Earth System Model Evaluation and Development Using ARM Data Sets: Community Activities

2022 ARM/ASR Joint User Facility and PI Meeting

Conveners: Ann Fridlind, Christina McCluskey, Hugh Morrison, and Shaocheng Xie

Background

- ARM and ASR have a long history of providing data and various types of support for <u>community-wide model evaluation exercises</u> (e.g., many GCSS case studies that remain widely used for ESM development)
- two current GASS projects continue in that tradition (DCP and COMBLE, stay tuned in this session), but activities have generally tapered off
- an ARM-based modeling group that incubates new projects from the viewpoint of <u>addressing important ESM uncertainties</u> could re-energize such activities
- how could such a group interact with external communities (e.g., GASS and WMO) and what frameworks could support making it sustainable?

Agenda

- Successes and barriers — Hugh Morrison
- Current GASS community-wide projects founded on ARM data
  - Diurnal Cycle of Precipitation — Shaocheng Xie
  - COMBLE — Tim Juliano and Florian Tornow
- The Earth Model Column Collaboratory (EMC^2) lidar/radar simulator
  - Application to DHARMA LES and ModelE3 ESM — Israel Silber
  - Application to E3SM — Yuying Zhang and Jingjing Tian
- Incubation of future activities
  - Aerosol properties and processes most limiting ESM skill — Susannah Burrows
  - Cloud properties and processes most limiting ESM skill — Andrew Gettelman
  - Contributed slides and discussion re new activities and enabling sustainability