NEWS AND INFORMATION

International Association of Hydrogeologists

The international groundwater organisation

Since 1956 a world-wide forum on the management of groundwater for the benefit of mankind and the environment

IAH Commissions and Working Groups - An Agenda for Reform

Ken Howard

The new IAH Council has asked the Executive to undertake a thorough examination of the services provided to members, with a particular focus on the roles of its Commissions and Working Groups. As Vice-President responsible for the Association's scientific and technical programme, I am seeking your input to a process of review and reform that I hope will streamline and significantly improve our present range of scientific activities.

The process was actually initiated in Stana de Vale (Romania) in 2002, when a special meeting of IAH Council focused its discussions on the future of IAH. In 2005 and 2006, Andrew Skinner and Jiri Krasny pushed the process forward with a comprehensive survey of members and a detailed questionnaire which was sent to IAH Council and Commissions, and in the past few months I have consulted with Commission Chairs to bring all the programme information up to date. Additional input was sought from Members of Council, National Committee representatives and the broader membership during the Hyderabad Congress in September 2009. Important goals of the initiative are to stimulate the work of active Commissions and Working Groups while opening up opportunities for new programme activities in emerging global groundwater issues.

Following the discussions in Hyderabad, detailed proposals for reform are presently under development and will be discussed by the IAH Executive at its meeting in February, before being tabled at the next meeting of Council. Some of the changes under consideration for Commissions include formal reporting requirements, fixed periods of tenure that can be renewed subject to a peer review process, and access to some limited central IAH funding for well defined deliverables. Reforms approved by Council could be implemented by the end of 2010. I strongly urge all members who have opinions on the Association's current array of Commissions and Working Groups and the way they work to e-mail me urgently at gwater@utsc.utoronto.ca with your thoughts, comments, ideas and suggestions.

Ken Howard

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To join IAH please visit the web site and either join on-line or download the membership application form

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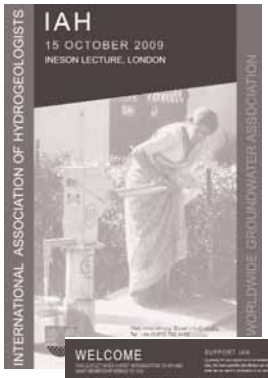
IAH News

IAH publicity, profile and membership

The Secretariat is pleased to have received positive feedback from members on the re-design of the IAH annual summary report, particularly the map showing the growing global reach of the Association. As in previous years, we had sufficient numbers of the report printed so that we can provide one in the packs sent out to new members. We have also been invited to provide them to put in the material given to participants at the groundwater industry short courses run by the National Centre for Groundwater Research and Training in Australia to help us recruit new members. We shall be looking for other chances to do this, so please advise the Secretariat of any such opportunities.



We in the Secretariat have now tackled another task on our list - a new publicity and membership leaflet and posters in the same general style as the annual report were produced for the joint convention in Hyderabad. Some examples are shown on the right. Rather than printing very large numbers of flyers which become out of date before they can be fully utilised, the intention is to use smaller print runs (obviously with somewhat higher unit costs) of more targeted leaflets. Thus we have already produced a modified version of the original for the UK National Chapter so that the section of text dealing with the benefits of the local chapter or group, the membership fee rates and payment instructions were all specific to the UK. This will be used at scientific meetings and also widely distributed to the universities where there are most likely to be potential new members. It is the intention to prepare an Australia/New Zealand version focused in the same way for distribution with the course material mentioned above.

The Secretariat will have a stock of generalised international (i.e. not country-specific) IAH membership flyers which can be provided to National Chapters for use at technical meetings and in universities to promote membership. We are also willing to discuss the production of additional country-specific versions. One of the issues discussed at the IAH Council meeting in Hyderabad was the need to be more effective at recruiting students and young professionals into the Association, and the Executive and Secretariat will be considering what measures we should take to achieve this.

For more information email jchilton@iah.org or knicholson@iah.org. We would also welcome your comments or ideas.

Secretariat

A Seasonal Message to all our Members...

As we come to the end of 2009, we can reflect together on another good year for IAH. The new Council and Executive have settled in well to the routine management of the Association, and initiatives related to our commissions and the general future direction of IAH are underway (as reported in this newsletter), ready for further development in 2010. Despite the worldwide recession, our membership has held up well and efforts continue to promote the establishment of new IAH national chapters; we would like to hear from you if you think there is potential to do this in your own country.

The IAH Secretariat would like to thank everyone for their constant support and wishes all IAH members very best wishes for a happy festive season and a successful and peaceful year in 2010. We look forward to continuing to work with you all.

Kellie, Sharon and John

Fees to be held at same level for 2010

As is the regular custom, IAH Council met in Hyderabad on the Sunday before the joint convention. Amongst the numerous agenda items tabled was the issue of IAH membership fees. It has been usual in the recent past to raise the fee rate in relatively small increments every second year to keep pace with the rising costs of running the Association. Analysis of income and costs by the Secretariat suggested that, strictly speaking, this ought to be the case again for 2010, although assessing possible future currency fluctuations and inflation rates made this more uncertain than normal. After considerable discussion, and taking account of a) the sound financial position already reported to Council, b) the maintaining of membership numbers in 2009 and c) the generally low inflation rates during the global recession, Council has decided to keep the euro membership rates the same in 2010 as in 2009, although exchange rate movements mean small rises for those who pay in pounds sterling but by chance not for those who pay in US dollars.

In taking this decision, IAH President Willi Struckmeier and Council felt this should be seen as a gesture to our members in a time of recession, particularly bearing in mind that our profession often does not do as well as others at such times. Both in the public and private sectors, members are experiencing pressure on salaries and jobs. The financial situation will be reviewed again in 2010 by the Executive and Secretariat in preparation for the next Council meeting in Kracow, with the likelihood that a small fee rise could be necessary for 2011.

Changes to country fee bands

Members will be aware that IAH operates a tiered fee structure to take account of the large economic differences between countries from which our membership is drawn. Published World Bank income per capita figures are used as a basis for categorising countries into our fee bands, and this showed some cases where current fee banding has lagged well behind economic development. Council approved proposals for a number of changes to the fee bands to take account of these changing economic circumstances. These primarily affect some of the countries of Latin America, new Member States of the European Union and some of the countries in transition from the CIS. In some cases, rigidly following the World Bank income categories would have resulted in large fee increases, and the Executive has therefore decided to retain a short transition period to help members in these countries to be able to afford to continue paying their fees. The full details of the new categories will be posted on the IAH website, and the new fee bands will apply to the 2010 fee rates.

IAH Executive

Improvements to IAH website

Members' attention is drawn to recent improvements to the IAH website which had been planned for some time. Firstly, the member login facility has been modified so that it now uses the member's email address together with a password, rather then the membership number and password as previously. This change brings us more into line with common practice for access to member-only sections of society, association and community websites. Secondly, responding to demand we have also streamlined membership renewals under the "members' area".

Thirdly, we have added within the "members' area" a section entitled "IAH meetings". This is intended to allow better access for members to the minutes of Council, AGM and Executive meetings, and any other special meetings that IAH might hold from time to time. According to our constitution and rules, members should have access to these papers, and the Secretariat has been aware for some time that we have not facilitated this as well as we should have done. Some copies of previous minutes have been available temporarily but rather obscurely on the WWGW website. Having established the required pages, the Secretariat is beginning to populate them so that they eventually form a comprehensive archive of the records of past business meetings of the Association.

The improvements went live in October after intensive testing, but there may still be small hitches, and we would be grateful if you could point out to us any that you find. These developments are seen as part of a continuing process. The updating of the pages containing basic information on National Chapters, Commissions, publications and so on can certainly be improved. We are also endeavouring to improve the posting of "Latest News" items. We would welcome any additional suggestions for possible website improvements to jchilton@iah.org or knicholson@iah.org.

Secretariat

President's Column

The need for more groundwater storage


Willi Struckmeier

Groundwater presents a multitude of local solutions for water security and climate change adaptation, particularly in the dry, drought-prone regions of the globe. However, groundwater resources in these regions are limited, as recharge rates are usually very low. Groundwater abstraction is hence a sensitive issue, but all too often there is poor or inadequate management of resources, and over-abstraction or groundwater mining are continuing almost unchecked. On the groundwater resources map of the world (see: www.whymap.org) some thirty areas showing regional water level declines owing to heavy groundwater pumping have been identified. These areas are significant at a global scale, but we know there are thousands of similar cases at a local scale. The recent paper in "Nature" on groundwater losses in Northern India is another case study of the creeping depletion of aquifer storage.

The latest World Water Development Report (2009) has clearly shown that global water demand is rising steadily, mainly owing to increasing population and irrigated food production. There is no doubt that competition for water will increase, particularly in water-scarce regions. In addition, this situation will worsen dramatically due to climate change but also due to socio-economic pressures in many places. Economic water scarcity in many poor regions or countries has already become just as important as physical water scarcity from dry climatic conditions.

What can be done to avoid a major water crisis?

Malin Falkenmark, who received the IAH Distinguished Associate Award in Lisbon in 2007, published the model of blue and green water, in which blue water represents the water in the atmosphere, rivers, lakes and aquifers whilst green water in soils serves chiefly the growth of plants. Her clear plea was to increase the portion of green water, if a food crisis is to be avoided. This simplistic model, however, does not take into consideration what happens every day; groundwater from aquifer storage is increasingly used for crop irrigation. Since this groundwater stored in deep aquifers is generally not involved in the present-day water cycle, the blue-green model must be extended with another colour (silver or gold) symbolising the "banked" groundwater treasure. Using modern drilling and pumping technologies this asset is increasingly withdrawn and depletes our stored groundwater resources, but at the same time it adds to the present-day water cycle, as it is converted into green water, evaporates or increases surface runoff, and may even be responsible for a certain sea level rise (see Konikow and Kendy, Hydrogeology Journal, 2005).

Our former president Ramon Llamas has nicely documented the high economic value of groundwater in agriculture, as the crop productivity on groundwater irrigated land was significantly higher than other areas ("more crop per drop"). However, this productivity gain is certainly not enough to solve regional water shortages, and it would further strain the limited groundwater resources.

In the opening session of our Joint International Convention in Hyderabad just a few weeks ago, Ghislain de Marsily explained in his keynote talk that the surface water community has done very well in increasing water storage by building numerous large dams and reservoirs, mainly in the last decades of the past century. He stressed the socio-economic benefits of this water infrastructure, but he also expected that the present low level of such infrastructure investments will continue, since the remaining suitable places for dams are few and environmental concerns are often overwhelming. He therefore called for an increase in the use of groundwater.

However, mere augmentation of groundwater withdrawal for irrigated crop production may certainly be detrimental to ecosystem services provided by groundwater in many places. I therefore think it is high time now to look for scientifically based, innovative options to increase the availability of green water and manage rainwater and shallow groundwater in a clever way in river catchments. Integrated water (and land) resources management (IW(L)RM) thus becomes more important than ever.

IAH colleagues have played a major role in the preparation of the conceptual framework known as managed aquifer recharge (MAR). This concept has been extended recently by the so-called 3R concept

(Recharge-Retention-Reuse) which was successfully launched in an African seminar during the last Stockholm Water Week in August 2009. The publications are available for download on the UNESCO water portal and the new http://www.bebuffered.com web site.

On the basis of these concepts, we hydrogeologists hold the tools for new groundwater storage options, and we should strive for a worldwide initiative to make efficient use of the buffering capacity of aquifers, and call for a decade for groundwater storage. We urgently need to promote rainwater harvesting and aquifer storage and lobby for implementation at community level in the coming years. In this respect the talk of Mr Popatrao Pawar on receiving his special IAH award in Hyderabad *(see page 9)* was a real eye-opener regarding the key role groundwater can play in IWLRM, leading to the improved welfare of rural communities.

Let us promote groundwater buffer solutions all over the world, to improve the livelihoods of many people, mainly in the developing world, and build resilience for climate change adaptation. Yes, all of us in IAH can do it!

Willi Struckmeier

News from the Karst Commission

An international conference Sustainability of the Karst Environment - Dinaric Karst and other Karst Regions was held in Plitvice, Croatia from 23-26 September 2009. The conference, organized by the Centre for Karst at Gospic, Croatia, was sponsored by the Croatian Ministry of Science, Education and Sports, by IAH, and by a number of other international organizations including UNESCO. The programme of the conference included 68 papers, 12 posters and a number of educational and scientific video presentations attended by more than 150 participants from around the world. The conference concluded with a short visit to the Plitvice Lakes World Heritage Site, known for their sinter terraces and associated hydrogeoecologic phenomena, followed by a one-day field trip through the Dinaric Karst.

The Plitvice Lakes World Heritage Site where sinter precipitation has formed a unique karst hydrogeoecologic system consisting of natural dams and 16 lakes.

The awardees of the Young Karst Researcher Prize, with Commission chairman Nico Goldscheider.

The renewed IAH Karst Commission (www.iah.org/karst) held its first official meeting at the conference and also, for the first time, awarded three Young Karst Researcher Prizes for presentations made at the conference, co-sponsored by the Centre for Karst. The awardees are: Andreas Hartmann (Germany), Caoimhe Hickey (Ireland) and Gregor Kovacic (Slovenia). This prize, now established as a traditional award of the Karst Commission, will be presented at future international conferences where karst hydrogeology is one of the topics and where official Karst Commission meetings take place.

Neven Kresic and Nico Goldscheider

This fine idea could be a model for other commissions to follow - Editor

Conference Report: Hyderabad, 6 - 12 September 2009

We are pleased to report that the National Geophysical Research Institute (NGRI) and the Association of Hydrologists of India (AHI) hosted the Joint International Convention of the 37th Congress of IAH and the 8th Scientific Assembly of the International Association of Hydrological Sciences (IAHS) in Hyderabad during September. The focal theme was "Water: A vital resource under stress: How science can help".

The Convention was inaugurated by Smt. Daggubati Purandeswari, Minister of State for Human Resource Development (Higher Education) of the Government of India. In her opening address, the Minister dwelt on the need to take a scientific approach to the management of surface and groundwater resources. She touched upon the water quality problems that are being faced world wide and more so in developing countries, including in India. She also made special reference to the issue of water pricing and stressed the need for the protection of the basic right to availability of good quality water to all inhabitants. In her concluding remarks she hoped that the international community together with national hydrological experts would be able to deliver effective solutions to the persisting water related problems. Dr. Rai, the regional Vice President of IAH and co-convener of the joint convention highlighted the significance of the conference in the Indian context. The inauguration was followed by an invited lecture by Professor Ghislain de Marsily on "Freshwater stocks on Earth as ice, surface water, groundwater: are we loosing water?"

The joint convention was structured into a slightly bewildering array of 22 symposia and workshops dealing with almost all topics of hydrological sciences. Five volumes of papers, four of which are from the joint symposia, were published before the conference, and delegate registration fees included a choice of one of these. IAH co-convened joint symposia and joint workshops with their IAHS colleagues, and four symposia exclusively on "hard rock hydrogeology" were organised by IAH.

A field trip to the Himayat Sagar and Osman Sagar, which are the main sources of drinking water supply to the twin cities of Hyderabad and Secunderabad, was arranged for the morning of 9th September. A workshop on "Managed Aquifer Recharge" (MAR) was held on 10th September by the IAH commission on MAR.

Another important event within the convention was a special lecture delivered by Past President Stephen Foster on "Hard-rock aquifers in tropical regions-using science to inform development and management" - a summary from of the presentation follows. Immediately before the IAH General Assembly a presentation to Mr Pawar *(see separate news item on page 9)* took place. The awards presented at the General Assembly are described on page 8.

Overall, the joint convention was a success, with just over 500 delegates from 62 countries attending. The venue and facilities of the Hyderabad International Convention Centre were of the highest quality. As always, each time we learn things that could be improved upon. The absence of a large number of the authors of accepted papers sometimes left large gaps which could have been more consistently managed for the benefit of delegates moving between the parallel sessions, and the posters could perhaps have been given a more prominent and visible presence.

Nevertheless the local organisers, in particular the co-covenors Dr Rajendra Prasad for IAHS and Dr SN Rai for IAH, are to be congratulated on a job well done.

As always it was a chance to catch up with old hydrogeological friends and colleagues and to make new ones.

Dr Rai and John Chilton

IAH Past President Overviews Low-Cost Water Supply from Tropical Hard-Rock Aquifers


Stephen Foster

The IAH invited plenary lecture at the Joint Convention in Hyderabad was delivered by Professor Stephen Foster on the topic "Hard-Rock Aquifers in Tropical Regions - Using Science to Inform Development and Management Policy" - in which he focused on Peninsular India and South and East Africa. The lecture was subtitled "How hard can we push them?" in the sense of trying economically and sustainably to achieve the UN-MDGs for improved rural water supply and more drought-proof agricultural livelihoods. The growth in understanding of the groundwater potential of hard rock aquifers was traced:

- from the original conceptual model (developed in Malawi, Zimbabwe and Uganda by BGS and others in the 1980s within the UN Drinking Water & Sanitation Decade) - indicating that most of the very limited transmissivity was concentrated in the saprock band (fractured rock-head) no more than 5 m thick but that the thickness of saturated regolith (the overlying weathered residue) was critical in contributing to groundwater storage and defining available well yields and drawdowns;
- to the detailed current research of an Indo-French (NGRI & BRGM) team working in Andhra Pradesh State - India, which has confirmed and refined this model and revealed significant differences in productivity between the Indian and African situations.

Resource potential is severely constrained by the limited effective depth and patchiness of the shallow aquifers - and subtle spatial variability means that effective application of hydrogeological science is required to reduce the unit cost of rural water well construction (by reducing failures and improving well design) and to guide more realistic and cost-effective efforts for recharge enhancement. Moreover, their natural storage is restricted at best to only a few years' recharge - thus when subjected to more intensive use they tend to be emptied rapidly and the competition for limited aquifer storage is highly counter-productive due to rapidly-diminishing well yields and spiraling energy costs (in terms of kWhr per 1.0 million km^3 or per ha irrigated).

Nevertheless, weathered hard-rock aquifers play a vital role globally in the provision of improved low-cost rural water-supplies, have been a critical component of the green revolution in various states of India and are being increasingly used for urban water supply in many developing cities. They are the only perennial source of water supply across an extensive region of western and southern India - which in all covers about 1.0 million km^3 and has a population of about 250 million and an equal number of cattle. Here the June-September monsoon provides 250-750 mm of rainfall in just a few events followed by a long dry season, with droughts that are likely to become more frequent and severe with accelerating climate change. In such a setting the importance of protecting watersheds, of conserving limited groundwater storage and of making maximum scientifically-sound use of their resources cannot be over-emphasised. Similar can be said of an equally-extensive area of southeastern Africa, whose demographics as yet are not quite as daunting as those of India and where their possible (but as yet unconfirmed) use for small-scale garden irrigation has not received systematic attention.

This scientific overview was interlaced with a critical discussion of the key related policy issues, based mainly on World Bank experience (and that of their clients and counterparts), including:

- promising experience of community groundwater demand management for irrigation at Hivre Bazar in the Maharashtra Ideal Village Scheme from 1994 and the much larger FAO- supported Andhra Pradesh APFAMGS Project since 2006 (*see also page 9*);
- realistic expectations and preferred deployment of water harvesting and recharge enhancement techniques to supplement available groundwater resources - in essence a valuable technique but not a universal panacea;
- the role of groundwater resource agencies and knowledge centres who need improved cross-sector outreach to contribute more successfully to the resource development and management process, given the development dynamics of these aquifers with very large numbers of individually small, dispersed, and often essentially private, users.

Stephen Foster and Secretariat

IAH Awards Presented in Hyderabad

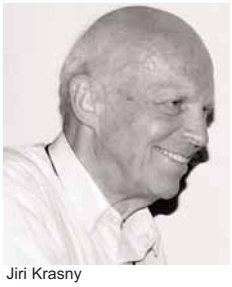
Peter Dillon receives the Presidents' Award from Willi Struckmeier

As is the custom, the IAH annual awards were presented at the General Assembly on the Wednesday evening of the convention week. The Presidents' Award was presented by the President Willi Struckmeier to Dr Peter Dillon. This is given in recognition of outstanding contribution to the science of hydrogeology and in furthering the aims of the Association and its mission to promote better understanding and management of groundwater resources. Peter has made particular efforts directed at non-specialist water users in local communities and schools. The citation noted that he fully meets both of these criteria.

Peter has been at CSIRO in Australia for over twenty years, having been the Director of the Groundwater Studies Centre and now leads the water use and research group. His research in aquifer storage and recovery was recognized in 2001 when he was co-winner of the UNESCO Great Man Made River International Water Prize. Peter has been an IAH member for many years and played an important role in IAH in Australia, including in the organisation of the 1994 IAH Congress in Adelaide "Water Downunder". Peter's major contribution to IAH internationally has been as chair of the Commission on Aquifer Recharge over the last seven years. This has been one of the Association's most active Commissions, and he continues to lead it with skill and enthusiasm.

The General Assembly approved the award of Honorary Membership of the Association to Professor Jiri Krasny and the presentation was also made by Willi Struckmeier. Jiri has indeed given exceptional services to IAH over a long period. He graduated from the Faculty of Science of Charles University, Prague in 1959 and obtained a PhD there in 1968. From 1959 until 1991 he was a hydrogeologist in the Czech Geological Survey, with substantial periods overseas in Iraq from 1979 to 1983 and Nicaragua from 1986 to 1989. He has been an Associate Professor at Charles University since 1991 and Director of the Institute of Hydrogeology, Engineering Geology and Applied Geophysics of the University.

During this long career, his research interests ranged broadly over the fields of hydrogeological mapping and regional and local groundwater resources studies and mineral and thermal waters. Jiri has been a member of the Association for more than 40 years. His interest in the hydrogeology and groundwater resource of hard rock terrains led to the establishment of a Working Group on Hard Rock Hydrogeology in 1994, following the Congress on this subject in Oslo in 1993. The Working Group became the IAH Commission on Hard Rock Hydrogeology in 2002, and Jiri was the chairman until 2008. His contribution to IAH has also included the Presidency of the IAH Czech National Committee, Associate Editor of Hydrogeology Journal and a principle convener of international conferences including "Groundwater quality: remediation and protection" in 1995 and "Groundwater in fractured rocks" in 2003. He is a worthy recipient of the award, and made a typically modest response to the General Assembly.



Jiri Krasny

The IAH Distinguished Associate Award for 2009 was given to the UNESCO Director-General, Mr Koïchiro Matsuura. This is given to a person who, while not being a groundwater professional, has made an outstanding contribution to the understanding, development, management and protection of groundwater resources internationally. In his term of office since 1999, Mr Matsuura has undertaken many reforms and strengthened resources, focusing on key priorities for UNESCO. He was re-elected to a second term in November 2005, and in both terms, water has remained a key priority for the Organisation through its flagship International Hydrological Programme, now in its VIIth Phase, with the science of hydrogeology as a key component. During Mr Matsuura's period in office,

three editions of the UN wide World Water Development Report have been published, in which a call for the need for sound use and management of groundwater has reached global prominence. Mr Matsuura's support to the International Hydrological Programme has contributed to capacity building for groundwater professionals, through the drawing up of the inventory of shared aquifers (IHP-ISARM) and maps (WHYMAP) for each continent, as well as by developing guidelines for better water management.

IAH were pleased to acknowledge Mr Matsuura's personal contribution with this award. He was not able to come to Hyderabad, so the presentation was made at UNESCO in Paris in August. A video was made of the presentation with the intention of showing it at the General Assembly, but technical difficulties prevented this. The video will be accessible on the IAH website in due course.

During the General Assembly the invitation to the next congress in Kracow was made by the Mr Jacek Jezierski, the State Under Secretary in the Ministry of the Environment in Poland (and its Chief Geologist), and he was also presented with a commemorative award by Willi Struckmeier. As the General Assembly was on this occasion held in the evening, it was followed by a drinks reception. This was organised and paid for by IAH centrally rather than by the convention, and enabled members of IAH to add their own congratulations to the award winners.

John Chilton

IAH Honours Indian Community Leader

Before the formal part of the General Assembly Mr Popatrao Pawar, Sarpanch (Village Council Chief) of Hivre Bazar, a village in the drought-prone interior of Maharashtra State, was awarded a Certificate of Honour and gift by IAH President Willi Struckmeier (pictured).

The Certificate cites his outstanding long-term leadership in watershed conservation, recharge augmentation, water-supply provision, and particularly the successful promotion of community-based groundwater management with all farmers treating the resource as common property.

Hivre Bazar is located in the extensive semi-arid region of peninsular India, which is underlain by low-storage, weathered hard-rock aquifers and has very variable and limited monsoon rainfall. The importance of protecting watersheds and conserving the small groundwater storage of these aquifers cannot be over-emphasised. The area suffered large-scale deforestation from the late 19th century to supply building timber and firewood to Ahmednagar City, leading eventually to hill-slope erosion and flash floods. The village was further devastated by the severe drought of 1970-73. Farmers struggled to maintain even the rain-fed wet-season crop against prolonged dry spells and were unable to do any significant dry-season cultivation - few could see their crops through to harvest, to feed their families and cattle, and most had to leave the village periodically or permanently to search for paid work in the towns and cities.

Mr Pawar was first elected Sarpanch of Hivre Bazar in 1989-90 after obtaining a Master of Commerce degree from Pune University and also distinguishing himself in the national sport of cricket. He set about meeting basic community needs such as secure drinking water-supply, improved agricultural production, increased employment opportunities and improved universal education. He initiated concerted efforts on groundwater resource management as a foundation for sustainable social development from 1994, when a comprehensive 5-year plan was implemented under the Maharashtra Ideal Village Scheme (Adarsh Gaon Yojana) through the formation of the Yashwant Agricultural, Rural & Watershed Development Trust. Soil conservation, reforestation and water harvesting (notably hill contour-trenching and bunding of streams) were undertaken. The semi-arid foot-hill terrain of Hivre Bazar was reasonably favourable for recharge enhancement although the average rainfall was only around 450 mm/a. Today the village *(continued over)*

sees little monsoon runoff, with the observed dry-season water-table much higher than pre-1990 levels and potable handpump borewells everywhere yielding adequate supply, thus eliminating the need for costly water-supply tankering.

The most critical groundwater-related decision of the Gram Panchayat (Village Council) was to prohibit the use of borewells (and the drilling of vertical bores in dugwells) for agricultural irrigation. This had the major benefit of moving farmers' minds away from "competition for deeper groundwater" to "cooperation on maximising benefits" from groundwater to which they all had access by dugwells. Farmers voluntarily restricted irrigation use through crop-water budgeting in accordance with antecedent rainfall and groundwater trends, approved at a Gram Sabha (Council Meeting). Societal control was sufficient to enforce the "no borewell for irrigation" rule and the agreed water-resource based cropping regime. It was also agreed to promote efficient irrigation technology and ban high water-use crops like sugarcane. In 2007 Stephen Foster (IAH Past President) and Shrikant Limaye (IAH Past Vice-President) made a field visit to Hivre Bazar to witness the progress that had been made and a subsequent systematic appraisal verified the very positive outcomes (GW-MATE Case Profile 22 on www.worldbank.org/gwmate).

After receiving the IAH Certificate of Honour, Mr Pawar delivered an excellent presentation on "The Success Story of Hivre Bazar - Converting a Drought-Prone Village into a Drought-Proof Village", which was greatly appreciated by conference participants. In view of the success of Mr Pawar in Hivre Bazar, the Maharashtra State Government recently appointed him as Chairman of the State Government "Ideal Village Programme", through which about 300 villages in different parts of the State would be selected for development on the Hivre Bazar pattern. For this Mr Pawar has been given the privileges of a State Minister.

Stephen Foster and Shrikant Limaye

Advertising and Copy Information


NEWS AND INFORMATION
International Association of Hydrogeologists
Over 300 Meet in Africa to Discuss Groundwater and Climate Change

IAH News and Information is published 3 times a year in 170mm x 240mm page format. It is distributed as an insert in Hydrogeology Journal and reaches all members and associated members of the International Association of Hydrogeologists and subscribing members of the Geological Society of America - totalling over 4,000. Some 45% of the membership is in Europe.

Advertising rates are €600 per full-page advert and €450 per half page. These rates apply for one issue. If you take an advert in two successive issues then the third is offered free of charge. Corporate sponsors and corporate members of IAH are entitled to 50% off the above rates.

Copy must be provided electronically - please contact knicholson@iah.org for acceptable formats. You will be invoiced for payment in euros or at the equivalent rate in sterling or US dollars when the advertisement is agreed. Copy dates are 1 March, 1 June and 1 October each year.

Calling all Members!

IAH "News and Information" is *your* newsletter. We welcome articles from everyone involved with IAH, from individual members and corporate supporters through to National Chapters, Commissions and Working Groups. Remember, our key aim is to improve our members' understanding of groundwater issues and support its better management - the newsletter can be an excellent means to support this. Wherever you are in the world we want to know about your plans and achievements!

In particular we are very happy to add your events to our conference listing on the website and in the newsletter, and to feature short articles promoting them beforehand and longer articles reporting on them afterwards. For this issue, we have received enough contributions to make a bumper 16 page edition. As well as meetings and conferences, we welcome news of field trips, exhibitions, publications; in fact anything you have been involved in that would interest IAH members.

If you have any articles for the newsletter or any suggestions for its improvement please contact John Chilton, via email jchilton@iah.org.

Thanks to all our contributors, and we look forward to hearing from you during 2010.

IAHS Young Scientists' Meeting, Hyderabad - Lessons for IAH?

At the recent IAHS/IAH Joint Convention a meeting was convened by Kate Heal of the University of Edinburgh, UK to enable young scientists to suggest how their involvement in and motivation towards IAHS could be increased. 27 young hydrologists comprising PhD students and project leaders, consultants and young lecturers from North America, Australia, Asia, Africa and Europe participated in the meeting. The meeting was organised as an interactive workshop and the participants were divided into five groups of 4-6, each discussing amongst themselves the same three questions posed by the convenor. Responses to each of the questions were gathered from all the groups and discussed.

The participants were asked why they chose to attend the conference; what would encourage more young scientists to participate in IAHS conferences; and what would encourage more involvement of young scientists in IAHS. Kate has kindly provided us with a summary of the discussions which she presented to the IAHS Plenary at Hyderabad. A full report of the meeting has been posted on the IAHS website and has also been sent to IAH who (without realising it!) kindly shared their post-AGM drinks reception with the meeting participants.

A number of actions are being recommended for implementation within IAHS:

- A young scientist "officer" in every IAHS Commission/Working Group;
- A young scientist co-convenor of all Symposia/Workshops;
- Set up a young scientists discussion group and improve IAHS webpages;
- Making conferences even better for young scientists: increased prominence of posters, more social events, a young scientist event, feedback to young scientist presenters, financial support for young scientists to participate - awarded on a competitive basis;
- Communicate more effectively to young scientists the benefits of IAHS membership and how to get involved.

We could do well to learn both from the initiative taken by Kate for IAHS and the potential outcomes. Indeed, similar comments about the poster sessions, management of "no show" speaker slots in parallel sessions and the need for more social events dominated the feedback I myself received from IAH members during the convention. These (and many other comments and experiences besides) will feed into a comprehensive guidance note on IAH congress organisation which is currently being prepared. We have, however, for the first time (as far as I know) provided part contributions from our own funds to the cost of attendance in Hyderabad for several, mostly young, groundwater professionals with papers accepted who would otherwise not have been able to attend.

The need to encourage more students and young professionals to join IAH and participate in our Commissions, congresses and publications was discussed in Council at Hyderabad. The Executive and Secretariat welcome the views of members on the issues raised by the IAHS meeting and more generally with regard to enabling younger scientists to contribute to IAH.

Our huge thanks go to Kate and IAHS for sharing this information with us. To receive a copy of the report and/or send comments please email jchilton@iah.org.

John Chilton

Kate Heal at IAH's post-AGM drinks reception.

IAH Forward Look - Update from Hyderabad


Shammy Puri

Background

In the April 2009 Newsletter the IAH Executive presented a brief note about the Forward Look process. Taking advantage of the Hyderabad Joint Convention and the likely presence of a large number of Council Members and Chairs of Commissions, a half day session of discussion was conducted. The structure of the session was intended to comprise a general brainstorming, followed by break out discussions of key points arising from this and group prioritisation of actions for short, medium and long term. In the event, as the working day turned out to be shorter than expected, only the brainstorming was conducted with those present. This in itself was very useful as it has already provided many good ideas. Several Council Members have followed up on the session with their suggestions of the way in which the IAH should develop in the next decade. The Executive is grateful to those who have replied and calls on all Members to also submit their ideas.

Solicitation of views on IAH in the future

To help with the brainstorming session, a questionnaire was circulated in advance to those attending. The format of the questionnaire that was used to collect the many points of view of members consisted of four principle aspects: (i) a review of the vision of the IAH, (ii) an 'inward look' at IAH, (iii) the place of IAH in the science-policy arena, and (iv) an 'outward look' from the IAH. A final part of the questionnaire also asked those responding to restate the vision and the mission of the IAH, if the preceding comments justified the need to do so. This questionnaire is still available to all members, who are encouraged to reply to it (Contact ShammyPuri@aol.com for this).

Preliminary findings

In the course of the brainstorming session 43 issues/points were brought up by those participating, covering all of the four aspects mentioned above. These ranged from 'integration of groundwater into IWRM' to 'increased professionalism' and 'income diversification'. After a little sorting and consolidation of these points, the following 'outward look' issues were identified: Inform global policy on groundwater; IAH to act as advisors to UN Agencies; Raise the profile of groundwater; support the African Groundwater Commission; prepare groundwater education materials; disseminate good news about groundwater; prepare authoritative facts, figures and graphics on groundwater; focus on students & young members - to list a few! As mentioned above, a full scale process was not completed at Hyderabad and this meeting was considered to be the start of the process.

Next steps

The Members of the Executive charged with the further development of the Forward Look process (Shammy Puri and John Chilton) are planning a more focussed event that will take place during the early part of 2010 to build on this promising start. This will probably take the form of a 2 day meeting at which a strategy will be formulated for the short, medium and long term development of the Association.

In the meantime, all members are encouraged to express their views and visions. The questionnaire which provides the preliminary basis for the Forward Look can be obtained from ShammyPuri@aol.com, jchilton@iah.org or knicholson@iah.org.

Shammy Puri

News from the National Chapters

Third Colombian Congress of Hydrogeology

The Colombian National Committee of IAH organized an outstanding meeting in Bogota, Colombia from July 5-10 2009. There were more than 200 participants at the Congress. A full scientific programme consisted of a two day hydrogeology short course, geological field trip, keynote speakers, technical exhibits, and technical presentations. The field hydrogeology short course presented to 45 students consisted of a first day discussion of field theory and a second day of field measurements presented by Dr. John Moore (IAH past president) and Dr. Joel Carrillo (president of the Mexican IAH chapter). Dr. Stephen Foster (IAH past president) and the Colombian Minister of the Environment made keynote presentations. The meeting was convened by Mario Valencia Cuesta, President of the Third Colombian Congress on Hydrogeology. The Colombian National Committee are to be congratulated on another excellent meeting. The picture below shows the field trip attendees.

John Moore and Mario Valencia-Cuesta

British National Chapter Inaugurates John Day Bursary

The British Chapter has established a bursary in honour of the late John Day, formerly both chair of the chapter and Vice President of IAH, and a dedicated servant of the Association for many years. The bursary will have a value of £500 and is intended to support students to undertake fieldwork as part of their studies. It is open to postgraduate students at any university in Great Britain and will be awarded for the first time in 2010. The bursary was launched at the recent Ineson Lecture organised by the chapter. Further details can be obtained from the website at http://iah-british.org/news.php or from Martin Boland on mboland@slb.com to whom applications should be submitted by 1 March 2010.

Sixth Argentine Congress of Hydrogeology

The Argentine Group of IAH is an active one that periodically organises interesting scientific and technical meetings which attract local hydrogeologists from within Argentina and from other Latin American countries and Spain. Thus, reports Emilio Custodio, the sixth Argentine Congress of Hydrogeology was held from 24-28 August, together with the fourth Spanish-IberoAmerican Seminar of Modern Groundwater Hydrology Topics, convened by the Argentine IAH Group, the local Faculty of Sciences and the IAH-Spanish Group. The location was Santa Rosa, the capital of La Pampa Province, in the centre of Argentina, and the hosts were the National University of La Pampa. The congress was attended by more than 200 people comprising professionals, researchers, professors and managers of groundwater, and students, mostly Argentinians but also from other countries (Chile, Peru, Ecuador, Colombia, Guatamala, Panama and Spain).

The congress consisted of plenary sessions and workshops on fluoride and arsenic in groundwater, general and specific aspects of aquifer recharge in dry areas, and groundwater management and planning. The seminar topic was contamination and protection of groundwater resources. In total more than 100 talks were given and the texts, with previous peer review, were made available in four volumes. The Argentine Group will make these available through its website www.aih-ga.org.ar and a selection will be published after further review and editing by the Boletin Geológico y Minero of IGME (the Geological and Mining Institute of Spain). The full set of papers has already been submitted to the journal.

The meeting was very interesting scientifically and technically - with numerous contributions from young hydrogeologists and students - and well organised in a very pleasant university environment. The conference and seminar were complemented by a field trip to the outstanding natural reserve of Parque Pedro Luro, a well preserved example of the primitive pampa which was particularly interesting its groundwater-related wetland areas. The meeting coincided with an extraordinary dry spell in which the role of groundwater to sustain cattle in the area was apparent, as well as the dependence of the local hydrology on the water table in such a flat region. This latter is a special aspect of hydrogeology and key for the pampas, and will be considered at the next meeting of the Argentine IAH Group to be hosted at the Centre for Large Plains Hydrology in Azul, in the centre of the Province of Buenos Aires from 21-24 September 2010.

Emilio Custodio

British National Chapter's 2009 Ineson Lecture

The 2009 Ineson Lecture was held at the Geological Society of London, Burlington House, Piccadilly on 15 October 2009, reports Brighid Ó Dochartaigh. This year's lecture was given by Professor Denis Peach, Chief Scientist of the British Geological Survey on the subject "Hydrogeological science over the past thirty five years - where will the next ten years lead?" It was supported by five talks on very different aspects of hydrogeology from young researchers representing the future of hydrogeology.

The first of these was by Stefan Krause of Keele University, who focussed on novel research on bigeochemical cycling at the hyporheic zone - the critical interface between groundwater and surface water. Mark Zeitoun of the University of East Anglia discussed Palestinian-Israeli records of historical groundwater abstraction and whether better hydrogeological data encourages the resolution of conflict over transboundary aquifers. Mohammad Shamsudduha, presently studying for a PhD at University College London, presented research into the impacts of abstraction and climate change on groundwater resources in the Bengal Basin, the largest of the world's mega-deltas. Ryan Law, of Geothermal Engineering, talked about exciting new opportunities for the development of geothermal energy from depths below 3 km. Finally, Simon Mathias of Durham University spoke on the importance of using hydrogeological science in the investigation of the potential for carbon capture and storage.

Professor Denis Peach's lecture spanned his career in hydrogeology over thirty five years, during which time he had worked for a UK water authority, in international consultancy, and for the last twelve years for the British Geological Survey. Denis' talk covered a broad range of hydrogeological issues from groundwater hazards, such as karstic flooding and gypsum dissolution, to groundwater resources, such as enhancing recharge in semi-arid areas. His main message was the critical role of geology in controlling aquifer heterogeneity, and the importance of understanding the geology at multiple scales to effectively understand groundwater systems. Denis finished by highlighting some of the critical issues likely to face groundwater professionals over the next ten years, including carbon capture and storage, urban hydrogeology, and the use of 3D modelling tools. He also concluded that we need both mathematical modellers and hydrogeological generalists; that we need to think beyond traditional hydrogeological boundaries and work with experts in soil, biology, sediment transport and socio-economics among others; and that we need to develop a much better understanding of uncertainty.

The meeting was well attended by groundwater specialists from academia, consultancy, water companies and the regulatory sector, and by students, and was followed by a wine reception at which members of the audience were able to continue discussion with the speakers.

Brighid Ó Dochartaigh

Recent Meeting of the Spanish Group on Wetlands

The Spanish Group of the IAH (IAH-SG) holds periodic meetings of interest to hydrologists from Spain and other countries. Thus, from 22 to 24 October 2009 IAH-SG organised an event about "The Role of Groundwater in Wetland Functioning" with the help of the Geological Institute of Spain, the Water Agency of Catalonia, the Technical University of Cataluña, the Technical University of Cartagena and other institutions. The meeting took place in Zaragoza at the International Water and Environment Centre (CIAMA).

The event was attended by more than 70 people, including groundwater professionals, researchers, professors and water managers, reports the IAH-SG vice president Luis Javier Lambán Jiménez. The opening address about the "relationships between groundwater and surface water in wetlands" was given by Dr. Marios Sophocleous (Kansas Geological Survey). Other speakers were Mark Whiteman (Environment Agency of England and Wales, UK), Emilio Custodio (Technical University of Cataluña), Blas Valero (Pirenaic Institute of Ecology) and Carlos Fernández Jaúregui (Water Assessment and Advisory-Global Network (WASA - GW). A total of 15 posters were displayed and three very recent publications on groundwater dependent wetlands were presented. The meeting was complemented by a field trip to the natural reserve of "La Alfranca".

Luis Javier Lambán Jiménez

Research Into Optimising Rehabilitation Methods for Potable Water Wells

Iron oxides in groundwater present significant maintenance and operational challenges when certain bacterial groups are present in sufficient numbers. The most problematic of these groups is commonly known as iron related bacteria (I.R.B.). These bacteria convert soluble iron into sticky clogging encrustations that reduce flows through the screen, pump and rising main. I.R.B. deposits have a profound negative impact on overall water production, geothermal heat exchangers and groundwater remediation facilities.

In the search for more sustainable, efficient well maintenance methods, Aquabiotics Industrial in Australia and Geoquip Water Solutions in the UK, in conjunction with key clients and strategic partners, have been researching methods to extend the maintenance intervals for wells with severe iron oxide clogging. Interim results from this research were presented in a paper at the WaterMed Conference 2009 in Rome.

One of the wells in the study had what is regarded by many as the worst iron oxide clogging in Western Australia. Historically after just 1000 hours of operation, the pump would be completely clogged and require a swap out to continue water extraction.

In February 2008 a combination rehabilitation treatment (BoreSaver Ultra C* and a bespoke cable tool rig) was undertaken giving the client a 200% improvement in the specific capacity.

In March 2009 the well was treated again in an identical manner to the 2008 treatment. With the 2009 rehabilitation, the starting point "untreated" was double that of 2008. This means the well performance had not deteriorated anything like as much as when standard rehabilitation techniques were used.

Previously the oxide thickness on the pump every 1000 hours of operation would be about 25mm thick with the intake port almost completely blocked. After the 2009 treatment an inspection at 4000 hours revealed just 3mm on the motor and no clogging at all of the intake port. Moreover, the expected decline in well performance, which had previously occurred every 1000 hours of pump operation, was not evident even after more than 4000 hours.

Summary

The Phased Treatment System has significantly increased the time between maintenance intervals, eliminated, to date, the clogging of the pump intake port and reduced rehabilitation costs.

Early conclusions of the research are that operators should make evidence based choices with beneficial management programmes for rehabilitation methods and techniques essential to reducing costs and efficient management of our groundwater resource. The research will be completed in 2011.

* Boresaver is a range of cleaning solutions for systems that are contaminated with iron oxide, manganese oxide and iron related bacteria. Boresaver Ultra C and Boresaver Liquid are approved by the Secretary of State under regulation 31 of the Water Supply (Water Quality) Regulations 1989 for use in potable water applications.

Editor's note - This article was provided by Geoquip Water Solutions, a recently joined corporate member of IAH. While there is a thin line between reporting and advertising, we are willing to print short articles of a technical nature which are from our corporate members and likely to be of interest to our members. We can also take direct advertising, details given on page 10, with favourable rates for corporate members and corporate sponsors. We hope this feature may encourage more organisations to become corporate members, so please encourage your employers to consider this.

Conference Listing

Summary details of groundwater-related conferences with e-mail or web addresses are given below. For a fuller list of conferences and more details, including links to web sites visit *www.iah.org/confs/*

We are happy to accept information concerning upcoming groundwater events from organisers - email knicholson@iah.org with full details.

2010

12-14 January: Tampa, USA. North American Environmental Field Conference and Exposition. Organised by Nielsen Environmental Field School. Email: info@envirofieldschool.com Web: http://www.envirofieldconference.com

15-17 March: Lille, FRANCE. Integrated River Basin Management under the Water Framework Directive (WFD) conference. Web: http://www.WFDLille2010.org

22-25 March: Muscat, OMAN. Water Sustainability in the GCC Countries. WSTA 9th Gulf Water Conference. Organised by Water Sciences and Technology Association. Web: http://www.wstagcc.org

24-26 March: Agadir, MOROCCO. Integrated Water Resources Management and Challenges of the Sustainable Development. Organised by IAH Moroccan Chapter. Email: lbouchaou@yahoo.fr Web: http://www.fsa.ac.ma/gire3d

27-30 April: Malaga, SPAIN. IV International Symposium on Karst. Organised by Centre of Hydrogeology, University of Malaga. Email: aimarin@uma.es Web: http://www.cehiuma.uma.es

17-21 May: Tainan, TAIWAN. The Third International Congresses (As 2010) “Arsenic in the Environment”. Arsenic in Geosphere and Human Diseases. Organised by Jochen Bundschuh and others. Web: http://www.As2010tainan.com.tw

25-29 May: Ohrid, REPUBLIC OF MACEDONIA. Conference on Water Observation and Information System for decision Support. BALWOIS 2010. Email: secretariat@balwois.com Web: http://www.balwois.com/2010

12-17 September: Kracow, POLAND. Groundwater Quality Sustainability. 38th IAH Congress. Organised by IAH Poland NC. Email: office@iah2010.org Web: http://www.iah2010.org

20-23 September: Prague, CZECH REPUBLIC. HydroPredict'2010 -- 2nd International Interdisciplinary Conference on Predictions for Hydrology, Ecology, and Water Resources Management: Changes and Hazards caused by Direct Human Interventions and Climate Change. Web: http://www.natur.cuni.cz/hydropredict2010/

22-24 September: Valencia, SPAIN. Fourth IAHR Groundwater Symposium. Organised by International Association of Hydraulic Engineering. Web: http://iahr2010-gw.com

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Congress update

As is the custom, presentations were made at the General Assembly in Hyderabad about future IAH congresses. An invitation to members to attend the next congress in Kracow was extended by Mr Jacek Jezierski, the Polish State Under Secretary for Environment. Preparations for the 38th congress continue apace, with online submission of abstracts open until 30th November and online registration for the congress available since September.

The Irish organising committee also made a presentation at the General Assembly with the intention of hosting the 39th congress in Dublin in September 2011. Since Hyderabad, however, they have unfortunately withdrawn, citing the current global economic situation and the consequent uncertainty over national institutional support for a congress. This is disappointing and potentially leaves us with a gap, and the Executive is currently examining alternative options for 2011.

The Canadian national chapter will be hosting the 40th congress in 2012 at Niagara Falls from 16 - 23 September. The proposed theme is “Confronting Global Change”, and the Australian chapter has indicated its willingness to host the 2013 congress at Alice Springs in the first or second week in September. These are both at the early stages of planning, and more details will be provided in the newsletter and on the IAH website in due course.

Secretariat