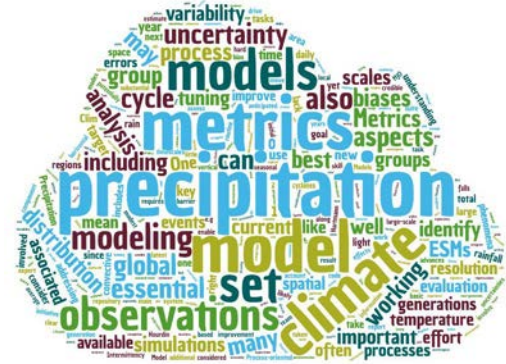


DOE Precipitation Metrics Workshop

July 1 to 2, 2019

Rockville Hilton
1750 Rockville Pike
Rockville, MD 20852

(Metro Stop: Twin Brook Station on Red Line)



AGENDA

Day 1

Welcome & Introductions

- 8:00 am. Gather
- 8:20 a.m. Welcome from DOE (G. Geernaert, R. Joseph)

Background, Motivation, Starting Point and Expectations

- 8:35 a.m. Aims of the workshop: Why are we here? (C. Jakob)
- 8:45 a.m. Perspectives on what to include as a baseline (A. Pendergrass)
- 8:55 a.m. A strawman as a starting point (P. Gleckler)
- 9:20 a.m. Perspectives on exploratory metrics (R. Leung)
- 9:35 a.m. Attendee intros, reactions and 1- to 3-minute perspectives on pre-meeting ideas
- 10:30 a.m. Break

Topics Relevant to Defining Precipitation Benchmarks

In addition to presenting their expertise as it relates to the workshop, presenters are asked to discuss their views on: 1) the co-chairs' strawman, 2) additional/alternate candidates for an initial set of benchmarks, and 3) topics relevant for future research that may lead to a more comprehensive and advanced set of metrics.

- 10:45 a.m. A modeler's perspective (R. Neale)
- 11:00 a.m. Evaluating simulated precipitation (including snowfall) with satellite observations (T. L'Ecuyer)
- 11:20 a.m. Extremes evaluation under observational uncertainty (M. Bador)

DOE Precipitation Metrics Workshop Agenda – Day 1 Continued

- 11:40 a.m. Connecting spatial and temporal scales of precipitation (G. Martin)
11:50 a.m. An Impacts-related perspective (A. Ruane)
12:05 p.m. Return value extremes and scale mismatch in model evaluation (M. Wehner)
12:25 p.m. Use-inspired metrics (P. Ullrich)
12:45 PM Lunch

Break Out Group Discussion—Identifying Initial Set of Benchmarks

- 2:00 p.m. Discussion topics:
- A set of set metrics, comprehensive but also concise and ready to go, and supported by the group, for evaluating precipitation in models
 - How should we address observational uncertainty?
 - A plan for efficient implementation
 - A plan for turning this into a publication evaluating the CMIP6 models; consider the feasibility of doing this by Dec 31, 2019
 - A set of (research) priorities for what should go into the next benchmarking round (which won't have the same time pressure of the IPCC/CMIP deadline)

BOG1 Chair: C. Jakob, **Rapporteur:** G. Tselioudis

BOG 2 Chair: P. Gleckler, **Rapporteur:** Travis O'Brien

- 3:30 p.m. Break
3:45 p.m. BOG report out and plenary discussion
5:30 p.m. End of session

Day 2

Reconvene

- 9:00 a.m. Gather; discussion on overnight thoughts

Topics Relevant to Exploratory Metrics

- 9:30 a.m. Evaluating simulated precipitation with ARM data (S. Xie)
9:40 a.m. Convection onset metrics (D. Neelin)
10:00 a.m. Machine learning and frontal systems (K. Kunkel)
10:15 a.m. Discussion
10:30 a.m. Break

DOE Precipitation Metrics Workshop Agenda – Day 2 Continued

- 10:45 a.m. Extratropical and frontal rainfall (J. Catto)
11:00 a.m. A regime-oriented perspective on evaluation of precipitation (G. Tselioudis)
11:20 a.m. Variability of monsoons (B. Boos)
11:30 a.m. Discussion
12:30 PM Lunch

Break Out Group Discussion (Establishing Initial Set, Areas of Needed Research)

- 2:00 p.m. **BOG 3:** What needs to happen for:
1. Solidifying the strawman - initial set of benchmarks, and other details of the approach
 2. Strategy for analysis + publication by IPCC deadline?
- Chair:** A. Pendergrass, **Rapporteur:** R. Neale
Participants: M. Bador, J. Lee, T. L'Ecuyer, M. Wehner, C. Jakob, P. Gleckler, P. Ullrich, C. Kidd, D. Easterling
- 2:00 p.m. **BOG 4:** What should the next generation of metrics look like? (Exploratory and process oriented metrics discussion)
1. What aspects (e.g., precipitation types, higher order moments) of precipitation should the exploratory metrics focus on to complement the standard metrics?
 2. Should relationships between precipitation and other quantities be considered in the exploratory metrics?
 3. What principles should be used to prioritize the exploratory metrics?
 4. How to implement a phased approach for exploratory metrics?
- Chair:** R. Leung, **Rapporteur:** S. Xie
Participants: B. Boos, J. Catto, K. Kunkel, G. Martin, D. Neelin, G. Tselioudis, T. O'Brien, C. DeMott
- 3:30 p.m. Break

Summative Plenary Discussion

- 4:00 p.m. Reports from BOGs; discuss how we will move forward
5:00 p.m. End of Workshop