International Commission on Water Quality (ICWQ)

Report on activities in the period April 2015 – May 2015

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 April 2014 to May 2015.

ICWQ contribution to the 26th IUGG General Assembly 2015

ICWQ has collaborated with other Commissions in IAHS and IUGG in mounting the following symposia and workshops at the 26th IUGG General Assembly 2016.

1. HW02 Hydrological Model Intercomparison for Climate Impact Assessments
   Convenors: Valentina Krysanova, Berit Arheimer (ICWQ)
   Co-convenors: Eva Boegh (ICCLAS), Alexander Gelfan (ICSIH), Ingjerd Haddeland (ICSW), Neil Holbrook (ICLL/IAMAS), Jianping Li (ICLL/IAMAS), Stewart Franks (ICCLAS), Wang Guo Qing (ICSW)

2. HW10 The Role of Sediment as an Indicator of Hydrological and Societal Change
   Convenors: M. Stone, A. Collins, P. Porto, V. Golosov (ICCE), P. Stålnacke (ICWQ)

3. HW12 Using Environmental Observatories in Catchment Studies and Management
   Convenors: Wouter Buytaert, Elango Lakshmanan (ICWQ), David Hannah (ICSW)

4. HW14 Advancing Water Quality Prediction at the Catchment Scale: New Theories and Approaches
   Convenors: Matthew Hippsey, Michael Rode, Kate Heal, Valentina Krysanova (ICWQ); Gil Mahe (ICSW)

5. JM3 Geochemical Process and Cycles
   Convenors: IAMAS, IAPSO, IAVCEI, IACS, Kate Heal (ICWQ)

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 80 Commission Members from 29 countries, representing all continents. Some of them have contributed to the organisation of symposia and workshops at the 26th IUGG General Assembly 2015.

The list of members of ICWQ is available at the updated ICWQ webpages http://paramo.cc.ic.ac.uk/iahs/index.html

ICWQ is convening a meeting during the 26th IUGG General Assembly in Prague in the lunch break on Thursday 25 June to plan future activities (**please meet at the IAHS Press stand at 12.15 pm**). All researchers into water quality are invited to participate.

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:

- *Workshop on Groundwater Laws, Policies & Management in Chennai: Potential for improvement*, 12 August 2014 (E. Lakshmanan as workshop organiser).
- *Nineteenth National Symposium on Environment*, Kottayam, India, 11-13 December 2014 (E. Lakshmanan as a Session Chair).
- *National Video Conference on Fluoride Toxicity in Water and Management of Fluorosis in India*, 20 February 2015 (E. Lakshmanan as an Invited Speaker).
- *Between the River and the Sea* International Conference, 16-18 September 2014 (P. Stålnacke as Chair).
- *Workshop on Modelling Lake Dynamics*, Orford, Canada, 28 October 2014 (M. Hipsey as workshop organiser).
- *Water@Edinburgh*, Edinburgh, 15 June 2015 (K. Heal 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: Higher Education Champion for the Centre for Expertise for Waters in Scotland. Member of the Scottish Universities Green Infrastructure Group. Projects completed on: (1) impact of windfarm development on peatlands for aquatic carbon and nutrient fluxes; (2) carbon production and transport in peatland riparian zones; (3) the role of aquatic systems in carbon and nitrogen transformations from source to sea.

Matt Hipsey: Chief Investigator on several Australian-funded projects, one entitled "Resilience of biogeochemical pathways along a catchment-ocean gradient" that focuses on water quality in the lower Murray-Darling Basin and is funded by the Australian Research Council Discovery Project scheme. Matt has developed two open-source model packages relevant to water quality prediction in aquatic landscapes including the General Lake Model (GLM) and the Aquatic Ecodynamics (AED2) biogeochemical model library for water quality prediction. These are now being used extensively by researchers in USA, Canada, Europe, Australia and New Zealand. The models are being used as part of a multi-lake comparison project, comparing over 30 systems across the globe. Extensions to the models connect riparian biogeochemistry with aquatic system water quality dynamics.

Elango Lakshmanan: Principal Investigator in four ongoing projects: (1) "Hydrogeochemistry of surface water and groundwater along Cauvery River" funded by the National Carbon Project of 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 leads the project "Adaptive governance of mountain ecosystem services for poverty alleviation enabled by environmental virtual observatories" (MOUNTAIN-EVO) funded by UK NERC/ESRC/DFID and co-leads the NERC-funded project "Probability, Uncertainty, and Risk in the Environment (RACER consortium).

<u>Other relevant activities</u>

- 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)
- 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)
- EGU Hydrology Division, Subdivision chair (WB)

- Hydrology and Earth System Sciences, Editor (WB, MH)
- Computers and Geosciences, Associate Editor (WB, MH)
- Environmental Modelling and Software, Guest Editor of special issue on “Novel approaches to aquatic ecosystem modelling”, published 2014 (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)
- National Representative of the Norwegian National Committee of IAHS (PS)

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