

GASS Project Reports for the GEWEX SSG Meeting

Xubin Zeng and Daniel Klocke, Co-Chairs

15 January 2018

Full Panel, Project or Working Group Name (Acronym): Global Atmospheric System Studies (GASS)

Reporting Period: 1 July 2017 – 31 December 2017

Starting date: 1 July 2017

End date (where appropriate): N/A

URL: <https://www.gewex.org/panels/global-atmospheric-system-studies-panel/gass-projects/>

Chair(s) and term dates: Xubin Zeng and Daniel Klocke, July 2017 – June 2020

1. 2-3 major panel accomplishments or significant contributions for the reporting period

Two new co-chairs were appointed in July 2017. In cooperation with past panel members, co-chairs and the broader community, a vision and strategy for a proactive and actionable future GASS panel has been developed. This is documented in a GEWEX News article in the August 2017 issue: https://www.gewex.org/gewex-content/files_mf/1508780303Aug2017.pdf

To transform the vision and strategy into concrete projects, the upcoming Pan-GASS conference from 26th of February to 2nd March 2018 in Lorne, Australia is of great importance. Abstract submission has been closed. With the effort of the organizing committee chaired by Ben Shipway (UK Met Office), more abstracts were submitted than we expected. And the organizing committee decided to decline some of the abstracts that are not closely relevant to the Conference. This conference will also serve as the “official” re-launch of GASS and its future projects, with breakout groups organised around potential future GASS projects.

2. Panel activities

We have communicated with past panel members about their future involvement in GASS activities. The key point is that we ask all future panel members to be actively involved in GASS projects (as a leader, contributor, and/or user).

Our primary Panel activity has been to organize a highly successful Pan-GASS Conference. So far, sessions have been finalized, with oral and poster presentation notifications emailed to participants.

We have talked with various people and organizations about potentially leading future GASS projects. We will ask various participants to prepare 1-2 page white papers on potential GASS projects before the Conference. Then breakout meetings will be held on these white papers during the Conference to generate the momentum.

Shortly after the Conference, we will have the list of GASS Panel members and GASS projects for GEWEX SSG approval.

3. New projects in place

As mentioned above, we expect to have a list of GASS projects available after the Pan-GASS Conference.

4. New projects and activities being planned, including timeline

See above.

5. Science highlights

For the new GASS panel, not yet.

6. Science issues

Discussed in the GEWEX News article in the August 2017 issue (see above).

7. Contributions to developing GEWEX science; fit into GEWEX imperatives

Both Co-chairs are involved in the relevant GEWEX discussions. Links to the modelling panels within WCRP (GEWEX/GLASS and WGNE) will continue and potentially be strengthened through common projects. GASS will also be closely linked to WWRP through the involvement of one co-chair. GASS is also exploring the link to the aerosol, precipitation and cloud activities in ACPC and GAP, as one ACPC representative will give a talk on ACPC at the Pan-GASS Conference, and one GASS co-chair will attend the coming ACPC Conference in April 2018.

8. List contributions to the GEWEX Science Questions and plans to include these.

- **Observations and Predictions of Precipitation**
- **Global Water Resource Systems**
- **Changes in Extremes**
- **Water and energy cycles**

GASS is relevant to three of the four questions above (precipitation, extremes, and water & energy cycles).

9. Other key science questions that you anticipate your community would want to tackle in the next 5-10 years within the context of a land-atmosphere project (1-3 suggestions)

In our GEWEX News article, we mentioned several such questions, such as:

- Coupling dynamics with physics (e.g., surface-boundary layer-convection coupling)

- Mechanisms for the diurnal cycle of precipitation over different regions
- Role of land processes in sub-seasonal to seasonal (S2S) prediction

10. Briefly list any specific areas of your panel's activities that you think would contribute to the WCRP Grand Challenges as identified by the JSC (not covered under 9).

- **Provision of skillful future climate information on regional scales (includes decadal and polar predictability)**
- **Regional Sea-Level Rise**
- **Cryosphere response to climate change (including ice sheets, water resources, permafrost and carbon)**
- **Improved understanding of the interactions of clouds, aerosols, precipitation, and radiation and their contributions to climate sensitivity**
- **Past and future changes in water availability (with connections to water security and hydrological cycle)**
- **Science underpinning the prediction and attribution of extreme events**

GASS is related to two grand challenges: cloud, aerosol, precipitation, and radiation interactions; and extreme events.

11. Cooperation with other WCRP projects (CLIVAR, CliC, SPARC), outside bodies (e.g. IGBP) and links to applications

Close links to WGNE in terms of model development are maintained.

Direct connections of GASS to WWRP are established by contributing to the action areas of WWRP and by reporting to WWRP-SSC. Cooperations with ACPC and CFMIP will be maintained through common projects. Potentially links might be established with CLIVAR (surface fluxes).

12. Workshops/meetings held

None

13. Workshops / meetings planned. Include travel support needs anticipated (for WCRP). Include tentative meetings planned up to 2 years (for IGPO planning purposes)

The Second Pan-GASS Conference will be held in Australia from 26 February – 2 March 2018. No travel support is available from GEWEX.

After all Panel members are selected, we will decide if we will need to have a panel meeting in late 2018 or early 2019.

14. Other meetings that were attended on behalf of GEWEX or your Panel

Pan WCRP modeling meeting, including the WGNE-32 session, 9-13 October 2017, UK MetOffice, Exeter, UK.

WWRP-SSC, 25-26 October 2017, Geneva, Switzerland.

15. Issues for the SSG

None at present.

16. List of key publications (*where appropriate*)

None. (see 5.)

17. List of members and their term dates (including changes) where appropriate:

TBD.