

International Commission on Water Quality (ICWQ)

Report on activities in the period June 2016 – June 2017

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 organised 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 June 2016 to June 2017.

ICWQ Officers

The current ICWQ officers are shown below. The changeover in President from Kate Heal to Wouter Buytaert will take place during the IAHS Scientific Assembly in Port Elizabeth in July 2017.

President	Kate Heal	UK
President-Elect	Wouter Buytaert	UK
Vice President	Xiaohong Chen	China
Vice President	Matt Hipsey	Australia
Vice President	A.B. Gupta	India
Secretary	Per Stålnacke	Norway

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.

The list of members of ICWQ is available on the ICWQ webpages

<http://paramo.cc.ic.ac.uk/iahs>

ICWQ contribution to the IAHS Scientific Assembly, Port Elizabeth, July 2017

In collaboration with other IAHS Commissions, ICWQ is contributing to convening the following symposia and workshops at the IAHS Scientific Assembly in Port Elizabeth in July 2017.

1. S2 Water quality and sediment transport issues in surface water
ICWQ Co-Convenors: Kate Heal, A.B. Gupta

ICWQ Co-Convenors are contributing as Guest Editors to the PIAHS volume which will be post-published from this Symposium.

2. W4 Long-term evolution in catchment water quality

ICWQ Convenor: Per Stålnacke; ICWQ Co-Convenors: Xiaohong Chen

During the Assembly, ICWQ will convene a meeting of all officers and members to plan future activities.

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:

- International meeting of the UNESCO-GWADI programme, Beijing, China, 25 – 26 October, 2017 (Wouter Buytaert as a Keynote Speaker).
- 2016 International Low Impact Development Conference, 26-29 June, 2016, Beijing, China (Xiaohong Chen as a Session Convenor).
- Asia Oceania Geosciences Society (AOGS) 13th Annual Meeting, 31 July – 6 August 2016, Beijing, China (Xiaohong Chen as an Invited Speaker).
- “The Hydro Asia 2016”, 16-19 August, 2016, Daejeon, Korea (Xiaohong Chen as the Chinese team leader).
- 2nd Congress of China Geodesy and Geophysics, 23-25 September, 2016, Nanjing, China (Xiaohong Chen as an Invited Speaker).
- 3rd Pan Pearl River Delta Water Security Forum, 21 October, 2016, Macau, China (Xiaohong Chen as the Co-organiser and Keynote Speaker).
- Association for the Sciences of Limnology and Oceanography (ASLO), Mountains to the Sea Aquatic Sciences meeting, Hawaii, March 2017 (Matt Hipsey as a steering committee member).

Involvement in water quality-related projects and working groups

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

Kate Heal (President): Contribution to the United Nations World Water Development Report 2017, “Wastewater the Untapped Resource”, Chapter 4. Established University of Edinburgh Water research network. Projects completed on: (1) the recovery and re-use of phosphorus from wastewater effluent for sustainable fertiliser development; (2) the role of light in aquatic carbon processing in peatlands. Co-investigator on new projects: (1) “Our Phosphorus Future” International Opportunities project funded by the UK Natural Environment Research Council (NERC); (2) “Potential for SUDS retrofitting in industrial estates” funded by the Scotland Centre of Expertise for Waters.

Wouter Buytaert (President-Elect): Investigator of various research projects funded by NERC, including new project “Coupled Human And Natural Systems

Environment (CHANSE) for water management under uncertainty in the Indo-Gangetic Plain”, “Catchment Risk Assessments using Multi-Scale Data” and “Citizen science for landslide risk reduction and disaster resilience building in mountain regions”.

Xiaohong Chen (Vice President): This year in charge of 20 projects with funds over US\$3 million. Typical projects completed include: (1) Networking and Total Use Constrained Water Resources Allocation Newsboy Model and Methodologies for Changing Environment, funded by the National Natural Science Foundation of China (NSFC); (2) Calibration of Water Quality Parameters in the Beijiang River, Project for Creative Research from Guangdong Water Resources Department; (3) Comprehensive planning of water resources protection for Guangdong Province, China, funded by Water Resources Department of Guangdong Province, China. Typical ongoing projects include: (1) Multiobjective Regulation of Water Resources in the Pearl River Basin, National Key Research Project of China, US\$2.1 million; (2) Response and regulation of water resources to salt water intrusion under sea level rise in the Pearl River Delta of China, funded by NSFC; (3) Adaptive coordinating regulation for the water resources system with game and mutual feeds among runoff-supply-hydropower water use- ecoenvironment water demand in the Lancangjiang Basin under the Environment Changing Key program of NSFC.

Matt Hipsey (Vice President): Continues to lead the modelling working group in the Global Lake Ecological Observatory Network. Developed two new Australian Research Council projects entitled “Balancing estuarine and societal health” linking hydrology, biogeochemistry and social science, and “Unravelling drivers of greenhouse gas emissions from estuaries”. Completed an Australian Research Council project entitled “Resilience of biogeochemical pathways along a catchment-ocean gradient”, and also involved in a CRC for Water Sensitive Cities project on “Multi-functional urban water systems” aimed at developing infrastructure for improving urban water quality. These projects have led to the development of a new open-source water quality modelling software library termed the “Aquatic Ecodynamics Library (AED)” that is now maturing and available for wetlands, lakes, rivers and estuaries to support management and science.

A.B. Gupta (Vice President): Completed research projects: Development of Pulsator as a replacement of clariflocculator for drinking water treatment. The results showed high benefits of reducing Al from treated water stream, whether alum or poly aluminum chloride was used. Ongoing projects: (1) Further development of a low cost field kit Colipat, which is highly sensitive for detection of coliforms (presence-absence) at low levels of contamination (2-3 coliforms per 100 mL), to reduce the time for sensing to 6-8 hours, without extra cost; (2) Field applications of Defluoridation of Drinking water using Combination of Magnesium and Calcium amended activated alumina funded by DST, Rajasthan India; (3) Utilisation of Marble Slurry powder for Production of Hydroxyapatite (HAP) suitable for defluoridation of drinking water sponsored by RPCB(2015); (4) “Optimization of the Disinfection Process for Secondary Treated Sewage by Hybrid Disinfection”, funded by the DST, Government of India, to develop a new hybrid disinfection strategy for secondary treated sewage to meet the total coliform norms for reuse in irrigation.

Per Stålnacke (Secretary): Coordinator of a Nordic Centre of Excellence entitled ‘An Integrating Nexus of Land and Water Management for a Sustainable Nordic Bioeconomy’ with focus on water quality impacts due to the future bioeconomy development in the Nordic countries.

Other relevant activities

- UK National Representative for IAHS (KH)
- Hydrological Sciences Journal, Associate Editor 2011-2017 (KH)
- Scottish Alliance for Geoscience, Environment and Society, Co-Convenor Theme 2 on Terrestrial Carbon (KH)
- Jingshan Scholar Professorship at Fujian Agriculture and Forestry University, China, 2016-2018 (KH)
- Hydrology and Earth System Sciences, Editor (WB, MH)
- Computers and Geosciences, Associate Editor (WB, MH)
- Environmental Modelling and Software, Editorial Board (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)
- Vice-President, Chinese National Committee for IAHS (CXH)
- Director, Chinese Society for Sustainable Development (CXH)
- Vice Director, Environmental Geoscience Division of Chinese Society for Environmental Sciences (CXH)
- Acta Scientiarum Naturalium Universitatis Sunyatseni (Editorial Board, CXH)
- Chinese Journal of Water Resources Protection (Editorial Board, CXH)

**Abbreviations: KH – Kate Heal, WB – Wouter Buytaert, MH – Matt Hipsey, PS – Per Stålnacke, CXH – Xiaohong Chen, ABG – A.B. Gupta*