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JSC-44
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DRAFT

Request of input from core activities to the

44th Session of the WCRP Joint Scientific Committee (JSC)

8-11 May 2023

Overarching goal: *Provide an update on progress with respect to science outcomes, and with respect to planning of new activities and enhanced collaborations within – and outside of - WCRP made over the last year, including any aspects that you want to bring to the attention of the JSC and the wider WCRP family.*

While producing your report, it would be helpful if you can:

- *Keep the report to essentials (around 5 pages in length, if possible; appendices and links can of course be used)*
- *Address the topics listed below plus anything additional you would like to include.*

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Template:

Report to the WCRP Joint Scientific Committee

1. Highlights achieved since JSC-43

General Achievements:

- *Recognizing the importance of carbon cycle to WCRP, GEWEX has incorporated the process understanding of coupled energy, water, and carbon cycles into its strategic planning, and discussions have been made on launching a related project. GEWEX SSG co-chair (Jan Polcher) is also leading the WCRP initiative on the energy, water, and carbon cycles.*
- *Recognizing the need to understand the human-natural coupled earth system in WCRP, GEWEX has incorporated the process understanding of the coupled system into its strategic planning, and discussions have been made on launching related projects (e.g., related to irrigation, urbanization).*
- *Recognizing the importance of the full water cycle to WCRP, GEWEX has strengthened the interaction with WMO Hydrology, and will launch related projects (e.g., on groundwater). GEWEX SSG co-chair (Xubin Zeng) is also leading the WCRP initiative on Global Precipitation EXperiment (GPEX).*
- *Major publication on 30 Years of GEWEX in BAMS (2023 Stephens et al., https://doi.org/10.1175/BAMS-D-22-0061.1)*
- *4th PAN-GEWEX Meeting in Monterey, CA, USA - Speed dating between the various panels led to numerous new ideas to be developed in the coming years. Strengthened cross panel collaboration*

PANEL Specific Achievements:

- *GLASS:*
  - *New GLASS Projects*
    - *SIF-MIP on modelling of solar induced cholorphyll fluorescence (SIF)*
    - *CLASP Coupling of Land and Atmospheric Subgrid Parameterizations*
  - *LIAISE Field Experiment and Determining ET (dET) (1st LIAISE, 3rd dET CC workshop March '23)*
    - *NOTE: ET does not have a reference network (yet), yet many ET products exist.*
  - *First outputs from Soil Parameter MIP (SP-MIP), highlighting the importance of hydraulic as well as thermal soil parameters, and the approach to infiltration modelling*
  - *Robust assessment of PedoTransfer Funtions*
  - *Steady development of the GEWEX/GLASS Land Atmosphere Feedback Observatories (GLAFOs*
  - *Continued support for and development of Modelevaluation.org*
  - *PLUMBER2 analyses are near-finalised and present important new findings for the land surface modelling community*
  - *New Irrigation Cross Cutting project with GHP*
  - *New Determining ET (dET) Cross Cutting project with GHP*

- *GHP:*
  - *New GHP Projects:*
    - *ANDEX and TPE-WS are now officially initiating RHPs, AsiaPEX and US RHP expected to follow this year.*
    - *Determining ET Cross-Cut is a new Cross-Cut effort (with GLASS).*
    - *Two new Projects on 1) Groundwater (Cross-cut effort) and 2) Surface Water*
    - *The flooding project is now officially getting underway.*
  - *International Network for Alpine Catchment Hydrology (INARCH) started its second phase*
  - *The HYMEX RHP concluded in 2022, a new follow project in the Mediterranean is in development*
  - *TEAMx an international research program dedicated to improving the understanding of atmospheric transport and exchange processes over mountains kicked off properly in 2022 (*https://doi.org/10.1175/BAMS-D-21-0232.1)

- *GDAP:*
  - *New projects:*
    - *Land water and energy closure assessment*
    - *The GEWEX Water Vapor Assessment (G-VAP) phase II*
    - *Earth Energy Imbalance (EEI) Assessment*
  - *Continuation of ISCCP-NG development (International Satellite Cloud Climatology Project – Next Generation)*
  - *ISMN Moved from TU Wien to The International Centre for Water Resources and Global Change (ICWRG)*
  - *WRMC-BSRN has become a Global Climate Observing System (GCOS) affiliated network*

- *GASS*
  - *3rd Pan-GASS meeting (Monterey, July 2022, 200 participants)*
  - *CFMIP-GASS meeting (Paris, July 2023, 250 abstracts received)*
  - *Ongoing projects:*
    - *DCP (Improving the simulation of diurnal and subdiurnal precipitation over different climate regimes)*
    - *LS4P (Impact of initialized land temperature and snowpack on sub-seasonal prediction)*

- Two GEWEX projects joined GASS:
  - *UTCC-PROES (Upper tropospheric clouds and convection process evaluation study)*
  - *GAP (GEWEX Aerosol precipitation initiative)*
- *Three new projects have started:*
  - *EUREC4A-MIP (Mesoscale organization of shallow convection)4*
  - *(Shallow) cumulus friction experiment*
  - *DYAMOND (Intercomparison of global cloud resolving models)*
- Three other projects are in preparation:
  - *Organization of deep convection*
  - *COMBLE (convective clouds during Artic cold-air outbreaks)*
  - *Nudged climate model runs to facilitate comparisons between simulations and observations (e.g. MOSAIC in the Arctic)*
- *Continuing or strengthening collaborations with CFMIP, WGNE, GDAP, Digital Earth*

2. Planned science initiatives and major events *(next 3 to 5 years)*

- *In July 2024 we will have the 10th GEWEX Open Science Conference in Sapporo, Japan*
- *New Regional Hydroclimate Projects targeting Central Asia, Africa and New Zealand/Oceania and cross-cutting projects on flooding, groundwater and surface water.*
- *Field campaigns to be organized in Aug-Sep 2024 over the tropical Atlantic to study the organisation of tropical convection (ORCESTRA campaign = sum of EC-TOOC + BOWTIE + MAESTRO + PICCOLO initiatives), 50 years after GATE.*

3. Active or planed collaborations with other Core Projects, Lighthouse Activities etc.

- *CLIVAR and GEWEX continue to work together on Monsoons Panel*
- *CORDEX/RiFS plans for collaboration on regional capacity development and modelling experiments*
- *CliC collaboration with TPE in the Asian high mountain region (Tibetan Plateau) looking to explore collaboration on ecosystem and permafrost processes*
- *Safe Landing Climates collaboration envisioned on the Water Resources pillar*
- *Digital Earth*
  - *Connections via some of the RHPs, as well as strong input on Regional High Resolution Modeling (km-scale, DYAMOND GASS project)*
- *My Climate Risk unclear as of yet how to engage effectively with local hubs but further interaction is planned*
- *Explaining and Predicting Earth System Change we foresee collaboration on*
  - *Understanding causes and implications of the trend in Earth's Energy Imbalance*
  - *Water resources as well as modeling activities related to GASS and GLASS*
- *WGNE*
  - *Various strong collaborations with GASS*
- GASS-CFMIP collaboration on cloud processes and cloud-climate feedbacks
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3a. Requests for the WCRP Academy to support your training activities?

- *Like to explore activities in conjunction with*
  - *a) our regional activities/RHP together maybe with CORDEX where applicable and*
  - *b) Open Science Conference in Japan in 2024*

4. Partnerships with projects outside WCRP

- *WWRP primarily collaboration through GASS (along with WGNE) but also plans to extend close collaboration between climate sciences and weather to climate and hydrological forecasting*
- *START supports GEWEX RHPs on capacity development (Central Asia and Africa)*
- *IAI mainly collaboration on ANDEX*
- *GEO/IGWCO and GEOGLOWS – support for training and capacity development activities in various regional activities (being explored)*
- *WMO Hydrology should be further strengthen as mentioned under WWRP to extend close collaboration between climate sciences and weather to climate and hydrological forecasting*
- *GCOS collaboration on BSRN as well as 'Cycles' Initiative*
- *UNESCO- IHP regional support mostly in context of RHPs*

***5. Issues and challenges**:*

- Recommendations or proposals, including any proposed changes to the structure of the Core Project, Lighthouse or other activity
    - *No*
- How do you see your community evolving, e.g., activities coming to an end or new ones starting?
    - *All our activities are organized under our 4 panels and the Monsoon Panel. In principle all activities are limited time most 5 – 10 years but some e.g. ISCCP-NG can be well over 10 years certainly if directly linked to Earth Observation missions*
    - *The premiss is to focus on a few activities and do them well rather than many and do them poorly. Drawback is that doing things well takes time and related publications hence also take time (this is a challenge in particular when in competition with 'quicker' but poorly or less rigorously executed activities). Assessments for example are seen as hugely valuable but difficult to find resources (people, computational, time, etc.)*
    - *Crosscutting activities within GEWEX are blossoming but come with their own set of challenges regarding leadership and responsibilities (reporting, representation) (similar issues are between activities between core projects and LHAs)*
- List any advice you request from, or questions that you have for, the JSC (including any additional funding requests you might have at this stage)
    - *GEWEX is requesting fund for its open science conference in 2024. More info in the attachment (submitted to JSC-only meeting).*
- *In person and online meetings: There is a need for in person meetings yet to organize these is challenging these days. Obviously, we want to reduce total travel both in terms of carbon as well as travel time and reduce costs. We also want to increase our access, diversity, and inclusion in our meetings. For in person that is certainly a major challenge and online is only a partial remedy. In addition, the total number of meetings has increased significantly (online and in person) which only adds to the difficulty to be effective.*
- *For international projects, some focus on organizing actual research activities (process understanding, data development, field campaigns, comprehensive data evaluation), while some focus on synthesis or overview papers. while both are important, the former takes much more efforts than the latter. Should the former be the primary focus of WCRP projects, with the latter being icing on the cake?*