

International Association of Hydrogeologists
COMMISSION ON GROUNDWATER & CLIMATE CHANGE
ANNUAL REPORT 2015

Chairs

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IAH-CGCC website: <http://www.gwclim.org>

1. IAH-CGCC Aims (2012-2015) – renewed in 2015

The mission of the IAH Commission on Groundwater and Climate Change (IAH-CGCC) is: **to improve understanding of (1) the relationship between groundwater and climate change, and (2) the role of groundwater in adaptation to climate variability and change.**

The IAH-CGCC will seek to fulfil its mission by:

1. promoting related research and development to advance scientific and technical knowledge;
2. fostering inter-disciplinary, international collaborations with research institutions, water resource managers, and water policy makers;
3. fostering linkages with related research and development activities in climate, hydrological, agricultural and health sciences;
4. engaging with key international organisations, agencies and programmes (*e.g.* UNESCO-IHP, WMO, FAO, UNICEF, WHO, IAEA-WRP, GEWEX, GWSP)
5. working with the International Groundwater Resources Assessment Centre (IGRAC) to promote the development of a programme and facility for the collection, evaluation, archiving and sharing of groundwater data including both ground-based observations and satellite measurements;
6. identifying and evaluating a series of representative case studies illustrating the relationship between groundwater and climate change and the role of groundwater in adaptation to climate variability and change;
7. disseminating research and development outcomes to the global research community including specifically the IPCC, and global development community including governmental and non-governmental organisations and those specifically concerned with enabling adaptation to climate change; and
8. creating awareness of the IAH-CGCC among IAH members, related professions and wider water resources and water supply communities.

2. Progress on IAH-CGCC objectives during 2015 through:

2.1 Educational Initiatives

The IAH-CGCC conducted training workshops in Benin and Estonia to improve understanding and the technical capacity to engage in research and monitoring of the relationship between groundwater and both contemporary climate change and long-term environmental change under the G@GPS initiative.

2015, 9-11 February **Observing groundwater storage changes in Benin & Burkina Faso**
(Cotonou, Benin)
- Workshop at the University of Abomey-Calavi under UK-funded UPGro *Groundwater Atlas* project (led by IAH-CGCC Co-Chair) involving scientists and students from Benin and Burkina Faso Priority that focused on the analysis of observational records of long-term groundwater-level time series. This activity contributes to the goals of *The Chronicles Consortium* (<http://www.un-igrac.org/special-project/chronicles-consortium>), an initiative of the IAH-CGCC established at the IAH Congress in Marrakesh in 2014.

2015, 5-9 July **4th Annual meeting of G@GPS-Palaeogroundwater from past and present glacial areas** (Tallinn, Estonia)
- Under the G@GPS (<http://www.gw-gps.com/>) initiative, a workshop and training course was conducted and led by Rein Vaikmae, Dioni Cendon and IAH-CGCC Co-Chair Jianyao Chen involving 30 research scientists around the world.

2.2 Contributions to special sessions at international conferences

2015, 13-18 Sept **42nd IAH Congress Meeting** (Rome, Italy)
Groundwater & Climate Change (3.2)
- The IAH-CGCC convened and contributed papers to this session. including an invited presentation to a special session on the relationship between satellite and ground-based observations of

2.3 Knowledge Exchange

- The IAH-CGCC has contributed to two outreach publications seeking to create awareness and policy-relevant implications of groundwater and global change led by UNESCO-IHP GRAPHIC and the IAH:

i) UNESCO-IHP GRAPHIC: *Groundwater & Climate Change: mitigating the global groundwater crisis and adapting to climate change* (p. 14)

ii) IAH Strategic Overview Series: *Global Change and Groundwater* (p. 6)

- The IAH-CGCC by way of *The Chronicles Consortium* is also leading a special issue/grouping of papers for publication in *Hydrogeology Journal* under the heading/focus, *Observed Storage Changes in African Aquifers and their Implications for Sustainable Water Resources Management* (<http://www.un-igrac.org/news/call-papers-special-issue-hydrogeology-journal>)

2.4 Engagement with international programmes and scientific agenda:

(i) Inter-governmental Panel on Climate Change (IPCC)

- Chapter 3 (Freshwater Resources) of WGII of the 5th Assessment Report (AR5) repeatedly cited the review paper led by the IAH-CGCC and published in *Nature Climate Change*; this manuscript has now been cited more 130 times

- IAH-CGCC Co-Chair Richard Taylor delivered an invited presentation to a special session, *Climate Change & Freshwater*, at the COP21 Science Meeting, *Our Common Future Under Climate Change*, in Paris on 7th July 2015.

(ii) Institut Recherche pour le Développement (IRD), France

- Through IAH-CGCC initiated *The Chronicles Consortium*, the IAH-CGCC is also working with the PICASS'EAU project funded by the French government (IRD). This collaboration involves exchanges of groundwater scientists between West and East Africa assessing the sustainability of groundwater use through the collation and analysis of observational records.

(iii) INQUA

- IAH-CGCC Co-chair Jianyao Chen serves also as INQUA IFG Palaeogroundwater leader, which enables the close communication between INQUA and the IAH.

(iv) UNESCO-IHP GRAPHIC Programme

- The IAH-CGCC continues to work closely with the GRAPHIC programme including the development of conference sessions and workshops (e.g. IAH Montpellier), responses to international agenda (COP21), and preparation of

(v) GEWEX Project

- The IAH-CGCC is currently leading a large network of researchers in an inter-comparison of modelled and *in-situ* observations of groundwater recharge in Africa under *The Chronicles Consortium* forming a new contribution to the Global Energy and Water cycle Exchanges (GEWEX) project.

3. Future Plans and Meetings

2016, 26 Sept IAH 43rd Congress (Montpellier)

The IAH-CGCC is co-chairing a special session (5.01), *Groundwater resources in a world facing climate change*. It is also holding a meeting of the IAH-CGCC and running a workshop, led by UNESCO-IHP GRAPHIC and IGRAC, on groundwater

and climate change. The IAH-CGCC has also contributed to the congress as members of the International Scientific Committee.

2016, 29 Sept **GEWEX: Including Water Management in Large Scale Models (Gif-sur-Yvette)**
Convened by the Global Land/Atmosphere System Study Panel (GLASS) and the GEWEX Hydroclimatology Panel (GHP), the IAH-CGCC through work conducted under *The Chronicles Consortium* will deliver a keynote presentation, *Large-scale modelling of groundwater resources: Insight from a comparison of model data and in-situ observations*.

2016, 12-16 **AGU Fall meeting (San Francisco)**
G@GPS group is chairing a session (H045, Session ID 3161), *From paleoclimate to the 2015-2016 El Niño: Natural climate variability signals in global groundwater resource*. The 6th annual G@GPS meeting will also be held at the AGU Fall meeting.

Richard Taylor, Bridget Scanlon & Jianyao Chen
IAH-CGCC Co-Chairs