

## **ARM Cloud and Precipitation Measurements and Science Group Charter**

March 2019



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## Acronyms and Abbreviations

AACT	ARM/ASR Coordination Team
ASR	Atmospheric System Research
CPMSG	Cloud and Precipitation Measurement Science Group
DOE	U.S. Department of Energy
ENA	Eastern North Atlantic
HSRL	high-spectral-resolution lidar
IMB	Infrastructure Management Board
MPL	micropulse lidar
NSA	North Slope of Alaska
RL	Raman lidar
RWP	radar wind profiler
SGP	Southern Great Plains
UEC	User Executive Committee
VAP	value-added product

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## 1.0 Committee Function and Objectives

The Atmospheric Radiation Measurement (ARM) Cloud and Precipitation Measurements and Science Group (CPMSG) brings together members of the ARM instrument operations, engineering, and translator teams with the ARM science community for the purpose of improving the performance and science impact of the ARM measurements of clouds and precipitation. The members of the CPMSG work toward this goal by confronting science needs from the broader research community with operational constraints of the ARM facility.

The CPMSG replaces the former radar science and engineering group. The CPMSG will continue to include a significant focus on the application of the ARM radar network; however, the focus of ARM is ultimately not on specific instruments but on providing measurements and associated data products that advance atmospheric science. Providing measurements of cloud properties has always been a core activity for ARM, but increasingly, ARM has striven to couple measurements of cloud properties with precipitation to support the full range of research associated with cloud systems. Radar measurements are often central to cloud and precipitation research but often the retrieval of cloud and precipitation properties requires coupling radar measurements with measurements from other instruments or other instruments may provide information in physical regimes where radars do not do well. Therefore, the CPMSG will address issues related to radar performance and applications but will also consider issues related to other passive and active remote sensors as well as ground-based in situ precipitation measurements.

A driving consideration for the group should be how resources can best be applied to measurements of cloud and precipitation properties and the development of associated data products to increase the scientific impact of these measurements.

The CPMSG reports directly to the ARM Technical Director and is charged with working together to provide constructive recommendations regarding the operation, characterization, and development of instruments providing cloud and precipitation measurements along with the development of data products derived from these instruments and the identification of measurement gaps. Recommendations for measurement characterization may include assessment of data quality, calibration procedures, determination of measurement uncertainties, and the communication of this information to users.

## 2.0 Membership

### 2.1 Committee Composition

The CPMSG will include scientists representing sectors of the ARM research community and ARM staff. Cloud and precipitation scientists will be invited by the ARM Technical Director to represent a range of research areas. The science representatives should also be selected to span cloud type regimes (warm shallow clouds, cold clouds, deep convection) to the extent possible. At least five and up to seven members will be selected to represent the following research areas (note that individuals may represent multiple areas):

- Cloud and precipitation microphysical retrievals

- Cloud and precipitation microphysical processes
- Cloud system dynamics
- Scanning radar applications
- Application of ARM data to model evaluation or parameterization development
- Satellite measurements of clouds or precipitation.

The members will also be selected to span the overarching meteorological regimes as represented by the Atmospheric System Research program: warm clouds, polar clouds, and deep convection. Additionally, the committee will include ARM staff that represent ground-based cloud measurement functions within the ARM facility. These members will include:

- A representative from the radar operations and engineering team
- A representative from the MPL, HSRL, or RL mentor teams
- A representative from among the RWP or in situ precipitation measurement mentors
- The cloud and precipitation translators
- A representative from the Data Quality Office.

Finally, the following roles are designated ex-officio members of the committee:

- The Technical Director
- The Associate Director for Operations
- The Engineering and Process Manager
- The Instrument Operations Manager.

The ex-officio members represent the group of ARM stakeholders who will be responsible for reviewing, prioritizing, and implementing recommendations from the CPMSG and function primarily as observers on the committee.

## **2.2 Committee Selection Process**

The members of the CPMSG will be chosen by the ARM Technical Director, with the input and approval of the ARM and ASR Program Managers. The ARM Technical Director may solicit recommendations for the science positions from the ASR working group chairs or the ARM User Executive Committee. The CPMSG should contain practical and diverse expertise in cloud and precipitation science, measurement, and modeling and should be able to provide objective instruction that serves the best interest of the ARM facility and its users. Science members are expected to be current or recent users of the ARM facility, although a representative may be a non-ARM user, if expertise outside the ARM community is needed.

## **2.3 Terms of Service and Committee Leadership**

Terms for science committee members will be two years and may be renewed for up to one additional consecutive term upon review by the ARM Technical Director.

The committee will be chaired by a representative from the science members with a vice-chair from the ARM facility. The chair and vice-chair will be elected by the members of the committee for a period of two years. An individual may not serve more than two consecutive terms as chair or vice-chair.

The chair and vice-chair will develop the agenda for CPMSG meetings, lead meetings, and provide written reports from meetings to the Technical Director. They may also extend invitations to individuals needed to represent specific themes during particular meetings.

## **3.0 Committee Activities and Duties**

### **3.1 Frequency and Structure of Meetings**

Committee members will participate in virtual meetings at least quarterly by telephone or videoconference. The CPMSG will also conduct annual face-to-face meetings to be held either at the annual ARM/ASR Principal Investigator meeting or as a dedicated face-to-face meeting. Additional meetings may be conducted as needed and agreed upon by the group.

A formal agenda will be prepared and distributed by the co-chairs before meetings. Members of the science community may propose agenda items and may be asked to present a suggested topic if that is considered useful by the chair and the Technical Director. Minutes for each meeting will be taken and made available to the public.

### **3.2 Meeting Participation**

Virtual meetings will generally be confined to members of the committee; however, non-members may be invited by the chair, vice-chair, or Technical Director to represent a particular topic as noted in section 3.1. The annual extended-format meetings will be open to the public; however, the committee chair or the ARM Technical Director may call a closed session if there is a need to discuss sensitive or proprietary information.

It is expected that committee members will make a sincere effort to attend meetings. If a member is unable to participate repeatedly, the Technical Director may choose to replace him/her prior to the end of their term to ensure representation for their subject area. Ex-officio members are not under the same expectation of regular participation but are free to participate in any meetings.

### **3.3 Quorum**

The committee may conduct business when a quorum of its members is present; such quorum shall consist of at least 50 percent of the members (excluding ex-officio members) and shall include the committee chair or his/her delegate from among the science members and the vice-chair or a delegate from among the ARM staff.





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