

INTERNATIONAL COMMISSION ON WATER RESOURCE SYSTEMS (ICWRS)

Status Report September 2004 (updated March 2005)

Commission membership

Dan Rosbjerg	President
Hubert Savenije	President-elect
Miguel A. Mariño	Vice-President
Toshiharu Kojiri	Vice-President
Günter Blöschl	Vice-President
Andreas H. Schumann	Secretary

1. Activities 2003 - 2004

Since the last status report of June 2003 a meeting of the ICWRS Bureau took place at the 7th July 2003 in Sapporo during the General Assembly of IUGG 2003. The symposium "Water Resources Systems – Global Change, Risk Assessment and Water Management" (HS02), which was convened by the commission with support from ICASVR, ICSW and ICWQ in Sapporo, was a very successful scientific event. The theme addressed a wide range of problems and a large number of contributions were submitted. In total 80 papers were accepted for oral presentation, 106 abstracts were accepted for poster and short oral presentation and 105 abstracts for poster presentation only. The below listed headlines of the program describe the main contents of the symposium:

- Water resources assessment - case studies and methodologies
- Observations of hydrological change
- Coupled climate-land surface modelling approaches
- Water quality threats to water resources
- Flood risk - analysing trends and processes
- Modelling approaches
- Modelling flood runoff
- Integrating water resources management
- Reservoir management
- Water resources management policies
- Water resources management - methods and case studies
- Low flow risk

The large number of accepted papers resulted in two volumes of a Red Book for the symposium.

In 2004 the commission supported the "6th International Conference on Hydroinformatics" held 21st – 24th June 2004 in Singapore. At this conference new applications and developments in Artificial Neural Networks, Evolutionary Algorithms, Fuzzy Logic, Optimization, Decision Support and Management Systems, Uncertainty and Risk Analysis were presented. As members of the International Advisory Committee Dan Rosbjerg and Dragan Savic took part in the preparation of this scientific event. Dragan Savic from the University of Exeter, UK, represents IAHS also as a member in the joint committee on "Hydroinformatics" in cooperation with IAHR and IWA. His participation is dedicated to the publishing of the journal "Hydroinformatics".

The commission was asked by the IAHS Bureau to contact IAHR concerning an inquiry by IAHR about a possible sponsorship of IAHS to the new "Journal of River Basin Management". The scientific content of this journal (e.g. integrated water resources management, flood forecasting and flood risk management, drought forecasting and drought management, floodplain, river and estuarine restoration, climate change impact prediction and planning of remedial measures, management of mountain rivers, operation strategies for engineered river systems, sustainable and adaptive management) belongs to the main field of interests of ICWRS. This Journal is now published in its second volume (4 issues per

year). It is sponsored by IAHR and INBO (International Network of Basin Organizations). After contact with the editor-in-chief, Paul Bates it became clear that the editors are interested in IAHS nominations for senior scientists to act as representatives on both the editorial main board (perhaps 1-2), and the editorial advisory board (perhaps 4-6). October 2003 the editors sent a draft agreement to the secretary of ICWRS, which was transmitted to the Secretary General of IAHS in 2003. This agreement is based on an IAHS individual member subscription rate. There is a strong interest of IAHR to get a response on this draft in the future. In the correspondence with Paul Bates he offered also to modify the draft, if there are any suggestions from IAHS. The commission has recommended that IAHS responds positively to the request and has offered to nominate the representatives. Until now we did not receive any response. It would be helpful if the commission could be informed about the status of negotiations.

2. Activities 2004- 2005

In September 2004 the “Workshop on Modelling and Control for Participatory Planning and Managing Water Systems” co-sponsored by ICWRS was held in Venice. The workshop focused on the role played by modelling and control techniques as well as software engineering in designing Multi-Objective Decision Support Systems (MODSS) for planning and managing water resource systems with an integrated and participatory approach.

ICWRS was co-sponsoring the symposium “IWRM and the Millennium Development Goals: Managing Water for Peace and Prosperity” in Windhoek, Namibia 2-4 November 2004, organised by WaterNet/WARFSA/GWP. This symposium, the fifth in a series initiated by WaterNet, brought together more than 120 scientists, educators, policy makers and practitioners from Southern and Eastern Africa. The specific input of sponsoring by IAHS-ICWRS was the Session on IWRM to reduce poverty. The session focussed on the role that IWRM should play in meeting the ambitious Millennium Development Goals and Targets set out in Johannesburg (2000) to be met before the year 2015, addressing poverty reduction, food security, environmental sustainability, water supply and sanitation. In all these aspects water plays a key role. There is no food security without water, no environment without water and, obviously, no water supply and sanitation without water; and all these aspects are at the core of poverty reduction. Meeting these targets will require innovations in institutional arrangements, policy reform and substantial capacity building. IWRM is a key instrument to mobilize these developments. Experiences, case studies, theoretical frameworks and new ideas for contributions that IWRM can and should make to assist in meeting the millennium development goals were welcomed in this session.

On behalf of IAHS the commission took part in the preparations of the “International Conference on Integrated Assessment of Water Resources and Global Change: a North-South Analysis”, 23-25 February 2005 in Bonn. Dan Rosbjerg was representing IAHS and gave a presentation dedicated to PUB at the conference.

The main contribution of ICWRS to the “7th IAHS Scientific Assembly in Foz do Iguacu”, Brazil, 25-29 April 2005, consists of the symposium S2 with the topic “Sustainable Water Management Solutions for Large Cities”. In total 80 papers have been submitted. 27 papers were accepted. The accepted papers cover a wide range of topics. Some contributions are related to the impacts of urbanisation on the local and regional hydrology, while other papers are dedicated to the specific conditions of urban water management with regard to the socio-economic and ecological conditions. A main topic is also the flood risk in urban areas.

The other contribution of ICWRS to the IAHS Assembly is the workshop entitled “Hydrological basis of dam safety with respect to floods”. This workshop is dedicated to the problems of design floods for obtaining a required dam safety level at sites with limited data availability. Its main aim is making recommendations for hydrologists faced with the problem

of design flood estimation in data-poor regions. The workshop was also announced at the meeting of the European Club of ICOLD in Canterbury in June. Based on the incoming abstracts the workshop will consist of 9 presentations and 4 posters.

ICWRS will participate in the special session of "Innovative perspectives of integrated water resources management under the changing world conditions" in XXXI IAHR Congress, Seoul, 2005. The President-elect of ICWRS Hubert Savenije will give an invited presentation about the view of IAHS on this topic. Other invited speakers will present the approach of similar organizations (IWRA, IWA, IAHR).

From 7th - 10th September 2005 the 6th International Conference "Sharing a common vision for our water resources" of the European Water Resources Association will take place in Menton, France. ICWRS will sponsor this scientific event on behalf of IAHS. It is planned to organize a joint session of EWRA, UNESCO (HELP) and ICWRS, which will be targeted towards water resources systems with particular reference to the implication of R&D coordinated programs and stakeholders involvement. Especially the link to HELP seems to be very attractive. It would be very interesting to find a link between European HELP basins with their integrated approach in relationship to the European Water Framework Directive and the very different problems of demand-driven water management in developing countries. This symposium could act as a link between the different approaches in developed and developing countries caused by different socio-economic developments and climatic conditions.

The discussion about the contribution of ICWRS to the XXIV IUGG Assembly in Perugia in 2007 is still ongoing. Due to the fact that the general theme of IUGG is "Earth: the ever-changing planet", and also that the Bureau of IAHS will propose the sub-theme dedicated to changes "Freshwater: ever changing and a cause for change", the commission is considering a symposium on "Changes in water resources systems - methodologies to maintain their multiple functions". The changes may relate to changing climatic conditions or impacts by human activities. A key challenge is the integration of forecasts of quantity and quality of the freshwater resource over a wide range of time scales considering the uncertainty of these perspectives. The symposium will particularly evaluate different methodologies to maintain the multiple functions of water resources systems under change. An important aspect is how the different system components can adapt to new conditions. Since water resources systems are complex, a successful approach to dealing with change can only be a multi-disciplinary one. Hence in considering methodologies, social, economic, environmental as well as technical dimensions of the measures should be taken into account. In view of the large uncertainty in both future water resources availability and our potential to deal with the problems, we should focus on flexibility and robustness of approaches and solutions. The symposium should especially support exchange of methodologies between developed and developing countries, which are faced with different pressures caused by different socio-economic developments and different vulnerabilities to change, both in terms of natural conditions and human impacts.

The other planned contribution of IAHS consists in the Workshop - New avenues for contemporary water resources management. The workshop will address the role of new tools for the effective management of water resources. A wide spectrum of techniques from object oriented dynamic simulation to spatial optimization under uncertainty will be discussed and application case studies presented. Presentations will focus on the utility of (a) system dynamics simulation tools, (b) evolutionary optimization tools, (c) integration of fuzzy analyses with simulation and optimization tools, and (d) spatial extension of simulation and optimization tools.

For 2006 the third symposium in the ICWRS-series of symposia on "Integrated Water Resources Management" is being planned. It will probably take place in Germany and will be dedicated to assessments of vulnerabilities and their reduction for water resources systems.

In this context it should be mentioned that it has not yet been possible to get a red book printed with contributions from the second symposium held in January 2003 in Stellenbosch, South Africa. The commission is currently working on the problem and hope soon to success in finding a solution to the problem.

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