

Annual Meeting of the GEWEX Hydroclimatology Panel (GHP)

3–5 October 2016
Gif-sur-Yvette, France

Jason Evans¹, Jan Polcher² and Joan Cuxart³

¹Climate Change Research Centre, School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, Australia; ²Laboratoire de Météorologie Dynamique du CNRS/IPSL, Paris, France; ³Departament de Física, Universitat de les illes Balears, Mallorca, Spain

The GEWEX Hydroclimatology Panel (GHP) meeting was hosted by Jan Polcher at the Centre National de la Recherche Scientifique (CNRS) campus, part of the Université Paris-Saclay. The goal of the 3-day meeting was to evaluate ongoing and planned GHP activities to ensure that they contribute effectively to the leading role that GEWEX plays in the regional hydrological sciences and related modeling activities. The meeting was co-located with the Global Land/Atmosphere System Study (GLASS) Panel meeting and had the additional aim of exploring collaborations between GHP and GLASS. Updates were provided for each element of the two main components of GHP—the Regional Hydroclimate Projects (RHPs) and the research topic-based Crosscutting Projects.

Regional Hydroclimate Projects (RHPs)

The presentations by the project managers of the RHPs provided updates on their recent accomplishments and future plans as well as highlighting the contributions that each RHP is making to the GEWEX Science Questions (GSQs).

The Hydrological Cycle in the Mediterranean Experiment (HyMeX) passed its mid-term review and has established a new focus on scale continuum in object-oriented studies, as well as more integrated transdisciplinary approaches. Key issues with societal impact include heavy precipitation, flash flooding and droughts. If the next phase of HyMeX achieves as much as the first, it will certainly have transformed our knowledge of water and climate issues in the Mediterranean Basin. The Changing Cold Regions Network (CCRN) RHP has been progressing well with many research achievements in the last year. Of particular note is the awarding of the “Global Water Futures” Project, by far the largest of its kind ever in Canada, which will allow significant continuation and expansion of the work currently underway within the RHP.

The Hydrology of Lake Victoria Basin (HyVic) and the Australian Energy and Water Exchanges (OzEWEX) are the two RHPs in the Initiating Phase. HyVic is underway as the first major funded project of HyCRISTAL (Integrating Hydro-Climate Science into Policy Decisions for Climate-Resilient Infrastructure and Livelihoods in East Africa), led by John Marsham, starting this past year. Future progress will be accelerated by a now-established coordination mechanism and hopefully the success of further grant proposals. OzEWEX has

other regions no data are being collected, or data are not being shared with the scientific community. The call to promote (e.g., through WMO) the sharing of data and the establishment of new in situ networks in poorly covered regions, such as Africa and South America, was made. It was also noted that the International Soil Moisture Network (ISMN; <https://ismn.geo.tuwien.ac.at/>) is widely used by the soil moisture community. It was hence recommended to continue this activity, but the question of where long-term funding could come from remains open (currently, ISMN activities are funded by ESA as a contribution to CEOS).

Future of Satellite-Based Observing Systems

Beginning in the 1980s, soil moisture estimates were derived from satellite observing systems not designed for this purpose. Nevertheless, the U.S. Defense Meteorological Satellite Program (DMSP) Special Sensor Microwave Imager/Sounder (SSMIS), MetOp/ASCAT and Aqua/AMSR have been used successfully to derive global data sets. More recently, these efforts were enhanced by the SMOS and SMAP satellite missions, which were specifically designed to provide measurements of soil moisture. While continuity is likely for active and higher frequency passive microwave measurements, thus far nothing is planned for the continuity of passive microwave L-Band measurements, which are expected to operate until at least 2020. It should be noted that the support for continuity of instruments like Sentinel-1, ASCAT and AMSR is not driven by the soil moisture community or hydrological applications, but by the oceanographic community and applications over the ocean.

The results presented at the workshop clearly indicated that the measurements and soil moisture products originating from the various satellite missions are highly complementary in their spatial and temporal coverage, resolutions and product accuracy. As a general statement, radar measurements (e.g., from Sentinel-1) excel with respect to their high spatial resolution but are strongly limited in temporal coverage and resolution and product accuracy. Measurements from SMOS, SMAP, AMSR and ASCAT are comparable in spatial and temporal coverage and resolutions.

The soil moisture product accuracies and characteristics indicate that the most comprehensive soil moisture data sets will be obtained by combining information from the different sensors. Only a constellation of satellites providing active and passive microwave measurements at frequencies from L- to C-Band will ensure that the following key soil moisture information requirements expressed by the different end user communities can be met: (1) high temporal sampling representing the diurnal cycle for hydrological applications; (2) high spatial resolution resolving individual fields for agricultural applications; and (3) consistently high absolute accuracy at the global scale for hydro-meteorology and climate applications.

The workshop participants recommended that instruments taking passive microwave L-Band measurements be continued in new constellations of satellites (i.e., complementing the ASCAT and AMSR series, and the Sentinel-1s.)

experienced some turbulent times with the Commonwealth Scientific and Industrial Research Organization (CSIRO) firing large numbers of scientists in their climate and water divisions, while the Australian Research Council has funded a Centre of Excellence for climate extremes. Despite these changes the annual workshop was again a success, along with the release of a special issue of *Climatic Change on Natural Climatic Hazards in Australia*, and the first Summer Institute (a 6-week long research intensive summer school for elite students in water and climate).

A number of potential new RHPs were discussed, including Baltic Earth, which has established itself as the successor to BALTEX and written a new science plan for the Baltic Sea Region around the six WCRP Grand Challenges. Baltic Earth has been accepted as an Initiating Phase RHP. We welcome it to the family and look forward to helping them with their progress towards addressing the Grand Challenges in the coming years. The Pannonian Basin Experiment (PannEx) held a second workshop in Budapest, Hungary. A white paper on the scientific challenges for the region has been written and circulated and will form a basis for discussions at the follow-up workshop to be held in March 2017 in Romania. The group has made great strides in bringing the community together and is on-track to apply for Initiating RHP status in 2017.

Crosscutting Projects

The established Crosscutting Projects focused on sub-daily precipitation (INTENSE), the International Network for Alpine Catchment Hydrology (INARCH) and precipitation near zero degrees Celsius all made progress during the year. This generally included holding workshops, collecting data and starting new research activities. A number of potential crosscutting activities have moved towards project status with one crosscut focused on the human management of the water cycle holding a workshop just before the GHP meeting.

GHP's Global Data Centers, the Global Runoff Data Center (GRDC) and Global Precipitation Climatology Center (GPCC), also presented their activities over the past year with encouraging connections made with GEWEX projects.

Wrap Up

Overall the progress of the established RHPs and Crosscutting Projects was very good and is an indication of a productive year ahead for GHP-related science. The continued development of initiating and potential new projects is also very encouraging for the future vitality of GHP. As always, suggestions for new initiatives are welcome. The joint discussions with GLASS highlighted a number of activities with potential for collaboration, with the initial focus being the development of water management in the water cycle. This would become a crosscutting activity jointly overseen by both Panels. The next GHP meeting is planned for October 2017 in Katmandu, Nepal and will include a joint session with the Third Pole Environment (TPE) Project. This meeting will explore the potential for TPE to evolve into a future RHP.

GEWEX/WCRP Calendar

For the complete Calendar, see: <http://www.gewex.org/events/>

- 26 November–3 December 2016—International Conference on African Large Basins Hydrology—Dakar, Senegal
- 29 November–1 December 2016—Annual GDAP Meeting—Washington, DC, USA
- 12–16 December 2016—AGU Fall Meeting—San Francisco, California, USA
- 14–15 December 2016—3rd Annual OzEWEX Workshop—Canberra, ACT, Australia
- 16–21 January 2017—WCRP-JNU Training on Monsoon Variability in a Changing Climate—Jeju, Republic of Korea
- 22–26 January 2017—97th AMS Annual Meeting—Seattle, Washington, USA
- 6–10 February 2017—GEWEX SSG-29 Meeting—Sanya, China
- 12–17 February 2017—International Symposium on The Cryosphere in a Changing Climate—Wellington, New Zealand
- 17–18 February 2017—13th Session of the CliC SSG—Wellington, New Zealand
- 29–31 March 2017—Joint ESA-Baltic Earth Workshop on Remote Sensing Applications in the Baltic Sea region—Helsinki, Finland
- 31 March 2017—GABLS Meeting—Delft, The Netherlands
- 2–6 April 2017—ACPC Workshop—Bad Honnef, Germany
- 18–21 April 2017—Third A-Train Symposium—Pasadena, California, USA
- 23–28 April 2017—EGU General Assembly 2017—Vienna, Austria
- 15–16 May 2017—GLASS Meeting—Tokyo, Japan
- 4–7 July 2017—10th HyMeX International Workshop—Barcelona, Spain
- 10–14 July 2017—International WCRP/IOC Conference on Regional Sea Level Changes and Coastal Impacts—New York, NY, USA
- 18–22 September 2017—COSPAR 2017—Jeju, Republic of Korea
- 25–28 September 2017—CFMIP Meeting on Clouds, Precipitation, Circulation, and Climate Sensitivity—Tokyo, Japan

GEWEX NEWS

Published by the International GEWEX Project Office

Peter J. van Oevelen, Director

Dawn P. Erlich, Editor

Shannon F. Macken, Assistant Editor

International GEWEX Project Office
c/o USRA

425 3rd Street SW, Suite 940
Washington, DC 20024 USA

Tel: 1-202-527-1827

E-mail: gewex@gewex.org

Website: <http://www.gewex.org>