IAHS Newsletter

NL104 December 2012

KNOWLEDGE FOR THE FUTURE

Joint Assembly Gothenburg IAHS - IAPSO - IASPEI Sweden 22-26 July 2013

Summary of IAHS Scientific Programme – p. 13

constituent Associations of International Union of Geodesy and Geophysics (IUGG)

International Hydrology Prize 2012

Kuni Takeuchi receives the award from Bruce Stewart (WMO), Stefan Uhlenbrook (UNESCO) and Gordon Young (IAHS)

Panta Rhei – Everything Flows

Change in Hydrology and Society

As PUB comes to a close, Panta Rhei is welcomed

The IAHS Predictions in Ungauged Basins – PUB – initiative (2003–2012) was wound up with an excellent meeting in Delft, the Netherlands, in October. The end of the PUB decade does not mean the end of the need for robust methods of estimation to represent hydrological processes in ungauged basins; the quest for improvements to estimation procedures must continue, but a great deal has been achieved. A video of the main presentations is available online. Two books, to be published in 2013, will provide overviews of runoff prediction in ungauged basins. *See p. 4.*

PUB will be succeeded by a new initiative, *Panta Rhei – Change in Hydrology and Society* that will be formally launched at the next IAHS Assembly, i.e. at Gothenburg in July 2013. A one-day meeting to consider the initiative was held in Delft following the PUB event, and everything from the outline science plan to the proposed name was up for discussion. *See p. 6.*

The Delft meeting was also an occasion to celebrate the 90th Anniversary of IAHS, and former Presidents and Secretaries General were invited to attend and join the party. *See p.2.*

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2012 Tison Award

The 2012 Tison Award is shared by David Love and Gerald Corzo-Perez. The Award, for the best paper published by a young scientist (<41 years old) in an IAHS publication, was made at the Delft meeting. *See p. 10*

Message from the President

gordonyoung_wwap@yahoo.com

IAHS 90th birthday celebrations at Delft

The week of 22 October witnessed intense IAHS activity at the Technical University of Delft in the Netherlands. Not only did we celebrate 90 years since the "birth" of IAHS in 1922, which coincided with the 170th birthday of TU Delft, but, in a two-day symposium, we successfully brought to a close the IAHS Decade on Prediction in Ungauged Basins (PUB), and then we made excellent progress in defining the purpose and content of our next scientific decade to commence in July 2013 at the Scientific Assembly in Gothenburg.

Symposium on PUB

We are currently in the fifth and final biennium of the PUB decade, a scientific endeavour that has inspired and energised the whole IAHS community. Hubert Savenije led the major discussions on the decade, ably assisted by Murugesu Sivapalan, one of the co-founders of the decade and chair of the first biennium, Jeff McDonnell who chaired the second biennium and involved many scientists in the process, and Günter Blöschl, chair of the third biennium and principal author and editor of the forthcoming book on PUB to be launched in Gothenburg. More detail on the PUB symposium is given later in the newsletter (p.13).

An exceptionally inspiring and informative presentation was given by invited keynote speaker Prof. Johan Rockström co-chair of the Future Earth initiative of the International Council for Science (ICSU) and Executive Director, Stockholm Resilience Centre, Sweden.

Workshop on the future IAHS Scientific Decade

The PUB symposium was followed by an equally successful and truly inspiring one-day workshop on the next IAHS scientific decade. It was remarkable that the workshop was attended by an overflow audience, indicating the exceptional interest of both accomplished scientists and the younger generation. Once again credit for the success of the whole debate on our future science plan should go to Alberto Montanari who, over the past year, has brought together the IAHS community in debate and discussion. The science plan, described in more detail later in this newsletter, is in near-final draft and will be completed by the end of 2012. In the meantime the Bureau of IAHS has agreed on the name of the new decade: "Panta Rhei – everything flows" emphasising the changes in hydrology within an ever-changing world. The major targets:

- Understanding,
- Estimation and Prediction, and
- Science in Practice,

are agreed and the major science initiatives to address these targets are in the process of being finalized. It has also been agreed that the decade will be divided into five biennia (as with PUB) and that the leader of the first biennium will be Alberto Montanari. Further decisions on adoption of the science plan and the process of its implementtation will be made by the IAHS Bureau over the next months.

The Association is greatly indebted to Professor Hubert Savenije who organized the whole event hosted by TU Delft. While providing the essential leadership for developing and implementing the event, Hubert was very ably assisted by many of his colleagues, students and university staff. The IAHS community expresses its sincere thanks to all who made the birthday celebrations so successful.

Gothenburg Assembly, 22–26 July 2013

Preparations proceed apace for the next Assembly in conjunction with our colleagues in IAPSO and IASPEI. The deadline for submission of abstracts for the pre-published symposia has already passed and final deadlines for all other symposia are imminent – so please act quickly if you wish to have a paper accepted (see p.13).

The inspiration provided by our newest Commission

It is normal that in the life of an organization there are times of great inspiration, resulting in dynamic new initiatives and there are other times when activities are more subdued. So it is with IAHS. Over the years we have had major assemblies every two years

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Edited by Cate Gardner

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Articles from IAHS members on all aspects of hydrology and related topics are welcomed for publication in the Newsletter. They should be sent to the IAHS Secretary General, Christophe Cudennec: *cudennec@agrocampus-ouest.fr*, or to:
IAHS, UMR SAS, Agrocampus Ouest,
CS 84215, 35042 Rennes Cedex, France

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The next Newsletter will be published in April 2013; copy deadline: 15 March 2013.

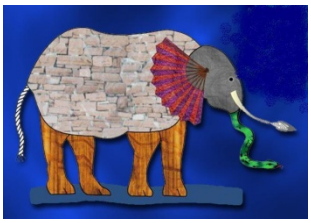
and our International Commissions have organized series of symposia, workshops and other meetings on a regular basis. These activities are the "bread and butter" of the association and are essential to its success.

However, every so often we witness a distinct upsurge in activity. Such was the case ten years ago with the initiation of the PUB decade – the whole membership was inspired and energized for a prolonged period. Such will also be the case with the advent of the new decade.

Another dynamic process launched a few years ago was the STAHy initiative that resulted in the creation of our most recent commission, the International Commission on Statistical Hydrology (ICSH). Salvatore Grimaldi, with the back-up of numerous of his colleagues, has been the driving force behind this initiative. Amongst other innovations introduced within ICSH has been a significant development of the Commission website – it now contains a substantial bibliography on statistical hydrology such that anyone new to the subject can immediately be directed to the literature on the subject that has been sub-divided into several sub-categories. Well done to this Commission! It remains to be seen whether other Commissions can emulate this example!

IAHS Presidents and Secretaries General from 1979 and into the future

Left to right:
Kuni Takeuchi (P 2001–2005)
Henny Colenbrander (SG 1988–1995)
Hubert Savenije (P-elect, 2013–)
Arthur Askew (P 2005–2009)
Pierre Hubert (SG 2000–2011)
Christophe Cudennec (SG 2011–)
John Rodda (SG 1979–1987, P 1995–2001)
Gordon Young (SG 1995–2000, P 2009–2013)



Closure of the IAHS Decade on Prediction in Ungauged Basins – PUB

Symposium in Delft, the Netherlands, 23–25 October 2012

PUB was IAHS's major research initiative during the 2003–2012 decade, and came to a close at the Delft conference in October 2012. This initiative was agenda-setting for the entire world-wide hydrological community and has led to significant international and regional initiatives to further the science of hydrology for the benefit of society.

The rationale for the PUB decade

Sustainable management of river basins requires a variety of predictive tools that can generate runoff predictions, over a range of time and space scales. The most widely used predictive tools for runoff predictions are essentially data-driven, i.e. they are estimated from gauged data. Unfortunately, in most catchments around the world runoff is not gauged. In any given region, in any part of the world, only a small proportion of the catchments possess a stream-gauge where runoff is measured. All other catchments have no streamgauge, and are therefore ungauged, and yet runoff information is needed almost everywhere people live, for a multitude of management purposes.

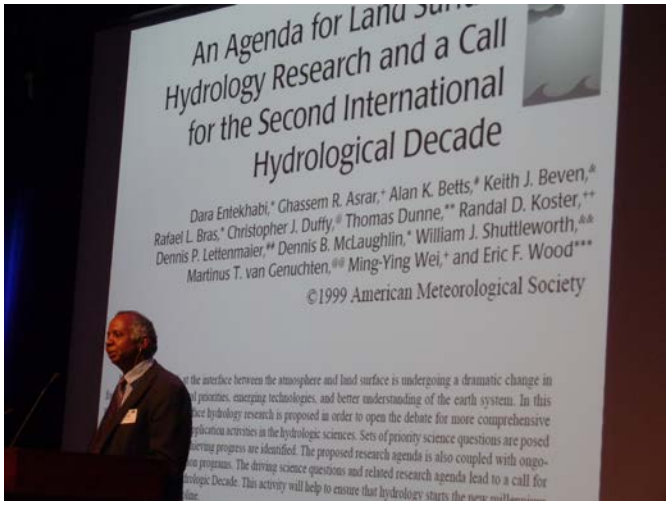
Lack of universal theories or equations applicable directly at the catchment scale has led to a plethora of models being developed and used for predicting runoff. These models differ markedly in their model concepts and structure, their parameters, and the inputs they use. They also differ in terms of which dominant processes they represent, and the scales at which they make predictions. Most models are developed by different people with different disciplinary backgrounds, while benefiting from local observations, experiences and practices that are influenced by local climate conditions and catchment characteristics. Consequently, they tend to have unique features not applicable in other places: every hydrological research group around the world seemingly studies a different object, their local catchment. The net result has been considerable fragmentation, "a cacophony" and a dissipation of effort that is not conducive to further advances.

The Decade on Predictions in Ungauged Basins (PUB) launched by the International Association of Hydrological Sciences (IAHS) in 2003 was aimed at achieving major advances in the capacity to make predictions in ungauged basins, through harnessing improved understanding of climatic and landscape controls on hydrologic processes. The vision of PUB was to help a transformation "from cacophony to a harmonious melody". One of the clear tasks that the PUB initiative set out to achieve was to address the fragmentation of modelling approaches through comparative evaluation: "*classify model performances in terms of time and space scales, climate, data requirements and type of application, and explore reasons for the model performances in terms of hydrological insights and climate–soil–vegetation–topography controls*."

The societal relevance of PUB

However, PUB also had a higher ambition. It was felt that focusing on a grand problem such as PUB, that had to draw heavily on new fundamental and theoretical advances in hydrology and associated Earth system sciences to address the immediate problem-solving needs of society, had the potential benefit of enabling hydrology to meet both its scientific and societal obligations. In other words, PUB was also seen as the vehicle to advance and revitalise the science of hydrology. Indeed, over the past decade, the PUB community has made huge strides in advancing both predictive capability and fundamental understanding of hydrological processes by working together in a concerted and coordinated manner. The PUB effort has helped to challenge long-held assumptions and question common paradigms, and has increased the constructive dialogue between different sub-disciplines and schools of thought.

Hubert Savenije addresses the audience.



Murugesu Sivapalan remembers the call for a Second International Hydrological Decade.

PUB closure

The Symposium held in Delft during 23–25 October 2012 was the closing conference of the IAHS decade on PUB, and it also celebrated the 90th anniversary of IAHS. The meeting was designed to report on the achievements of the PUB decade and to discuss the challenges that still lay ahead. Also this conference hosted an important meeting of scientists to discuss the contours of the IAHS science plan for the coming decade: Panta Rhei.

The conference attracted more than 200 delegates from 37 countries, who spent three days discussing the achievements of PUB and the way ahead in eight thematic groups. The plenary sessions on the first day of the conference contained reports and visions of the previous PUB chairs (Murugesu Sivapalan, Jeff McDonnell, Günter Blöschl and John Pomeroy) and the IAHS president who initiated PUB, Kuni Takeuchi. A special invited lecture was given by Dominic Mazvimavi, from the University of Western Cape in South Africa (supported by IUGG), who presented the PUB achievements in southern Africa, where there is a long tradition of estimating runoff in catchments with little information.

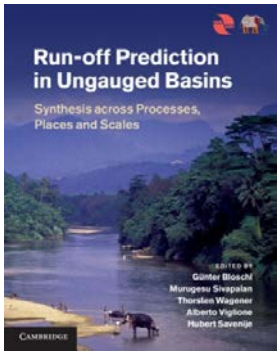
Another important element of the first day of the conference was the presentation of the PUB Synthesis book by Günter Blöschl, who was the lead editor of the synthesis process. In this process Prof. Blöschl and his team assessed the outcome of an impressive number of reported case studies, on the basis of which a synthesis was made with recommendations for procedures and approaches to handle predictions in ungauged basins. The state of affairs of the book on *Putting PUB into Practice* was presented by Alexander Gelfan (in John Pomeroy's absence). These key-note lectures are accessible online at the link:
http://collegerama.tudelft.nl/Mediasite/Play/877046ca567642bd8750afb1e00bb3ff1d

The second day of the conference was dedicated to looking forward and jointly defining the subject of the next decade. We had an excellent and inspiring key-note lecture by Johan Rockström, of the Stockholm Resilience Centre, who clearly sketched the boundaries of our planetary system and which contributions science has to make to find the route to a sustainable society. This lecture was greatly appreciated by the audience and was a perfect introduction to the work of Alberto Montanari, who presented the outline of the new decade, which is to be named Panta Rhei: Everything Flows. The key-note lectures given on this second day are also available online at:
http://collegerama.tudelft.nl/Mediasite/Play/cfa4dea1d105498f97587af86aec23e11d

The conference was very dynamic, with active participation of the delegates during the thematic sessions in the afternoons. On the closing day of the conference the outlines of the new decadal initiative (Panta Rhei) were discussed in a plenary session with the participation of about 100 delegates, under the chairmanship of Alberto Montanari. The present outline of the plan can be found on the IAHS web site under the New Science Initiative.

In brief, this was a memorable event, a festive celebration of the 90th anniversary, and a worthy closure of the IAHS science decade.

Hubert Savenije
Chair of the Organising Committee
PUB Chair 2011–2012



Run-off Prediction in Ungauged Basins

Synthesis across Processes, Places and Scales

Edited by Günter Blöschl, Murugesu Sivapalan, Thorsten Wagener, Alberto Viglione & Hubert Savenije

ISBN: 9781107028180 Price £85.00
Publisher Cambridge University Press – available from April 2013

Predicting water runoff in ungauged water catchment areas is vital to practical applications such as the design of drainage infrastructure and flooding defences, runoff forecasting, and for catchment management tasks such as water allocation and climate impact analysis. This important new book synthesises decades of international research, forming a holistic approach to catchment hydrology and providing a one-stop resource for hydrologists in both developed and developing countries. Topics include: data for runoff regionalisation, the prediction of runoff hydrographs, flow duration curves, flow paths and residence times, annual and seasonal runoff, and floods. Illustrated with many case studies and including a final chapter on recommendations for researchers and practitioners, this book is written by expert authors involved in the prestigious IAHS PUB initiative. It is a key resource for academic researchers and professionals in the fields of hydrology, hydrogeology, ecology, geography, soil science, and environmental and civil engineering.

Putting PUB into Practice

Edited by John Pomeroy, Chris Spence and Paul Whitfield

Publisher: CWRA with IAHS
Publication, Spring 2013

This Monograph is an outcome of the International Putting PUB into Practice Workshop held in May 2011 in Canmore, Canada, the principal aim of which was to describe perspectives and practices by which approaches for prediction in ungauged basins contribute directly to water resources management. By examining a gradient from data-rich to data-poor contexts, and considering the needs of a range of hydroclimatic regions, the Monograph considers a variety of regional efforts and perspectives represented in the PUB movement. A range of approaches for maximising the predictive value of streamflow data, and the translation of theory based on understanding of the structure and variability of physical processes into practical predictive solutions were considered, as well as the potential for new technologies (in hydrometeorological measurement, process verification, catchment characterisation and information management) to contribute to the development of solutions which incorporate improvements in hydrological understanding, thereby encouraging the translation of PUB research into practice.

CWRA ACRH
Canadian Water Resources Association
Association Canadienne des Ressources Hydriques

The New Science Initiative for IAHS: 2013–2022

Visionary Session on the New Decade

Delft, 25 October 2012

The IAHS meeting that took place in Delft hosted the visionary session dedicated to the new scientific decade 2013–2022. The lively programme was punctuated by nine talks commencing with an overview by Alberto Montanari (Chairman of the IAHS Task Force for the New Decade – University of Bologna), and followed by (links to abstracts of the talks):

Denis Hughes (IAHS Vice-President – Rhodes University), Research challenges for the new decade: Application of hydrological science in practice

Sally Thompson (University of California Berkeley), Science in practice and predictions: Three components of an adaptive framework for water science

Michael McClain (UNESCO-IHE), XXX-Hydrology: Bridging disciplines to address key environmental problems

Liliang Ren (IAHS Vice-President – Hohai University Nanjing), Future directions for Hydrology from the viewpoint of evolution routes in hydrological sciences

Hilary McMillan (National Institute for Water and Atmospheric Research, New Zealand), Making the most of hydrological data

Jim Freer (University of Bristol), Recent advances and future directions in the evaluation of models and data in a world of uncertainty

Elena Toth (University of Bologna), Role and agenda of data-driven modelling

Matthew Hipsey (University of Western Australia), Pulling it together – integrative approaches to facilitate knowledge discovery in the data deluge.

Alberto Montanari, Chair of the Task Force for the New Decade, and Chair of the first biennium of the Decade

Liliang Ren listens to comments.

Moreover, some 20 pop-up presentations were given by the audience. The contributions produced a vibrant debate on the emerging research challenges in hydrology. The symposium stimulated in the participants the feeling of being part of a unified community, with a vivid sense of belonging. Our community is excited by the opportunity to, once again, join our research efforts to address the emerging challenges related to water and environment in the next 10 years.

The outcome of the session was a multitude of ideas that contributed to shaping up the draft version of the Science Plan for the IAHS scientific decade 2013–2022, which is now available on the IAHS blog at: http://distart119.ing.unibo.it/iahs/Panta-Rhei-science-plan-draft-ver1.pdf and the draft summary of the Science Plan is reproduced here, on page 7. The blog is still open for comments from the community and suggestions for the Science Plan, and in particular the research questions presented, will be accepted up until 31st December 2012. Instructions for commenting and further details are provided at the home page of the blog.

Mike Kirkby gives his pop-up presentation.

The final version of the Science Plan will be prepared during January and February 2013. Then, the Implementation Plan will be prepared by the IAHS Bureau and suggestions from the community on the related research themes will be collected on the blog until May 2013. Finally, the Science and Implementation Plan will be approved by the IAHS Bureau in Gothenburg, during the IAHS General Assembly, and the new scientific decade 2013–2022 will be launched.

The process for shaping the Science Plan has been very inclusive. It is important to maintain and further promote the involvement of our community in the brainstorming process over the next six months and, later on, in the research activities of the new decade. Above all, it is important that the hydrological community worldwide feels unified to address research challenges that are more important than ever for society. Therefore, please do visit the blog at http://distart119.ing.unibo.it/iahs/ and take the opportunity to comment.

Alberto Montanari
Chair of IAHS Task Force on the New Decade 2013–2022

Excerpt from the Draft Science Plan

6. The Next IAHS Scientific Decade: The Science Plan

6.1 Title and acronym: PANTA RHEI – Change in hydrology and society

6.2 Summary

The Scientific Decade 2013–2023 of the International Association of Hydrological Sciences will focus on the analysis, interpretation and modeling of changes in hydrological systems, and their links with natural variability, human impact and human needs, to address emerging instances from society in relation to water. The scientific objective is to reach an improved interpretation of the processes governing the water cycle by focusing on their changing dynamics, in connection with rapidly changing human systems. The concept implies to focus on hydrology as a changing interface between environment and society through water, whose dynamics is essential for the impact of environmental change on society. Changes are defined as long term or irreversible modifications along the time arrow of system's configuration, including boundary conditions, input data, internal dynamics. Past research activity dedicated ample focus on the temporal variability of hydrological processes, including changes induced by seasonality, land use changes and assigned scenarios of climate change. In fact, the impact of long term or irreversible changes has been mainly studied in the past through scenario analysis, which leaves many questions open about its representativeness and uncertainty. The Scientific Decade 2013–2022 will focus on ameliorating the comprehension of unsteady behaviours of the Earth system and ultimately the water cycle, by devising innovative theoretical blueprints for processes representation including change and by profiting from advanced monitoring and data analysis techniques. The objective is to improve change quantification, attribution and modeling, with the ultimate goal to enhance predictability and technical applications. Interdisciplinarity will be sought by bridging with the socio-economic sciences and geosciences in general.

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Presentation of the 2012 International Hydrology Prize

For outstanding contributions and leadership in hydrology and water resources management

Citation presented by Gordon Young, IAHS President, in Delft, the Netherlands, 24 October 2012

It gives me great pleasure to present Professor Kuniyoshi Takeuchi, Professor Emeritus of the University of Yamanashi, Kofu and Director of the International Centre for Water Hazard and Risk Management, Tsukuba, Japan, as this year's recipient of the International Hydrology Prize. Professor Takeuchi has a world reputation as an exceptional scientist, charismatic teacher and influential leader based on his outstanding contributions to hydrological research, particularly in the field of water resources management, his role in educating young researchers through establishing both national and international academic programmes, his international leadership in the field of water sciences, especially related to UNESCO IHP and his extraordinary contributions to hydrological sciences as President of IAHS, especially for launching the international decade of Prediction in Ungauged Basins (PUB).

Professor Kuniyoshi Takeuchi graduated in Civil Engineering from the University of Tokyo and received a PhD in City and Regional Planning from the University of North Carolina at Chapel Hill. He worked as a Research Associate at Colorado State University and the Tokyo Institute of Technology. He also worked as a research scholar at the International Institute for Applied Systems Analysis (IIASA), Austria, after which he joined the University of Yamanashi, Kofu, Japan, as an Associate Professor where he was soon promoted to Full Professor. Six years ago he was appointed the founding Director of the International Centre for Water Hazard and Risk Management (ICHARM), under the auspices of UNESCO in Tsukuba, Japan. In this capacity he has been spearheading its research and education programmes for international cooperation to help governments and local communities to reduce water disasters in the world.

Kuniyoshi Takeuchi's early research focused on optimal control of multi-unit inter-basin water resource systems. During this time, he developed a Linear Program coupled with Dynamic Program (DCL) for optimal reservoir operation and the concept of Drought Duration Curves (DDC) for hydrological persistence statistics and chance-constrained reservoir operation. The challenge he faced was to identify optimum or near-optimum management strategies in a high-dimensional solution space, and his parsimonious parameterization method of marginal loss functions and the combined optimization approach proved to be very efficient. During his stay at IIASA, he developed cyclone track forecasting methods using the Kalman filter. At this time, filter methods were mainly used for runoff forecasting in hydrology. His approach of using filter methods for storm track forecasting was innovative and widened new areas of applying it for hydro-meteorological forecasting. After returning to Japan, he expanded his DDC method to include high flows and the resultant Drought and Flood Duration Curves of precipitation and streamflow were used as Palm prints of rivers that at a glance indicate the flow regime of the river and the degree of development efforts necessary to control floods and water resources. Anticipating the important role of remote sensing for hydrology and water resources management he developed methods for exploiting radar and satellite measurements of rainfall for hydrological purposes. He also developed a hydrological simulation model for Lake Kawaguchi in the Mount Fuji area based on a tank model that estimated lake water level in semi-real time and has played an important role in water supply management of the downstream city of Yokohama. He also contributed a study of using water quality as a tracer to separate streamflow components into near surface and deep subsurface flow. This interest in water quality was extended to laboratory experiments of water purification processes in the capillary zone of soil moisture and the effects on the aquatic flora of changes in the concentration of nutrients.

From the mid-1990s, he was one of the first researchers worldwide to recognize the need for studying the operation characteristics and hydrological effects of dams and reservoirs at a global scale. His long-term view of sustainability was a novel concept in reservoir management at that time. One of the outputs of this body of research is his IAHS publication on "Sustainable Reservoir Development and Management" that appeared in 1998 (IAHS Publ 251). Kuniyoshi Takeuchi once more demonstrated his uncanny ability for defining new paths forwards when he put high-resolution distributed hydrological models on his research agenda. He developed the YHyM/BTOPMC model that extends the TOPMODEL concept from small headwater catchments to large river basins such as the Mekong. The new philosophy was to use globally available data including satellite data where no ground observations are available or accessible for parameterizing and driving the model, thus making global application of the model feasible. The model is based on satellite measured precipitation, evapotranspiration, snow and ice, discharge, flow routing, sediment and water quality. Also, the model is numerically more efficient than previous models through a block-wise approach essential for high resolution models. Kuniyoshi Takeuchi and his colleagues are currently implementing this model at the global scale. After moving to ICHARM in 2007, he merged his model with the Integrated Flood Analysis System of the Public Works Research Institute and made it a very useful tool for flow simulations in poorly gauged basins in warm humid regions in the world. The model has a sound theoretical basis and a clever, nested philosophy of data acquisition. The nested approach uses satellite and other globally-available data as a default and, as additional more local data become available, they can be assimilated into the hydrological simulations. This nested approach has been much appreciated by experts from numerous countries around the world, including Indonesia and Pakistan.

Professor Takeuchi has also been very active in the education of young colleagues. In 2003, as the leader of the 21st century COE programme on "Research and Education on Integrated River Basin Management in the Asian Monsoon Region" at the University of Yamanashi, he established the International Special Doctoral Course for

Integrated River Basin Management and the Virtual Academy. This is a course aiming at an in-depth education in specialised areas, such as hydrological modelling, together with the ability to communicate across a wide spectrum of disciplines. Designing and implementing these programmes has been a major achievement in the education of young scholars and engineers in the area of hydrology and water resources management. His educational contributions have continued at ICHARM. He established postgraduate Master and Doctoral programmes on Disaster Management at ICHARM jointly with the National Graduate Institute for Policy Studies and Japan international Cooperation Agency. The programmes have mostly attracted practitioners from the public sector of water resources and water-related disaster management. His dedicated educational efforts in international programmes at the University of Yamanashi and ICHARM have been very visible around the world. Many of his students have gone on to important positions in academia and administration in countries such as China, Thailand, Nepal, Iran, the USA and Australia.

Professor Takeuchi has been one of the key players of the UNESCO-International Hydrological Programme (IHP) from an Asian perspective. He promoted collaborative research on the hydrological cycle and sustainable development of water resources in Southeast Asia and the Pacific region by initiating the IHP Regional Steering Committee for Southeast Asia and the Pacific (RSC). Before he had started these IHP activities, there was not a single forum or symposium on hydrology and water resources in the region. During his service on the RSC as the secretary for the first six years, he impressively strengthened the research in the region by establishing an information network of mutual exchange of hydrological and meteorological data through cooperation with local researchers. Among many other achievements, the group has published the *Catalogue of Rivers for Southeast Asia and the Pacific*, has promoted the Asian Pacific FRIEND programme (hydrological research through international exchange of river data), and has been holding a seminar every year in rotation.

Kuniyoshi Takeuchi chaired the Intergovernmental Council of the UNESCO IHP from 1998 to 2000. During his term he promoted the IHP phase five programme, the formulation of the phase six programme and coordination with the World Conference on Science (ICSU) and the World Meteorological Organization (WMO). These contributions to IHP and UNESCO-related activities received high acclaim and led him to take responsibility to direct ICHARM, a UNESCO category II centre, when it was established in 2006. As the founding director, he soon advanced the Centre to one of the most successful of the almost 20 UNESCO centres. His leadership has been a major contribution to the discipline in Asia and worldwide by furthering and implementing knowledge-based decision-making.

Concurrently with his ICHARM directorship, he has been serving on various other international boards. He has been a member of the High-Level Expert Panel on Water and Disaster under the UN Secretary General's Advisory Board on Water and Sanitation, Secretary of the International Flood Initiative organised by UNESCO, WMO, UNISDR and UNU, a member and a vice-chair of the Science Committee of Integrated Research on Disaster Risk (IRDR) organized by ICSU cosponsored by the International Social Science Council and UNISDR, the Chair of the National Committee for the IRDR in the Science Council of Japan, and President of the IUGG Commission on Geophysical Risk and Sustainability. Through these activities, he has been promoting hydrological sciences and technology to better serve land and water management and water-related disaster management.

Kuniyoshi Takeuchi has also made major contributions to IAHS over the past 30 years. He served as a President of the International Commission on Water Resources Systems from 1992 to 1995, and as a Vice President of IAHS from 1995 to 1999. Due to his excellent work and leadership, he was elected President of IAHS for the term 2001 to 2005. In 2001, as President of IAHS, he launched the international decade on Prediction in Ungauged Basins (PUB) and established the international PUB research network. IAHS PUB is an initiative that emerged out of discussions between IAHS members on the World-Wide Web and during a series of IAHS sponsored meetings in Maastricht (July 2001), Kofu (March 2002) and Brasilia (November 2002) about the need to reduce the predictive uncertainty in hydrological science and practice. In particular his activities in Kofu have been instrumental in starting PUB which has aimed at shifting the predictions of streamflow, sediment and water quality variables from calibration-based to new, and largely understanding-based methods. As the PUB decade is drawing to a close, IAHS members are fully appreciating the crucial role of Kuniyoshi Takeuchi in launching this flagship activity of IAHS.

Kuniyoshi Takeuchi has already received numerous national and international honours. For example, he received the "Research Promotion Award" from the Japan Society of Civil Engineers, the "Distinguished Achievement Award" from the Japanese Society of Hydrology and Water Resources, the "Science Academy Award" from Yamanashi Science Academy and the "International Contribution Award" from the Japanese Society of Civil Engineers. Kuniyoshi Takeuchi is currently an Honorary Professor of the Institute of Water Resources and Hydropower Research in China, Hohai University, Beijing Normal University and the Nanjing Institute of Hydraulic Engineering.

Kuniyoshi Takeuchi is a person of broad interests and a deep thinker, and he is also a person who knows how to put ideas into practice. Throughout his career he has equally valued societal needs and scientific rigour for the betterment of the science and humanity. His contributions to solving global water problems have been enormous and he has freely shared his expertise and enthusiasm. Professor Takeuchi has been instrumental on the worldwide international stage for such a sustained period in leading research in hydrology and water resources management. It is a great privilege to present Professor Kuniyoshi Takeuchi with the International Hydrology Prize on the basis of these truly outstanding contributions and leadership in hydrology and water resources management. He will certainly add distinction to a very distinguished award.

Reply by Kuni Takeuchi

Thank you so much, Gordon. It is a great honour for me to receive this truly distinguished award, the International Hydrology Prize. I am especially happy and honoured to receive the prize on this occasion of the closure of the IAHS PUB Decade and the 90th Anniversary of IAHS.

Compared with the scientific contributions of many giant hydrologists who received the Prize in the past, my contribution may be little. But if I could do anything that

deserved the Prize, it was only with my excellent colleagues, including many brilliant students, whom I have had the good fortune to work with for a long time. Without their support and cooperation, I could achieve nothing. I feel so lucky to have such nice colleagues in Japan, Asia and all over the world. I proudly receive this honour together with all those colleagues.

Thank you very much to those who nominated me for the Prize, especially, Günter and Siva. I know that your kind initiation for nomination brought me this honour. Günter kindly drafted the nomination by reading many of my publications, which I know was exceptional given his extremely busy schedule. Siva made my contribution to PUB possible with his brilliant ideas, leadership and kind trust in me. PUB was the highlight of my whole IAHS life. I am so happy to be able to work with many friends all over the world with such strong confidence and excitement.

Thank you very much to all of my IAHS friends. IAHS is my family providing me a professional home, class room and society of life-long friends. I truly treasure the time I have shared with IAHS friends. I am so lucky to be a member of this IAHS family.

Last, but not the least, I would like to thank my wife, Hiroko. All of my work has been possible only with her continuous encouragement and support and the warm environment she created in our family. Thank you so much Hiroko. I would like to share the honour with you and our proud family, four kids, six grandchildren and another grandchild on the way.

Thank you so much again for the Prize. Let us keep working together to bring our IAHS legacy of science and friendship to generations and generations, century by century.

The video of the combined IHP and Tison Award ceremony can be viewed at
http://collegerama.tudelft.nl/Mediasite/Play/63b2cabfa71b465b99393e81a99b080c1d .

Presentation of the 2012 Tison Award

To honour an outstanding paper by one or more young scientists, published in any of the IAHS publications

Rainfall–interception–evaporation–runoff relationships in a semi-arid catchment, northern Limpopo basin, Zimbabwe
by D. Love, S. Uhlenbrook, G. Corzo-Perez, S. Twomlow & P. van der Zaag, published in 2010 in *HSJ* 55(5), 687–704.

Citation by Demetris Koutsoyiannis, IAHS co-Editor and Chair of the Jury of the 2012 Tison Award

The Tison Award honours an outstanding paper of one or more young scientists, published in any of the IAHS publications. It was bestowed for first time 25 years ago, in 1987 in Vancouver, Canada, and the first recipient was Zbyszek Kundzewicz, now co-Editor of *Hydrological Sciences Journal*. Since then up to 2011, the award has been bestowed 20 times on 33 scientists from several countries belonging to three continents, Europe, Asia and Australia. Most of the laureates are now renowned hydrologists. One of them, the 2007 laureate, is now our Secretary General, Christophe Cudennec.

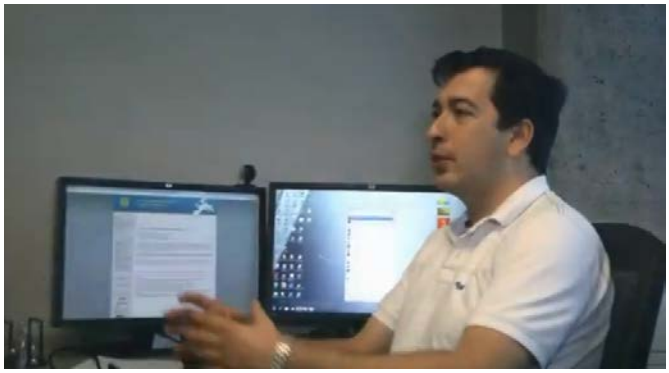
This year 11 papers were candidate for the award. The Jury, which I had the honour to chair, decided that the award goes to the paper "Rainfall–interception–evaporation–runoff relationships in a semi-arid catchment, northern Limpopo basin, Zimbabwe" by five authors, published in the *Hydrological Sciences Journal*. Two of the authors are young scientists eligible for the award: the first author, David Love, and the third, Gerald Corzo-Perez. Interestingly, the second author, Stefan Uhlenbrook, is no longer eligible age-wise but was Tison laureate back in 2000. The other two authors are Steve Twomlow and Pieter van der Zaag. The paper emanates from an international cooperation between Zimbabwe, Kenya and the Netherlands.

It is important to note that the winner David Love is an African working in Zimbabwe, while Gerald Corzo is both Columbian and Dutch, and works in Mexico. Thus, we have a unique case in the history of the Tison award that with one awarded paper we cover three continents. Also, we have another unique case that for the first time in its history the award goes to an author from Africa. And a third record is that for first time in its history the award goes to an author from America. Based on these coincidences we can be proud that the Tison award has, from now on, covered all five inhabited continents.

But, as I said, these are just coincidences and did not play any role in the selection of the winning paper. Irrespective of any consideration of geopolitics, the two winners are worthy recipients of the Tison award and their paper is really important.

David Love is an enthusiastic, energetic and dedicated African researcher. He was born in 1975 in Zambia. He holds a BSc from the University of Zimbabwe and an MSc from the

David Love in the field



Gerald Corzo-Perez keeping dry

University of Stellenbosch in South Africa. He has impressive scientific achievements, including many well-cited publications. He is the Manager of WaterNet, a network of more than 50 knowledge institutions in sub-Saharan Africa for capacity building in Integrated Water Resources Management. He is the Chair of the Pan-African Steering Committee and the Regional Steering Committee for East and Southern Africa of the Partnership for Agricultural Water in Africa. He is a part-time lecturer at the University of Zimbabwe. David and his wife also farm cattle in southern Zimbabwe.

Gerald Corzo is a civil engineer by training with a strong background in computational science. Currently he is a research professor at the Tecnologico de Monterrey in Mexico and adjunct investigator at Wageningen University in the Netherlands, working on hydroinformatics. One of the impressive elements of Gerald's career is the multi-national and inter-continental setting of his studies. In addition to his activities in Mexico and the Netherlands, he has supervised master students in the North China University, and he is involved in a project for measuring precipitation through mobile phone antennas in Colombia, as well as in the analysis of the performance of the Bogota water supply system, again in Colombia. Furthermore, from 2011 he became the manager of the LatinAqua network for water research scientists in Latin America.

David Love, Gerald Corzo and the co-authors of the awarded paper have chosen a combined experimental and modelling approach to study the hydrological processes in a small catchment in southern Zimbabwe, characterized by limited rainfall with strong spatial variability, which occurs over a limited period of time and produces ephemeral, disconnected discharge events. The catchment lies in a remote area where experimental hydrology is extremely challenging and reliable measurements did not exist before. Field work was extremely difficult, not only because of the hydro-climatic conditions during the two rainy seasons when it was carried out, but also due to the adverse economic situation in Zimbabwe.

The authors investigate in their paper the interplay of the different hydrological processes and, in particular, identify interception as a very important process in the water balance of the catchment. They demonstrate the importance of incorporating interception explicitly into the model structure using Monte Carlo simulations and model uncertainty assessment. The model suggests that groundwater recharge, despite being episodic, becomes very important in this water scarce area.

As the Chair of the 2012 Tison Award Committee, I hope that bestowing the Tison Award on David Love and Gerald Corzo encourages them to further pursue fine research work in hydrology and strengthens their already established international scientific career.

Finally, I am happy to sum up that this year's bestowing of the award is a clear demonstration of the importance of the globalized research collaboration and an evidence of the importance of the mission of the International Association of Hydrological Sciences.

Response by David Love and Gerald Corzo-Perez

In the absence of David Love and Gerald Corzo-Perez, neither of whom could attend the Delft symposium, the award was presented to Stefan Uhlenbrook and Pieter van der Zaag; Stefan read the following responses from them:

Thank you very much for the award! It is a great honour for us!

Demetris Koutsoyiannis (left) and Gordon Young (right), present the Tison Award to Stefan Uhlenbrook and Pieter van der Zaag (centre left and right, respectively), who accepted it on behalf of David Love and Gerald Corto-Perez.

David says, since my earliest days at university in Harare, I have always believed in team science and, over time, in transdisciplinary work as a way to tackle complex systems and their emergent properties. I have always been more of a boots-on-the-ground scientist (leather sandals rather than gumboots, given the climate), but it has been a delight to work with someone like Gerald who is at the sharp end of the modelling stick! I was very pleased that we could find a way to incorporate interception into our model, a critical parameter that demonstrates what one can see in the field: that few rain events in a semi-arid regime produce runoff, and few runoff events are continuous.

Gerald says, as commented by Dr Demetris Koutsoyiannis, I have been involved more in dry hydrology recently than in the wet, not meaning that I have not worked with floods and high flows, but because I have been more a modeller than an experimentalist. It is interesting that with my experience as a Hydroinformatician I believe that part of my role is to improve those scientific intersects that would normally be issues and turn them into a strength for scientific development. Hydrology has been something that requires important amounts of experimental work and now, more than ever, is the time to complement it. Nowadays, Climate Change models have shown me the importance of exploring more intersects with local hydrological models, not only to improve the actual measurements, but as a key aspect to optimize and narrow our uncertainties in actual bias of the models and make predictions for the future. On the other hand, extreme and fast event have shown what I see as Real Time Hydrology, which every day grows more in hybrid concepts of not only experimentalist vital information but also on the idea of learning from other fields of modern technology. These ideas have attracted me and are part of my main motivation to continue in hydrological research.

Thank you again for this award, which is indeed an important motivation for us both. We are also immensely privileged to be the first Tison laureates from sub-Saharan Africa and Latin America.

The Tison Award is sponsored by Taylor & Francis.

Erosion and Sediment Yields in the Changing Environment

Report from the International Commission of Continental Erosion – ICCE

Soil erosion plots at the Three Gorges Reservoir in China

In October this year, a Symposium on Erosion and Sediment Yields in the Changing Environment was held at the Institute of Mountain Hazards and Environment in Chengdu (China).

The Chengdu symposium represents a continuation of the highly successful series organized by the International Commission on Continental Erosion (ICCE).

Selected papers were pre-published in IAHS Red Book Publ. 356, edited by Adrian L. Collins, Valentin Golosov, Arthur J. Horowitz, Xixi Lu, Mike Stone, Des E. Walling & Xinbao Zhang.

The 54 papers collected in this volume, including four keynote papers, aim to advance our understanding of the processes of erosion and sediment production in different areas of the world.

The five main themes covered during the symposium were:

- **Dynamic processes of erosion and sediment transport in fluvial systems**, that provides information on the pathways and patterns of erosion and sediment transport in fluvial systems
- **Impacts of climate change and human activities on erosion and sediment yield**, dealing with the influence of land-use change on catchment soil erosion and sediment yields and fluxes
- **Modelling erosion and sediment yields**, which covers a variety of approaches for estimating sediment concentration/fluxes in the absence of actual sample data
- **Mountain hazards and debris flows** providing information on quantifying and modelling landslides and debris flows in different countries/environments
- **Monitoring and tracing methodology** that highlights the important role of both monitoring and tracing approaches for improving our understanding of soil erosion and sedimentation

The presentations and papers generated by this symposium provide an important indication of the increasing significance of soil erosion and sediment yield issues to both environmental and scientific communities.

Contents and abstracts available at:
http://www.iahs.info/redbooks/356.htm

IAHS Publ. 356 (*2012*)
ISBN 978-1-907161-33-9
452 + x pp. Price £90.00
IAHS members' price: £67.50

IAHS Publ. 356 can be purchased online from IAHS Press (and also via Amazon in N. America).

From left to right: Penny Perrins, Mike Acreman, Cate Gardner, Frances Watkins, Gwyn Rees and Jill Gash

Seasonal festivities start early for IAHS at Wallingford

The IAHS Press staff enjoyed Xmas lunch with Mike Acreman and Gwyn Rees (the Secretary and a Director of IAHS Ltd).

It was a time for crackers, party hats and silly jokes; the following particularly appealed:

Q1 – What has a bed but does not sleep, and a mouth but does not speak?

Q2 – Who is the most famous married woman in America?

(Answers on page 15 – they were funny at the time!)

KNOWLEDGE FOR THE FUTURE

Joint Assembly Gothenburg IAHS - IAPSO - IASPEI Sweden 22-26 July 2013

The IAHS Scientific Assembly at Gothenburg will run from Monday 22 July to Friday 26 July 2012, inclusive. In addition to the IAHS-led joint events and IAHS symposia and workshops, there will be many events run by IASPEI and IAPSO in which IAHS members are welcome to participate. A summary of IAHS events is given below; see full details at http://iahs-iapso-iaspei2013.com/. Abstracts should be submitted via the website.

4 February 2013 abstract submission deadline for all the following events Go to http://iahs-iapso-iaspei2013.com/

Code	Event	Lead convener(s)
IAHS-led Joint Events		
HPS1	**Advanced statistical methods for hydrology, oceanography and seismology** Organiser: IAHS Co-sponsor: IAPSO, IASPEI	Salvatore Grimaldi
HP2	**Land–ocean interaction** Subtitle: Hydrodynamics and biogeochemistry Organiser: IAHS Co-sponsor: IAPSO	Christophe Cudennec
HP3	**Implications of sea-level change for the coastal zone** Organiser: IAHS Co-sponsors: IAPSO, CCEE	Dan Rosbjerg
IAHS Symposia and Workshops *The IAHS Symposia are coded H0x and will consist of oral presentations and poster presentations that have been accepted by the Symposia Conveners, and will each generate a Red Book. Workshops are coded Hw0x*		
Hw03	**Characterizing water quantity and quality: new approaches and future directions** Organiser: IAHS (ICWQ, ICGW, ICSW)	Kate Heal
Hw06	**Anthropogenic radionuclide contamination of water and sediment: short-term and long-term consequences** Organiser: IAHS (ICCE, ICWQ)	Valentin Golosov
Hw07	**Tracer hydrology as a tool for understanding and quantifying flow-paths and biodegradation processes in groundwater systems** Organiser: IAHS (ICT)	Piotr Maloszewski
Hw08	**Subsurface warming, heat energy and groundwater** Organiser: IAHS (ICGW)	Makoto Taniguchi
Hw10	**Adaptative water resources management – system design and operation** Organiser: IAHS (ICWRS, ICSH)	Barry Croke
Hw11	**Environmental information systems for hydrology and water resources** Organiser: IAHS (ICSW, ICWRS, ICRS)	Jean-François Boyer
Hw12	**The Third Pole Environment – Remote sensing and modelling of hydrometeorological processes in high elevation areas** Organiser: IAHS (ICRS) Co-sponsor: TPE, GEWEX	Bob Su
Hw13	**How can models help to solve water quality problems?** Organiser: IAHS (ICWQ, ICSW)	Valentina Krysanova
Hw14	**Regional modelling in hydrology using statistical tools** Organiser: IAHS (ICSH)	András Bárdossy
Hw15	**Testing simulation and forecasting models in non-stationary conditions** Organiser: IAHS (ICSH, ICSW)	Vazken Andréassian
Hw16	**Hydrology education and capacity building in developing countries** Organiser: IAHS (Education Working Group)	Thorsten Wagener

Codes: H = IAHS (Hydro), P = IAPSO (Physical oceanography), S = IASPEI (Seismology), and w = workshop

The following events are also programmed, but abstract submission for these is now closed:

HP1 Deltas: landforms, ecosystems and human activities
H01 Climate and land-surface changes in hydrology
H02 Cold and mountain region hydrological systems under climate change: towards improved projections
H04 Understanding freshwater quality problems in a changing world
H05 Interactions between sediment and aquatic ecology: an ecohydrological perspective
H09 Considering hydrological change in reservoir planning and management

Travel Grant Applications *Some funds will be available to assist participants with travel expenses. Applications for funds should be made via the Joint Assembly website before 4 February 2013.*

A New IAHS prize: The "StaHy Best Paper" Award

During the IAHS Bureau Meeting held in Delft in October 2012, a proposal from the International Commission on Statistical Hydrology (ICSH-IAHS) to establish a new IAHS prize named the "StaHy Best Paper Award" was approved.

The aim is to reinforce the ICSH initiative of collecting references related to specific Statistical Hydrology topics, indeed the only requirement of the award is to be the author of a paper included in the reference lists collected at the ICSH website (www.stahy.org).

The prize will be awarded every year at the ICSH annual topical workshop and the winner will be invited to attend and speak during the workshop (expenses paid).

The selection procedure is simple and does not require nomination of candidates for the prize. Each year, an announcement detailing the selection procedure and setting the deadline for paper evaluation will be made at the ICSH website. After the deadline, all papers present in the five ICSH topic reference lists and included in the evaluation period will be collected (the evaluation period will be three years starting from five years before the ICSH topical conference date). All collected papers will be ordered by citations reported in the Scopus database (excluding self citations of all authors) at the deadline. The first 20 papers will be evaluated by the ICSH officers, giving priority to the scientific content of paper, and the winner selected. The list of the 20 papers will be published at the ICSH website, with details of the winning paper.

This award is a pilot initiative and, if successful, other IAHS Commissions could decide to adopt a similar prize.

The first StaHy Best Paper Award will be given during the StaHy'13 workshop "Facets of Uncertainty" Kos Island, Greece, 17–19 October 2013 (http://kos2013.org/).

Key dates of the award procedure are as follows:

30 April 2013 Deadline for citation counting. On 30 April, details of papers published in 2009–2010–2011 and present in the ICSH lists will be extracted from the Scopus database and ordered by citations (excluding self citations).

31 May 2013 Deadline for evaluating the first 20 papers of the ordered list.

15 June 2013 Announcement of winner.

All information is available at:
http://www.stahy.org/ICSHAWARD/tabid/111/Default.aspx

Salvatore Grimaldi
President of ICSH Commission

5th EGU Leonardo Workshop – Hyrofractals'13 – Statistical Hydrology StaHy'13

Three different events: the EGU Leonardo Conference, held every year in Europe, the IAHS Statistical Hydrology (StaHy) Workshop, held every year in different places of the world, and the Hydrofractals Conference, held every 10 years, will coincide in space and time in 2013 in Kos, Kos Island, Greece, 17–19 October 2013. Each of these events has its own dynamics but all three have been set to focus on a common idea: the uncertainty in natural processes. It is hoped that the different views within the three components of the Kos convention will shed light on the many facets of uncertainty.

Uncertainty has often been regarded as an opponent of science, whose task is to eliminate it or reduce it as much as possible. However, it has also been argued that uncertainty is intrinsic in nature, impossible to eliminate, and also a quality with positive aspects. Understanding and quantifying uncertainty could make the understanding of Nature more feasible and its modelling more realistic. Therefore, the focus of the Kos convention is not to contribute to uncertainty elimination, but rather to show how deterministic modelling approaches can be combined with uncertainty estimation to improve the quality of models and predictions.

Details at the conference website: http://kos2013.org

The Thematic Consultation on Water in the post-2015 development agenda

The Thematic Consultation on Water (the water consultation) in the post-2015 development agenda is now open, waiting for your inputs on the www.worldwewant2015.org/water website. The water consultation, co-led by UN-Water, UNDESA and UNICEF, is part of the UN-system led "global dialogue" comprising 50–100 Country Consultations and 11 global Thematic Consultations. The water consultation wants to ensure that everyone can have their say. We need your ideas to foster a shared vision on key future challenges in water and a new global water goal in the post-2015 development agenda. We shall also discuss lessons learnt, challenges and opportunities related to the implementation of the present Millennium Development Goals on water and sanitation, and what remains to be done.

You can participate in the water consultation by engaging in the on-line web-based discussion (www.worldwewant2015.org/water). You can also engage through social media at Twitter @WaterPost2015 using the hashtag #waterpost2015 or visit our Facebook page WaterPost2015.

The water consultation is divided into two interactive phases: Phase I is the global water consultation, which focuses on broad challenges to trigger engagement and discussion. The global consultation will remain online and active for the whole duration of the consultation. Phase II focuses on thematic sub-consultations broadly in the areas of water, sanitation and hygiene (WASH), water resources, wastewater management and water quality. Phase II starts in mid-January2013 and runs to 3 March 2013. In March the outcome from the different discussions will be summarised into policy recommendations in a final report that will be transmitted to the High-level Panel on Post-2015 appointed by the UN Secretary General at the end of March.

Around the on-line web-based consultation you might find various other events organised. In different ways they can feed into the water consultation to stimulate the on-line discussions and engagement.

IAHS is an official partner of UNWater: www.unwater.org

Calendar of meetings Organized/Sponsored by IAHS

2013	Conference	Contact details
Algiers, Algeria 24–25 February	5th International Conference on Water Resources and Sustainable Development (CIREDD 2013)	Prof. Mohamed Meddi, Ecole Nationale Supérieure d'Hydraulique, Blida, Algérie mmeddi@yahoo.fr or m.meddi@ensh.dz
Gainesville, FL, USA 21–26 April	IAHS Groundwater Quality Conference (GQ13)	
Rennes, France 13–16 May	HydroEco2013, 4th International Multidisciplinary Conference on Hydrology and Ecology: Emerging Patterns, Breakthroughs and Challenges	Dr Gilles Pinay, Observatoire des Sciences de l'Université de Rennes Université de Rennes 1, Rennes, France, tel: +33 2 23 23 68 69; gilles.pinay@univ-rennes1.fr Mr Karel Kovar, PBL Netherlands Environmental Assessment Agency Bilthoven, The Netherlands, tel: +31 30 274 3360; karel.kovar@pbl.nl
Koblenz, Germany 3–7 June 2013	Water and Sediment – VI International Conference on Water and Environmental Research	Johannes Cullmann, IHP/HWRP Sekretariat, Bundesanstalt fuer Gewaesserkunde, Am Mainzer Tor 1, 56068 Koblenz, Germany tel: +49 261 1306 5313; cullmann@bafg.de
The Hague, The Netherlands 10–13 June	LuWQ2013, International Interdisciplinary Conference on Land Use and Water Quality: Reducing Effects of Agriculture	Dico Fraters, RIVM National Institute of Public Health and the Environment, Bilthoven, the Netherlands tel: +31 30 274 4039 ; dico.fraters@rivm.nl Karel Kovar, PBL Netherlands Environmental Assessment Agency, Bilthoven, The Netherlands tel: +31 30 274 3360 ; karel.kovar@pbl.nl
Wageningen, The Netherlands 1–3 July	IPC11 – 11th International Precipitation Conference	Contacts : Remko Uijlenhoet remko.uijlenhoet@wur.nl and/or Sabine Meijerink sabine.meijerink@wur.nl
Gothenburg, Sweden 22–26 July	Knowledge for the Future. Joint IAHS-IAPSO-IASPEI Scientific Assembly	Joint Assembly Secretariat, Congrex Sweden AB, IAHS/IAPSO/IASPEI 2013 PO Box 5078, SE-402 22 Göteborg, Sweden. tel: +46 31 708 60 00; fax: +46 31 708 60 25. iahs.iapso.iaspei2013@congrex.com
Perth, Western Australia 16–20 September	IAH 40th International Congress – Solving the Groundwater Challenges of the 21st Century	
Kos Island, Greece 17–19 October	Facets of Uncertainty 5th EGU Leonardo Conference • Hydrofractals'13 • Statistical Hydrology—StaHy'13	http:/kos2013.org
Kathmandu, Nepal 27–29 November	International Conference on Climate Change, Water and Disaster in Mountainous Areas	Mr Deepak Paudel, General Secretary, info@soham.org.np Mr Jagat K. Bhusal, Chairman, bhusaljagat@yahoo.com
2014		
Hanoi, Vietnam February/March	FRIEND Conference	
Washington DC, USA 7–9 April 2014	Weather Radar and Hydrology International Symposium	ASCE's Environmental and Water Resources Institute (ASCE-EWRI)
2015	:	
Prague, Czech Republic, June–July	XXVIth IUGG General Assembly, including the IAHS Assembly:	

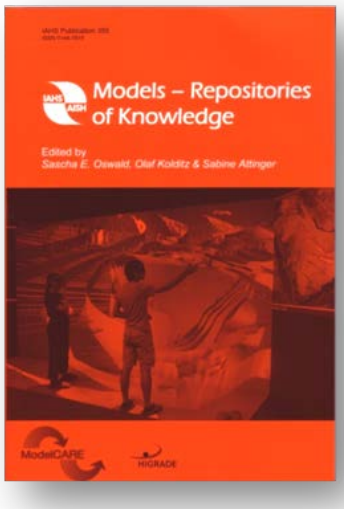
***Answers** to jokes on p.12: 1, A river, 2, Mrs Sippi*

International Association of Hydrological Sciences
Association Internationale des Sciences Hydrologiques

Models – Repositories of Knowledge

Edited by Sascha E. Oswald, Olaf Kolditz & Sabine Attinger

IAHS Publ. 355 (*2012*) ISBN 978-1-907161-34-6, 374 + x pp. Price £77.00
IAHS Members price: £57.75



Questions of global and climate change, use of energy resources and waste deposition, mean that work with groundwater now needs to include the interfaces to the atmosphere, surface waters and deeper formations that are potentially used for geothermal energy and CO_2 storage, and ModelCARE2011 reflected that. More than ever, models are means to integrate information from different and manifold sources, allowing a better conceptual view of systems as a whole and improving understanding of them, i.e. models are *repositories of knowledge*. This volume considers:

1 Parameter estimation
2 Uncertainty
3 Numerical and computational methods
4 Reactive transport and bioremediation
5 Stochastic and multi-scale models
6 Coupled processes in the subsurface
7 Groundwater flow and climate

ModelCARE

HIGRADE

Full details and abstracts available at: http://www.iahs.info/redbooks/355.htm

Buy online from IAHS Press, from jilly@iahs.demon.co.uk, or (in N America) from Amazon