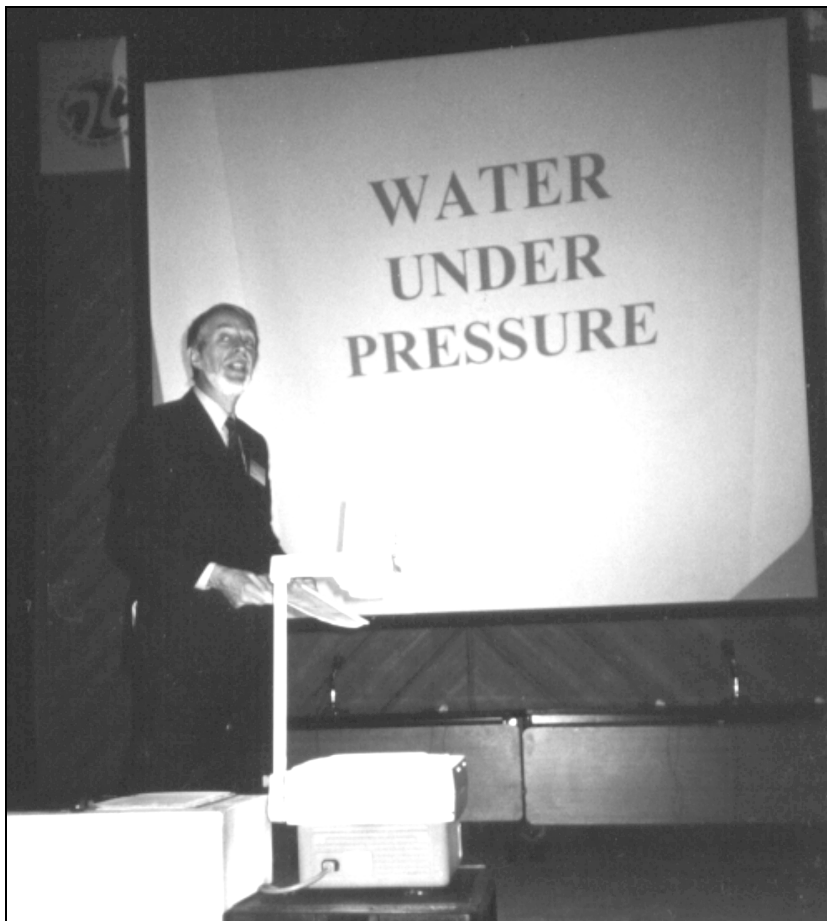




IAHS Newsletter

No. 71

January 2001



IAHS President John Rodda at the International Symposium: Can Science and Society Save the Water Crisis in the 21st Century?, Tokyo, 24 October 2000.

HSJ now has an impact factor of 1.009
(see page 3)

Huge price reductions on some Red Books and Journals
(see page 7 and the new Catalogue)

Plan to come to Maastricht, July 2001
(see page 24 and 2nd circular)

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President's Piece

Colorado was extremely hot, with extensive forest fires in the western part of the state, when the Executive Committee of the International Union of Geodesy and Geophysics (IUGG) met for its annual session in Boulder on 9 and 10 August. Following reports of the meeting of the IUGG Bureau and from the seven associations and after discussions of the preparations for the Sapporo Assembly, most attention was given to consideration of IUGG goals and objectives and the future of the Union. Why should IUGG exist? What makes the Union unique? How would the annual subvention be obtained from member countries without IUGG, were among the questions addressed in attempts to clarify what is wrong with the Union. It was felt that IUGG should be made more relevant, more active and more flexible. How to achieve these and other desirable attributes were amongst the main problems.

In the last Newsletter, I reported questioning Dr Larry Kohler (Executive Director of the

International Council for Science (ICSU)) at his lecture at the Royal Society in June about improving links between IAHS and the International Geosphere Biosphere Programme (IGBP). To discuss this question and others, ICSU convened a meeting in Paris in September between representatives of its water programmes in the Global Energy and Water Experiment (GEWEX) and IGBP, a number of ICSU bodies including IAHS, and parallel international programmes of which FRIEND (Flow Regimes from International Experimental and Network Data) and HELP (Hydrology for Environment, Life and Policy) are prominent. Views were exchanged on how each programme or body was advancing and on needs to improve links between them. I proposed that IGBP should plan to convene jointly with IAHS its future symposia concerned with hydrology and water resources.

Marseilles in mid-October was the venue for the Second Assembly of the World Water Council (WWC) attended by some 200 water specialists from: ministries, international agencies, water companies, nongovernmental organizations and the like. There were technical sessions, the final meeting of the 38-member Board of Governors (BOG) formed at the First Assembly, the Assembly itself when the business of the WWC was conducted and the initial meeting of the new BOG. Quite a lot of time was spent on agreeing the acceptance of new members of the Council and then conducting the election of the new BOG. There were 39 candidates for the 20 elected places and when the result was announced, the 75 votes received by IAHS gave the Association the 17th place. The new BOG then elected Mahmoud Abu-Zeid as President for a further 3 years and Bill Cosgrove as Vice-President. The WWC is preparing for the Third World Water Forum in Japan in March 2003.

Can Science and Society Save the Water Crisis in the 21st Century? This was the intriguing title of an international symposium held at the Science Council of Japan in Tokyo on 24 October, organized by the Japan Society of Hydrology and Water Resources with the support of the Science Council, several ministries of the Government of Japan and a number of other bodies. Kuni Takeuchi, who led the organization of the symposium, arranged for this question to be answered in a series of lectures from "around the world". These lectures were given by: the President of IAHS, the three Vice-Presidents, the Secretary General, the Editor and several other members of the Association, together with Andras Szollosi-Nagy, Arthur Askew and Gordon Young. The symposium was followed later in the week by a set of similar presentations at Yamanashi University and a field excursion, which concluded with an IAHS ascent of the lower slopes of Mount Fuji following two exotic

IAHS Newsletter

The International Association of Hydrological Sciences (IAHS) is a nongovernmental scientific organization dedicated to serving the science of hydrology and the worldwide community of hydrologists. The IAHS Newsletter is issued three times a year (usually in January, May and September) and is distributed free of charge to individuals (not libraries) at the discretion of the Secretary General. Recent issues have been sent to all IAHS members.

Both this Newsletter and previous issues are downloadable from the IAHS web site:

<http://www.cig.ensmp.fr/~iahs>

Articles should be sent to the IAHS Secretary General, preferably by e-mail to iahs@ensmp.fr, or on diskette in Word, Rich Text Format or ASCII format, or by fax or mail to:

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Ecole des Mines de Paris,
F-77305 Fontainebleau, France
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fax: +33 1 64694703

Next deadline for copy

Articles must be received at least six weeks before the month of publication. **The next issue will be published in May 2001 and the deadline for articles is 24 March 2001.**

The Newsletter is edited by Penny Kisby and published by IAHS Press, Centre for Ecology and Hydrology, Wallingford, Oxfordshire OX10 8BB, UK

nights in a Japanese-style hotel. During the visit to Japan the idea of establishing an IAHS 2020 Working Group was developed. Each Commission is being asked to provide me with the names of two members aged 35 or less, one of whom will be selected to make up the 12-member group, with one UNESCO and one WMO nominee, to be chaired by Prof. Oki. The group is expected to produce a report similar to that of the Hydrology 2000 Working Group (IAHS Publ. no. 171), for presentation at the IAHS Scientific Assembly in 2005.

Dams, as most hydrologists are aware, are and have been the focus for much controversy and contention, to the extent that the International Union for the Conservation of Nature and the World Bank established the World Commission on Dams several years ago to look into the problems their construction poses. "Dams and Development", the report of the 10 member commission, chaired by Prof. Kader Asmal (South Africa) was launched in London on 16 November. Several members of IAHS contributed to the report and your President was one of the 500 or so gathered together for the launch. Former President Nelson Mandela opened the proceedings with the hope that confidence, assurance and harmony would be promoted by the report.

John C. Rodda

From the President-Elect

Dear friends:

A happy new Century!

I hope that you all started a very pleasant new year of the new Century with something bright and promising in your mind. Let us start working together.

The millennium year was indeed full of exciting events launching the new Century. Many of them attracted more people, more disciplines, more interest, more ideas and experiences, and more and more were integrated. It demanded an increase of knowledge and the powerful analysis and synthesis of knowledge. It is our role as hydrological scientists to provide simple but practical principles to analyse the mass of knowledge and synthesize the results for practical use. I believe that IAHS has been very successful in acquiring knowledge and finding principles. Our continued efforts as a scientific nongovernmental organization (NGO) acting as a bond for various disciplines can certainly contribute to the better use of scientific knowledge. New initiatives such as Hydrology for Environment, Life and Policy (HELP), the World Water Assessment Programme, the International Global Observing System are some examples where we can make a direct contribution.

I would like to share with you some of my millennium year experiences.

It was a real surprise at the Second World Water Forum in the Hague last March seeing a man and a woman absolutely naked standing on the stage and a naked lady in the audience protesting about dam construction and the privatization of water. I witnessed this event, together with John Rodda and Gordon Young, in the auditorium of the Hague Congress Centre. I believe this added some extra concerns of the Japanese organizers hosting the third World Water Forum in 2003.

After the Bureau of the IHP in Paris in April, Andras Szollosi-Nagy of UNESCO's Water Sciences Division and I visited the US Departments of State and of the Interior in Washington, DC. US colleagues expressed their keen interest in participating in the IHP and in other global water initiatives. We visited the Water Resources Institute of the Corps of Engineers and saw the very advanced application of hydro-sciences in real water management practices. Andras and I took a photo in front of the big statue of Albert Einstein who said "Imagination is more important than knowledge." We appreciated the help of Jerry Delli Priscoli and Jake Peters for making the arrangements and for the hospitable reception we received.

In June I successfully terminated my Chairpersonship of the Intergovernmental Council of the IHP and passed the burden to Prof. Reinder Feddes of The Netherlands. I am pleased to be relieved of this important role and pass it over to our old friend Reinder, although till 2002 I still remain on the IHP Bureau as the past chairperson.

In September I visited Cambodia together with Dr Dushmanta Dutta of the University of Tokyo and saw the record-breaking floods. We visited flooded areas and saw refugees with goats and cattle on the roads and boats distributing relief supplies. The floods affected one third of the country. Mr Veng Sakhon, the Under Secretary of State, Ministry of Water Resources and Meteorology, requested all the help they could get, including scientific support such as satellite images which we mailed to him later.

From 22 to 28 October the Japan Society of Hydrology and Water Resources (JSHWR) invited John Rodda, Pierre Hubert, Gordon Young, Carlos Tucci, Lars Gottschalk, Lekan Oyebande, Zbigniew Kundzewicz, Andras Szollosi-Nagy, Arthur Askew, Xia Jun, Irina Krasovskaia and Ashim Das Gupta to Tokyo and Kofu. A symposium entitled "Can Science and Society Save the World Water Crisis in the 21st Century? Reports from the World" was held in Tokyo and two workshops were held in Kofu. It was a great success in allowing the JSHWR and other water-related people in Japan to know better

IAHS and its collaboration with UNESCO and WMO, besides drawing support for my IAHS presidency starting at Maastricht. The presented papers are now being edited for possible publication as a special issue of *Hydrological Sciences Journal*. I am grateful to all the invitees for sparing precious time to attend, and to our hosts including Professors Katumi Musiake (JSHWR President), Hiroyoshi Shiigai (President of Yamanashi University), Toshiharu Kojiri and a number of sponsors.

In November, the Eighth IHP Regional Steering Committee for Southeast Asia and the Pacific (RSC) and a symposium were held in Christchurch, New Zealand, jointly with the New Zealand Conference on Fresh Perspectives. Nearly 400 participants attended including over 50 delegates from Southeast Asia and the Pacific region from countries ranging from Mongolia to Tonga. After the conference, I was one of the seven Japanese who visited the Motueka basin in the northernmost part of the South Island to see their experience as a leading HELP basin. We witnessed the cooperative scientific and democratic process of integrated catchment management for conserving the beautiful basin environment for forestry, agriculture, fishery and marine production. We are grateful to our hosts, in particular, Richard Ibbitt, Breck Bowden and Andy Pearce.

I would like to mention two interesting lessons I learned:

- At the Hydraulic Engineering Center, USCE, in Davis, California, in September, Mr Arlen D. Feldman said to me "Very detailed risk analyses requirement in any engineering project assessment provided us a great opportunity to understand our own project better and improve it." I believe this is the way we have to go.
- In Perth, Australia, in November, Prof. Tom Hatton told me "Although Perth has a Mediterranean climate with precipitation about 850 mm year⁻¹, in the area some hundreds of kilometres around Perth the precipitation is only 400–500 mm year⁻¹. The area was originally forested with semiarid trees such as eucalyptus and since the evapotranspiration rate was large, the groundwater recharge rate was only in the order of 1 mm year⁻¹, which resulted in the accumulation of very large amounts of cyclic salts deep in the regolith. But after it was developed into agricultural land, mostly for wheat, the recharge rate increased to up to 10% of the annual precipitation, due to the decrease of transpiration, well above the aquifer discharge capacity, in the 1–5 mm year⁻¹ range. This created a sharp rise in the groundwater level resulting in serious salinization and in some cases water logging

frequently producing floods." I think this is unique as a salinization problem as a result only of changing the land use by deforestation to cropland, without the introduction of any irrigation.

Finally, I would like to mention two personal matters. Between the IHP Bureau and the US visit in April, I had three days off in Paris when I participated in the European "GO" Championship Tournament and I got a "5 Wins (out of 6 games) Award" with a certificate and 500 FF. In August at the occasion of the JSHWR General Assembly, I was awarded the "JSHWR Distinguished Achievement Award" for my contribution to international research leadership. Which do I like better? Please do not ask.

I wish you all the very best start for the first year of the new Century. See you at Maastricht if not sooner.

Kuni Takeuchi

From the Editor

Let me start by sharing with you the joy of the good news. The Science Edition of the 1999 ISI Journal Citation Reports provides key figures on journal rankings. Out of 46 journals listed in the Water Resources section, *Hydrological Sciences Journal* (HSJ) is ranked thirteenth with an impact factor of 1.009. This represents very substantial progress. The value of the impact factor for the year 1999 was determined as an average number of fast citations (i.e. to papers published in HSJ in 1997 and 1998), calculated throughout all the journals in the ISI database. You may remember my enthusiasm not long ago when the value of the impact factor grew from 0.386 to 0.411. Now, our Journal is closer to the giants! The total number of citations to all HSJ articles (including the older ones) in ISI-listed journals in 1999 was 579.

My warmest thanks go to everyone who contributed to this success. First of all, to all scientists publishing their excellent papers in HSJ and to authors referring to HSJ articles in their Journal contributions; to reviewers (from the Board of Associate Editors and from outside the Board) whose wise recommendations have helped me minimize the number of errors and the possibility of accepting papers that do not deserve being in HSJ. Thanks also to the Associate Editors for all their input and advice, and to Frances Watkins who has been an excellent and most reliable Production Editor. Frances is responsible for the day-to-day administration of the Journal and does the bulk of the copy editing and formatting work on papers accepted for publication.

Of course, a positive jump of the impact factor can be a chance occurrence, an upwards

oscillation which cannot be sustained the next year. Yet, in my assessment, it is a manifestation of a long-term growth tendency. In fact, I was confident that HSJ could reach the level of unity, yet I thought that it might take two or three years longer to achieve. To reach such a high value now was a pleasant surprise and a terrific Christmas gift. I am aware of references to past HSJ articles in recent HSJ papers, yet this in itself is not enough to explain the observed improvement. There must have been plenty of citations to recent HSJ papers in other journals on the ISI list.

The value of the impact factor does indeed matter. I learned about our success from a scientist who recently submitted a paper to HSJ, encouraged by the, now high, value of the impact factor. It was a pragmatic decision. In several countries a scientist is evaluated based, *inter alia*, on the value of the impact factor of journals where her or his papers are published.

I take the impact factor rise as a signal that we are on the right track. Yet, the value of the impact factor is not the sole criterion of journal rating. Another one is the number of subscribers. Both indices are inter-related (though with some time lag). The growth in the value of the impact factor must be echoed by improved sales. By the way, if you happen to read this article and have reached this point, could you please check whether your institution has subscribed to HSJ in 2000 (if not, this interesting volume can still be purchased) and will subscribe in 2001? Or, maybe, you could take advantage of a discounted individual member's subscription? Good value (impact factor 1.009!) for little money!

In the IAHS environment, the scientific and financial criteria are not the only ones that count. Enhancing research in the developing world definitely belongs to the mandate of the Association and HSJ plays an important role in it. Let us try to fulfil this mandate while maintaining the high quality of accepted papers. *Noblesse oblige!* Let us continue to work together and try to pursue continuous improvement of HSJ.

According to the rules, the panel of Associate Editors of HSJ has 30 members, nominated for a six-year period. Associate Editors are usually active as authors, reviewers, advisors and promoters of the Journal. Every autumn, the HSJ Editor thanks retiring Associate Editors for their long-standing support and collaboration and invites new incumbents to serve for a period of six years. Accordingly, I recently had the very unenviable task of bidding farewell to five loyal and long-serving Associate Editors, nominated in 1994, who have provided regular timely reviews and advice throughout the six years of their duties. They are: Dr E. Adar (Israel), Dr R. Berndtsson (Sweden), Dr M. J. Hall (The Netherlands), Dr M. Kuhn (Austria) and Dr T. Mizuyama (Japan). They have served HSJ very generously.

We thank them most warmly for all their help and wise advice over those years. It would be highly appreciated if they could occasionally assist us further when asked to review a paper.

The main aim of the rotation policy is to ensure a regular input from the growing body of experts in new developments within hydrology—active researchers, working on cutting-edge problems. New people are expected to bring in new ideas, new knowledge of emerging fields of hydrology and to extend the area of competence of the pool of Associate Editors. The new Associate Editors joining us this autumn are: Dr Alistair McKerchar (New Zealand), Dr Zekai Şen (Turkey), Dr Eric Servat (France), Dr Jim Shuttleworth (USA) and Dr Andrzej Zuber (Poland). Wishing them every success in their new capacity, I am looking forward to closer collaboration with them. I hope that the new incumbents will be most reliable in competent and timely reviewing of submitted papers. It is our expectation that the Associate Editors will not decline a review request in their area of expertise, unless they can indicate a reliable replacement referee willing to undertake the review.

Even if good news dominates this article, it is necessary, for a proper balance, to mention less enjoyable developments and problems.

In order to provide satisfactory service to our authors, we need prompt reviewing. Every HSJ contribution is reviewed by at least two experts. An eternal problem is related to the poor responsiveness of some reviewers. Frances keeps chasing referees when they do not provide reviews in time. Yet, due to the heavy everyday workload it is hard to find time for chasing. Sometimes referees promise they will write a review and then again nothing happens. The failure of referees to respond to review requests may be due, in part, to their belief that we ask a large number of referees to review each paper, as seems to be the case with some of the larger, e.g. US commercial hydrology journals. Therefore they just ignore our request, even though Frances' e-mail asks them to let her know if they are unable to provide the necessary review.

Let me issue a plea to all experts to whom a review request is directed. If you cannot provide a review, then a fast response declining our review request will be appreciated. It would be even better if you could suggest another competent referee. The best solution is for you to suggest the name of a competent referee who is likely to agree or who has already agreed to provide a review. Sometimes papers are scientifically enriching and reviewers thank me for giving them the opportunity of seeing such papers. At times the opposite happens.

I strongly encourage our referees to be more critical. Euphemistic reviewing and being overly acceptance-prone do not serve the Journal well.

There have been a few other less pleasant moments. We witnessed a conflict between a professor and his PhD student. I had to make a decision at the proof-reading stage of an article (i.e. shortly before publication), based on the evidence available to me at that time, which stemmed from the professor. Later on, the student contacted me providing additional and convincing evidence in his favour.

It was not pleasant when another Associate Editor, asked to name a reviewer, replied, "It is Zbyszek's problem to find a reviewer. All my colleagues are very busy."

During the recent IAHS event organized by Dr Takeuchi, our President-Elect, in Japan, there were ample opportunities to discuss various IAHS-related matters among the officers of the Association, WMO and UNESCO Directors and other experts. When talking on HSJ matters I stated that, after my three-and-half years as IAHS Editor, I saw reviewing as a critically important factor in the performance of a journal. A small token of our appreciation is an acknowledgement and a list of all referees who have reviewed HSJ submissions in a given year, now published in the February issue of the Journal. "How about launching a best reviewer's award?"—said Dr Hubert, IAHS Secretary General. The idea is definitely worthy of consideration. What qualifies as good is a quick response, a 3C (competent, concise and critical) review, preferably sent, clearly labelled, as an e-mail attachment. The award could be an incentive and could enhance high quality reviewing. The modalities need to be discussed. The award itself could be modest (IAHS finances permitting), e.g. a diploma and an IAHS tie or headscarf. It is rather difficult to make a collective decision and a one-person-jury (myself, knowing all the anonymous reviewers) seems the only option. Yet, in the decision-making process, the nomination of reviewers by authors should play a role if authors feel that anonymous Reviewer A or Reviewer B did a marvellous and very useful job. Should individuals eligible for the award stem from the pool of reviewers who are not Associate Editors? Or perhaps including Associate Editors? Maybe two awards—one for an Associate Editor and one for a referee who is not an Associate Editor? Comments welcome.

One more thing I would like to discuss is papers in French. There are two official languages of the Association: English and French. Therefore, authors may publish papers in HSJ in either of these languages (accompanied by a translation of the title and the abstract into the other language). Yet, several authors of accepted papers in English inform us that it is not possible for them to provide the *titre et résumé* in good French. Then we have to rely on the generous assistance of Dr Pierre Hubert in checking

(sometimes doing) French translations of titles and abstracts of accepted HSJ papers in English and also in checking the language of papers written in French, especially by authors whose mother tongue is not French. Pierre has continued to provide this service after he retired as an Associate Editor in 1998, and continues to do so despite his heavy duties as Secretary General. *Chapeaux bas* to Pierre for his heroic efforts to promote and enhance the presence of the French language in HSJ. Well, in fact it is not only Pierre. We have several *francophone* Associate Editors and several other colleagues who know French quite well. Yet, at times, there are problems. There are fewer experts in our pool of potential reviewers with an adequate command of French. On several occasions excellent scientists have refused our review request. "Sorry, but I do not know French well enough." was a typical explanation. "Can I have the paper translated into English?" Well ... no, you cannot. Sorry. But then French speaking experts prove to be very helpful in suggesting alternative reviewers.

Frances and I wish we knew French better—the common language of educated people in several European countries in the past. I am trying hard to read carefully every French paper before it is accepted for publication in HSJ. I am well aware of the large audience from France, Quebec, Belgium, Switzerland, Africa, and more generally those from the *communauté francophone*. Yet, the assistance of French native speakers is indeed indispensable in our work for HSJ.

More and more often we work electronically. We are delighted with the increasing number of e-submissions (accompanied by posted hard copies), e-reviews and e-correspondence with authors and referees. This is a high-speed, high-reliability and low-cost development. I hope that many find it useful to have tables of contents and abstracts of HSJ papers on the IAHS web site ably administered by Dr Pierre Hubert (<http://www.cig.ensmp.fr/~iahs>). A list of forthcoming papers is also on the web site.

I end with my best seasonal greetings to all of you. All the best for the New Year and for the millennium. Somebody has wished me more submissions to HSJ. Well, I would frame this wish in a slightly different way: **more excellent submissions!** The number of submissions keeps growing. This augurs well for further growth of quality: there is a better selection, as the number of articles in a volume is about constant.

You are always welcome to contribute to HSJ and to offer your advice on the editorial policy and strategy for the Journal, preferably to my e-mail address: zkundze@man.poznan.pl. I would appreciate receiving remarks you may have on this article, or any other comments which you think could be useful to me.

Zbigniew W. Kundzewicz

IAHS Press

Red Books

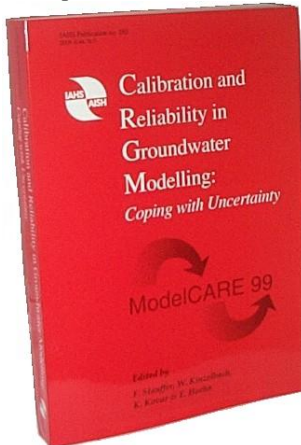
Two books in the IAHS Series of Proceedings and Reports (Red Books) were published in September and another (Publ. no. 261) was published in December. Abstracts of the papers are already on the IAHS Homepage:

Calibration and Reliability in Groundwater Modelling—Coping with Uncertainty

edited by F. Stauffer, W. Kinzelbach, K. Kovar & E. Hoehn

The 74 papers in the post-published proceedings of the ModelCARE 99 Conference (Zürich, September 1999) address relevant methodologies and techniques, and identify the needs for future development. They form a comprehensive overview.

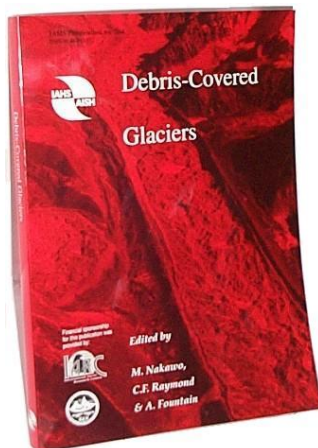
Modelling concepts, stochastic modelling, parameter estimation and model calibration, prediction reliability, use of field information, and nonlinear and coupled flow and transport modelling, are covered in separate sections which incorporate both the theoretical and the applied. There is discussion of well-known models such as MODFLOW-MT3D as well as innovative approaches including the development and use of artificial neural networks and genetic algorithms. Applications include modelling of tritium release at Mururoa and Fangataufa using uncertain data, and multiphase modelling of gas storage in aquifers, as well as groundwater resource and quality estimation.



Publ. no. 265 (September 2000), price £69.00 (2001 price to members in financially disadvantaged countries only £13.80; other members £51.75), 524 + xii pages, ISBN 1-901502-36-8

Debris-Covered Glaciers

edited by M. Nakawo, C. F. Raymond & A. Fountain



The *Workshop on Debris-Covered Glaciers* (Seattle, September 2000) was organized with the aim of synthesizing current understanding about debris-covered glaciers and rock glaciers. By drawing on experiences from different regions of the world the underlying physical processes controlling the nature of debris-covered and rock glaciers were highlighted. This pre-published proceedings volume comprises 28 selected papers on:

- Distribution and setting
- Mass and energy balance
- Origin and transport

- Supraglacial lakes
- Climate variations
- Biology and hydrology

Financial sponsorship for this publication was provided by the International Arctic Research Center, Fairbanks, Alaska, USA; and Glaciological Expedition in Nepal

Publ. no. 264 (September 2000), price £44.00 (2001 price to members in financially disadvantaged countries only £9.00; other members £33.00), 288 + viii pages, ISBN 1-901502-31-7

The Hydrology–Geomorphology Interface: Rainfall, Floods, Sedimentation, Land Use

edited by Marwan Hassan, Olav Slaymaker & Simon Berkowicz

This publication comprises 20 chapters which derive from a conference at the Hebrew University, Jerusalem (May 1999), organized around the theme of drainage basin processes and morphology. They reflect the complex functioning of the drainage basin sediment cascade and are arranged to follow the flux of water and sediment from source to sink. Fluvial geomorphology and related processes in arid areas, and especially those represented in the Negev Desert (Israel), are a particular focus.

The rainfall input to arid geomorphological systems is considered in detail. Understanding of both its temporal and spatial distribution is a prerequisite of successful rainfall–runoff modelling and particularly so for arid systems. Rainfall–runoff modelling and erosion studies in the Negev Desert and also Australia, Slovakia and the USA are reported.

Some of the central questions in fluvial geomorphology are addressed including that of the geomorphic effectiveness of high magnitude events such as tropical storms in Baja California, USA, and also in India. The sediment output term has, until the last decade or two, been comparatively neglected by geomorphologists in general, but four contributions provide information about the functioning of drainage basins from lacustrine sedimentary evidence.

The volume is a tribute to the contribution made by Asher Schick to the science of geomorphology. The success of Schick's work arises largely from his single-minded attention to the fundamental links between geomorphology and hydrology.

The Hebrew University of Jerusalem provided financial sponsorship for this publication

Publ. no. 261 (December 2000), price £49.00 (2001 price to members in financially disadvantaged countries only £9.80; other members £36.75), 326 + x pages, ISBN 1-901502-16-3

The first 2001 title is likely to be:

Hydro-ecology: Riverine Ecological Response to Changes in Hydrological Regime, Sediment Transport and Nutrient Loading

edited by Mike Acreman

The post-published proceedings of Workshop HW2 held at the IUGG Assembly in Birmingham, July 1999, contains 14 papers including an overview paper by Mike Dunbar. This Red Book may be published in March.

Publ. no. 266 (2001), approx. 160 pages, ISBN 1-901502-41-4

Work is in progress on the post-published proceedings of two large IAHS meetings held in 2000:

Remote Sensing and Hydrology 2000

edited by Manfred Owe, Kaye Brubaker, Jerry Ritchie & Albert Rango

Over 120 oral and poster papers from a symposium held at Santa Fe, New Mexico, April 2000.

Publ. no. 267

The Extremes of the Extremes: Extraordinary Floods

edited by Arni Snorrason et al.

About 60 oral papers from a symposium held at Reykjavik, July 2000.

Publ. no. 271

Publications 268–270 will be the three pre-published proceedings for symposia S2, S3 and S5 at the IAHS Assembly in Maastricht, July 2001. Revised and edited papers are due at IAHS Press in February for:

Regional Management of Water Resources

edited by Andreas Schumann, Xia Jun, Miguel Marino & Dan Rosbjerg

Publ. no. 268

Impact of Human Activity on Groundwater Dynamics

edited by Hans Gehrels

Publ. no. 269

Soil–Vegetation–Atmosphere Transfer Schemes and Large-scale Hydrological Models

edited by Han Dolman, John Pomeroy, Taikan Oki & Alan Hall

Publ. no. 270

2001 Blue Book

Following the hugely successful *The Hydrology of the Nile*, published in 1999, we are delighted to announce plans are in place to produce the following title in the series of Special Publications later in 2001:

The Ecohydrology of South American Rivers and Wetlands

edited by Michael McClain

Chapters based on papers from the International Symposium on Hydrological and Geochemical Processes in Large-scale River Basins (with special emphasis on the Amazon and other tropical basins), held at Manaus, Brazil, November 1999, as part of the UNESCO Ecohydrology Programme.

Special Publication no. 6

Hydrological Sciences Journal (HSJ)

Do you read HSJ?

Hydrological Sciences Journal now has an impact factor of 1.009, ranking 13th out of the 46 journals listed in the Water Resources section of

the recently published Journal Citation Reports for 1999! This compares with an impact factor of only 0.411 and ranking of 29th for 1998. That means more people are reading the Journal and citing recently published papers in their work. Are you one of them?

If you don't have access to the Association's scientific journal, why not make a New Year resolution to start a subscription? You can apply for a member subscription with discount: the discount is 50%, which means you pay £74 or US\$115 for the six issues of 2001 (vol. 46). As a member in a financially disadvantaged country, you are eligible for 80% discount and can buy the 2001 Journal for only £29.60. Alternatively, why not get your library, department or organization to subscribe (full price £148 or US\$230), so that HSJ is shared by others? Contact Frances Watkins for further information, or send her your order with the appropriate payment or VISA/MasterCard/Eurocard details.

The table on the next page lists the papers published in the last two issues of the 2000 volume as well as all the papers that have been accepted for publication in recent months and will appear soon in 2001.

There has been a small but steady increase in the number of papers submitted for publication. It currently takes about 9 months from receipt of a paper at IAHS Press to final acceptance for publication, and a further four months before publication in a Journal issue.

Catalogue of Publications 2001

A new edition of the Catalogue of Publications has been produced and is being distributed to IAHS Members with this issue of the Newsletter. The Catalogue may also be found on the IAHS web site.

The Catalogue announces huge reductions on prices of pre-1990 Red Books and pre-1996 Journals. Our book storage space is finite and by offering older stock at bargain prices to all customers (libraries, departments and organizations as well as members) we hope to free up space for future publications.

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Standing Orders

Some libraries, university departments and subscription agents buy all books in Red Book

Hydrological Sciences Journal 2000

Papers in vol. 45, no. 5 (October)

- PRATAP SINGH, K. S. RAMASASTRI, NARESH KUMAR & MANOHAR ARORA: Correlations between discharge and meteorological parameters and runoff forecasting from a highly glacierized Himalayan basin
- J. D. KALMA, H. PERERA, S. A. WOOLDRIDGE & G. STANHILL: Seasonal changes in the fraction of global radiation retained as net all-wave radiation and their hydrological implications
- NESE ACANAL, RECEP YURTAL & TEFARUK HAKTANIR: Multi-stage flood routing for gated reservoirs and conjunctive optimization of hydroelectricity income with flood losses
- W. FERNANDEZ, R. M. VOGEL & A. SANKARASUBRAMANIAN: Regional calibration of a watershed model
- B. YU, C. W. ROSE, C. C. A. CIESIOLKA & U. CAKURS: The relationship between runoff rate and lag time and the effects of surface treatments at the plot scale
- BELLIE SIVAKUMAR: Fractal analysis of rainfall observed in two different climatic regions
- J. LÉONARD, M. MIETTON, H. NAJIB & P. GOURBESVILLE: Rating curve modelling with Manning's equation to manage instability and improve extrapolation
- NICOLAS R. DALEZIOS, ATHANASIOS LOUKAS, LAMPROS VASILIADES & ELIAS LIAKOPOULOS: Severity-duration-frequency analysis of droughts and wet periods in Greece
- MANOJ K. JAIN & UMESH C. KOTHYARI: Estimation of soil erosion and sediment yield using GIS
- TOMMY S. WONG & YUNJIE LI: Determination of equilibrium detention storage for a series of planes

Papers in vol. 45, no. 6 (December)

- ERIC SAUQUET, LARS GOTTSCHALK & ETIENNE LEBLOIS: Mapping average annual runoff: a hierarchical approach applying a stochastic interpolation scheme
- COSTANZA DI STEFANO, VITO FERRO & SALVATORE RIZZO: Assessing soil erosion in a small Sicilian basin by caesium-137 measurements and a simplified mass balance model
- MAGNUS PERSSON, RONNY BERNDTSSON, SLAH NASRI, JEAN ALBERGEL, PATRICK ZANTE & YUKI YUMEGAKI: Solute transport and water content measurements in clay soils using time domain reflectometry
- AMIN A. ELSHORBAGY, U. S. PANU & S. P. SIMONOVIC: Group-based estimation of missing hydrological data: I. Approach and general methodology
- AMIN A. ELSHORBAGY, U. S. PANU & S. P. SIMONOVIC: Group-based estimation of missing hydrological data: II. Application to streamflows
- PAWEŁ M. ROWIŃSKI, WŁODZIMIERZ CZERNUSZENKO & JEAN-MARC PRETRE: Time-dependent shear velocities in channel routing
- WAN RUSLAN ISMAIL: The hydrology and sediment yield of the Sungai Air Terjun catchment, Penang Hill, Malaysia
- JACQUES CALLEDE, PASCAL KOSUTH, JEAN-LOUP GUYOT & VALDEMAR SANTOS GUIMARÃES: Discharge determination by Acoustic Doppler Current Profiler (ADCP): a moving bottom error correction method, applied on the River Amazon at Obidos

Forthcoming papers (in no particular order)

- Y. S. YANG, R. M. KALIN, Y. ZHANG, X. LIN & L. ZOU: Multi-objective optimization for sustainable groundwater resource management in a semiarid catchment
- T. K. S. ABAM: Regional hydrological research perspectives in the Niger Delta
- MIKDAT KADIOĞLU & ZEKAI ŞEN: Monthly precipitation-runoff polygons and mean runoff coefficients
- BENINA TOUAÏBIA, ABDELLAH AÏDAOUL, DIETER GOMER & MOHAMED ACHITE: Quantification et variabilité temporelles de l'écoulement solide en zone semi-aride, de l'Algérie du Nord
- SARFARAZ AHMAD & SYED I. HASNAIN: Snow and stream water chemistry of the Ganga headwater basin, Garhwal Himalaya, India
- SCOTT A. WOOLDRIDGE, STEWART W. FRANKS & JETSE D. KALMA: Hydrological implications of the Southern Oscillation: variability of the rainfall-runoff relationship
- T. A. FONTAINE, J. F. KLASSEN, T. S. CRUICKSHANK & R. H. HOTCHKISS: Hydrological response to climate change in the Black Hills of South Dakota, USA
- BELLIE SIVAKUMAR, RONNY BERNDTSSON, JONAS OLSSON & KENJI JINNO: Evidence of chaos in the rainfall-runoff process
- MURRAY PEEL, Q. J. WANG, RICHARD M. VOGEL & THOMAS A. McMAHON: The utility of L-moment ratio diagrams for selecting a regional probability distribution
- C. LOUMAGNE, M. NORMAND, M. RIFFARD, A. WEISSE, A. QUESNY, S. LE HÉGARAT-MASCLE & F. ALEM: Integration of remote sensing data into hydrological models for reservoir management
- TAWATCHAI TINGSANCHALI & CHAIYUTH CHINNASRI: Numerical modelling of dam failure due to flow overtopping
- SPYROS BELTAOS & TERRY D. PROWSE: Climate impacts on extreme ice jam events in Canadian rivers
- SERWAN M. J. BABAN & KAMARUZAMAN WAN YUSOF: Modelling soil erosion in tropical environments using remote sensing and GIS
- BERHANU FANTA, B. T. ZAAKE & R. K. KACHROO: A study of variability of annual river flow of the northern African region
- GIL MAHÉ, YANN L'HOTE, JEAN CLAUDE OLIVRY & GEOFFROY WOTLING: Trends and discontinuities in regional rainfall of West and Central Africa
- HAFZULLAH AKSOY, MEHMETCIK BAYAZIT & HARTMUT WITTENBERG: Probabilistic approach to modelling of recession curves
- A. MAHESHA: Effect of strip recharge of sea water intrusion into aquifers
- F. SÁNCHEZ-MARTOS, R. JIMÉNEZ-ESPINOSA & A. PULIDO-BOSCH: Mapping groundwater quality variables using PCA and geostatistics: a case study (Bajo Andarax, southeastern Spain)
- ZEKAI ŞEN & AHMET OZTOPAL: Genetic algorithms for precipitation occurrence classification and prediction
- OGNJEN BONACCI: Monthly and annual effective infiltration coefficients in Dinaric karst: example of the Gradole karst spring catchment
- EMMA L. TATE, KEVIN J. SENE & JOHN V. SUTCLIFFE: A water balance study of the upper White Nile basin flows in the late nineteenth century
- SURENDRA KUMAR MISHRA & VIJAY P. SINGH: On the Seddon speed formula
- YADH ZAHAR & JEAN-PIERRE LABORDE: Génération stochastique d'averses et de leurs index d'érosivité: conception et validation d'un modèle pour la simulation temporelle de la dynamique érosive en Tunisie centrale

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inform Jill about changes to your: name • mailing address • telephone no. • fax • e-mail (also any change in the subjects that interest you—based on the titles of the IAHS Scientific Commissions given on the back cover of the Newsletter). As well as distributing flyers on new books to all members with the Newsletter, last year we started sending e-mails to members with information on new books that cover one or more of the subjects they are interested in. We can only do this if we have your correct e-mail address. We have no e-mail address at all for more than 600 members!

Penny Kisby, Frances Watkins,
Cate Gardner & Jill Gash

News from Commissions

International Commission on Surface Water (ICSW)

The International Commission on Surface Water has established a mailing list to ease communication with and dissemination of information to the hydrological community interested in surface water-related topics.

The International Commission of Surface Water held a bureau meeting in Stockholm on 13 September 2000, which was hosted by the Swedish Natural Science Research Council. The meeting discussed the activities of the secretariat, including the completion of the web site, establishing a mailing list of ICSW members and reviewing contributions to the IAHS Newsletter. In addition, funding was discussed for forthcoming workshops and conferences and ideas were outlined for the next IUGG General Assembly, which will be held in Sapporo, Japan, in 2003.

The next ICSW Bureau meeting will take place during the IAHS Maastricht Assembly in 2001 (provisional date 20 July). There will also be an ICSW Plenary meeting provisionally arranged for the evening of Monday, 23 July. All IAHS members interested in ICSW are invited to this meeting. If you would like to contribute to any activities organized by ICSW, please contact Siegfried Demuth, ICSW Secretariat.

ICSW members interested in European Water issues have the opportunity to receive regular news from The European Association (EWA) through registration at the European Water Management News (jan.van.de.kraats@kabelfoon.nl). The members of the EWA are national organizations in the field of water management and its secretariat is located at Hennef in Germany. The Institute for Inland Water Management and Waste Water Treatment (RIZA) in The Netherlands is responsible for the retrieval and organization of the e-mail news, primarily by searching the

World Wide Web for interesting press releases in the water sector and distributing them to registered persons. The ICSW Secretariat has released the e-mail addresses via its mailing list and has received much positive feedback.

ICSW supported the FRIEND/AMHY (FRIEND-Alpine and Mediterranean Hydrology) seminar in Montpellier, 11–13 October 2000. *The International Seminar on Hydrology of the Mediterranean Regions* aimed to take stock of hydrological research conducted in the Mediterranean region. The seminar focused on:

- (1) Rainfall and runoff variability
- (2) Hydrological hazards
- (3) Availability and durability of water resources
- (4) Integrated water resources management.

Tunisia, Morocco, Lebanon and the Palestinian Hydrology Group recently joined the FRIEND/AMHY network. The future aim is to include Egypt and Syria to achieve a better balance between north and south Mediterranean countries. The seminar received over 150 abstracts with 60 oral presentations and poster presentations. As a result of the seminar two new networks have been launched: (1) Rainfall/Runoff Modelling in the Mediterranean Basins, coordinated by Lebanon and (2) Integrated Water Resources Management, coordinated by Tunisia. The FRIEND/AMHY group is involved in organizing an International Conference on the Hydrology of the Mediterranean and Semiarid Regions, at Montpellier in 2003, which will also include research from Africa and Central America.

The Commission supported the very successful *Workshop on Runoff Generation and Implications for River Basin Modelling*, Freiburg University, Germany, 9–12 October. A report on the workshop is given later in this Newsletter.

The Commission is supporting:

- *European Geophysical Society Workshop: Modelling and Managing Hydrological Droughts*, Nice, France, 26–30 March 2001; preparation for this workshop is well under way.
- *FRIEND 2002: Fourth International Conference on FRIEND— Bridging the Gap between Research and Practice*, Cape Town, South Africa, 18–22 March 2002. The first circular has now been distributed. The conference proceedings will be published as an IAHS Red Book and a FRIEND Report summarizing the main research results from the regional FRIEND groups will also be published.

Siegfried Demuth, Secretary ICSW

International Commission on Groundwater (ICGW)

The committee is in transition as we approach the end of the Presidency of Dr Ed Sudicky from the

University of Waterloo, Canada, in July 2001. We express our gratitude to Ed for his excellent service. Dr Yoram Rubin from the University of California—Berkeley, will succeed him. The other officers of the Commission are: Dr Norio Tase from Japan (Secretary), and Vice-Presidents Dr Marc Bierkens from The Netherlands, Dr Aldo Fiori from Italy, and Dr David Lerner from the UK.

Recently, ICGW assisted in forming a joint commission on groundwater–seawater interaction, which is sponsored by the International Association of Physical Sciences of the Ocean and IAHS. A preliminary proposal for the creation of this joint commission is available for review at the following URL:

<http://www.cig.ensmp.fr/~iahs/groundse.htm>

IAHS will be represented by Jeff Turner from Australia (jeff@per.clw.csiro.au).

ICGW is assisting and supporting the following conferences:

- *First International Conference on Salt Water Intrusion and Coastal Aquifers: Monitoring, Modelling, and Management*, Essaouira, Morocco, 18–25 April 2001, hosted by Ecole Mohammadia d'Ingénieurs, Rabat.
- *Groundwater Quality 2001: Third International Conference on Groundwater Quality*, Sheffield, UK, 18–21 June 2001, hosted by the University of Sheffield and co-sponsored by the International Association of Hydrogeologists and IAHS.
- *Bridging the Gap between Measurements and Modelling in Heterogeneous Media: International Groundwater Symposium*, Berkeley, California, 25–29 March 2002, organized by the International Association for Hydraulic Engineering and Research (IAHR) and co-sponsored by IAHS and ASCE/EWRI.
- *ModelCARE 2002 Conference*, Prague, Czech Republic, 17–20 June 2002, is now being planned.

More information on these meetings may be obtained from the our Association or Commission web sites:

<http://www.cig.ensmp.fr/~iahs> or
<http://www.env.tsukuba.ac.jp/~ICGW>

Norio Tase, Secretary ICGW

International Commission on Water Quality (ICWQ)

The Commission was involved, together with the IHP/OHP National Committees of The Netherlands and Germany, in sponsoring and organizing the *International Conference on Agricultural Effects on Ground and Surface*

Waters: Research and Policy at the Edge of Science and Society, which took place in Wageningen, The Netherlands, 1–4 October 2000. A report on the conference is given later in this Newsletter.

In this Newsletter, the series of items highlighting critical water quality problems in countries where the Commission Vice-Presidents work is continued with a report from Valentina Krysanova on the Elbe River basin in Germany.

Changes in water quality in eastern Germany and the Czech Republic since 1990

The Elbe River basin (~150 000 km²) covers large parts of the Czech Republic and eastern Germany. Approximately two thirds of the basin lie within Germany (about 80% of that within the former GDR territory) and one third within the Czech Republic. The basin is densely populated and includes large cities such as Berlin, Prague and Hamburg. The Elbe is important as a source of water supply for industrial, domestic and agricultural purposes, and as an essential inland waterway.

In 1989, the Elbe was one of the most polluted European rivers. At that time, its water quality was comparable to that of the Rhine in the early 1970s when maximum pollutant loadings were experienced. Untreated or insufficiently treated sewage from industrial and domestic sources, and practically uncontrolled leaching from agricultural fields in the Czech Republic and the former GDR were responsible for the high pollution load. In addition, pollution by organic compounds and heavy metals results from mining activities in both countries, and from industrial sources, including the chemical industry; pulp and paper factories; metallurgy and others. The load by nutrients (nitrogen, N, and phosphorus, P) comes mainly from domestic sources, the food industry, and diffuse agricultural sources.

“The Programme of Immediate Actions for the Reduction of Pollution Load in the Elbe” and “The Action Programme Elbe” were developed by the International Commission for the Protection of the Elbe in 1991 and 1995, respectively, as a basis for the improvement of water quality. In these programmes, specific requirements and recommendations were laid down for different industries. Through implementation of these measures, and reduction and partial closing of mining activities and some industries, the pollution load from industrial sources has been essentially reduced (e.g. by 1999 total N, total P, Cd, and Pb had been lowered to 35, 44, 3.4 and 39%, respectively of 1994 values). In addition, 181 waste-water treatment plants (139 in Germany and 42 in the

Czech Republic with a capacity of >20 000 population equivalents each) were extended, reconstructed or built in the Elbe drainage area in the period 1990–1999. These measures and the introduction of phosphate-free detergents have resulted in a reduction of inputs from domestic sources by ~30% for nitrogen and ~65% for phosphorus.

The programmes also suggested the following measures regarding agricultural enterprises in the basin:

- (a) supporting structural changes, such as set-aside of arable land and conversion of cropland into grassland,
- (b) building manure depots of sufficient storage capacity,
- (c) implementing measures for erosion control,
- (d) improving environmental education of farmers.

In addition, establishment of buffer strips along river courses was suggested and has begun. However, up to now inputs from diffuse sources to surface waters have not changed significantly.

The ecological state in many parts of the Elbe is still close to natural, despite the occurrence of rather poor water quality in the 1980s. A diverse community of living organisms has survived in the river bed. For example, observations close to Magdeburg show that there were 114 species present in the period 1850–1940, which reduced to 52 in 1950–1989, but re-established to 83 in 1998. The number of fish species in the middle Elbe has been increased from 26 in the 1980s to 52 in 1999. The improved water quality allowed the introduction of salmon in the streams of Saxony in the 1990s. This is an indication that the Elbe is in a regeneration phase.

It can be concluded that implementation of the programmes and many other initiatives since 1990 have led to substantial improvement of water quality and the ecological situation in the Elbe. Now, following reduction of pollutant and nutrient inputs from point sources and the solution of the most severe problems, agriculture has become the main source of nutrient pollution in the Elbe, as in many other European rivers. In some ways, however, the situation has become more complex, because a further reduction is more difficult to achieve.

Good modelling practice in water management

Of interest to water quality modellers will be the initiative taken in The Netherlands to develop a *Good Modelling Practice (GMP) Handbook*, where hitherto there were no guidelines on good practice supported by all the parties involved in water management. To summarize, the objective of the GMP Handbook is:

- To take the initiative on guidelines with regard

to model use, which are supported by all parties in water management

- To stimulate more careful use of models in water management
- To improve the reproducibility and transferability of model studies

The handbook is intended in particular to support the modeller. It deals with all major steps in the modelling process and is therefore very suitable for use as a checklist. Recording the procedures of the checklist will create a model journal, which renders a model study reproducible and transferable, and allows other parties involved to have a clearer idea of the model study. However, the Handbook explicitly is not intended as a compulsory straitjacket, but rather as a technical tool.

The main target group for the handbook is the (non-programming) modeller who carries out modelling projects. The various components of the handbook provide an inexperienced modeller with a clear and step-by-step plan in order to carry out a modelling project in a careful, reproducible and transferable manner. More experienced modellers will probably mainly use the handbook to check whether all steps in the modelling process have been or will be paid sufficient attention. The handbook may well become part of the quality system in institutes and companies in the future, regardless of whether they are acting as a client or an executive party. Finally, the handbook can be used as a study and reference book in the training of modellers. On the whole, the handbook is expected to be a useful tool in reducing the gap and confusion, which often occur between client, executing party and modeller.

This GMP handbook may be freely used and copied, provided that correct acknowledgement is made to: STOWA/RIZA (1999) *Smooth Modelling in Water Management, Good Modelling Practice Handbook*; STOWA Report 99-05, Dutch Dept of Public Works, Institute for Inland Water Management and Waste Water Treatment Report 99.036; ISBN 90-5773-056-1. Copies of this report (price Dfl 25) are available from the following addresses in The Netherlands:

- SDU, afdeling SEO/RIZA, Postbus 20014, 2500 EA The Hague [tel.: +31 70 3789783; mlget@sdu.nl]. Payment upon delivery; giro slip enclosed.
- Hageman Verpakkers BV, Postbus 281, 2700 AC Zoetermeer, stating ISBN or order number and a clear delivery address.

This handbook can also be downloaded from the internet at the following URL:

<http://waterland.net/riza/aquest/projecten/modellen/gmp.html>

Bruce Webb, Secretary ICWQ

International Commission on Tracers (ICT)

Joint International Isotopes in Hydrology Programme

During a meeting in Paris, 6–8 April 2000, at UNESCO, an IAEA/UNESCO planning group suggested forming a long-term inter-agency programme entitled **Joint International Isotopes in Hydrology Programme (JIHP)** established under the auspices of the International Atomic Energy Agency (IAEA) in cooperation with UNESCO with links to WMO and other international hydrological and water-related programmes (see also page 18 of this Newsletter).

The aim of this programme is to facilitate the integration of isotopes in hydrological practices through:

- *Development* of tools for better understanding of specific hydrological processes and improving the assessment, development and management of water resources
- *Support* of national, regional and international programmes in water resources
- *Incorporation* of isotope hydrology as part of hydrological curricula in universities worldwide
- *Integration* of isotopic data in hydrological databases at national, regional and global scales

It is expected that this international programme will cover *scientific, practical and educational aspects* of relevant hydrology and water resources studies and will improve implementation and coordination of hydrological programmes of UNESCO, WMO, IAEA and other international governmental or nongovernmental organizations.

The following is an excerpt from IHP/IC-XIV/Inf.20:

Methodologies based on the use of isotopes in a wide spectrum of hydrological problems encountered in water resources assessment, development and management activities are already scientifically established, and they are presently employed as an integral part of many water resources investigations and environmental studies. These methodologies are essentially based on the general concept of "Tracing" in which either naturally occurring isotopic species (environmental isotopes) or intentionally introduced tracers are employed. A variety of well-established and field verified isotopic techniques offer effective tools, with proven technological and economic benefits, for water resources assessment, development, and management. It is important to note that isotope studies are not expensive and that a single analysis can yield considerable information on hydrological process as compared to costlier classical investigations.

ICT is delighted with this idea and the philosophy of this programme and considers it as a great success for the work and the efforts of ICT during the last 10 years in promoting tracer methods in hydrology and in particular in bringing hydrologists and tracer specialists closer together. This planned international programme follows the general aims and purposes of ICT formulated in 1991.

Events with ICT involvement:

- The *International Workshop on Runoff Generation and Implications for River Basin Modelling*, Freiburg University, Germany, 9–12 October 2000 was successful. A report by Jens Lange is given later in this Newsletter.
- *Workshop on Environmental Isotopes in the Arid Zone* held at CSIRO Land and Water in Adelaide, 4–7 December 2000. The Adelaide laboratory of the Centre for Groundwater Studies and CSIRO Land and Water has been the initiator and centre of much of the Australian isotope hydrological work over the last 30 years. More information on the workshop may be obtained from Andrew Herczeg (andrew.herczeg@adl.clw.csiro.au).
- *New Approaches to Characterizing Groundwater Flow* at the XXXI Congress of the International Association of Hydrogeologists (IAH), Munich, Germany, 10–14 September 2001, organized by IAH in cooperation with International Association of Tracer Hydrology. Further information from: stefan.wohlich@iaag.geo.uni-muenchen.de or from the Secretary of ICT.
- *AGU Chapman Conference on State of the Art of Hillslope Hydrology*, convened by Larry Band and Jeff McDonnell. AGU has recently approved this Chapman conference that will be held at Sunriver, Oregon, 8–12 October 2001. The 5-day meeting will include invited oral presentations and submitted poster presentations. Further information can be obtained from Larry Band (lband@email.unc.edu) or Jeff McDonnell (jeff.mcdonnell@orst.edu).

Other news

The International Commission on Tracers would like to establish a **mailing list** to facilitate, implement and enforce close links and transfer information between the hydrological community interested in the application of tracer methods in hydrology. Therefore we need an updated database of members of ICT. If you are interested to get actual information by e-mail in future, please let me know your address (hydrology@uni-freiburg.de).

The next ICT plenary meeting will be held in Maastricht and has been provisionally arranged for the evening of Tuesday, 24 July. All IAHS members interested in ICT are invited to this meeting. If you would like to contribute to any activities of ICT, please contact the Secretary of ICT. The date of the ICT bureau meeting has not yet been decided.

Chris Leibundgut, Secretary ICT

International Commission on Atmosphere–Soil–Vegetation Relations (ICASVR)

Past events

Karsten H. Jensen was a member of the scientific advisory committee for *Groundwater 2000: International Conference on Groundwater Research* that was held in Copenhagen, Denmark, 6–8 June 2000. More information can be found at <http://www.isva.dtu.dk/grc/gw2000/default.htm> and a report on the meeting by Dan Rosbjerg is given later in this Newsletter.

Training and teaching activities

- Training in the Use of LBA-HydroNET Hydrometeorological Network Database in Support of the Large-scale Biosphere–Atmosphere Experiment in Amazonia, CPTEC, Cachoeira Paulista, Brazil, December 2000. It is hoped this will be the first in a series of workshops which has created <http://www.lba-hydronet.sr.unh.edu> over the LBA (Large-scale Biosphere–Atmosphere Experiment in Amazonia) domain. It is a result of earlier work with UNESCO and CATHALAC to develop the <http://www.r-hydronet.sr.unh.edu>. A group of about 35 researchers from the US, Brazil, Colombia, Peru, Venezuela, Bolivia, and Ecuador attended; and Charles Vörösmarty was the convenor.
- *Typological Approaches to Estimation of Global Suspended Sediment Flux*, Water/Sediments Workshop of the International Geosphere Biosphere Programme (IGBP), Boulder, Colorado, USA, September 2000. Charles Vörösmarty represented IGBP-BAHC to develop land-to-ocean flux models to support IGBP activities in this realm.
- *NSF-Arctic Systems Science Hydrology Workshop*, at the National Center for Ecological Analysis and Synthesis, Santa Barbara, California, September 2000. This was a gathering of about 30 researchers, both US and international, to develop a research plan for the US National Science Foundation's

Arctic Systems Science Program to improve hydrological research across the Arctic. The plan being submitted recommends creation of a pan-Arctic hydrological systems initiative composed of linked monitoring, process studies, and simulation exercises.

Charles Vörösmarty was the workshop convenor and co-chair.

- *Short Course on Advanced Modelling of Water Flow and Solute Transport in Variably-saturated Media* at CSIRO Land and Water in Townsville, Australia, 15–17 August 2000. The instructors were M. Th. van Genuchten, Jirka Simunek and J. W. Hopmans.
- *Short Course on Modelling of Water Flow and Solute Transport in Variably-saturated Media* at ETH, Monte Verita, Switzerland, 17–21 October 2000. The instructors were M. Th. van Genuchten, Jirka Simunek, M. Larsson, K. C. Abbaspour and C. Stamm.
- *Short Course on HYDRUS-1D and 2D Software for Variably Saturated Flow and Transport* organized by the International Ground Water Modeling Center and Bechtel, San Francisco, 14–15 December 2000. The instructors were M. Th. van Genuchten and Jirka Simunek.
- Jirka Simunek was a member of the “Simulation and Modelling Work Group” in the *Partnership in the DOE Complex-Wide Vadose Zone Science and Technology Roadmap: Characterization Modelling and Simulation of Subsurface Contaminant Fate and Transport*, May–July 2000.

Forthcoming event

- *Short course on Advanced Modelling of Water Flow and Solute Transport in Variably-Saturated Media* at Institute of Soil Science, the University of Hanover, Hanover, Germany, 30 March–1 April 2001. The instructors will be M. Th. van Genuchten and Jirka Simunek.

K. H. Jensen, President ICASVR

IAHS/WMO Working Group for GEWEX

The IAHS/World Meteorological Organization (WMO) Working Group for the World Climate Research Programme's Global Energy and Water Cycle Experiment (GEWEX) was established in the early days of GEWEX to support the hydrological sciences undertaken within the programme. The aims of the Working Group parallel those of the IAHS and WMO—namely:

- To promote the development and application of hydrological science to the aims of GEWEX.

- To provide for discussion, comparison, and publication of research results and the requirements for future research through the organization of workshops, symposia at special sessions at the IUGG General Assemblies and IAHS Scientific Assemblies and stand-alone workshops.

As GEWEX activities move beyond the continental-scale experiments to cover other areas of the world, IAHS and WMO can provide opportunities for “global” support. Thus the Working Group should address issues not currently being dealt with by the GEWEX Hydrometeorology Panel (GHP) (“niche” issues/problems) beyond the current Continental-Scale Experiments (CSE) in a global sense. It should provide advice to the GHP on appropriate hydrological and water resources management issues. There are opportunities to coordinate/include those relevant international/country/regional/basin activities currently outside of the CSE/GEWEX activities. The Working Group will also promote discussions between the hydrological modelling community and the land-surface modelling communities which tend to be represented by IAHS and the International Association of Meteorology and Atmospheric Sciences (IAMAS) respectively. For example, an initiative of the Working Group could be to promote the development of appropriated distributed hydrological models that operate as (a) land-surface schemes for use in atmospheric models (used in NWP) or (b) stand-alone models that are able to handle the appropriate atmospheric models and satellite data.

Current Working Group proposals include the following: a workshop for water managers in Europe to follow on the US experience (see later), a workshop on precipitation fields derived from adjusted point observations for GCM validation improvement in mountainous areas, and at a later stage, when the relevant new satellites are producing data, a workshop on soil moisture which would be focused on the linking of observed point data to satellite data.

Following the retirement of the Group’s first chairman, Prof. Gert Schultz, and the retirement of many of the original members, the Working Group is being restructured to accommodate the development of the GHP and the work of the CSEs. The new Working Group will have representatives of the CSEs and the relevant IAHS International Commissions together with key members of the original Group, WMO and UNESCO. The Group formally meets at IAHS Assemblies and IUGG General Assemblies and, during the intervening two years, makes use of informal meetings at other conferences, meetings, etc. The next meeting, the first of the new Working Group, will be at the Scientific Assembly in Maastricht in July 2001. Interested

IAHS members are invited to attend as observers and to contact the Chairman if they wish to take an active role in defining new projects/activities which the Group could undertake in support of GEWEX.

GEWEX Continental-Scale Experiments

Begun in 1987 GEWEX is now in its second phase and has had its aims and objectives refined to reflect the growing concerns as to the availability and sustainability of the world’s water resources. The GEWEX Continental-scale International Project (GCIP) was the first GEWEX large-scale land-surface experiment. GCIP was established to improve the understanding and to demonstrate prediction of the variations of global and regional processes and water resources and their response to environmental change. Taking advantage of the data resources available in the Mississippi River basin, GCIP was quickly followed by four more Continental-Scale Experiments (CSE) in various climatic zones: the Baltic Sea Experiment (BALTEX), the Mackenzie River basin GEWEX study in Canada (MAGS), the Large-scale Biosphere–Atmosphere Experiment in Amazonia (LBA), and the GEWEX Asian Monsoon Experiment (GAME), an experiment encompassing several areas in Asia. Linked to GAME is the Korean Monsoon Experiment (KORMEX) the objectives of which are to understand the dynamic and physical mechanisms of the energy and water cycle of the monsoon in Korea as characterized by the “Changma” pattern and the associated heavy rainfall, and to improve their prediction. At its fifth session in September 1999, the GHP included the study of the Coupling of the Tropical Atmosphere and Hydrological Cycle (CATCH) in Niamey, West Africa, as a Continental-Scale Affiliate (CSA) within the GHP. CATCH will make important contributions toward the GHP/GEWEX global objectives, in particular these smaller basins will be an important component of GHP’s planned transferability studies. In addition, CATCH meets the call to have a study in Africa where the application of GEWEX research in the water cycle is critical to understanding the water resources problems of the region. CSA status recognizes the difficulty CATCH will have in fully meeting all of the CSE criteria. Initiatives in other parts of the world are expected to qualify for CSA status.

GEWEX Phase II

With the endorsement of Prof. Soroosh Sorooshian, Hydrology and Water Resources Systems and Engineering, University of Arizona as the Chairman of the GEWEX Scientific Steering Group (SSG) in March 1999 by the

WCRP Joint Scientific Committee, GEWEX is moving into Phase II, an exploitation of new satellites and models. As a hydrologist, Prof. Sorooshian's appointment will assist in directing GEWEX to meet one of its more critical objectives, "to develop the ability to predict the variations of global and regional hydrologic processes and water resources and their response to environmental change". GEWEX is to make a greater effort to engage the water resources community to ensure that modelling, observations and data assimilation activities meet the water community's requirements for better management of water resources.

Initiatives proposed under Phase II have been developed and identified over the past 10 years. Valuable lessons have been learnt as to the deficiencies in the successful closure of the water and energy cycles at different spatial and temporal scales. The new global initiatives to meet the goals of the second phase of GEWEX include the following:

- Development of new global data sets of key climate parameters
- GEWEX radiation studies aimed at producing accurate fluxes in the entire atmospheric column
- Continued improvement of coupled land-surface/atmosphere models and parameterization of cloud and atmospheric processes in regional and global weather and climate models
- Promoting the participation of the hydrological modelling community and supporting operational environmental services in their efforts to develop improved and more accurate hydrometeorological predictions
- Continued participation in studies related to changes in surface snow cover, mid-winter processes, and other cold region phenomena
- Coordinating the future activities and participation of the CSEs in the Coordinated Enhanced Observing Period (CEOP).

GEWEX Hydrometeorology Panel

All CSEs have agreed to facilitate the exchange of scientific information and observational data, validate models and parameterization schemes and verify their transferability from one river basin to another, and to involve water resources agencies in the better utilization of prediction results. The CSEs will also engage the broader community through outreach efforts utilizing lectures on topics of regional and global climate variations and prediction of their impact on society.

Water Energy Balance Study

In order to assess the value of many years of

observations, modelling and analysis and our ability to close the energy and water cycles over the CSEs, the GHP established a Water Energy Balance Study (WEBS). This is seen as particularly important in the implementation of GEWEX Phase II, an exploitation of new satellites and models, and Phase III, the application of GEWEX results to climate prediction. This evaluation will assist in determining observational gaps which will or could be met by remote sensing observations, where new *in situ* observations are required, and to what extent gaps can be satisfactorily filled using models. The first WEBS workshop was held during GHP's fifth session in September 1999 at which a few cross-cutting statements were presented from an earlier GCIP WEBS workshop. These provide an indication of some of the problems which need to be addressed in this activity and are reproduced below:

- High temporal resolution data that resolve important processes are essential for accurately resolving the water budget
- The domain over which a budget can be resolved is sensitive to the spatial resolution of the sampling
- Although it is difficult to establish, runoff appears to be a valuable independent variable for testing closure
- High resolution models in 4-DDA mode, plus data inputs provide the best products for atmospheric budgets
- "Tuning" and "nudging" techniques limit the utility of models in budget studies

Process research (on precipitation and cloud processes; soil moisture/runoff generation processes, etc.) are needed to improve the ability to model water and energy budgets.

Coordinated Enhanced Observing Period

To enhance global GEWEX activity the CSEs have established a Coordinated Enhanced Observing Period (CEOP). As an initial pilot activity this is a two-year effort in 2001 and 2002 to collect common data sets necessary to meet common scientific objectives. CEOP will be patterned on the First GARP Global Experiment. It will make effective use of the new generation of satellite data and global analysis schemes as well as other associated regional experiments. This coordinated effort will provide validation testbeds of models and remote sensing for GEWEX and other WCRP programmes such as Climate Variability and Prediction Project (CLIVAR). It will advance our understanding of several key processes of land-surface and atmospheric interactions under different terrain and climate conditions, providing an important link to the transportability of data and models to

larger scales. This coordinated effort will provide deeper insight into the coupled atmosphere–land–surface interactions in the climate system and will improve our skill in predicting changes in precipitation and water resources on seasonal and annual time scales.

Water Resources Application Project

Following preliminary proposals at the fifth session of GHP in September 1999, at the expanded GEWEX SSG meeting in January–February 2000 to develop detailed plans for the next phase of GEWEX, a breakout session was established to consider the role of GEWEX in water resources applications. It was recognized that because of the complex and wide ranging requirements of the water resources community, careful evaluation and planning are needed to determine the most effective interface between GEWEX and water resources applications. To progress planning a Water Resources Application Project (WRAP) has been established within the GHP. The purpose of this group is to promote dialogue between the GEWEX programme (and GHP in particular) and the water resources community regarding contributions (real and potential) of hydrological and meteorological sciences to water management at all space and time scales. The first meeting of the working group was held in August 2000 at which it was decided to pursue the IAHS/WMO Working Group's proposal to hold workshops with water resources managers on "The Role of GEWEX Hydrometeorology Science in Improved Water Resources Management". The first is proposed for Europe in 2001 and the second a joint Workshop with IAMAS at IUGG in Sapporo in 2003.

GEWEX Global Land–Atmosphere System Study

The GHP will have a role in the GEWEX Global Land–Atmosphere System Study (GLASS) which is being led by the GEWEX Modelling and Prediction Panel in close association with the WCRP Working Group on Numerical Experimentation. The aim of GLASS is to foster an evaluation of the next generation of land–surface schemes (LSS) in general circulation and region atmospheric models and to coordinate the evaluation of LSSs in their different applications. The next generation of LSSs includes the carbon cycle to provide atmospheric models with CO₂ fluxes to simulate the evolution of vegetation and thus feedbacks between climatic variations and the state of the biosphere. The new generation will feature more horizontal complexity of the surface to address the imbalance of current LSSs' emphasis on very sophisticated vertical processes while retaining simple assumptions on the

horizontal variance of surface conditions. They will also include the next generation of data assimilation methods making use of the evolving remotely sensed variables. GLASS will also serve as an interface between the land–surface community and other GEWEX projects such as the International Satellite Land–surface Climatology Project (ISLSCP). Links to the Biosphere Aspects of the Hydrologic Cycle (BAHC) will be maintained in order to facilitate smooth coordination with the model intercomparison studies undertaken by BAHC.

Soil wetness

Soil wetness plays an important role in partitioning incoming radiative energy into sensible and latent heat fluxes. In addition to the role of soil moisture in the interaction between the land surface and the atmosphere, soil wetness regulates runoff from the land surface and discharge. The status of vegetation, which determines transpiration and radiative properties, is controlled seasonally and inter-annually by soil moisture. Hence, soil moisture is essential for climate predictability on seasonal-to-interannual time scales.

Given its importance two components of GEWEX, the International Satellite Land–surface Climatology Project (ISLSCP) and the GEWEX Numerical Experimentation Panel (GNP), established the Global Soil Wetness Project. The Project consisted of the modelling of a 2-year data set, 1987–1988, based on the ISLSCP Initiative I CD-rom data. Uncoupled land–surface process models utilizing global data of soil moisture, temperature, runoff and surface fluxes were used to produce three times per month data of time-mean and instantaneous fields and the monthly mean diurnal cycle of specified quantities in a standard format for comparative analyses. The products were compared with routinely observed soil moisture data from Russia, Mongolia, China and the USA and the data obtained from the First ISLSCP Field Experiment (FIFE). A Special issue of the *Journal of the Meteorological Society of Japan*, vol. 77, no. 1B, Global Soil Wetness Project (GSWP), edited by T. Kioke *et al.*, 1999 describes some of the models and results.

Model Parameter Estimation Project

A key issue in land–surface modelling is to estimate model parameters that vary spatially and are unique to each computational element. An international Model Parameter Estimation Experiment (MOPEX) was established with the support of GCIP funding and the IAHS/WMO Working Group and the WMO Commission of Hydrology to develop techniques for the *a priori* estimation of the parameters used in land–surface

parameterization schemes of atmospheric models and in hydrological models. The major effort to achieve this goal is to assemble a large number of high quality historical hydrometeorological and river basin characteristics data sets for a wide range of intermediate-scale river basins (500–10 000 km²) throughout the world. Data sets from Phase I of MOPEX are available via the Internet. MOPEX Phase II activities will collect additional data from the US as well as data for basins from other countries. During the next three years, the scientific community will use the available MOPEX data sets to estimate basin parameters and to relate them to basin characteristics. The issues being addressed in MOPEX will be considered at the next IAHS Scientific Assembly in Maastricht in 2001 in Symposium S5: Soil–Vegetation–Atmosphere Transfer Schemes and Large-scale Hydrological Models.

For further information on GEWEX and the above activities readers are referred to the GEWEX web site and its associated links (<http://www.gewex.com>).

Alan Hall, Chairman IAHS/WMO
Working Group for GEWEX

UNESCO

Status of IHP after the 14th Session of the Intergovernmental Council, Paris, 5–10 June 2000

Introduction

The UNESCO intergovernmental scientific cooperative programmes in water resources (IHP, and earlier the International Hydrological Decade (IHD)) were established because both the international scientific community and the Member States, realizing that water resources are often among the primary limiting factors for harmonious development in many regions and countries of the world, saw the need for an internationally coordinated programme. Its prime role is acting as a catalyst to promote scientific cooperation. The general objective of the IHD, and later of the IHP, was established as the improvement of the scientific and technological basis for the development of methods and the human resource base for the rational management of water resources, including the protection of the environment.

These objectives remain almost the same today as during the launching of the IHD in 1965. However, there are several shifts/trends in the international scene related to the field of water sciences and water resources development and management that are quite relevant to UNESCO's role in the next decade, such as: Globalization, with the entry of new players, including

multinationals, the increasingly acute competition for water giving rise to diverse types of conflicts and the increasing role of stakeholders in the decision process. Major recent developments framing UNESCO's actions in the field of freshwater are influenced by:

- The World Conference on Science (Budapest, 1999), which appealed to the scientific community for a “new commitment” and to shift to application-oriented research which can be summarized by “sciences serving human needs”.
- The exercise of the World Water Vision, hosted and assisted by UNESCO and which culminated in the Second World Water Forum (The Hague, March 2000). It identified critical regional and cross-cutting issues, pointed out directions leading toward the 2025 “Vision” and made a strong worldwide call to make water “everybody's business”.
- The Ministerial Declaration “Water Security for the 21st Century” issued from the concurrent Ministerial Conference in The Hague, which delineated specific actions, expected from the UN system including a World Water Assessment Programme, leading to periodic reporting of the situation.

These landmarks, among many others, have influenced the Fifth and Sixth Phases of the IHP. More information about these phases as well as the related new initiatives, will be briefly presented here.

The current phase (IHP-V; 1996–2001)

The theme of the current Fifth Phase (IHP-V) is “Hydrology and Water Resources Development in a Vulnerable Environment”. As in the previous phases, IHP-V constitutes a framework for applied research and education in the field of hydrology and water management. It is regarded as a dynamic concept that aims to improve the links between research, application and education, and to promote scientific and educational activities. There are three main clusters, in IHP-V, addressing issues related to:

- Resource process and management studies
- Regional studies
- Transfer of knowledge, information and technology

Eight themes have been identified, within the set of clusters, as a support structure for the whole programme. They cut across different hydrological scales and different climatic regions, but have integrated water management in a vulnerable environment as a common issue. The themes are seen as cornerstones within which projects can be flexibly implemented.

The eight themes are:

- Global hydrological and biochemical processes
- Ecohydrological processes in the surficial zone
- Groundwater resources at risk
- Strategies for water resources management in emergency and conflicting situations
- Integrated water resources management in arid and semiarid zones
- Humid tropics hydrology and water management
- Integrated urban water management
- Transfer of knowledge, information and technology (KIT)

Over 30 projects and hundreds of activities have been executed under these themes. However, the implementation of IHP-V is now running close to its concluding biennium (2000/2001) and is naturally harmonized with the active planning for the Sixth Phase of the IHP.

The forthcoming phase (IHP-VI; 2002–2007)

In recognition of the shift in thinking about water from fragmented compartments of scientific inquiry to a more holistic, integrated approach, the general theme for IHP-VI has been defined as “Water Interactions: Systems at Risk and Social Challenges”. In defining the critical research components for 2002–2007, it became clear that what had hitherto been missing is a close investigation of water science and policy “at the margins”. What happens, for example, at the intersections of distinct components of water resources management?

Some of the interactions to be further investigated, or to be focused on during the Sixth Phase of IHP include those between:

- Surface water and groundwater
- Atmospheric and terrestrial parts of the hydrological cycle
- Freshwater and salt water
- Global watershed and river reach scales
- Quantity and quality
- Water bodies and aquatic ecosystems
- Science and policy
- Water and civilization

Bridging the gaps between these disparate components in an integrated fashion represented the major need to draw the IHP-VI in line with the above-mentioned comprehension of water interactions, technological development of data acquisition and improved modelling of processes and interactions. The relevant IHP-VI topics on hydrological research, water resources management and education have been formulated

in five themes; with the transition and interaction from the global scale to the watershed scale being the overall need for knowledge, information and technology transfer. The five themes are:

Theme 1 **Global changes and water resources**

Theme 2 **Integrated Watershed and Aquifer Dynamics**

Theme 3 **Land Habitat Hydrology**

Theme 4 **Water and Society**

Theme 5 **Water Education and Training**

Two cross-cutting programme components: FRIEND (Flow Regimes for International Experimental and Network Data) and HELP (Hydrology for Environment, Life and Policy) have been identified which, through their operational concept, interact with all of the five themes.

The above-mentioned IHP-VI Plan was approved by the Intergovernmental Council of the IHP in its 14th session held in Paris in June 2000. Other than HELP, the approved Plan includes many new initiatives such as the World Water Assessment Programme, the progress with UNESCO-IHE Institute in Water and Education, the Joint International Isotope Hydrology Programme, and two initiatives on groundwater. Due to the importance of these initiatives, a specific introduction on each of them now follows.

The new initiatives

The World Water Assessment Programme (WWAP)

WWAP is one of the new initiatives approved by the 14th session of the Intergovernmental Council. It was recognized that one of its major productions is the “World Water Development Report” (WWDR). The report is a major cooperative initiative of the UN system under the supervision of the ACC Subcommittee on Water Resources.

WWDR will be a periodic review, continuously updated, designed to give a credible picture of the state of the world’s water resources and their development. It will contain indicators and analysis that will identify and diagnose:

- The needs for and uses of water
- The state of the world’s freshwater resources
- The broad organizational and socio-economic context of their utilization
- Current problems and emerging threats to the resource base
- Approaches to sustainable development, management and use of freshwater resources

More details about the WWDR will be presented and discussed as a major agenda item of the 21st session of the ACC Subcommittee.

Hydrology for the Environment, Life and Policy (HELP)

HELP is a joint UNESCO/WMO programme which is designed to establish a global network of catchments to improve the links between hydrology and the needs of society. It is a cross-cutting programme of the UNESCO IHP and will contribute to the World Freshwater Assessment Programme, and the Hydrology and Water Resources Programme of WMO.

The vital importance of water in sustaining human and environmental health is the key driving force behind HELP. However, no international hydrological programme has addressed key water resource issues in the field and integrated them with policy and management needs. HELP will change this by creating a new approach to integrated catchment management. The new approach is to use real catchments, with real water-related problems as the environment within which hydrological scientists, water resources managers and water law and policy experts can be brought together.

The Joint International Isotope Hydrology Programme (JIHP)

The main objective of JIHP is to enhance the utilization of isotope techniques in various water resources assessment and management operations. The programme will be convened in close collaboration with the International Atomic Energy Agency and WMO as a follow-up to a recommendation of the Fifth UNESCO/WMO International Conference on Hydrology.

The Groundwater Initiatives

The two groundwater initiatives include a project on "International Shared Aquifer Resources Management (ISARM)". IHP, in cooperation with the International Association of

Hydrogeologists, FAO and UN ECE, have launched this programme in recognition of the fact that there are many large regional aquifers, shared by more than one country, that represent a substantial and secure supply for many beneficial socio-economic uses and are thus critical for national and regional water security. The aim of this interagency initiative is to improve the regional coordination as well as the understanding of the scientific, socio-economical, legal, institutional and environmental issues of the management of shared aquifers. The second initiative is the establishment of an "International Groundwater Resources Assessment Centre (IGRAC)" under the auspices of UNESCO and WMO. The Centre should act as a catalyst for stimulating and focusing national efforts in groundwater system monitoring and assessment.

The UNESCO-IHE Institute for Water Education and Training

One area that received great emphasis and demand for immediate action from UNESCO, was the strengthening of "Fresh Water Resources Education". As a response to this, the Director General of UNESCO, Mr Koichiro Matsuura, has signed an Aide-Memoire with the Government of The Netherlands to further pursue the establishment of the International Institute for Infrastructural, Hydraulic and Environmental Engineering (IHE) in Delft as a UNESCO Centre of excellence in water resources education. Concerned authorities in both The Netherlands and UNESCO are currently carrying out a consultation process for the realization of this aim through the ultimate mandatory approval of the governing bodies of UNESCO.

IHP Secretariat

WMO



Mr Rutashobya of Tanzania and Mr B. Stewart of Australia, new President and Vice-President respectively of the WMO CHy.

The eleventh session of the WMO Commission for Hydrology (Chy) was held in Abuja (Nigeria) from 6 to 16 November. The session was opened by the Nigerian Federal Minister of Water Resources, Colonel Muhammadu Bello Kaliel and by the WMO General Secretary, Prof. G. O. P. Obasi. About 40 countries and several international organizations were represented. IAHS was represented by its Secretary General, Dr P. Hubert. All the aspects of the hydrological programmes and activities of WMO were reviewed. We will give more information about the discussions and decisions of this Commission in a following issue of the Newsletter. We should

nevertheless give some information about the renewal of the Bureau. Mr D. Rutashobya from Tanzania was elected the new President of the Commission. He succeeds Dr K. Hofius from Germany, who has been in charge for the last 8 years. The new Vice-President of the Commission is Mr B. Stewart from Australia. IAHS works closely with WMO, through different channels, like the IAHS/WMO working group on GEWEX (see the report earlier in this Newsletter), and is regularly invited to attend the Chy Advisory Working Group, which is the governing body of Chy. WMO provides generous support for our activities, especially to enable scientists from countries in need to participate to our workshops, symposia and assemblies. We want here to attest our gratitude to WMO for this support and to Dr Hofius for the marvellous job he has done for hydrology. We also want to wish Mr Rutashobya and Mr Stewart good luck in their new posts and ensure them of our loyal support.

Pierre Hubert

GRDC has new Head

Dr Thomas Maurer is the new Head of the Global Runoff Data Centre (GRDC), at the Federal Institute of Hydrology, Koblenz. An article on GRDC will be included in the next Newsletter.

In Memory of Adriaan Volker

On 3 September 2000 Prof. Ir Adriaan Volker passed away after a short illness. With him, we lost an eminent hydrologist and a very interesting and modest personality.



Adriaan Volker was born in Rotterdam in 1917. His father, who worked with the Volker dredging company, was often on mission abroad. Because of this, from the age of eight Adriaan spent his primary school days in France. As a result he had full command of the French language and developed a lifelong affinity with the French culture. After graduating from secondary school he took up his studies at the Delft University of Technology, then named Technische Hogeschool Delft, from which he graduated in 1940. In the same year he started working at the Hydraulics Department of the Dienst Zuiderzeewerken (the governmental service responsible for the large land reclamation projects in the former inland sea in the heart of the country), later to become the head of this department. He initiated and coordinated the research activities related to the land reclamation projects, including research into: dike elevation, seepage of saline water, salinization, dry-out of the old land, water management and in general, the impact of the works on the hydrology.

Volker was famous and highly respected for his knowledge of land reclamation, throughout the world. In 1954, the Japanese government requested Volker and Prof. Jansen (who reclaimed the island of Walcheren after it was inundated during the war) to advise on the reclamation of the Hachiro Gata lagoon. Following their advice the lagoon was successfully reclaimed. A monument in their honour reminds us of their efforts.

In 1956 Volker became the head of the Hydrology Department of the Ministry of Public Works. In this capacity his accomplishments included: study of the salt intrusion in estuaries, the first policy document on water management and for quite some time he was member of the boards of the former Committee on Hydrological Research TNO and the Institute of Applied Geosciences of TNO (now NITG-TNO).

He was one of the first to plead for a reduction of the pollution of the Rhine, and in particular the salt disposals. He convinced the International Commission for the Protection of the Rhine to include restrictions on both the salt load and salt concentration in the treaty of 1976. As a spin-off of the International Hydrological Decade (1965–1975) Adriaan Volker was one of the initiators of the International Commission for the Hydrology of the Rhine.

He visited more than 75 countries as an advisor. He was convinced that one should share knowledge and information to gain knowledge, particularly with colleagues from developing countries. In 1957, also as a result of his efforts, the IHE-Delft was established, where education was provided to international students from all over the world in the fields of hydraulics and environment. He continued to lecture in hydrology at IHE (with special attention to the hydrology of deltas) until his retirement in 1992, on which occasion he received a special award as Distinguished Lecturer of IHE.

In 1965 the Delft University of Technology nominated Volker

Professor of Hydrology at the Department of Civil Engineering, where he lectured on general hydrology and the hydrology of deltas.

In his career, Volker declined several offers for even more prestigious positions, with the argument that this would keep him from travelling and from his international advisory activities. In this capacity he was an important ambassador for the hydrological science as well as for his home country.

Besides his advisory work, he participated in activities of the ECE, OECD, WMO, FAO, UNESCO, World Bank, ECAFE, Mekong Secretariat, etc. He was President of IAHS from 1963 to 1967. He chaired the Council of the International Hydrological Decade from 1971 to 1973. He was Vice-President of ICID. In 1984 IAHS, UNESCO and WMO honoured him with the International Hydrology Prize. The Dutch and French governments gave him high governmental distinctions. In 1982, at the age of 65, Volker retired from government and the Delft University of Technology, but he never retired from his international activities. In the late nineties his activities slowed down, but he remained in close contact with his friends, colleagues and neighbours.

With Adriaan Volker, the hydrological community loses an active, enthusiastic and colourful advocate of the hydrological sciences, an excellent engineer and a very special educator. His fascinating personality will remain part of our memories.

P. Huisman, R. H. Boekelman, H. J. Colenbrander,
H. M. Oudshoorn, F. Rutgers, H. H. G. Savenije &
E. Schultz

Reports on Meetings

GROUNDWATER 2000: International Conference on Groundwater Research

Copenhagen, Denmark, 6–8 June 2000

The conference was organized by the Groundwater Research Centre at the Technical University of Denmark in collaboration with the Danish Water Resources Committee and sponsored by The COIWI Foundation, European Science Foundation and Danish Environmental Protection Agency. Co-sponsoring organizations included IAHS and the IHP of UNESCO.

The aim of the conference was to create an interdisciplinary forum for presentation and exchange of the most recent advances in groundwater research. Current research in groundwater addresses fundamental processes, for example by recognizing the combined effect of physical, chemical and microbiological mechanisms in laboratory and field studies. It also marks a transition to more engineering-related topics such as remediation technologies for cleaning up contaminated soils and groundwater.

The conference focused in particular on five key issues:

- Aquifers and contaminant distribution
- Groundwater quality problems
- Natural attenuation
- Remediation technologies
- Groundwater protection

High-level keynote and invited speakers were associated with each of the selected topics and a large number of contributed oral and poster papers were presented during the three-day conference. The number

of participants was approximately 320, ensuring lively discussions in three well-attended concurrent sessions.

The proceedings of the conference are printed by Balkema in the book *Groundwater 2000* edited by P. L. Bjerg, P. Engesgaard & T. D. Krom (ISBN 90-5809-133-3). All oral and poster presentations are documented by a two-page paper, and the book hereby offers a comprehensive overview of actual research results, while at the same time pointing to other recently published material. A CD-rom providing easy search opportunities is included.

The organizers are happy to conclude that the aims of the conference were achieved. The contributions of the sponsors and the efforts of the attendees are gratefully acknowledged. The generous support and the enthusiastic participants made the conference an important event in the continuous struggle to advance groundwater research.

Dan Rosbjerg, Lyngby, Denmark

XXth Conference of the Danube Countries on Hydrological Forecasting and the Hydrological Basis of Water Management

Bratislava, Slovakia, 4–8 September 2000

The conference was organized by the Slovak Committee for Hydrology and the Slovak Hydrometeorological Institute jointly with the IHP of UNESCO, WMO and IAHS. All the main Slovak hydrological institutions took part in the organization of the conference.

155 papers from 287 authors were submitted and 252 participants registered for the conference. The participants were from 20 countries, mostly from the Danube River basin. Out of 18 Danube countries only three were not represented (Switzerland, Bosnia and Herzegovina, Macedonia). The proceedings of the conference have been published on CD-rom. Technical and historical excursions were organized to the confluence of Danube and Morava rivers including one to Devín Castle, and to the Gabčíkovo hydrostructure area.

The conference topics were:

- Hydrological forecasting
- Eco-hydrological processes
- Erosion, sediment transport and sedimentation
- Water quality and river ecology
- Water resources management in the Danubian region

The International and Local Scientific Committees announced the results of the Danube Conference Award for Young Hydrologists. The Award promotes excellence in research by young hydrologists in the Danube countries. Three Awards were granted for outstanding papers submitted to and presented at the conference. Candidates applying for the Awards have to be under 35 years of age. The Award consisted of a citation at the conference and a grant covering the costs of the stay in Bratislava. The following authors received the award (in alphabetical order): Elena Bojilova and Tatiana Orehova from Bulgaria who co-authored a paper, Graziella Jula from Romania, and Michail Kornilov from Ukraine.

The XXI Hydrological Conference of the Danube Countries will be hosted by the Romanian National Committee for the IHP in 2002.

Pavol Miklanek, Bratislava, Slovakia

International Workshop on Debris-Covered Glaciers

Seattle, USA, 13–15 September, 2000

Debris-covered glaciers comprise a significant fraction of the global population of glaciers and are particularly common in the Himalayas, Andes, Alaska, and on strato-volcanoes worldwide. Despite their relatively common occurrence, debris-covered glaciers have not been well studied. However, to quantitatively estimate glacier contribution to sea-level rise, regional water resources, and hydrological hazards, we require fundamental understanding of their distribution and processes. Of immediate importance, debris-covered glaciers, particularly those in the Himalayas, commonly develop supraglacial lakes that can cause disastrous floods.

In addition, debris-covered glaciers may, in some cases, be a transitional stage between clean glaciers and rock glaciers. Current debate on the origin of rock glaciers and their possible genetic connection to debris-covered glaciers highlights fundamental issues regarding mass and energy transport in debris and ice debris mixtures. These questions are particularly important for understanding the origin of potentially old (millions of years) ice in rock glaciers in polar environments on Earth or more generally on Mars.

The workshop was organized around six themes, including:

- Distribution and setting
- Mass and energy balances
- Debris origin, morphology and transport processes
- Supraglacial lakes, formation and outburst
- Climatic variations and the response
- The hydrology and biology

The workshop, organized by the IAHS International Commission on Snow and Ice, was very successful in bringing together a diverse, international group of scientists. Sixty-three participants from 13 countries presented 53 technical papers at the conference. For the first time we have a relatively comprehensive perspective about processes acting in debris-covered glaciers and the important gaps in our knowledge. Twenty eight of the papers are published in *Debris-Covered Glaciers*, IAHS Publ. no. 264, edited by M. Nakawo, C. F. Raymond & A. Fountain. Information about contents of this volume and how to obtain it is available at <http://www.cig.ensmp.fr/~iahs>.

Andrew Fountain, Portland State University, USA

International Workshop on Modelling Runoff Generation and Implications for River Basin Modelling

Freiburg, Germany, 9–12 October 2000

More than 80 scientists from all over the world gathered at the Workshop on Modelling Runoff Generation and Implications for River Basin Modelling at the Institute of Hydrology, University of Freiburg, Germany. It was organized by Chris Leibundgut, Stefan Uhlenbrook and Jeff McDonnell. The workshop was jointly convened by IAHS and its International Commissions on Tracers (ICT) and Surface Waters (ICSW) and by the National Working Group IHP/OHP-FRIEND/ERB, Germany.

Throughout the four days the participants felt a personal and inspiring atmosphere mainly due to the unorthodox character of this workshop. Ample time

was left for discussion not only at the end of each session but also within an extended poster session. Two separate slots were reserved for small group discussions where the audience was split into four groups each addressing different key research problems. After about 90 minutes the rapporteurs presented the outcomes at the plenum for general discussion. This discussion is published in a separate chapter of the workshop proceedings.

From the outset different questions accompanied the workshop, e.g.:

- Can we reconcile tracer based estimates of event water with hydrometric studies?
- Can we reconstruct model reservoirs that capture dominant flow response with a minimal number of tuneable parameters?
- What is the minimal set of measurements necessary to characterize a hydrological system?
- How can preferential flow be parameterized at the catchment scale?
- How do we scale up our process knowledge from the plot scale to the catchment scale?
- How can we introduce additional information (i.e. further hydrometric measurements or tracers) for model calibration or validation?

As both modellers and field hydrologists were present, the gap between both groups was quickly bridged. This, of course, did not answer all the addressed questions. However, it was generally agreed upon that it is not enough for today's rainfall-runoff model to produce a close fit between measured and simulated runoff data, as this alone does not guarantee a correct reproduction of ongoing hydrological processes. Instead, different ways to improve hydrological models were introduced, e.g.:

- Using tracers or hydrometric measurements to set up conceptual model structures
- Using process knowledge to spatially delineate a catchment for distributed modelling
- Using additional data to constrain model uncertainties

From the plot to the catchment scale the outcomes of process- and modelling studies throughout the world were discussed and evaluated. This yielded a comprehensive overview of today's state of the art in runoff generation research and catchment modelling. The complete proceedings of the workshop are published in a separate volume of the series *Freiburger Schriften zur Hydrologie*. For further information please refer to:

<http://www.uni-freiburg.de/hydrology/publika/schrift-e.html>

In parallel, selected papers will be published (in an expanded version) in a special issue of *Hydrological Processes*.

Jens Lange, Freiburg, Germany

International Conference on Agricultural Effects on Ground and Surface Waters: Research and Policy at the Edge of Science and Society

Wageningen, The Netherlands, 1–4 October 2000

This conference was organized/sponsored by the IAHS International Commission on Water Quality, together with the IHP/OHP National Committees of The Netherlands and Germany. The goal of the conference, attended by ca. 125 participants from 25 countries, was

to address the themes of water scarcity and water pollution caused by agriculture and to indicate the possibilities of protecting water resources. The focus was on water management methods in the moderate humid areas of the Northern Hemisphere, and an explicit aim was to link the sociological with the scientific aspects and also to consider the political decision-making process.

Three main themes were addressed at the conference:

- **The local level—the agricultural production unit:** Under this theme, the effects of developments in agricultural production systems on the hydrological cycle, and groundwater and surface water quality systems were demonstrated with quantifiable indicators. Field studies and model calculations showed, however, not only negative impacts but also the changes in agricultural practices that have resulted in definite improvements. These measures included, for example, regulations concerning timing of fertilizer application, use of buffer strips along bodies of water, improvements in soil cultivation and development of a humus top soil, and compensation payments for changes in land management aims from mass production to guaranteed good water quality. It was also suggested that demonstration farms and sites should be used more for the education of farmers at the interface of science and practice.
- **Hydrological and environmental policy in a region:** Under this theme, the focus was on resolving the interests of the many different groups within a region, in addition to agriculture, which are concerned with water problems. Conference presentations demonstrated how use of results from monitoring programmes, improved methods for upscaling and downscaling, and tools for the quantification of uncertainties could produce approaches to the solution of water problems that were acceptable to different interest groups. Models relevant to the regional scale and concerned with the interpretation of temporal trends, forecasting the hydrological impacts of changing farming practices and the reduction of water pollution were also presented. It emerged that although decision support systems are developed explicitly by scientists, they are often too complex to assist the process of decision making by the interest groups involved. In contrast, socio-economic models assist policy makers to find solutions to water quality problems and to evaluate the environmentally relevant and economic results of political targets. Most socio-economic models assume that a reduced nitrate discharge from the soil is soon reflected in a reduction of the nitrate content in surface water. However, conference presentations highlighted that this assumption is not always realistic and a delay in the transport time of the nitrate due to hydrological processes should be taken into greater consideration.
- **Hydrological and environmental policy on a national level:** Under this theme, studies relating to the formulation of national regulations, or for checking the effectiveness of guidelines, were presented. It was shown that models are well suited for describing the processes of substance transport, for preparing scenarios for testing future measures and for assisting in decision making. However, it was also clear that thinking only in terms of model variables might result in the neglect of useful

alternative approaches. Furthermore, vital boundary conditions, such as the negative effects of the injection of liquid manure on soil organisms, are not at present fully considered in modelling. A wide range of agricultural impacts in particular countries was reported at the conference. These included studies from Poland, Slovenia, Russia and the northern countries, which presented the results of monitoring programmes and efforts made to counteract contamination of groundwater and surface water, and an investigation in Germany, which analysed increasing number of flash floods in agricultural areas in relation to land use before and after the Second World War.

Several general points emerged from the conference as a whole. Firstly, the papers presented dealt almost exclusively with conventional land-use practice, and little or no attention was given to organic farming. Secondly, new approaches to communication, decision making and risk assessment are required to facilitate planning at local, regional and national scales. Thirdly, procedures for the involvement of citizens in the decision-making processes affecting water cycling and pollution are urgently recommended. The detailed recommendations to governments and international organizations, which emerged from the conference, have been summarized in *The Wageningen Statement*, which is reproduced on the ICWQ web pages at:

<http://www.ex.ac.uk/~BWWebb/icwq/Wag.htm>.

The papers from this successful conference will be published in the IAHS Red Book series later in 2001.

Joop Steenvoorden, Wageningen, The Netherlands

European Conference on Advances in Flood Research

Potsdam, Germany, 1–3 November 2000

The Potsdam Institute for Climate Impact Research (PIK) hosted the European Conference on Advances in Flood Research, on the occasion of the final presentation of the European Research Project “European River Flood Occurrence and Total Risk Assessment System”—EUROTAS. IAHS was one of the sponsors. Scientists from nine European states participated in the EUROTAS project and the conference was attended by some 200 scientists from over 20 countries. The final results of this project were highlighted during a session on the first day of the conference, and future research activities of the group were outlined.

During the following two days, papers and posters were presented on: impacts of change in land use and climate on flooding, flood management and assessment of flooding risk, catchment modelling and management systems and impact of river engineering works on flooding.

Analyses of recent flood events, like the floods in southern Africa (Mozambique and Republic of South Africa), in Switzerland and Italy, and the November floods in Great Britain were presented. Results from other catastrophic flood events, such as the Oder flood in 1997 and the Mississippi flood in 1993 were presented and discussed concerning climatological, land-use and flood-management issues. All the cases presented clearly showed that the human and social dimension is one of the determining factors, which can exacerbate or mitigate the human and economic losses of a flood event. This was very dramatically shown for Mozambique where the floods impacted much more

severely on the life of the people and the economy of the country compared to developed countries. One of the key results of the conference is that “human strategies” in flood prevention are getting more important and promising than purely “technical strategies”.

The conference also showed research from several European regions where the link between an increase in large-scale precipitation events and anthropogenic climate change has been shown, e.g. for the southern part of the Rhine catchment. In other catchments, e.g. the Elbe catchment, climate change is likely to lead to a decrease in precipitation, which may also decrease the flood risk in that region.

The conference closed with an outlook given by Jim Dooge highlighting the need for integrated flood management in the overall context of sustainable development of water resources.

The conference proceedings have been published in the PIK Report series: Bronstert, A., Bismuth, C. & Menzel, L. (editors) (2000) *Advances in Flood Research: Proceedings of the European Conference, Potsdam, 1–3 November 2000. PIK Report no. 65*, Potsdam Institute for Climate Impact Research, Potsdam, Germany, 712 pp.

Christine Bismuth, Potsdam, Germany

The Exeter travel fund

The Exeter travel fund was set up after the First Scientific Assembly of IAHS held in Exeter, July 1982. The fund (administered by the British Hydrological Society) is to help UK hydrologists, particularly younger hydrologists, participate in future IAHS meetings. Applications are now invited for grants to support participation in the Scientific Assembly at Maastricht, next July. Applications should be sent **no later than 28 February** to:

Prof. Bruce Webb, School of Geography and Archaeology, University of Exeter, Amory Building, Rennes Drive, Exeter EX4 4RQ [fax: 01392 263342; e-mail: b.w.webb@exeter.ac.uk]

Applications should give the following information:

- Full contact details, current position and age
- Details of the support requested
- The nature of your participation at Maastricht
- Details of any other sources of funding requested or confirmed

News about Maastricht

Preparations for our Scientific Assembly in Maastricht are going strong. The Local Organizing Committee met on 29 November and visited the Maastricht Exhibition and Congress Centre which has all the facilities necessary for a successful Assembly, in the framework of a friendly city, inhabited by welcoming people. The Scientific Committee is also working well. The provisional timetable is reproduced here and the programme is continuously being updated on the IAHS web site. The second circular will be issued in January and will be widely disseminated (probably with this issue of the Newsletter). You can find information about registration, accommodation and transport on the IAHS web site and you can also directly contact the Local Organizing Committee for a copy of the second circular at the following address:

Provisional timetable for Maastricht, 18–27 July 2001

	Wednesday 18 July				Thursday 19 July				Friday 20 July				Monday 23 July				Tuesday 24 July				Wednesday 25 July				Thursday 26 July				Friday 27 July										
	1	2	3	4	E	1	2	3	4	E	1	2	3	4	E	1	2	3	4	E	1	2	3	4	E	1	2	3	4	E	1	2	3	4	E				
Symposia																																	Symposia						
S1	X	X	X																																		S1		
S2				X	X	X	X	X	X	X	X																											S2	
S3+4												X	X	X	X	X	X	X	X	X	X	X	X																S3+4
S5																X	X	X	X	X	X	X	X																S5
Workshops																																	Workshops						
W1										X	X	X	X	X	X																						W1		
W2																								X	X												W2		
W3																X	X	X	X																		W3		
W4				X	X	X	X	X	X																												W4		
W5																								X	X	X	X											W5	
W6					X	X																															W6		
W7								X	X	X	X																										W7		
Prospective																								X	X												Prospective		
Conclusion																														X	X						Conclusion		

- Registration will be on 17 and 18 July
- Icebreaker (reception) on 17 July
- Opening ceremony on 18 July
- Reception on the evening of 19 July
- Dinner on the evening of 25 July
- Closing ceremony on the evening of 27 July

IAHS Maastricht 2001,
c/o Conference Agency Limburg, PO Box 1402,
6201 BK Maastricht, The Netherlands
[tel.: +31 43 3619192; fax: +31 43 3619020;
cal.conferenceagency@wxs.nl]

Financial support

UNESCO, WMO, the French Government, the Dutch Government and IAHS are providing financial support. Applications for financial support to attend the Maastricht Assembly should be sent (preferably by e-mail) to:

Dr C. A. Onstad
Treasurer IAHS, 7607 Eastmark Drive, Suite 230,
College Station, Texas 77840, USA
[fax: +1 979 2609415; constad@spa.ars.usda.gov]

The funds available are limited and preference will be given to participants from developing countries who have an accepted paper for one of the symposia or workshops.

Other Forthcoming Events

(all meetings are organized or sponsored by IAHS and/or its Commissions)

Mahadevan Birth Centenary International Symposium on Challenges of Water Resources Management in the Developing Countries in the 21st Century

Visakhapatnam, India, 6–10 May 2001

Call for abstracts

IAHS is one of the sponsors of this international symposium that commemorates the centenary of the birth of the late Prof. C. Mahadevan who inspired generations of students at Andhra University, Visakhapatnam, particularly with his zeal for geology. The aims are to find ecologically sustainable and low cost ways of addressing the various water management issues which particularly concern developing countries. There will be eight sessions devoted to the following themes:

- Water resources inventories, with special reference to the management of coastal aquifers
- Water quality in relation to water use
- Augmentation, conservation and protection of water resources
- Technical/socio-economic challenges of water transfer
- Information technology in the management of water supplies
- Drinking water issues
- Climate change impacts on water resources
- The role of nongovernmental organizations in the sustainable management of water resources

The deadline for submission of **abstracts was 15 December 2000**. **Full papers** should be submitted by **15 April 2001** and the proceedings of the symposium will be post-published in India and The Netherlands.

A pre-symposium Workshop on Hydrological Approaches for the Mitigation of Adverse Impacts of Extreme Weather Events (Floods and Droughts) is proposed. This will be held at Andhra University, Visakhapatnam, on 4–5 May 2001 under the direction

of Dr I. Radhakrishna (postmast@esngri.ren.nic.in).

For more information on submission of abstracts, please contact:

Prof. G. Krishnarao
Executive Secretary of the Symposium,
Department of Geology, Andhra University,
Visakhapatnam 530017, Andhra Pradesh, India
[fax: +91 891 755547;
geokrsna@mdevanwateres.com]

or

Prof. U. Aswathanarayana
CP 1947, Maputo, Mozambique
[fax: +2581 308915; anarayan@zebra.uem.mz]

Further details may be found on the web site:

<http://www.mdevanwateres.com/symposium1.htm>

International Workshop on River Runoff Minima and Maxima

St Petersburg, Russia, 6–8 June 2001

Call for abstracts

This workshop, organized by the Russian State Hydrometeorological University, the St Petersburg City Administration and the Ministry of Education of the Russian Federation, with sponsorship by WMO, UNESCO and IAHS, will deal with the forecasting, measurement, and computation of floods and droughts, prediction of catastrophic rainfall, floods from tornadoes and because of human activity etc. Both theoretical and applied aspects will be considered. A key goal is to identify the main problems of flood and drought prediction which will then be discussed in a symposium in 2003.

Abstracts, not exceeding one page, in Word or ASCII should be submitted by e-mail by **1 April 2001** to: kuzmin@rw.ru.

The registration fee of US\$150 will include the proceedings, reception, transfer between airport and hotel or university, and some sightseeing trips.

For more information contact:

Dr Vadim Kuzmin
Scientific Secretary of the Organizing Committee,
Department of Land Hydrology, Russian State
Hydrometeorological University,
Malookhtinski 98, St Petersburg 195196,
Russia
[tel.: +7 812 5853608; kuzmin@rw.ru]

or see: <http://www.kuzmin.rw.ru>

I Mercosul Urban Drainage Seminar and V Brazilian Urban Drainage Seminar: Solutions for Urban Drainage in Latin America

Porto Alegre, RS, Brazil, 10–12 July 2001

Call for abstracts

IAHS is supporting an urban drainage seminar planned to be held at Instituto de Pesquisas Hidráulicas, UFRGS, Porto Alegre in July 2001. The main topics will be:

- Monitoring
- Quantitative and qualitative evaluation of urban drainage impacts
- Solutions and controls for Latin America environment
- Urban drainage management
- Case studies

Extended abstracts of not more than four pages and at least 700 words should be sent by e-mail to:

urb2001@vortex.ufrgs.br. The **abstract deadline is 15 April 2001**.

A more detailed call for papers (in Portuguese) may be found at the web site:

<http://galileu.iph.ufrgs.br/urb2001>

International Conference on Hydrological Challenges in Transboundary Water Resources Management

Koblenz, Germany, 25–27 September 2001

Call for abstracts

Convened by the National Committee of the Federal Republic of Germany for the IHP of UNESCO, the co-sponsors of this conference include IAHS. The conference supports IHP-V project 4.1: International water systems.

The international community has become very aware of the need throughout the world for the sustainable development of transboundary water systems (TWS). Increasing demands and declining water quality, growing vulnerability from floods and droughts, and alarming water-borne health and eco-hydrological problems confront water resources management with challenges that need comprehensive strategies for providing water of adequate quantity and quality and protecting man and nature from adverse impacts. Sustainable solutions for TWS depend on close international cooperation—provision and exchange of hydrological information are the most important prerequisites for river basin communities to improve their social, economic and environmental living conditions in a harmonized way.

The conference will deal with the following themes:

- Hot spot analysis of hydrological problems
- Integrated hydrological networks and information systems
- Methodologies for analysing hydrological processes in large-scale water systems
- Institutional and legal aspects of transboundary hydrological cooperation
- Experiences and challenges for sustainable development in TWS

Well-known experts are being invited to deliver keynote lectures on the state of the art of each theme. The working languages of the conference will be English and German (simultaneous translation will be available).

For more information, please see the Homepage: http://www.bafg.de/html/aktuell/hydrological_challenge.htm or contact:

Dr U. Schröder
Bundesanstalt für Gewässerkunde, IHP/OHP
Sekretariat, Postfach 200253, D-56002 Koblenz,
Germany
 [tel.: +49 261 13065313/5440; fax: +49 261 13065422;
schroeder@bafg.de]

International Conference on Flood Estimation

Berne, Switzerland, 6–8 March 2002

Call for abstracts

This conference is supported by the IHP of UNESCO, the Operational Hydrology Programme of WMO and IAHS. It is aimed at presenting and discussing the latest developments within the field of flood estimation for micro- and mesoscale catchments. Apart from hydrological aspects of model evolution and questions

in connection with regionalization of floods, the practical use of models will be given particular attention.

The topics are:

- Flood measurement techniques
- Process analysis as a basis of flood modelling
- Extreme value statistics
- Modelling and regionalization of floods
- Presentation of the results of the International Commission for the Hydrology of the Rhine Basin Project: flood estimation in the Rhine basin

The topic of extreme value statistics will only be discussed by a keynote speaker.

The **deadline for abstracts is 31 March 2001** and full papers will be due by 31 December 2001. Please direct enquiries and send abstracts of 300–400 words by e-mail as ASCII, Word or PDF files to: floodestimation@bwg.admin.ch. Please indicate your preference for oral or poster presentation.

For more information see:

<http://www.admin.ch/bww/d/news>

or contact:

International Conference on Flood Estimation
Federal Office for Water and Geology,
CH-3003 Berne, Switzerland
 [tel.: +41 31 3247758; fax: +41 31 3247681;
floodestimation@bwg.admin.ch]

FRIEND 2002: Fourth International Conference on Flow Regimes from International Experimental and Network Data—Bridging the gap between research and practice

Cape Town, South Africa, 18–22 March 2002

Call for abstracts

This conference is convened jointly by the IHP National Committee of South Africa, Southern Africa FRIEND, IAHS and WMO. The objective of the conference is to present the results of the UNESCO FRIEND research programme that has stimulated international cooperation in the field of regional hydrology. A focus of the conference will be bridging the gap between knowledge, research and practical applications. The proposed topics are:

- Hydrological data—policy, international rivers, databases, real time, dissemination
- Managing hydrological risk—floods, surface and groundwater droughts
- Water scarcity, over-exploitation and poverty reduction
- Sustaining water-related ecosystems—definitions, methodology and operation
- Continental hydrology—regimes, water sharing, teleconnections, snow, ice, international basins

Authors are invited to submit papers which demonstrate how advances in hydrology can be used for the development of integrated river basin management to ensure the sustainable development of water resources. Examples of incorporating research results in operational hydrology and water resource planning, including decision support systems, numerical and statistical models and visualization techniques are welcome. Papers are encouraged from a broad range of institutions including operational hydrological agencies, water users, policy makers and research scientists.

The deadline for submission of abstracts was **30 November 2000**. Papers will be pre-published in

the IAHS series of proceedings and reports. The deadline for submission of **final papers** (which may be submitted and presented in English or French) is **30 May 2001**.

In addition to the conference proceedings, a FRIEND Report, presenting a synthesis of the FRIEND activities for the period 1998–2002, will be edited by regional FRIEND groups and published for the conference. The registration fee will be approximately US\$300, which will include a copy of the proceedings, FRIEND Report, local transport and conference reception and dinner.

For further information, please contact:

FRIEND 2002

**Institute for Water Research, Rhodes University,
PO Box 94, Grahamstown 6140, South Africa**

juanita@iwr.ru.ac.za

or visit the conference web page:

<http://www.ru.ac.za/institutes/iwr>

Changes to IAHS National Representatives

Two new IAHS National Representatives have recently been appointed:

Armenia/Arménie

Prof. Vladimir Boynagryan
Yerevan State University, A. Manoogian St. 1,
Yerevan 375025

e-mail: vboynagryan@vsu.am

fax: +374 1 151087

tel.: +374 1 550661

Trinidad and Tobago/La Trinité et Tobago

Prof. Serwan M. J. Baban
Department of Surveying and Land Information, Faculty of
Engineering, The University of West Indies, St Augustine

e-mail: sbaban2001@yahoo.com

fax: +1 868 6624414

tel.: +1 868 6622002 ext. 2108

The National Representative for Iran now has an e-mail address:

Iran/Iran

Dr M. K. Hafizi
Institute of Geophysics, Tehran University, Kargar
Shomali Ave, PO Box 14155-6466, Tehran, Iran

e-mail: hafizi@chamran.ut.ac.ir

fax: +98 21 8009560

The full list of IAHS National Representatives can be found at:

<http://www.cig.ensmp.fr/~iahs>

Calendar of Meetings Organized/Sponsored by IAHS

2001		
Toronto, Canada 26–28 March	Alina Martin, SAIC MS R-4-3, 11251 Roger Bacon Drive, Reston, Virginia 20190, USA tel.: +1 703 3184678; fax: +1 703 7360826; martinali@saic.com ; http://www.fracturedrock2001.org	Fractured Rock 2001: an International Conference
Essaouira, Morocco 18–25 April	Prof. A. Cheng, Department of Civil and Environmental Engineering, University of Delaware, Newark, Delaware 19716, USA tel.: +1 302 8316787; fax: +1 302 8313640; cheng@ce.udel.edu ; http://www.ce.udel.edu/faculty/cheng/saltnet/swica	SWICA-M3—First International Conference (and Workshops) on Saltwater Intrusion and Coastal Aquifers: Monitoring, Modelling and Management
Visakhapatnam, India 4–5 May	Prof. G. Krishna Rao, Dept of Geology, Andra University, Visakhapatnam 530003, India tel.: +91 891 754871 ext. 232 or 316; fax: +91 891 755547; geokrsna@mdevanwateres.com ; http://www.mdevanwateres.com	Pre-symposium Workshop on Hydrological Approaches for the Mitigation of Adverse Impacts of Extreme Weather Events (Floods and Droughts)
Visakhapatnam, India 6–10 May	Prof. G. Krishna Rao, Dept of Geology, Andra University, Visakhapatnam 530003, India tel.: +91 891 754871 ext. 232 or 316; fax: +91 891 755547; geokrsna@mdevanwateres.com ; http://www.mdevanwateres.com/symposium1.htm	Mahadevan Birth Centenary International Symposium on Challenges of Water Resources Management in the Developing Countries in the 21st Century
Dijon, France 9–11 May	Dr J. P. Carbonnel, Colloque OH2, Case 123, 4 Place Jussieu, F-75252 Paris Cedex 5, France tel.: +33 1 44276326; fax: +33 1 44275125; jpc@biogeodis.jussieu.fr or oh2@biogeodis.jussieu.fr ; http://www.cilea.it/history/DHS/Oh2.htm	OH2: First International Symposium on the Origins and History of Hydrology
St Petersburg, Russia 6–8 June 2001	Dr Vadim Kuzmin, Scientific Secretary of the Organizing Committee, Department of Land Hydrology, Russian State Hydrometeorological University, Malookhtinski 98, St Petersburg 195196, Russia tel.: +7 812 5853608; kuzmin@rw.ru	International Workshop on River Runoff: Minima and Maxima
Sheffield, UK 18–21 June	Conference Secretariat GQ2001, Department of Civil and Structural Engineering, University of Sheffield, Mappin Street, Sheffield S1 3JD, UK gq2001@sheffield.ac.uk ; http://www.shef.ac.uk/~gq2001/	Groundwater Quality 2001: Third International Conference on Groundwater Quality
Marseille, France 18–20 June	J. A. Tejada-Guibert, Division of Water Sciences, UNESCO, 1 Rue Miollis, F-75732 Paris Cedex, France fax: +33 1 45685811; symposium2001@unesco.org ; http://www.unesco.org/science/ihp/symposium2001/symposium2001.htm	International Symposium on Frontiers in Urban Water Management: Deadlock or Hope?

Innsbruck, Austria 10–18 July (5–8 days)	(1) Roland List; (2) Pierre Hubert, (1) Department of Physics, University of Toronto, Toronto M5S 1A7, Canada; (2) CIG, Ecole des Mines de Paris, 35 Rue Saint-Honoré, F-77305 Fontainebleau, France tel.: (1) +1 416 9782982; (2) +33 1 64694702; fax: (1) +1 416 9788905; (2) +33 1 64694703; listr@attcanada.ca	IAMAS/IAHS Inter-Association Symposia: Assessment of Liquid Precipitation from Convective Systems
Porto Alegre, RS, Brazil 10–12 July	Dr Carlos E. M. Tucci, Instituto de Pesquisas Hidráulicas, UFRGS, Av. Bento Gonçalves 9500, Caixa Postal 15029, CEP 91501-970 Porto Alegre, Brazil tel.: +55 51 3166670; fax: +55 51 3166565; tucci@if.ufrgs.br ; http://galileu.iph.ufrgs.br/urb2001	I Mercosul Urban Drainage Seminar and V Brazilian Urban Drainage Seminar: Solutions for Urban Drainage in Latin America
Maastricht, The Netherlands 18–27 July	IAHS Maastricht 2001, c/o Conference Agency Limburg, PO Box 1402, 6201 BK Maastricht, The Netherlands tel.: +31 43 3619192; fax: +31 43 3619020; cal.conferenceagency@wx.nl ; http://www.cig.ensmp.fr/~iahs	Sixth Scientific Assembly of IAHS: A New Hydrology for a Thirsty Planet
18 July	Dr Eric Servat, IRD-Hydrologie, BP 5045, F-34032 Montpellier Cedex, France tel.: +33 4 67144990; fax: +33 4 67144989; eric.servat@mpl.ird.fr	Symposium S1: Invited Lectures on Water-Related Threats to Social and Economic Developments
19–20 July	Dr Andreas Schumann, Ruhr University Bochum, Institute for Hydrology and Water Management, D-44780 Bochum, Germany fax: +49 234 3214153; andreas.schumann@ruhr-uni-bochum.de	Symposium S2: Regional Management of Water Resources
19–20 July	Prof. Herbert Lang, Institute for Climate Research, ETH-Z, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland tel.: +41 1 6355230; fax: +41 1 3625197; lang@geo.umwn.ethz.ch	Workshop W4: High-Mountain Regions: Hydrological Processes and Cryospheric Processes, Models and the Variability of Available Water Resources; in Anticipation of the "Year of the Mountains 2002"
19 July	Prof. Jacob de Vries, Vrije Universiteit, Faculty of Earth Sciences, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands tel.: +31 20 4447276; fax: +31 20 6462457; vrij@geo.vu.nl	Workshop W6: Hydrogeological Evolution in Coastal Lowlands: Role of Density- and Compaction-Driven Groundwater Flow
20, 23 July	Dr Paul Pilon, Monitoring Services Division, Atmospheric Environment Branch—Ontario Region, 75 Farquhar Street, Guelph, Ontario N1H 3N4, Canada tel.: +1 519 8234202; fax: +1 519 8262083; paul.pilon@ec.gc.ca	Workshop W1: Flood Forecasting with Reference to Global Change
20 July	Dr Frans van Geer, The Netherlands Institute of Applied Geoscience TNO, PO Box 6012, 2600 JA Delft, The Netherlands tel.: +31 15 2697135; fax: +31 15 2564800; f.vangeer@nitg.tno.nl	Workshop W7: Optimization of Monitoring Strategies for Groundwater Quantity and Quality
23–25 July	Dr Norman (Jake) E. Peters, US Geological Survey, Suite 130, 3039 Amwiler Road, Atlanta, Georgia 30360-2824, USA tel.: +1 770 9039145; fax: +1 770 9039199; nepeters@usgs.gov	Symposium S3/4: Impact of Human Activity on Groundwater Dynamics
24 July	Prof. Slobodan P. Simonovic, Department of Civil and Environmental Engineering, University of Western Ontario, London, Ontario N6A 5B9, Canada tel.: +1 519 6612111 ext. 88344; fax: +1 519 6613779; ssimonovic@eng.uwo.ca	Workshop W3: The Role of Information Technology in Sustainable Water Resources Management: Case Studies from Developed and Developing Regions
24–25 July	Dr Han Dolman, Alterra (formerly DLO—The Winand Staring Centre), PO Box 47, 6700 AA Wageningen, The Netherlands tel.: +31 317 474304; fax: +31 317 424812; f.vangeer@nitg.tno.nl	Symposium S5: Soil–Vegetation–Atmosphere Transfer Schemes and Large-scale Hydrological Models
26 July	Dr Jerry C. Ritchie, USDA-ARS Hydrology Laboratory, BARC-W, Bldg 007, Room 104, Beltsville, Maryland 20705-2350, USA tel.: +1 301 5047490; fax: +1 301 5048931; jritchie@asrr.arsusda.gov	Workshop W5: Application of Geographic Information Systems and Remote Sensing for Quantifying Patterns of Erosion and Water Quality
26 July	Dr Anne Coudrain-Ribstein, Hydrosciences, Université de Montpellier II, Case MSEM, F-34095 Montpellier Cedex 5, France tel.: +33 4 67149085; fax: +33 4 67144774; coudrain@msem.univ-montp2.fr	Workshop W2: Hydrological Impacts of Long-Term Exploitation and Climatic Evolution: the Use of Tracers and Modelling in Aquifer Systems
27 July	Prof. Reinder Feddes, Chair Soil Physics, Agrohydrology and Groundwater Management, Wageningen, Department of Environmental Sciences, Nieuwe Kanaal 11, 6709 PA Wageningen, The Netherlands tel.: +31 317 482875; fax: +31 317 484885; reinder.feddes@users.whh.wau.nl	Concluding General Session: Threats and Challenges to Water Quantity and Quality on a Thirsty Planet
Besançon, France 20–22 September	Prof. Jacques Mudry, Département de Géosciences, UFR Sciences et Techniques, F-25030 Besançon, France tel.: +33 3 81665753; fax: +33 3 81665794; jacques.mudry@univ-fcomte.fr ; http://karst.univ-fcomte.fr/	Seventh Conference on Limestone Hydrology and Fissured Media
Koblenz, Germany 25–27 September	Dr U. Schröder, Bundesanstalt für Gewässerkunde, IHP/OHP Sekretariat, Postfach 200253, D-56002 Koblenz, Germany tel.: +49 261 13065313; fax: +49 261 13065422; schroeder@bafg.de ; http://www.bafg.de/html/aktuell/hydrological_challenge.htm	International Conference on Hydrological Challenges in Transboundary Water Resources Management
Montpellier, France 2–5 October	Dr Raoul Granger, National Water Research Institute, 11 Innovation Boulevard, Saskatoon, Saskatchewan S7N 3H5, Canada tel.: +1 306 9755758; fax: +1 306 9755143; raoul.granger@ec.gc.ca	International Workshop on Applications of Remote Sensing in Hydrology

Sunriver, Oregon, USA 8–12 October	Prof. Jeff McDonnell, Department of Forest Engineering, Oregon State University, Corvallis, Oregon 97331-5706, USA tel.: +1 541 7378720; fax: +1 541 7374316; jeff.mcdonnell@orst.edu	AGU Chapman Conference on State of the Art of Hillslope Hydrology
Kathmandu, Nepal 6–9 November	Prof. A. Herrmann, Kathmandu IPM Conference, Institute of Geography and Geoecology, Technical University Braunschweig, Langer Kamp 19c, D-38106 Braunschweig, Germany tel.: +49 531 3915607; fax: +49 531 3918170; ipmktm@tu-bs.de ; http://www.tu-bs.de/institute/igg/physhyd/conference	International Conference on Environmental Risk Assessment of Pesticides and Integrated Pesticide Management in Developing Countries
2002		
Berne, Switzerland 6–8 March	International Conference on Flood Estimation, Federal Office for Water and Geology, CH-3003 Berne, Switzerland tel.: +41 31 3247758; fax: +41 31 3247681; floodestimation@bwg.admin.ch ; http://www.admin.ch/bww/d/news	International Conference on Flood Estimation
Cape Town, South Africa 18–22 March	FRIEND 2002, Institute for Water Research, Rhodes University, PO Box 94, Grahamstown 6140, South Africa juanita@iwr.ru.ac.za ; http://www.ru.ac.za/institutes/iwr	FRIEND 2002: Fourth International Conference on FRIEND— Bridging the Gap between Research and Practice
Berkeley, California, USA 25–29 March	Dr Angelos Findikakis, Bechtel Systems & Infrastructure Inc., Mail Stop 333/12/C34, PO Box 3965, San Francisco, California 94119-3965, USA tel.: +1 415 7688550; fax: +1 415 7684898; anfindik@bechtel.com ; http://anfindik@bechtel.com	Bridging the Gap between Measurements and Modelling in Heterogeneous Media: International Groundwater Symposium
Prague, Czech Republic 17–20 June	Dr Zbynek Hrkal, Charles University, Faculty of Sciences, Institute of Hydrogeology, Engineering Geology and Applied Geophysics, Albertov 2, 128-43 Prague 2, Czech Republic tel.: +420 2 21952211; fax: +420 2 21952180; hrcal@natur.cuni.cz	ModelCARE 2002: Fourth International Conference on Calibration and Reliability in Groundwater Modelling
Cardiff, UK 1–5 July	Cherrie Summers, Hydroinformatics 2002 Secretariat, Cardiff School of Engineering, Cardiff University, Queen's Buildings, PO Box 917, Cardiff CF24 0XH, UK tel./fax: +44 29 20874421; summersc@cardiff.ac.uk ; http://www.cf.ac.uk/engin/news/confs/hydro	Fifth International Conference on Hydroinformatics
Alice Springs, Australia 2–6 September	Dr Fiona Dyer, School of Resource, Environment and Heritage Sciences, University of Canberra, Canberra ACT 2601, Australia tel.: +61 2 62012267; tel.: +61 2 62012328; fiona.dyer@canberra.edu.au	International Symposium on the Structure, Function and Management Implications of Fluvial Sedimentary Systems
2003		
Montpellier, France April	Dr Eric Servat, Centre IRD Hydrologie, BP 5045, F-34032 Montpellier Cedex, France tel.: +33 4 67917260; fax: +33 4 67547106; eric.servat@mpl.ird.fr	International Conference on the Hydrology in the Mediterranean and Semiarid Regions
St Petersburg, Russia June	Dr Vadim Kuzmin, Department of Hydrology, Russian State Hydrometeorological University, Malookhtinski 98, St Petersburg 195196, Russia tel.: +7 812 2242265; kuzmin@solaris.ru	International Symposium: Hydrological Extremes: Theoretical and Applied Aspects of Forecasting and Computations
Sapporo, Japan 30 June–11 July	Dr Kiyoshi Suyehiro, IUGG2003 LOC Office, Deep Sea Research Department, Japan Marine Science and Technology Center (JAMSTEC), 2-15 Natsushima-cho, Yokosuka, Kanagawa 237-0061, Japan suyehiro@jamstec.go.jp ; www.jamstec.go.jp/jamstec-e/IUGG/indexe.html	XXIII IUGG General Assembly

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IAHS Homepage

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Contacting you!

Important for all IAHS members

To ensure you keep receiving the Newsletter we need accurate contact information for all members. Do let us know about changes to your address, tel. no., fax no. and e-mail (also any change in the subjects that interest you—based on the titles of the IAHS International Commissions given on the back cover of this Newsletter). Please send any changes to:

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Included with this issue were:

Catalogue of IAHS Publications 2001

Flyer on Publ. 261

Flyer on Publ. 264

2nd circular on Maastricht will probably also be distributed with this issue of the Newsletter

International Association of Hydrological Sciences

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Individual membership of the Association is *free* and open to anyone who endeavours to participate in IAHS activities, such as IAHS symposia and workshops. *Members in financially disadvantaged countries may obtain 80% discount on most IAHS publications.* Members in other countries may obtain 50% discount on *Hydrological Sciences Journal* and 25% on other IAHS publications. For further information on membership contact:

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Information about IAHS may be found at the IAHS web site:

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Dr Pierre Hubert, Secretary General IAHS
Ecole des Mines de Paris, F-77305 Fontainebleau, France
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Scientific Commissions

Some Commissions have their own web site which can be accessed through that of IAHS (see above). Information about the activities of the Scientific Commissions of the Association may be obtained from their Secretaries:

International Commission on Surface Water (ICSW)

Contact: Prof. SIEGFRIED DEMUTH, Institute of Hydrology, University of Freiburg, Fahnbergplatz, D-79098 Freiburg, Germany
[tel.: +49 761 2033538; fax: +49 761 2033594;
demuths@uni-freiburg.de;
<http://www.uni-freiburg.de/hydrology/icsw/>]

International Commission on Groundwater (ICGW)

Contact: Dr NORIO TASE, Institute of Geoscience, University of Tsukuba, Ibaraki 305-8571, Japan
[tel.: +81 298 534244; fax: +81 298 519764;
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International Commission on Continental Erosion (ICCE)

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[tel.: +1 306 9665671; fax: +1 306 9665680;
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International Commission on Snow and Ice (ICSI)

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International Commission on Water Quality (ICWQ)

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[tel.: +44 1392 263334; fax: +44 1392 263342;
b.w.webb@exeter.ac.uk; <http://www.ex.ac.uk/~BWWebb/icwq/>]

International Commission on Water Resources Systems

Contact: Prof. ANDRÉ GÖRGENS, Department of Civil Engineering, University of Stellenbosch, Private Bag X1 Matieland, Stellenbosch 7602, South Africa
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International Commission on Remote Sensing (ICRS)

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<http://hydrolab.arsusda.gov/~jritchie/>]

International Commission on Atmosphere–Soil–Vegetation Relations (ICASVR)

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jsimunek@ussl.ars.usda.gov]

International Commission on Tracers (ICT)

Contact: Prof. CHRIS LEIBUNDGUT, Institute of Hydrology, University of Freiburg, Fahnbergplatz, D-79098 Freiburg, Germany
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Hydrological Sciences Journal

The Association has produced a scientific journal since 1956—now called *Hydrological Sciences Journal*. As well as scientific papers on all aspects of hydrology, the Journal contains announcements on worldwide hydrological activities organized or sponsored by IAHS, book reviews, and a diary of forthcoming events. August sometimes comprise a collection of papers on a single topic. These Special Issues are available as separate publications.

Subscriptions: The full annual subscription rate (for six issues) for 2001 is £148/US\$230 (the price for members in financially disadvantaged countries is £29.60 and the price for other members is £74/US\$115). Please send orders for both current subscriptions, Special Issues and back issues to Frances at the address given below.

Contributions: The Editor welcomes original papers, scientific notes, and discussions in either English or French. There is no page charge for papers less than 15 printed pages in length. Please send material for publication to:

Mrs Frances Watkins, IAHS Press, Centre for Ecology and Hydrology, Wallingford, Oxfordshire OX10 8BB, UK
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Original papers will be screened by two referees, one of whom is usually an Associate Editor. Instructions to Authors are available from Frances.

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Since 1924 the Association has published proceedings of symposia and workshops, and reports from working groups. These publications comprise the well established “Red Book” *Series of Proceedings and Reports*. In 1989 the first of a series of Special Publications was published. Publications in this series have an A4 format, a blue cover, and do not generally exceed 100 pages. Please send orders for these publications to:

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Tison Award

The Tison Fund provides an annual prize of US\$1000 (plus a year's free subscription to *Hydrological Sciences Journal*!). The Tison Award is granted for an outstanding paper published by IAHS in the two years before the deadline for nominations. The rules are found on the IAHS web site. *Nominations should be received by the Secretary General not later than 31 December each year.* Candidates must be under 41 years of age at the time their paper was published.