1 2RS *(tel 01223 463926, email sbp@mm-camb.mottmac.com)*.

# New Zealand Hydrological Society Annual Conference

## 16-19 November 2004
## Queenstown, New Zealand

**I was delighted to have the opportunity to attend this meeting, having worked in New Zealand from 1994 to 1998 and been a member of the New Zealand Hydrological Society since 1995.**

Funding for my trip was covered in part by a BHS Travel Grant and a grant from the New Zealand Hydrological Society. This was their 43rd annual conference and attracted over 200 delegates from throughout New Zealand and overseas — its theme was "The Water Balance". The location was particularly attractive: Queenstown, on the shores of Lake Wakatipu in the South Island, is one of the main tourist destinations in the country and has become a centre for adrenalin activities such as bungy jumping, paragliding, white-water rafting and jet-boating.

Queenstown itself was severely flooded in November 1999 from the lake overflowing. Many shops and businesses were flooded to a depth of 1 m which caused considerable damage and loss of income. Following this flooding, a defence was proposed

around the lake front, but it was blocked by local businesses and the mayor. The result is that businesses in the flood prone area have now been refused insurance cover and the local authorities are now looking into the use of demountable defences.

The first day consisted of five workshops, on resource consent compliance, habitat assessments, management of stream depletion effects, environment court/expert witness and acoustic Doppler current profiling (the last taking the form of a demonstration in the Dart River). The next two days opened with keynote speakers and were then split into three concurrent sessions with over 80 scientific papers presented. The keynote speakers covered the general issue of water management, both from New Zealand and overseas perspectives.

**Daryl Lew** (Opus International, NZ) presented a paper entitled "The Blue Gold Rush" about the unprecedented rush to secure rights to water in New Zealand over the past ten years, following the implementation of the Resource Management Act. **John Williams** (retired Chief of CSIRO Land and Water) summarised the key aspects facing water management in Australia, and **Brian Caruso** (US EPA, formerly Victoria University of Wellington) contrasted water management in New Zealand and the USA.

The concurrent sessions covered a range of topics, such as flooding, hydroelectricity, groundwater-surface water interchange, riparian protection, water quality and water management and allocation. Several presentations were on flooding, since many parts of New Zealand were hit by severe floods in February and again in July 2004, with return periods of over 50 years. **Horace Freestone** (Opus International) reviewed the flooding in 2004 and compared these events with other historical floods. The worst affected areas were in the northern tip of the South Island and much of the central and southern North Island, including parts of Wellington. The cost of damage was estimated to be NZ$600 million in the Manawatu region alone.

A paper by **Maurice Duncan** (NIWA) put the scale of flooding in some parts of New Zealand into perspective and discussed the application of a 2-D hydrodynamic model to define the 50-year flood level for Westport, on the west coast of the South Island. The 50-year flow for the Buller River which drains the area was estimated at 9200 cumecs. Such a remarkable discharge for a catchment of 6000km$^2$ is due to the combination of exceptionally high rainfall (annual average of over 6000mm with up to 500mm/day possible) and very steep relief: it is within the Southern Alps, with large areas of bare rock surfaces.

I found the papers on water quality particularly interesting, as I worked in this field when I was in New Zealand. There is concern about the effects of intensive agriculture and land-use change on surface and groundwater quality. I was pleased to see that a catchment water quality modelling study in the Toenepi (central North Island), started 10 years ago, is still in progress. Groundwater quality monitoring had been undertaken to complement the initial surface water quality monitoring and modelling.

**Roland Stenger** (Aqualinc Research Ltd) presented some of the monitoring results, showing that concentrations of nitrate in groundwater were well below those measured for surface water. He suggested that denitrification in the unsaturated zone may explain the difference. Other water quality papers included a discussion of nitrate contamination of groundwater in Canterbury (**Phil Abrahams**, Environment Canterbury), contrasting the effects of nitrogen discharge to groundwater from a wool shed and a wastewater plant (**John Hadfield**, Environment Waikato), and a review of the performance of riparian buffers in pasture catchments (**Lucy McKergow**, University of Otago).

The closing session on the third day included an address by the **Rt. Hon. Marion Hobbs**, Minister for the Environment. The Government would be releasing a discussion document in the next few weeks as the first step towards developing a national water management framework. The Minister accepted that demand for water was rising and that finding a way to manage the competing demands of environmentalists, water users, water managers and those using water for recreation was a challenge.

The final day of the conference was set aside for the field trips. Delegates had a choice of a trip to the Manapouri Power Project on Lake Manapouri, some 2 hours drive south from Queenstown, or a visit to the Clyde Dam, 80km to the north. I opted for the latter, which was the shorter trip. The Clyde Dam is the largest concrete gravity dam in New Zealand, 490m wide and 105m high. It was built between 1977 and 1989 for the dual purposes of providing hydro-electric power and water for irrigation. It is located in the driest part of New Zealand, east of the Southern Alps, where the rain shadow effect makes the annual average rainfall a mere 300mm. The majority of the catchment upstream of the dam, some 12000km$^2$ in total, is considerably wetter, with annual rainfall in excess of 2000mm. The area was also badly affected during the 1999 floods. The power station was inundated and generation was shut down, the access road was cut off by the flood waters and staff on the site were on standby for evacuation. At its peak the spillway was discharging 3200 cumecs, but this was well below the maximum capacity of 4600 cumecs.

I presented a paper on the Boscastle flood and the management of flood risk in the UK. This prompted a lot of discussion about the flood risk mapping work undertaken by the Environment Agency over the past five years. Following the 2004 floods in New Zealand, a natural hazard mapping programme is now being implemented, which includes the risk from flooding, landslides, tsunamis, windstorms and earthquakes. I had discussions with some of the people involved in this project, who were keen to find out about the Environment Agency's Section 105 flood risk mapping programme in the UK and to identify areas where similar technology or approaches would be possible in New Zealand, such as the use of LiDAR and synthetic apeture radar to derive digital terrain models.

Overall this conference was excellent. It was well organised and it was particularly pleasing that a large number of students attended and presented papers. The 2005 conference is planned for Auckland. Further details and general information about the New Zealand Hydrological Society can be found on their website: *www.hydrologynz.org.nz*.

*Harvey Rodda, Hydro-GIS Ltd*

# President's piece

The New Year normally marks a time of celebration and optimism for the future. Very sadly, the transition from 2004 to 2005 has been marred by the natural disaster of the Indian Ocean tsunami and its human tragedy on a scale that is hard to comprehend. The Society's thoughts are with all those in the areas affected, and the Main Committee has decided to make a donation to the Disasters Emergency Committee on behalf of the BHS as a whole. It may be that some of our members have decided to contribute by going to the affected areas in order to offer help and expertise on the ground, either in the immediate aftermath of the catastrophe or as part of the longer-term processes of recovery. If this is the case, and there are ways in which the Society might help such individual efforts, please contact any member of the Main Committee.

## New skills in SLR's hydrology team

**Matthew Travis** recently joined SLR Consulting Ltd as an associate in its regional office in Eastwood, Nottingham. He has moved from URS Corporation, where he worked for over six years as a hydrologist on water management projects including flood risk assessments for brownfield regeneration schemes, drainage studies, water supply projects and water quality modelling. Matthew will be working within SLR's hydrological and hydrogeological team to develop the water management side of their business across the UK. *(www.slrconsulting.co.uk)*

## Geothermal heating project

Two Newcastle University Professors, **Paul Younger** (a former BHS Hon. Secretary) and **David Manning**, have discovered a viable source of underground hot water on the site of a redundant cement works at Eastgate, Weardale, County Durham.

The discovery is expected to lead to the development of the first renewable energy 'model village' in the UK. Paul and David carried out the exploratory drilling for the Weardale Task Force, set up to revive the dale's economy after the Lafarge Cement works closed in 2002. They sank a 1000 m borehole on the Slitt Vein, near Cambokeels mine, where warm water had been discovered in the late 1980s.

The water in the borehole is warm enough to be potentially used for space heating. The composition, temperature and flow data now available indicate that the resource is likely to provide a 'hot springs' development, where low volumes of warm saline water are typically used. The way is now open to further well development to make even greater use of the hot water.

Paul said, "The programme has been a great success, proving the existence of a geothermal resource at least as promising as the best ever previously identified in the UK. Valuable geological information has been collected, underpinning the North Pennines' status as a European Geopark."

# Diary

*2nd March 2005*
BHS National meeting
"Future Trends in British Hydrology: the next 21 years" — talks by younger hydrologists and discussion
Venue: Lancaster University
Time: 10.30 – 16.30
Contact: Keith Beven *(k.beven@lancaster.ac.uk)* or Tim Fuller, ICE *(tel 020 7665 2234, email bhs@ice.org.uk)*
Programme: *www.es.lancs.ac.uk/hfdg/BHS_Meeting/BHSNext21flyer.htm*

*10th March 2005*
BHS South East Section meeting
"Water Framework Directive — international links"
Venue: ICE, London, Time: 18.00
Contact: Helen Procter *(tel 01372 754201, email helen.procter@atkinsglobal.com)*

*22nd March 2005 (World Water Day)*
CEH/RGS World Water Day meeting
"Water for Life — the UK Input" and launch of the 'Water for Life' decade
Venue: Royal Geographical Society, 1 Kensington Gore, London SW7 2AR
Contact: Heather Binney, RGS/IBG *(tel 020 7591 3005, email h.binney@rgs.org)*
Details at *www.rgs.org*

*3rd–9th April 2005*
7th IAHS Scientific Assembly
Venue: Foz do Iguaçu, Brazil
See the IAHS website: *http://iahs.info*

*11th–13th April 2005*
Third International Conference on Water Resources Management
Venue: Algarve, Portugal
Contact: Wessex Inst. of Technology *(tel 0238 0293223, email rgreen@wessex.ac.uk)*
Details: *http://www.wessex.ac.uk/conferences/2005/waterresources05/*

*13th April 2005*
Scottish Hydrological Group AGM
"Rolling out sustainable drainage solutions throughout Scotland" — Chris Jefferies (Abertay University)
Venue: Royal Society of Edinburgh
Time: 6.00 for 6.30
Contact: Mike Cranston *(tel 01738 627989, fax 01738 630997, email michael.cranston@sepa.org.uk)*

*13th–14th April 2005*
RRC 6th Annual Network Conference
*"River restoration: where are we today?"*
Venue: Univ. of Hertfordshire, Hatfield
Booking form and programme at *http://www.therrc.co.uk/conferences.htm*

*24th–29th April 2005*
European Geosciences Union General Assembly 2005
Venue: Vienna, Austria
Contact: *http://www.copernicus.org/EGU/ga/egu05/index.htm*

*11th May 2005*
BHS National / South East meeting
"Hydrology of Extremes"
Venue: ICE, London, Time: 10.30
Contact: Joe Pearce *(tel 01903 703874 email joe.pearce@environment-agency.gov.uk)*

*11th May 2005*
BHS South West Section meeting
"Land-use change, distributed modelling and the Framework Directive"
Venue: Exeter University
Time: 09.30–15.30
Contact: Paul Bates *(tel 0117 928 9108, fax 0117 928 7878, email Paul.Bates@Bristol.ac.uk)*

*25th May 2005*
BHS Pennines Hydrol. Group meeting
"Current water resources issues in northern England"
Venue: Penrith and Eden catchment
Time: full day, with site visits (preceded by an EGM to elect a new committee)
Contact: Janet Makin *(email janet.makin@uuplc.co.uk)*

*5th–8th June* 2005,
3rd IWA Conference on Water and Wastewater Treatment Technologies
Venue: Sapporo, Japan
Contact: Noirin Casey *(tel 020 7654 5500, fax 020 7654 5555, email let2005@iwahq.org.uk, web www.let2005.iwa-conferences.org)*

*16th June 2005*
BHS South East Section meeting
LOCAR catchments — site visit
Contact: Helen Procter *(see above)*

*23rd–24th June 2005*
BHS Welsh Section meeting
"Hydrology in Wales: planning for environmental change"
Venue: Gregynog, Powys; optional field visit to Plynlimon catchments
Contact: Catherine Wilson *(email wilsonca@cardiff.ac.uk)* — see flyer

*11th–13th July 2005*
Water in Celtic countries — 4th Inter-Celtic Colloquium on Hydrology
Venue: Guimarães, Minho, Portugal
Contact: *Lferreira@lnec.pt*

*29th August – 1st September 2005*
IGU international conference: *"Environmental change and rational water use"*
Venue: Buenos Aires, Argentina
Call for papers: abstracts by 15 March
See *http://water-sustainability.ph.unito.it* or contact Tony Jones *(jaj@aber.ac.uk)*.

*31st August – 2nd September 2005*
"Flows and spaces in a globalised world" — RGS Annual Conference
Venue: RGS/IBG, London
Contact: *david.demeritt@kcl.ac.uk* or see *www.rgs.org/templ.php?page=3resann05int*

*21st September 2005*
BHS National / South East meeting
"LOCAR (lowland catchment research)"
Venue: ICE, London
Contact: Prof. Ian Douglas *(email ian.douglas@manchester.ac.uk)*

*15th–17th November 2005*
Institute of Fisheries Management
"Fisheries on the edge"
Venue: The Lowry, Salford Quays
Contact: Wendy Diedricks, APEM Ltd *(tel 0161 226 2922, fax 0161 226 0753)*

**Copy deadline for *Circulation* No. 85 8th April 2005**