paratively underexplored. During the forum, there were several overview presentations given by forum facilitators on the topics of convective-permitting modeling, the Coordinated Regional Downscaling Experiment (CORDEX) project and lessons learned from dynamical downscaling of seasonal forecasts in the United States. The presentations were followed by an open discussion, oriented to both scientific and logistical aspects of initiating a possible new CORDEX-like effort to dynamically downscale S2S reforecast products. Subsequent to the Latsis Symposium, facilitators will prepare a summary document that will be shared with the World Meteorological Organization, as well as follow-on presentations at the American Geophysical Union (AGU) and American Meteorological Society conferences within the United States. The facilitators will use the list of registered attendees of the forum as a basis for pursuing any community research efforts proceeding forward.

On the first evening of the event, a public lecture was held on the topic of why we need better climate models. The presentation by Reto Knutti provided an overview of climate change and the role of models in quantifying past and future changes and informing mitigation and adaptation decisions. It gave a broad perspective on the challenges and opportunities of the next generation of weather and climate models and their value to society. The lecture was attended by about 250 people from both the workshop and local community and was followed by a very active and interesting discussion.

The symposium closed with a panel discussion covering major challenges and opportunities in kilometer-scale modeling such as observational needs, future software and hardware demands, data volume and sharing, emerging science topics and the integration of high-resolution model results into larger-scale efforts such as the Climate Model Intercomparison Project (CMIP). The community realized that it is important to integrate institutions that do not have the necessary resources to run large kilometer-scale models into high-resolution modeling efforts. Furthermore, writing a community white paper was suggested as one of the outcomes of the meeting. This paper would outline the need and potential benefits of kilometer-scale climate models.

The 4th GEWEX Convection-Permitting Climate Modeling workshop will be held in Kyoto, Japan from September 2nd to 4th 2020 (*http://www.jmbsc.or.jp/tougou/WS2020/WS2020index.html*). Furthermore, a kilometer-scale climate modeling session (*https://agu.confex.com/agu/fm19/webprogrampreliminary/Session80373.html*) took place at the AGU Fall Meeting (San Francisco, U.S.A.; December 9–13, 2019) and another is planned for the European Geosciences Union (EGU) General Assembly (Vienna, Austria; May 3–8, 2020). Updates about these meetings and other community activities will be posted through the Convection-Permitting Climate Modeling community e-mail list (*ral-cpcm@ucar.edu*; to subscribe, send an e-mail to *prein@ucar.edu*).

2019 GEWEX Hydroclimatology Panel (GHP) Meeting

Sydney, Australia
11–12 October 2019

Joan Cuxart and Francina Dominguez
GHP Co-Chairs

Hosted by Jason Evans, the 2019 GHP Meeting and the Determining Evapotranspiration Workshop were held at the Climate Change Research Center (CCRC) of the University of New South Wales in Sydney, Australia. During the GHP meeting, participants shared and reviewed the status of current and future GHP projects. We also welcomed four new Panel members: Vidya Samadi of the University of South Carolina; Li Jia from the Earth Observation for the Water Cycle (EO-Water) Lab, part of the Institute of Remote Sensing and Digital Earth (RADI) of the Chinese Academy of Sciences; Ali Nazemi of Concordia University; and Andreas Prein of the National Center for Atmospheric Research (NCAR). Two other new members, Ivana Stiperski (University of Innsbruck) and Paola Arias (Universidad de Antioquia), could not be present. After seven years of excellent leadership, Jason Evans stepped down as co-chair of GHP at the end of the meeting. Francina Dominguez was appointed as the new co-chair of GHP. Silvina Solman ended her service as Panel member after her second three-year term.

GHP is comprised of three different types of projects: Regional Hydroclimate Projects (RHPs), an essential tool in understanding and predicting hydroclimates; Cross-Cut Projects (CCs), which encourage proliferation of knowledge from region to region, allowing the synthesis of results at a global scale; and Global Data Centers, which collect and distribute hydrologically-relevant data. The progress of ongoing and initiating GHP projects in each category was reviewed during the meeting.

Current Regional Hydroclimate Projects (RHP) and Cross Cut (CC) Projects

The Hydrological cycle in the Mediterranean eXperiment (HyMeX) RHP, focusing on the Mediterranean Basin, will end in 2020 after a 10-year span. There are still ongoing activities on convective precipitation in Corsica and on deep water formation in the Eastern Mediterranean. The last experimental campaign planned for April to October 2020 is the Land Surface Atmosphere Interactions over the Iberian Semi-Arid Environment (LIAISE) project, which concentrates on the effects of irrigation and terrain heterogeneity. The possibility of HyMeX transitioning to a GHP network was discussed.

The Baltic Earth RHP, concentrating on Earth system science for the Baltic Sea region, proceeds with its current main research themes, which include water oxygenation in coastal areas, marine ecosystems and climate variability and projections. The RHP is producing nine Baltic Earth Assessment Reports (BEARs) and has a large number of activities planned for the coming years.

One lesson learned from both HyMeX and Baltic Earth is that the model of small groups obtaining their own funds and coalescing is a durable and flexible paradigm.

The Pannonian Basin Experiment (PannEx) is an Initiating RHP centered in the Pannonian Basin in Europe. The 5th workshop was held in Novi Sad, Serbia in June 2019, and the progress of the different Task Teams has been revised. A call from the European Space Agency (ESA) related to drought in the Pannonian Basin was awarded to the DryPan proposal. The PannEx chair will invite the DryPan team to report on its activities at the 6th PannEx workshop, planned for June 2020. A number of bilateral initiatives are in progress, and some papers are being published.

The International Network for Alpine Catchment Hydrology (INARCH) CC, focusing on understanding hydrological processes in alpine cold regions, has been very active. The 5th INARCH workshop is planned for spring 2020. The project has a relevant role in the new World Meteorological Organization (WMO) initiative called the "High Mountain Summit." There are clear links with the ANDEX RHP, the Third Pole Environment (TPE) effort, the proposed CC named Transport and Exchange Processes in the Atmosphere over Mountains Experiment (TEAMx) and perhaps a Western U.S. RHP, if it comes to fruition. The INARCH CC will end in 2020 and its leaders are currently reflecting on how to proceed with its legacy.

***P**articipants of the 2019 GHP Meeting*

The INTElligent use of climate models for adaptation to non-Stationary hydrological Extremes (INTENSE) CC, focusing on subdaily precipitation, has been very active in data acquisition, analysis and publication of manuscripts. The data has also been added to the Global Precipitation Climatology Center (GPCC) global repository. This activity will also end in 2020.

The Near 0°C Precipitation CC is coming to a close with the generation of a data base containing records and related climate analysis from different regions, especially in the Northern Hemisphere. Numerical simulations with special focus on microphysics and analysis of Coupled Model Intercomparison Project (CMIP) projections have also been performed.

Data Centers

Steady and significant progress was reported by the Global Precipitation Climatology Centre (GPCC) related to precipitation data. The center provides precipitation climatology, monthly data from 1891–2018, daily data from 1982–2018 and a monitoring product. The Global Runoff Data Centre (GRDC) focuses on acquisition, harmonization and storage of global historical river discharge data. With increasing data requests and new projects such as Global Freshwater Fluxes, this data center is very active. Finally, the International Data Centre on Hydrology of Lakes and Reservoirs (HYDROLARE) continues gathering information on the water level of lakes and reservoirs worldwide.

Prospective RHPs and CCs

There are currently five activities exploring the possibility of becoming a new GHP action. The first is the ANDEX RHP, which focuses on the Andes Mountains of South America. The organizers are in the process of amalgamating the community and obtaining international support. After the initial meeting at the end of 2017, the workshop in October 2018 and writing workshop in April 2019, the group's plan is to have the first draft of the white book ready by the end of 2019 and then to begin writing the implementation plan. ANDEX will apply for formal RHP status in 2020.

Third Pole Environment-Water Sustainability (TPE-WS) is an RHP initiative intending to explore water sustainability in the expansive high mountain region of South Asia. The team is working on a science plan and different subgroups have been established. Members will have a proposal ready by November or December of 2019.

The Asian Precipitation Experiments (AsiaPEX) RHP, focusing on understanding Asian land precipitation, will apply for RHP status shortly. Many in-person meetings and the Kick-Off Conference in Sapporo, Japan in September 2019 were successful. The group is planning a 2020 field campaign. A proposal will be ready by November or December of 2019.

The TEAMx initiative was recently approved as a GHP Cross-Cut. This CC focuses on multi-scale transport and exchange in the atmosphere over mountains. The team is organized and active, having completed a Memorandum of Understanding, review papers and a workshop. An intensive field campaign focusing on the European Alps is planned for 2023. The geographical scope of the project will broaden in the future through links with other international groups.

The Determining Evapotranspiration (Determining ET) CC is an activity focusing on advancing the understanding and determination of evapotranspiration. Thirty four participants from all around the world came together for a two and a half day workshop held just before the GHP meeting. Several areas of interest have been established and a new meeting is planned a year from now. The group will consider organizing as a GEWEX Cross-Cut, or alternatively a PROcess Evaluation Study (PROES), and this will be further reflected on during the coming months.