

Cloud Life Cycle WG Opening Plenary

20 March 2013



A New Approach

- **What?** Science team organized more directly around programmatic scientific objectives
- **Why?** To better facilitate larger, and more significant, programmatic accomplishments
=> bigger impact on models



A New Approach

- **How?**

- More discussion, coordination, collaboration.
- More emphasis on group activities.
- Modified meeting structure.
- Focus and Interest Groups
- Guidance from DOE managers and WG leaders
- PIs find a way to fit into, and shape, the priority research themes and activities



A New Approach

- **How?**
 - Continuity with groups in time
 - Initial facilitators identified
 - Leaders step forward
 - Participation is critical!



CLWG Meeting Design

- Opening plenary
 - General structure
 - Translator activities
- Science theme breakouts (W & Th)
- CLWG closing plenary on Thursday
 - Reports from science theme breakouts
 - Building the bigger CLWG/ASR picture
 - Priorities discussion



Science Breakout Objectives

- Fine tune science question(s) as needed
- Prioritize scientific focus / foci
- Identify participating/contributing investigators and projects
- Draw strong guidance from model importance, limitations, and difficulties
- Identify critical measurements, parameters, and data products (VAP guidance)
- Establish plans for coordinated research activities and for informing model needs

Science Breakout Considerations

- Important to establish ways to integrate modeling and observational work.
- Interface with existing Focus and Interest Groups (intentional similarities built in!)
- Consider working towards new groups if appropriate



CLWG Programmatic Themes

- Ice particle size distribution
- Shallow to deep convection
- Convection organization
- Cu / Sc / St cloud processes
- Phase partitioning and mixed-phase processes



What processes determine the temporal evolution and vertical distribution of the ice particle size distribution in ice clouds of all kinds?

Wednesday, 1:30-5:30 pm, Main plenary room

Facilitators: *Greg McFarquhar, David Mitchell*

- Particle growth, microphysical processes, radiative properties, and fall speed
- Mass – area – density – size relationships
- Evolution in time and space
- Impact of measurement challenges
- Key measurements: SGP, TWP, NSA, StormVex, aircraft projects
- Relevant groups: IcePro, QUICR



What cloud and environmental processes control the transition from shallow to mid-level to deep convection and how does the transition differ over land and ocean?

Thursday morning, 8-9:45 am, Main plenary room

Facilitators: *Steve Krueger, Chidong Zhang*

- Role of environmental conditions
- Vertical motions inside and outside of cloud
- Entrainment/detrainment
- Scales: diurnal, weekly, seasonal
- Key measurements: SGP, TWP, AMIE/MJO, MC3E
- Relevant groups: MJO, entrainment, VV



Under what environmental conditions does convection organize into mesoscale structures and why? What processes determine the persistence of the stratiform rain and anvil regions?

Thursday morning, 10:15-12:00, Main plenary room

Facilitators: *Courtney Schumacher, Leo Donner*

- Roles of mesoscale winds, humidity, dynamics, cloud microphysics, radiation
- Impact on precipitation processes
- Impact of convective organization on environment
- Key measurements: SGP, TWP, AMIE/MJO, MC3E, TWP-ICE
- Relevant groups: CStAT, VV, entrainment



What processes control the partitioning of phase in mixed-phase clouds of all kinds (Arctic stratus, midlatitude nimbostratus, and deep convective)?

Thursday morning, 8 – 9:45, Room 3

Facilitators: *Gijs de Boer, Jerry Harrington*

- Relation to environmental temperature/moisture, vertical velocity, aerosols
- Impacts on persistence, latent heat, radiation, vertical dist'n of condensate, and precipitation formation
- Key measurements: NSA, MPACE, ISDAC, StormVex, TWP, SGP
- Relevant groups: AACI, Ice Nucleation, IcePro



What processes determine the formation, persistence, and evolution of cumulus, stratocumulus and stratus clouds in warm and cold climates?

Thursday morning, 10:15-12:00, Room 3

Facilitators: *Mark Miller, Minghua Zhang*

- Radiation-turbulence-entrainment-microphysics-drizzle-precip interactions
- Role of large-scale vs. local-scale processes
- Similarities/differences between warm and cold climates
- Key measurements: SGP, Azores, MAGIC, Pt. Reyes, NSA, MPACE, ISDAC
- Relevant groups: Entrainment, VV



General Discussions

- General feedback on this approach.....



Translator Activities

- We need to provide specific guidance for translator activities
- Science theme groups are a primary mechanism for determining priorities

