ARM's New Science Plan

Fall 2008

Solicitation of Input from the ARM Working Groups, ARM Science Team and ARM Science Community

Fall 2008/Spring 2009

ARM Chief Scientist collects input and works with ARM Program Managers, ARM SISC, ARM Working Groups, ARM Science Team and ARM Science Community to develop ARM's New Science Plan.

Summer 2009/Fall 2009

ARM's New Science Plan is in place

First Set of Inputs from across ARM Program

Aerosols:

Q1: How do aerosols influence ice (containing) clouds?

Q2: How do aerosols influence liquid water clouds?

Q3: What is the relationship between aerosols and precipitation?

Cloud Dynamics and Precipitation Processes:

Q4: What controls the distribution of vertical velocity and how does it vary at spatial scales?

Q5: What is the relationship between dynamics and cloud properties?

Q6: How does precipitation evolve in clouds?

Orography:

Q7: What is the role of orography in cloud formation and precipitation?

Surface Processes:

Q8: What is the role of surface processes and properties in cloud formation? (albedo, *diurnal cycle*, subsurface moisture, land cover)

3-D Radiation:

Q9: What is the profile of time-averaged radiative and latent heating and cloud properties?

Q10: How do we account for 3D radiative transfer in climate modeling and remote sensing?

Q11: What characterizes and controls the upper tropospheric humidity?

Cloud Property Working Group Input to Date

Q1: Global dimming and brightening (Chuck Long)

Q2: Shallow convection dependence on land surface and boundary layer (Mark Miller)

Q3: Cloud phase partitioning (Matthew Shupe)

Q4: New paradigm for evaluating model ice microphysics using observations (Zhien Wang)

Q5: Ice sedimentation rates (David Mitchell)

Q6: Quantifying the contribution of small ice crystals to the cirrus PSD (David Mitchell)

Q7: Geoengineering of cirrus clouds (David Mitchell)