Meeting/Workshop Reports

Summary of the 2020 GEWEX Data and Analysis (GDAP) Annual Meeting

Virtual Meeting
12–14 October 2020

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GDAP Co-Chairs

The 2020 GDAP Meeting occurred virtually from 12–14 October 2020. Unfortunately, because of the global pandemic, we had to cancel our scheduled meeting planned to take place in the heart of Paris at the University of Jussieu. Even though the GoToMeeting™ setup is not as appealing as the Tour Zamansky, we were still able to have fruitful exchanges on the status of the various projects and activities. The Panel members and activity leads were able to join most of the sessions.

We had two project update sessions on Monday the 12th. The first one was more favorable to the European Union and Japanese time zones and the second was more favorable to the United States and European Union time zones, although our Asian colleagues ended up participating as well. On Tuesday and Wednesday, two additional sessions were held in the United States and European Union time zones dedicated to discussing the Earth's Energy Imbalance assessment and the International Satellite Cloud Climatology Project–Next Generation (ISCCP-NG) project. Though favorable to U.S. participants, the timing was still a bit harsh for our California-based colleagues who joined the meeting at 6:30 AM.

On Monday, Hiro Masunaga gave an update about the Joint International Precipitation Working Group (IPWG)/GEWEX Precipitation Assessment. The project is in its final stage and the report is in press. Rémy Roca is in contact with the International GEWEX Project Office to elaborate on the preferred mode of publication of the report. Udo Schneider gave a status report about Global Precipitation Climatology Centre (GPCC) network activities. The most prominent takeaway from the presentation was the upcoming new release of a full daily 1982–2019 precipitation analysis using enhanced data streams and a new method of interpolation. The International Soil Moisture Network (ISMN) activities were summarized by Irene Himmelbauer, who presented on behalf of Wouter Dorigo. The link to the U.S. network has not been finalized because some data policy issues have emerged. The ISMN operations are planned to transition from the Vienna University of Technology (TU Wien) to the German Federal Institute of Hydrology (BFG), although the pandemic has delayed this move. A paper describing the network is in the process of being drafted and the authors have been gathered and will give an overview of the activity. The discussion highlighted the interest in sharing experiences between the various ground-based sites operating under the auspices of GDAP, as ISMN appears a bit isolated from the other networks. Finally, the session ended with an update on the Water Vapor Assessment by Marc Schröder. A coordinated special issue in the European Geosciences Union (EGU) journal is underway and accepting papers until December of 2021. The production of the assessment report has been delayed and is now projected for release in fall 2021. Similarly, the database update will be finished in 2021. Inquiry into the possibility of a third phase of the assessment has been discussed and the format needs to be identified (extension, new objectives) by the water vapor community.

The Monday afternoon (morning in the U.S.) session began with a presentation by Christian Lanconelli about the status of the Baseline Surface Radiation Network (BSRN) activities. A new co-chair of BSRN has been identified: Laura Riihimaki will help Christian with the various duties of the chair position. Participants raised the point that BSRN's positioning between the World Climate Research Programme (WCRP) and the Global Climate Observing System (GCOS) could be clearer. New activities include support from BSRN to establish standards for ocean-based radiation measurements. The discussion identified the need to initiate a satellite working group in BSRN to strengthen the links between space-based and ground-based radiation measurements. Chris Kummerow then provided an overview of the Integrated Product (IP) project. The missing longwave and shortwave surface radiation time series have been completed, offering the products in a now-complete 1988–2017 period. A data paper is being written and a special issue in *Frontiers* has been identified as a suitable outlet for this. The scientific analysis of the data has started, and Chris Kummerow reported that a dedicated water budget closure analysis over the tropical ocean shows non-stationary biases in the precipitation consistency over the West Pacific Ocean. Rémy Roca mentioned preliminary efforts to run the L'Ecuyer et al. (2015)[1] optimization framework on the IP products, revealing the need to boost the evaporation for better closure at the global scale. The future of the IP project was briefly mentioned, and there is no strong current motivation to extend the effort. As for the land-atmosphere initiative that was due to kick off in March 2020 in Toledo, the whole project has been shifted to next year and its progress waits on the resolution of the pandemic.

The Tuesday session was dedicated to the Earth's Energy Imbalance (EEI) Assessment. The first presentation by Benoit Meyssignac and Tim Boyer gave a status update of the Assessment. The effort has grown since last February and is now composed of six actions addressing various time scales, ranging from recent climate to the previous century, and various sources of EEI estimates, including in situ floats, satellites, and reanalysis. Preliminary results were also presented, highlighting the first comparison between the Clouds and the Earth's Radiant Energy System (CERES) EEI time series and the 0-2000m heat content estimates as well as sensitivities of the altimetry-based ocean heat content estimation to the computation of the Expansion Efficiency of Heat. The group plans to write an American Geophysical Union communication. A short exchange about the yet-to-start embedded top of atmosphere radiation assessment

[1]L'Ecuyer, T., et al., 2015. The Observed State of the Energy Budget in the Early Twenty-First Century. *J Clim.* 28, 21: 8319–8346. https://doi.org/10.1175/JCLI-D-14-00556.1.

then took place. The discussion further mentioned the addition of a dedicated chapter in the Precipitation Assessment about the consistency between global precipitation and global radiation that eventually links to the EEI. Jim Mather gave a short presentation about the Atmospheric Radiation Measurement (ARM) facility activities that triggered a discussion about planning a smaller, more focused workshop, prior to the delayed IP workshop, jointly held with the BSRN team. It would concentrate on strengthening the link between the existing facilities, the satellite activities in GDAP, and the scientific questions of GEWEX. Organizers are aiming to hold this ground-based, data-centric event as soon as sanitary conditions permit.

The Wednesday session focused on the ISCCP-NG initiative. It was also a year since the first ISCCP-NG workshop took place at the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) headquarters in Darmstadt, and we reviewed progress made since then. An overview was first provided by Andy Heidinger, which gave both the programmatic context and some updates on the working group dedicated to the L1G product. The link with the International Cloud Working Group (ICWG) is very strong and has enabled sustained discussions since the workshop. This L1G "georing" product is based on advanced geostationary platforms and would form the basis for the ISCCP-NG product suite developments. Andy reported significant progress in building a prototype or a demonstration product and created some excitement among participants by showing a movie of estimated outgoing longwave radiation (using 11- and 6.3-microns observations) at ~5km sub-hourly to hourly resolution. The governance, science-wise, was discussed and Graeme Stephens recalled the role of GEWEX as a steward of international data efforts. It is anticipated that the ISCCP-NG would report to GEWEX [GDAP or the Scientific Steering Group (SSG)]. The exchange further suggested that the project should begin to communicate with the broader cloud science community to advertise the activity and its anticipated outcomes. In particular, the next GEWEX SSG meeting might provide a good forum to present the progress in order to bridge out to the "Digital Twin" Earth modeling effort, for which such a data set is highly relevant. Andy also presented slides from Joerg Schultz that summarized the effort to inform the Coordination Group for Meteorological Satellites (CGMS) council about the activity. The project and its ambition were very well received and are now being inserted into the complex multi-agency program where EUMETSAT will keep a leading role. Finally, the science applications of a new ISCCP-NG data set were discussed. Brian Kahn synthetized the various types of anticipated outreach spanning from cloud processes to aerosols and lightning. Graeme Stephens emphasized the strong connection with the scientific objectives of the National Aeronautics and Space Administration (NASA)-led Aerosol and Cloud, Convection and Precipitation (ACCP) international cooperation effort. Graeme suggested that Andy give a seminar in the framework of the ACCP science seminar series. The discussion about the next steps for the project focused first on a hands-on virtual workshop to showcase what can be derived from the prototype L1G. This should happen in the spring of 2021 after the prototype is accessible. Later, a more conventional workshop is envisioned, but its realization depends on the trajectory of the pandemic.

2020 GEWEX Hydroclimatology Panel (GHP) Meeting

Virtual Meeting
26–27 November 2020

Ali Nazemi, Francina Dominguez (GHP Co-Chairs) and Joan Cuxart (Past GHP Co-Chair)

The 2020 GHP Meeting occurred during the COVID-19 pandemic and marked the first fully virtual GHP meeting. Held through the GoToMeeting™ online platform, the 2020 GHP meeting provided an opportunity for Panel members and project leaders from across the globe to share and review the status of current and future GHP projects. To accommodate diversity in time zones, the Co-Chairs decided to schedule 3-hour sessions each day to outline and discuss each project in short 10- to 15-minute time slots. To make this possible, each project submitted its presentation(s) and report(s) in advance, so Panel members could review each activity prior to the meeting. Although the spirit and socializing opportunities of previous in-person GHP meetings was missing, this iteration clearly showed that there are also benefits in virtual meetings. One lesson learned was that if the presentations are uploaded ahead of time, then the meeting itself will be dedicated only to targeted discussion, which makes it easier to maintain the focus and effectiveness of the discussion. We believe meetings with such a format can enrich the experience of the attendees and can potentially be a complement for some in-person events in post-pandemic situations.

GHP is comprised of four different types of activities: (1) Regional Hydroclimate Projects (RHPs), aiming at understanding and predicting hydroclimatology in a specific region; (2) Cross-cutting Projects (CCs), encouraging knowledge mobilization and global synthesis around a specific problem; (3) Global Data Centers, collecting and distributing hydrologically-relevant data; and (4) Networks, maintaining collaboration and building capacity for activities relevant to GEWEX science. During the GHP meeting, the group reviewed and discussed the progress of ongoing and prospective projects in these three categories.

Ongoing and Prospective Regional Hydroclimate Projects (RHPs) and Networks

RHPs are generally large, multidisciplinary projects, developed to improve our understanding of the physical processes that affect water and energy exchanges within a region. There are currently three ongoing RHPs, including Global Water Futures (GWF), Baltic Earth, and The Hydrological cycle in the Mediterranean eXperiment (HyMeX). These are mature RHPs with a large group of active researchers and established ties with local communities. GWF and Baltic Earth are progressing continuously and at a good pace. While HyMeX is now officially over, there is a strong willingness to continue this RHP. A new group of young researchers, who were present at the meeting, will take the lead on the next phase of HyMeX. The Land Surface Atmosphere Interactions over the Iberian Semi-Arid Environment campaign (LIAISE) may serve as an effective link between the old and the new HyMeX initiatives.