

# **International Commission on Water Quality (ICWQ)**

## **Report on activities in the period July 2013 – March 2014**

### Introduction

The International Commission on Water Quality (ICWQ) is responsible for promoting the advancement of the water quality of hydrological systems, including research and management issues. This goal is accomplished informally through communications among interested members/participants, and through organized technology transfer activities such as workshops on topical issues and symposia at which scientists present their results in oral and poster sessions and in accompanying publication of the proceedings.

The report presents a summary of activities that have been undertaken by ICWQ and its officers from July 2013 to March 2014.

### ICWQ officers update

Berit Arheimer stood down from the post of ICWQ President in June 2014, but is still active in ICWQ and IAHS activities. Kate Heal agreed to move from a Vice President role to President until the 2015 IUGG Assembly. Matt Hipsev (University of Western Australia) became a Vice President of ICWQ. The other ICWQ roles remain unchanged as: Vice Presidents Lakshmanan Elango and Per Stålnacke, Secretary Wouter Buytaert, and Past President Valentina Krysanova.

### ICWQ activity at the IAHS–IAPSO–IASPEI Joint Assembly “Knowledge for the future, Gothenburg, Sweden, 22-26 July 2013

In the Assembly ICWQ convened/co-convened the following symposia and workshops:

- H04: Understanding fresh-water quality problems in a changing world
- HW03: Characterizing water quantity and quality: new approaches and future directions
- HW13: How can models help to solve water quality problems?
- HW06 Anthropogenic radionuclide contamination of water and sediment: short-term and long-term consequences
- HP2: Land-ocean interaction – Hydrodynamics and biogeochemistry
- IAHS Early Career Hydrological Scientist meeting

Reports of symposia and workshops have been disseminated through IAHS Newsletter 106. The papers presented at Symposium H04 were pre-published as an IAHS Red Book entitled “Understanding Freshwater Quality Problems in a Changing World” (Publication 361, ISBN 0144-7815) edited by Berit Arheimer, Adrian Collins, Valentina Krysanova, Elango Lakshmanan, Michel Meybeck and Mike Stone.

During the Assembly ICWQ also held its Commission meeting. Topics discussed at the meeting were ICWQ inputs to the Scientific Programme for the IUGG Assembly in 2015 and participation in water-quality research programmes developed under

Panta Rhei. There was particular enthusiasm for building up test-bed datasets for hydrology and water quality at different scales and using these as the basis for a model inter-comparison workshop for water quality. It was suggested that the ICWQ webpages could be developed to include a repository for water quality datasets. There was also interest in conducting a comparative water quality assessment of catchments (similar to what has been done in PUB for runoff) – i.e. meta-data analysis of catchment studies to assess effect of climate, geology, topography, catchment size, land use characteristics on water quality parameters.

### **ICWQ proposals for the IUGG Assembly 2015 in Prague**

ICWQ has proposed the following symposia/workshops and is happy to work with other Commissions in developing them.

1. Symposium: New theories and examples of water quality dynamics at the catchment-system scale  
Convenors: Matthew Hipsey, Kate Heal (ICWQ)
2. Workshop: Source-to-sea continuum for water quality  
Convenors: Elango Lakshmanan, Kate Heal, (ICWQ)  
Other Commissions: ICCE? ICSW? Also IAPSO?
3. Workshop: Advancing water quality prediction and uncertainty assessment  
Convenor: Michael Rode, Valentina Krysanova (ICWQ)  
Other Commissions: ICSW? ICGW?
4. Workshop: Using environmental observatories in catchment studies and management  
Convenor: Wouter Buytaert, Elango Lakshmanan (ICWQ)  
Other Commissions: ICCE? ICSW? ICGW?
5. Workshop: Model inter-comparison for climate impact assessments  
Convenor: Valentina Krysanova, Berit Arheimer (ICWQ)  
Other Commissions: ICCLAS agreed. ICSIH? ICSW?

A document providing more details of the proposed content of these symposia/workshops has been submitted to the IAHS Secretary and can also be obtained from Kate Heal (k.heal@ed.ac.uk).

### ICWQ Membership update

At the ICWQ plenary meeting in Melbourne in 2011 it was agreed to establish a “membership” of ICWQ so that interested scientists would become members of the Commission to be able to support the ICWQ activities. There are now 79 Commission Members from 28 countries, representing all continents. Some of them have already contributed to the organisation of symposia and workshops at the Joint IAHS-IAPSO-IASEI Assembly in Gothenburg in July 2013 and participated in the ICWQ meeting during the Assembly.

## Organisation of other water quality-related conferences and workshops

ICWQ post-holders were involved in the organisation of the following water quality related Conferences and Workshops:

- *Eighth International Symposium on Managed Aquifer Recharge (ISMAR)*, Beijing, China, 15-19 October 2013 (E. Lakshmanan as a Session Chair).
- *Workshop on hydrogeological and aquifer characterization testing*, Anna University, Chennai, 18-21 November 2013 (E. Lakshmanan as a coordinator).
- *National Groundwater Conference and Tamil Nadu Water Week*, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India, 8-10 December 2013 (E. Lakshmanan as a Session Chair).
- *International symposium on Integrated Water Resources Management , CWRDM*, Kozhikode, India, 19-21 February 2014 (E. Lakshmanan as a Session Chair).
- *Workshop on reservoir modelling with focus on cyanobacteria dynamics*, Cordoba, Argentina, 11-12 November 2013 (M. Hipsey as workshop organiser).

## Involvement in water quality-related projects and working groups

The ICWQ members are involved in a number of national and international projects and working groups.

**Kate Heal:** Member of the Steering Committee of the "Mainstreaming Innovation" project which includes sustainable urban drainage infrastructure for improving water quality.

**Matt Hipsey:** Chief Investigator on several Australian projects, one entitled "Resilience of biogeochemical pathways along a catchment-ocean gradient" that focuses on water quality in the Murray-Darling Basin and is funded by the Australian Research Council Discovery Project scheme. He is also co-investigator on a project funded by the Australian Research Council entitled "Unravelling the cycling of nitrogen along a subtropical freshwater-marine continuum using a multi-isotope, multi-tracer and modelling approach". In addition Matt is participating in a NSF funded project "New knowledge from the Global Lake Ecological Observatory Network" through which he has commissioned two new open-source models - the General Lake Model (GLM) and the Aquatic Ecodynamics Modelling Library (AED). Matt is also part of a new collaborative "Multi-Lake Comparison Project" involving modelling 30 lakes from around the globe and comparing model performance of prediction of water quality variables using a common modelling methodology. This new model platform has been the subject of a US "Water Research Foundation" project on predicting cyanobacteria dynamics in a changing climate.

**Elango Lakshmanan** is a Principal Investigator in four ongoing projects: (1) "Hydrogeochemistry of surface water and groundwater along Cauvery River" funded by the Indian Space Research Organisation; (2) "Hydrogeological studies of the proposed uranium mining site, Gogi region, Karnataka, India" funded by BRNS, Dept.

of Atomic Energy, Govt. of India; (3) “Mitigation strategies to counteract seawater intrusion” funded under the Indo-German (DST-DAAD) Collaborative Initiative and; (4) SAPH PANI – “Enhancement of natural water systems and treatment methods for safe and sustainable water supply in India” funded by the European Commission.

**Per Stålnacke:** Co-coordinator of “Integrated water resources and coastal zone management in European lagoons in the context of climate change” (LAGOONS) funded by the EC. Co-Project leader “Norwegian river monitoring programme (RID)”.

**Wouter Buytaert:** Co-leads the project “Hydrometeorological feedbacks and changes in water storage and fluxes in Northern India”, funded by the UK NERC & Indian Ministry of Earth Sciences. He is PI for the project “Adaptive governance of mountain ecosystem services for poverty alleviation enabled by environmental virtual observatories” (MOUNTAIN-EVO) funded by UK NERC/ESRC/DFID.

#### Other relevant activities

- Hydrological Sciences Journal, Associate Editor (KH\*)
- Scottish Alliance for Geoscience, Environment and Society, Co-convenor Theme 2 on Terrestrial Carbon (KH)
- Regional Environmental Change, Associate (VK)
- Member of the German National Committee of IAHS (VK)
- Cluster leader in the Swedish national research programme Climate change and Environmental Objectives (BA)
- Member of the scientific jury for the Swedish Junior Water Prize, linked to Stockholm World Water Week (BA)
- Member of the steering board of the Water Management Program at SMHI (BA)
- Member of the Swedish expert group for UNESCO scientific programmes IHP (BA)
- Journal of Environmental Science and Technology, Associate Editor (EL)
- International Journal of Water Resources and Environmental Management, Associate Editor (EL)
- Journal of Earth Resources, Editor-in-Chief (EL)
- Member of the Geoscience Advisory Council (Subsurface Hydrology), Ministry of Mines, Government of India (EL)
- Hydrology and Earth System Sciences, Editor (WB, MH)
- Computers & Geosciences, Associate Editor (MH)
- Environmental Modelling and Software, Guest Editor of special issue on “Novel approaches to aquatic ecosystem modelling” (MH)
- Member of Panta Rhei working group “ Changing Biogeochemistry of Aquatic Systems in the Anthropocene” (MH)
- Guest-Editor of special issue in Agriculture, Ecosystems & Environment (PS)

*\*Abbreviations: KH – Kate Heal, VK – Valentina Krysanova, BA – Berit Arheimer, EL – Elango Lakshmanan, WB – Wouter Buytaert, MH – Matt Hipsey, PS – Per Stålnacke*