

GEWEX Report

1. Highlights for JSC

- Soils and Water workshop expanding GEWEX science to subsurface processes, modelling and observations ([GEWEX Soils and Water](#))
 - Several activities started within this initiative, in particular land-based experiment on impact of choice of soil parameters (SoilParameterMIP)
- Human component in land models:
 - Workshop organized in September 2016 ([GEWEX Newsletter article](#))
 - This topic has been identified as major focus for future activities within GHP, GLASS and the Water and Extremes GCs
- GEWEX High resolution modelling workshop (convectively permitting modelling (CPM) workshop)
 - The workshop covered five main scientific topics: 1) CPM evaluation and added value; 2) Climate change assessments with CPMs; 3) Land-atmosphere interactions in CPMs; 4) Observational datasets for CPM evaluation; 5) CPM for simulating tropical phenomena.
 - The workshop findings and next steps are reported in Bulletin of American Meteorology Society (DOI: <http://dx.doi.org/10.1175/BAMS-D-16-0263.1>).
- New leadership established in both GDAP and GASS. Among other activities, GDAP is to expand further on its activities on energy and water budget syntheses and is developing plans for an extensive precipitation assessment in coordination with the International Precipitation Working Group (IPWG). GASS is developing a coordinated research program linked to WWRP. To build this link further, one of the new GASS co-chairs is from WWRP.
- The US GEWEX office has been established and hiring of coordinator underway.
- Four PROES efforts are developing and two are now reaching a level of maturity with peer review publications now appearing. These efforts bring a more process centric approach in the use of observations and are important building blocks of panel efforts.
- A climate hydrological sensitivity workshop was conducted in June ([Link](#)) and a high profile review article reviewing its findings is under development.
- CMIP6 contributions:
 - GEWEX is leading for the first time major land-based CMIP6 projects: the Land surface, snow and soil moisture MIP (LS3MIP) and the Land Use MIP (LUMIP). This allows a strong expansion of GEWEX activities in the climate modelling research community. Focus of these experiments will be on the impacts of land feedbacks and forcings for regional climate variability, water availability and extremes.
 - GEWEX is also strongly contributing to the HighResMIP.
- Climate extremes is a now a main focus of research within the GEWEX community (GC extremes, GEWEX science question), and one of the two main themes of the planned 2018 Open Science Conference.

2. Primary science issues (ahead, 3 to 5 years)

- GEWEX has now reached its 30th year. It is time now to both reflect back on and advertise achievements of the project and forward articulating the directions ahead. This will involve a revisit of the vision and mission statement of GEWEX and its four science questions.
- In addition to our Scientific Imperative document ([GEWEX Resources](#)) the following scientific issues are at the forefront of GEWEX:
 - Continue to expand on the human component in GEWEX's core activities in particular with respect to GC on Water, Modeling of Land-Atmosphere interactions and Hydrological Modeling;
 - Continue Extend the Process Evaluation Studies to support model development (with the other core projects)
 - Support continuation and embedding of the GEWEX endorsed Global Data Products both on state variables and fluxes (at operational centers e.g. NCEI) and define future requirements for future missions
 - Formation of a new GEWEX initiative within China.
 - GEWEX is to play a major role in the newly forming WCRP-model precipitation assessment activity both through the observational assessment efforts of GDAP and through PROES activities that focus on precipitation-centric processes.
 - Expand climate modelling activities in the context of CMIP6. It is the first time that GEWEX-sponsored CMIP experiments have been planned.

3. Issues and challenges:

- Working with other Core Projects
 - CLIVAR: In general working fine (e.g. interactions within GC Extremes). Monsoon panel after a rough start seems to be getting on track and functioning better. There is improvement to be made in the area of global energy and water exchanges assessment.
 - CLIC: Important collaboration on CMIP6 experiment "Land surface, snow and soil moisture MIP" (LS3MIP). This experiment will investigate jointly soil moisture- and snow-climate feedbacks. In addition, similarly as with SPARC new activities on PROES that will need time to take shape. With James Renwick becoming the new CLIC co-chair, the activity on Mountain Precipitation (Mounterrain) which he led is looking for new leadership.
 - SPARC: Mainly through activities related to 'former' GEWEX GASS panel. New activities are being developed with respect to Process Evaluation Studies (PROES). These are new activities so take time to take shape.
- How do you work with CMIP and the modelling groups (vis-à-vis WMAC)
 - Most of our work toward CMIP is done through activities with the GEWEX GLASS panel, in particular in the context of two GEWEX-sponsored CMIP6 experiments: The "Land surface, snow and soil moisture MIP" (LS3MIP) and the "Land use MIP" (LUMIP). There is also a strong involvement and coordination role from GEWEX in the "HighResMIP" CMIP6 experiment.
- How do you address observations/data requirements (vis-a-vis WDAC)
 - GEWEX continues to address the observational requirements needs to; a) monitor earth processes and define instrumentation requirements; b) perform process studies and their requirements, and; c) execute assessments of data products (e.g. water vapor, precipitation) ([Data Assessments](#)).

- How you work with Grand Challenges
 - GEWEX leads and supports the development of two GCs on Water for Food Baskets and on Extremes.
 - The GC Extremes is coordinated in collaboration with CLIVAR. Major activities have taken place, including a very-well attended summer school (summer 2014), which led to a journal special issue with articles led by the participating students (published in summer 2015), and several workshops that took place in 2015 and 2016 (see [GC-Extremes report](#)). An additional workshop on compound events is planned in April 2017. The GC has already resulted in major publications and several new publications are in preparation as a result of the organized workshops and meetings. The GC extremes is strongly involved in the preparation of the GEWEX “Water and Extremes” Open Science Conference planned in 2018.
 - The GC Water is expanding on the initial idea of water for the food baskets of the world. Two workshops have been held one related to [high resolution modelling](#), and to including the [human component in water management](#) collocated with the GHP/GLASS panel meetings.
 - How you see your community evolving
 - Our community is constantly changing around a core group of dedicated volunteers. We are expanding our activities in Asia, Africa and Latin America while hoping to maintain our efforts in North America and Europe.
 - With respect to ECS we embed them in our core activities and support and encourage our panels in outreach.
 - How you work with WCRP
 - We work primarily with WCRP through our JPS Senior Scientific Officer for GEWEX liaison, which is going well. We have interactions with the JSC Chair to a certain extent but much less with the D/WCRP and other staff (exception the consultants).
 - How the current funding affects your community, your activities, your service
 - The reduced funding from 120 K a few years back to roughly 40K is not sustainable to support our core activities. This would require even more additional funding to be sought to support meetings and travel in particular to ECS and LDC participants. Given the current political climate in the US it is not clear how GEWEX can resolve that smoothly or without potential repercussions.
 - We are organizing the GEWEX OSC in 2018 that requires significant funding mostly external to WCRP. Yet WCRP contribution is essential.
 - The IGPO budget has been constant for the last 5 years and not clear how future US congressional budget decision might impact the IGPO. Increase is highly unlikely.
 - We are at if not beyond the limits of our capabilities given the current funding. Streamlining the many activities and the increased efficiency cannot keep up with the decreased funding.
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