vations (FIDUCEO); the other is the Gap Analysis for Integrated Atmospheric ECV Climate Monitoring (GAIA-CLIM), which addresses the uncertainty of surface-based reference observations and their use to characterize satellite measurements. In addition, GEWEX data set producers and assessments have further addressed how uncertainty might be quantified in products and through comparisons with other data.

GDAP supported a recent workshop on uncertainties in water vapor measurements at 183 GHz (see report in November 2015 issue of *GEWEX News*), where biases observed between measurements at 183 GHz and calculations using different radiative transfer models were discussed, including using either radiosondes (RAOBS) or short-range forecasts from Numerical Weather Prediction (NWP) systems. The primary objectives of the workshop were: (1) describe the biases, trying to separate the biases that were common to all approaches from those which may have been a result of a particular methodology; (2) identify and, where possible, quantify uncertainty in every component of the comparison; and (3) begin the process of bias attribution where possible, which could in due course lead to bias elimination. In order to address these ambitious goals, experts in many different aspects were assembled. This included specialists in RAOBS calibration, NWP models and data assimilation, instrument biases and radiative transfer models, both the models themselves and the underlying spectroscopy. Comparisons were also undertaken with other techniques for sensing humidity information such as Global Navigation Satellite Systems (GNSS), Differential Absorption Lidar (DIAL), Raman Lidar and infrared radiances.

GDAP will continue to support such activities to achieve better overall uncertainty characterization of satellite-derived data sets. ESA and EUMETSAT are planning a workshop on uncertainty characterization for satellite data sets in 2017.

Next Meeting

The next annual meeting of GDAP and the kickoff workshop for the precipitation assessment is tentatively scheduled for fall 2016 in Washington, DC.

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Annual Meeting of the GEWEX Hydroclimatology Panel

Entebbe, Uganda
17–19 November 2015

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The GEWEX Hydroclimatology Panel (GHP) meeting was held to evaluate the ongoing and planned activities of the Panel to ensure that they are effectively contributing to the leading role that GEWEX plays in hydrological sciences and related modeling activities. 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. The meeting was hosted by the Uganda National Meteorological Authority on the shores of Lake Victoria.

Regional Hydroclimate Projects

The RHP project managers provided updates on recent accomplishments and future plans of the RHPs and highlighted the contributions that each one is making to address the GEWEX Science Questions. Two RHPs have successfully concluded—the Northern Eurasia Earth Science Partnership Initiative (NEESPI) and the Monsoon Asian Hydro-Atmosphere Scientific Research and Prediction Initiative (MAHASRI). NEESPI held a well-attended closing workshop in Prague in April 2015. The RHP was a great success in many respects, particularly in terms of engaging with scientists in the northern Eurasia region. MAHASRI held an international conference in March 2016 that served as its final meeting. Broad discussion of the many achievements of MAHASRI research, along with impacts that it has had on the Southeast Asia region, were reported on at the conference. We thank the long serving project leaders of these RHPS—Pasha Groisman (NEESPI) and Jun Matsumoto (MAHASRI)—for their dedicated leadership and encourage them to continue to be involved in existing projects or initiate new GEWEX activities.

The Hydrological Cycle in the Mediterranean Experiment (HyMeX) held a significant workshop in September 2015 that served as a five-year review and involved planning for the next five years. HyMeX has achieved much in its first five years, and now that the community is firmly established, it will be exciting to see how its research evolves going forward. The Changing Cold Regions Network (CCRN) RHP has been progressing well with its extension into the Mackenzie River Basin in Canada, which provides a significant increase in the cold regions research being undertaken. CCRN is connecting with research communities outside traditional GEWEX disciplines, such the ecological community, which is a very positive aspect for the RHP.

The Hydroclimate Project for Lake Victoria (HyVic) and the Australian Energy and Water Exchanges (OzEWEX) are "initiating" RHPs. While successfully building communication and sparking collaborative activities across parts of the OzEWEX community, the RHP is establishing recognition amongst the scientific community and potential funders. OzEWEX has held two annual workshops that have received strong attendance and participation. HyVic activities were highlighted, given the location and the hosts of the meeting. Significant funding has been granted to HyVic by UK agencies and this will allow many of the planned HyVic activities to begin. Further coordination and initiation work continues but progress is expected to accelerate in the coming year.

While a number of potential new RHPs were discussed, including Baltic Earth, it was the Pannonian Basin Experiment (PannEx) that has made the most recent progress. A workshop was held in Osijek, Croatia and an International Planning Committee (IPC) was established to draft a white paper defining the scientific objectives for the RHP. The IPC will form the basis for discussions at the follow-up workshop to be held in June in Budapest.

Crosscutting Projects

Two crosscutting activities—the project focused on sub-daily precipitation (INTENSE) and the International Network for Alpine Research Catchment Hydrology (INARCH) Project—reported on their activities during the past year, including holding workshops, collecting data and initiating new research activities. A number of potential crosscutting activities have made progress towards reaching GHP project status, including the Alpine precipitation (MOUNTerrain) Project, which held a special session at the annual meeting of the American Geophysical Union in December 2016. A formal proposal to GHP to be approved as a Crosscutting Project is expected in the coming months. A new crosscut that is focused on human intervention in the water cycle is also moving forward with a workshop planned for late September 2016 outside Paris.

The Global Data Centers, including the Global Runoff Data Center (GRDC), the Global Precipitation Climatology Center (GPCC) and the International Data Centre on Hydrology of Lakes and Reservoirs (HYDROLARE), presented their activities over the last year, reporting encouraging connections with some GEWEX projects, as well as potential further connections that were identified during the meeting.

Wrap Up

Overall the progress of established RHPs and the Crosscutting Projects was very good and is an indication of a productive year ahead for GHP-related science. The continued development of initiating RHPs and other potential new projects is also encouraging for the future vitality of GHP. As always, suggestions for new initiatives are welcome. The next GHP meeting is planned for October 2016 outside Paris and will include a joint session with the Global Land/Atmosphere System Study (GLASS) Panel to form stronger collaboration between the Panels.

Participants at the GEWEX Hydroclimatology Meeting in Uganda.