

46th Session of the WCRP Joint Scientific Committee (JSC)

Date: 12-16 May 2025

Instructions

***Overarching content/goal:** To provide an update on progress made during the last year, and to identify issues etc. in advance of the JSC meeting. This will allow more discussion and less reporting at the JSC meeting itself. The outcomes from this report will also feed into a highlights brochure planned for the first quarter of the year. The Secretariat will arrange calls prior to the JSC meeting with JSC liaisons (as appropriate) to discuss the input and any issues to the JSC meeting itself. Please work with the WCRP secretariat responsible for your activity, in the preparation of the report.*

Please keep the information as focused as possible and provide links to websites where more details can be accessed.

Update report for the WCRP Joint Scientific Committee

Global Precipitation Experiment (GPEX)

1. High-level publications (in particular strategic publications/assessments that are direct outcomes of your activity)

- The manuscript based on the GPEX Science Plan has been published in Bulletin of American Meteorological Society (BAMS) to further increase the community awareness and impacts of GPEX : Zeng et al., 2025, <https://journals.ametsoc.org/view/journals/bams/106/2/BAMS-D-23-0242.1.xml>
DOI : <https://doi.org/10.1175/BAMS-D-23-0242.1>

2. Capacity Building/Education and Training Highlights

- High level WCRP GPEX and U.S. funding agencies workshop and GPEX SSG meeting was organized between December 06-07, 2024, at the USGCRP HQ in Washington D.C., USA. The workshop attended by five U.S. funding agencies – NOAA, DoE, NSF, ONR and NASA involved discussions on GPEX science plan, objectives over the next few years. As a part of this, discussions around potential GPEX related capacity development activities were also discussed. Several U.S. agencies such as NASA, NOAA and NSF highlighted ongoing capacity development initiatives that could serve as potential study cases for GPEX.
- GPEX also has a dedicated Working Group (WG) on National/Regional Activities and Capacity Development (WG4). This WG will support existing national/regional activities and/or the establishment of new activities, partly through capacity building (e.g., AsiaPEX, the Precipitation Prediction Grand Challenge in the U.S., African precipitation initiative). The WG4 plans to support the capacity development by entraining scientists and graduate students into GPEX's Years of Precipitation, particularly from the Global South whose populations are most vulnerable to climate variability and change. In situ researchers understand regional and local processes and can contribute to model evaluation, development, and inclusive experiment design for these regions. For instance, to enhance and maintain observational networks in the Global South in a sustainable way, it is important to train local operational and academic personnel and evaluate approaches that safeguard from potential

vandalization or misuse (e.g., through citizen science, local ownership, innovative technologies).

3. Linkages with other Core Projects, Lighthouse Activities, Academy etc.

- *As the GPEX SSG members represent almost all WCRP projects, GPEX has benefited from other WCRP projects in the development of the GPEX Science Plan.*
- *GPEX has also given remote or in-person presentations to other WCRP project meetings when invited. At the most recent GEWEX SSG meeting in Feb. 2025, following GPEX's presentation, potential collaborations are currently being considered between GEWEX's Global Data Analysis Panel (GDAP) and GPEX's WG2 Precipitation relevant Databases.*
- *GPEX will continue to leverage other WCRP projects and LHAs for synergistic GPEX activities.*
- *GPEX's WG4 on capacity development will also work closely with the Academy to promote training opportunities in future.*

4. Partnerships with entities outside of WCRP

- *GPEX has maintained interactions with WWRP and its projects. GPEX will be presented at the upcoming International Monsoons Workshop jointly organized by WWRP and WCRP.*
- *In collaboration with GEWEX, GPEX has interacted with the WMO Infrastructure Department (e.g., instruments and measurements) and Service Department (e.g., hydrology). GPEX continues the connections with WMO's Hydrology Division through one of its SSG members who is an expert member of WMO's Standing Committee on Hydrology.*
- *The high level GPEX-USGCRP workshop held in December 2024 has also helped strengthen connections with several U.S. funding agencies.*
- *The four GPEX WGs are also building new partnerships and connections –*
 - *WG1 is helping building connections with ongoing and future field campaigns (e.g. AR Recon, AsiaPEX, TEPEX, Hi-Africa). Field campaigns as a part of these activities could potentially be considered for GPEX anchor projects.*
 - *The co-chairs of the WG2 are connecting with various precipitation related agencies such as GPCC, and other national meteorological agencies to create partnerships on database sharing.*
 - *The WG3 co-chairs will be working closely with precipitation modelling and forecasting centres. Further to this, discussions between GPEX leadership and ECMWF and NCEP centres have also been initiated.*
 - *WG4 is also exploring partnerships with external entities (such as centres in the Himalayan region- Nepal, ICIMOD) to develop GPEX related capacity development activities.*

5. Future Science Directions for JSC consideration (e.g., new groups, activities)

- *Working Groups Membership and Working Groups Implementation Plan*
 - *The four Working Group co-chairs have been appointed and each of the WGs currently have a very few members selected from the applications received in the*

2024 GPEX open call. GPEX will soon be publishing a new WG membership call to invite more applications. The requirements have been defined by the WG co-chairs and the SSG members after several discussions on the WG science and expertise requirements.

- *At the GPEX SSG meeting in December 2024, the four Working Groups have identified short term science objectives that the WGs will focus. Elaborate WG science and implementation plan will be prepared once the WGs are fully functional.*
- **WCRP Years of Precipitation**
 - *Identify and endorse 3-4 anchor projects for the GPEX global coordinated field campaigns on four storm types (atmospheric rivers, mesoscale convective systems, tropical cyclones, and monsoons) as part of the WCRP Years of Precipitation (YoP) in 1-2 years. As a part of this, the GPEX leadership have approved the endorsement criteria for anchor projects. WG1 will be working closely with potential field campaigns to submit anchor project proposals for the SSG's review.*
 - *Launch the YoP in 2-3 years,*
 - *Finish the GPEX global coordinated field campaigns in 4-6 years.*
- **Other GPEX Activities**
 - *Interact with and seek the agreement of major forecasting and modelling centers on generating analysis/reanalysis, forecasting, and modelling products for the YoP in 1-2 years,*
 - *Besides the YoP, develop three other types of GPEX activities (data synthesis and development, modeling, and capacity development), with some led by GPEX and most led by other WCRP projects (with GPEX contributions) in 1-3 years (before YoP) and in 4-6 years (during the YoP),*
 - *Continue the engagement with other projects and organizations each year.*

6. New Activities (e.g., structural changes to your activity, plans for databases and other products not covered in the above)

- *As highlighted in Section 5, GPEX will soon be expanding its WG memberships with an expectation for the WGs to be fully functional in 2025.*

7. General (Highlight any other outcomes etc. that you wish to make the JSC and other WCRP activities aware of (in particular regionally focussed activities we could use in any highlights brochure). Are there particular challenges faced in the last year that the JSC should be aware of?)

- *We don't have any specific suggestions or issues for GPEX or WCRP activities at present,*
- *Once we make some progress in our GPEX Implementation Planning, we may have suggestions for new topics/activities and/or potential suggestions for a Global Fellowship focus for future years,*
- ***An important challenge for GPEX is ensuring continued complementarity with other Lighthouses and core projects and maximally benefiting from synergies. As a partial solution GPEX SSG and Working Groups will continue to have good representation from those WCRP activities.***

