

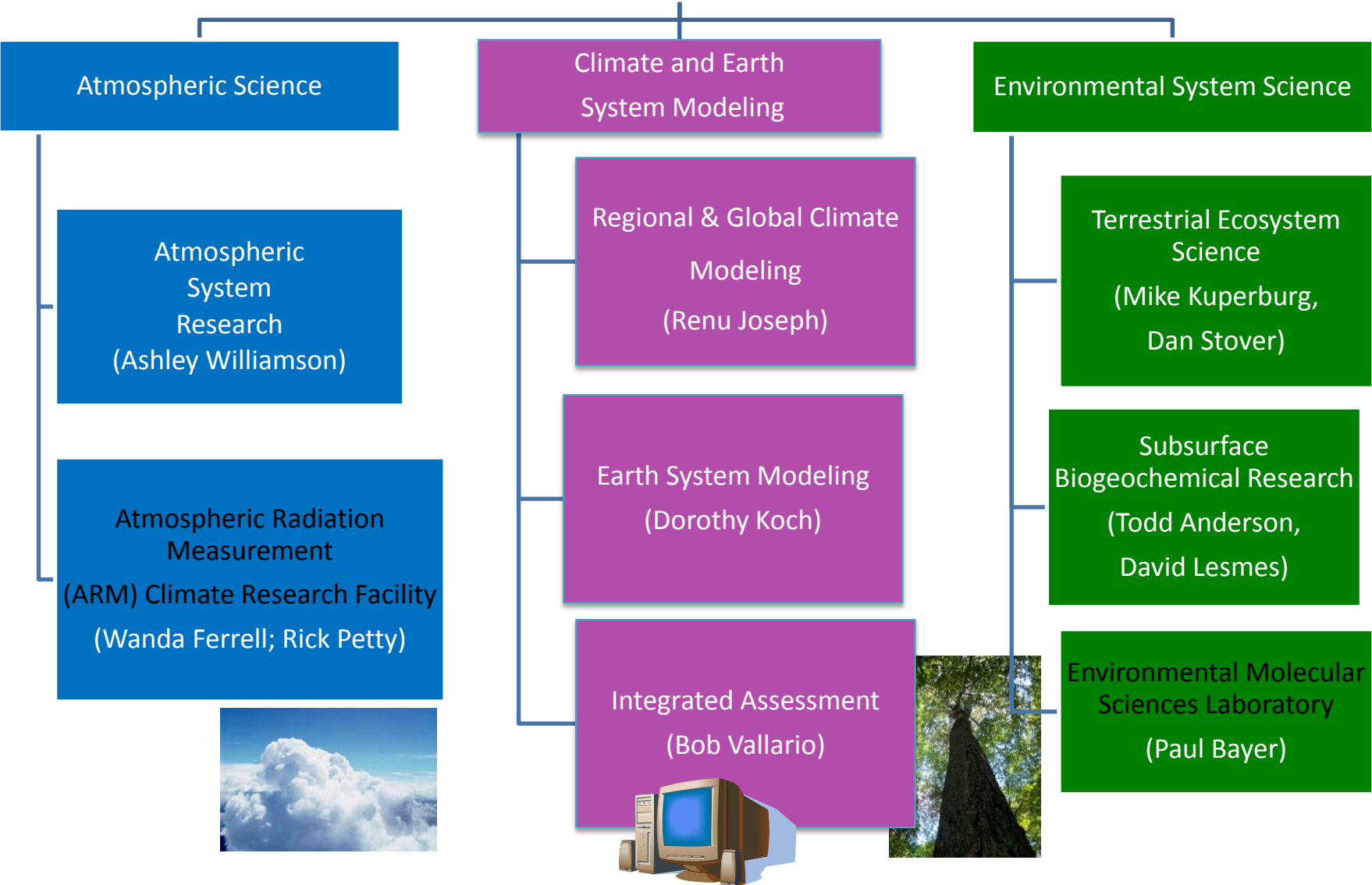
Climate and Environmental Sciences Division

G. L. Geernaert

March 13, 2012

Atmospheric System Research - Principle Investigator Meeting

Climate and Environmental Sciences Division
(Gary Geernaert)
(Karen Carlson-Brown; Leslie Runion, Patrick Horan; Nver Mekerdjian)



Strategic Planning

The Energy-Environment-Climate Nexus

Greenhouse gases are emitted during energy production...
and climate change will impact energy production

Building on our CESD mission:

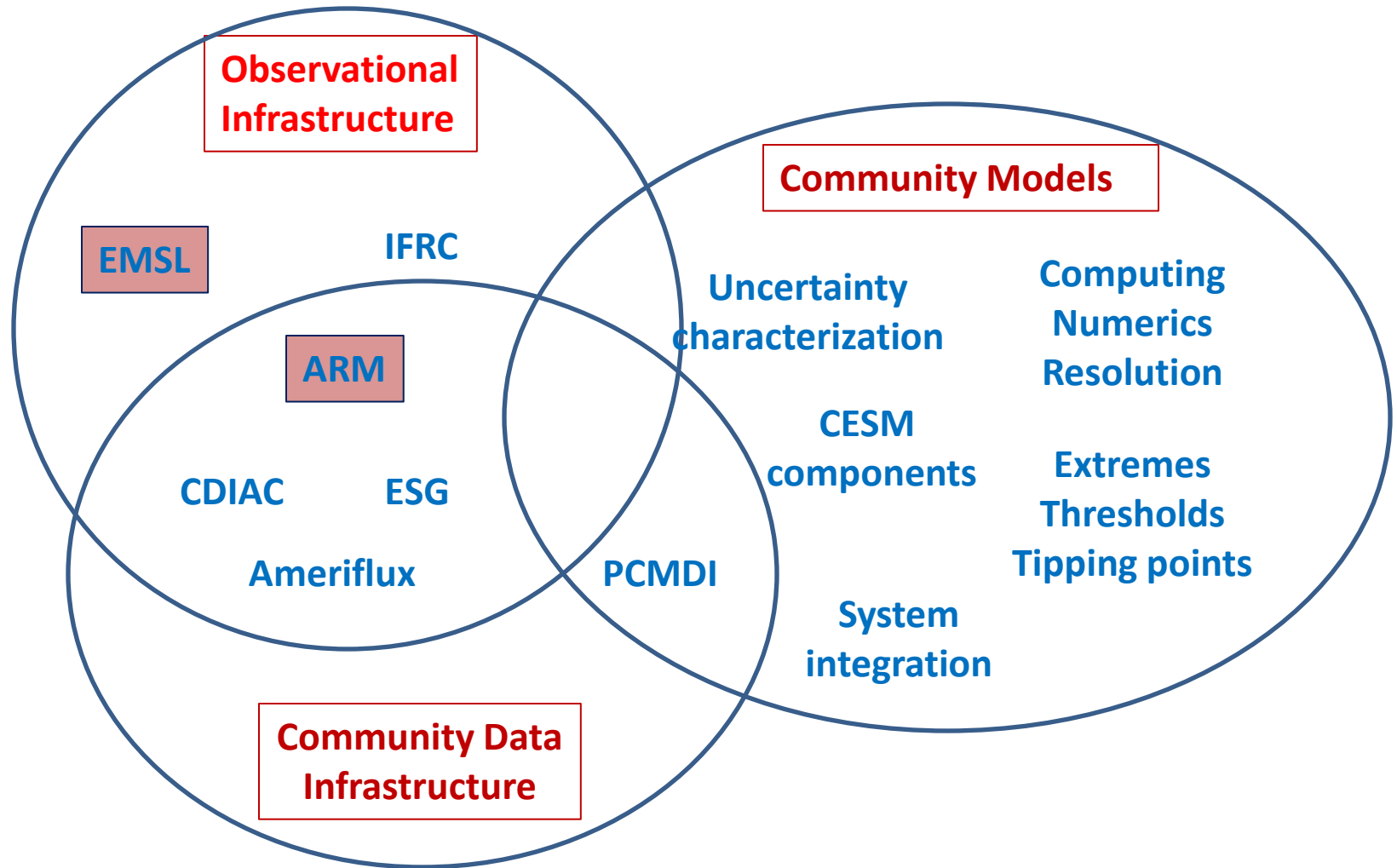
To advance a robust predictive understanding of Earth's climate and environmental systems and to inform the development of sustainable solution to the Nation's energy and environmental challenges.



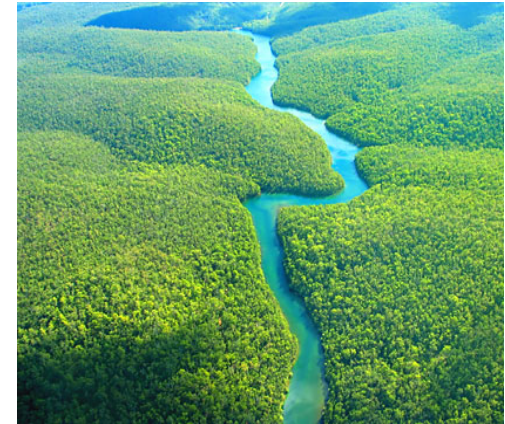
Climate & Environmental Sciences Division Strategic Goals

1. Synthesize new process knowledge and innovative computational methods advancing next generation, integrated models of the human-earth system.
2. Develop, test and simulate process-level understanding of atmospheric systems and of terrestrial ecosystems extending from bedrock to the top of the vegetative canopy.
3. Advance fundamental understanding of coupled biogeochemical processes in complex subsurface environments to enable systems-level prediction and control.
4. Enhance the unique capabilities and impacts of the ARM and EMSL scientific user facilities and other BER community resources to advance the frontiers of climate and environmental science.
5. Identify and address science gaps that limit translation of CESD fundamental science into solutions for DOE's most pressing energy and environmental challenges.

Platforms for science integration



NGEE Concept (Next Generation Ecosystem “Experiment”)



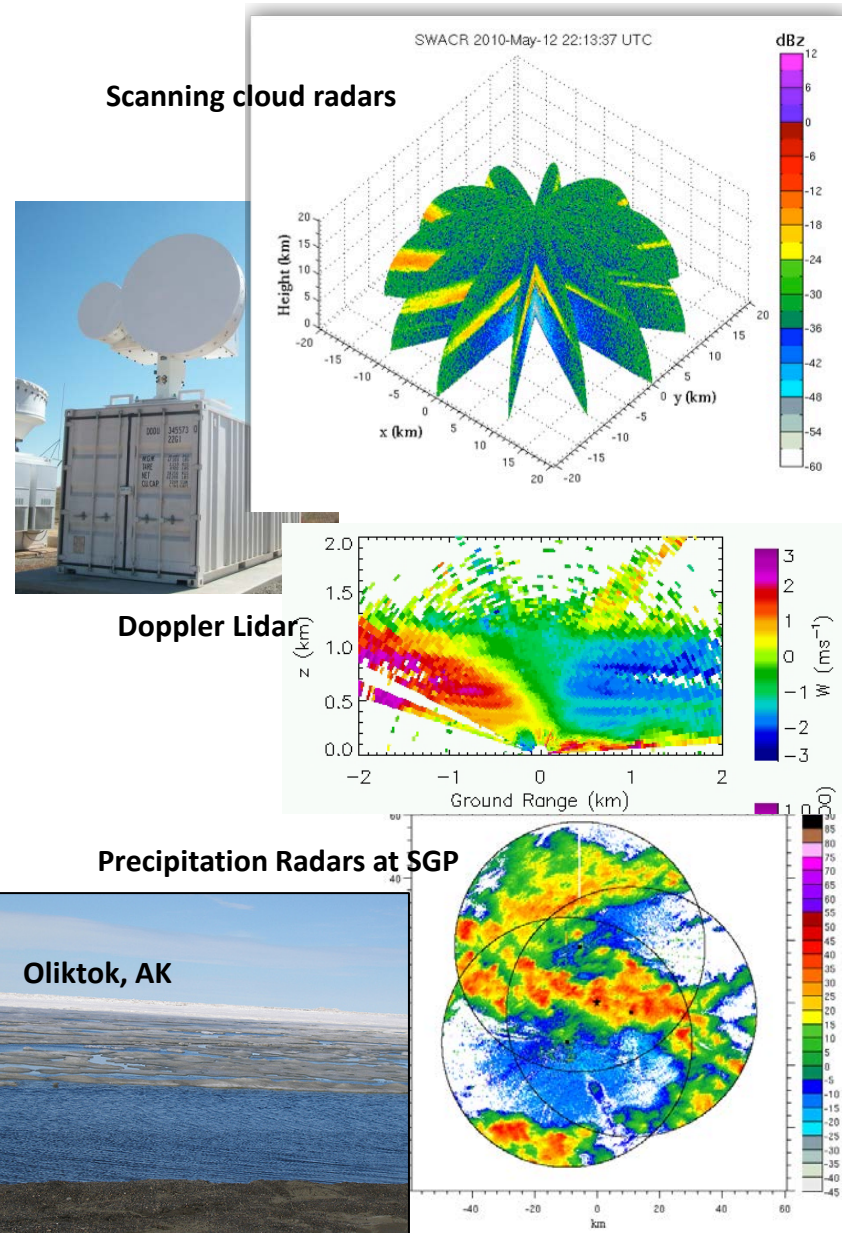
- Target systems that are:
 - Globally important
 - Climatically sensitive
 - Relatively unstudied
- Carefully couple modeling and field/laboratory research / planning
- Representation of scale/resolution of a high resolution Earth System Model (ESM) grid cell (i.e., a maximum 30x30 km grid size)
- NGEE Arctic Phase I proposal accepted with revisions for FY 12
- NGEE Tropics starts in FY13, workshop planning under development

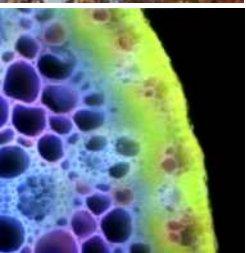
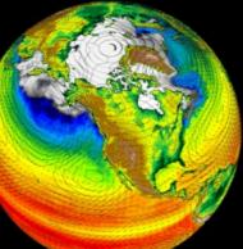
ARM Climate Research Facility – Next Generation

- ARM provides unique, continuous, long-term measurements : the role of clouds and aerosols in climate change
- New instruments: 3-dimensional measurements of cloud, aerosol and precipitation to improve climate models.

- In FY 2013, ARM opens new sites:**

- Azores (marine clouds)**
- Alaska Arctic coast**





Thank you!

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<http://science.energy.gov/ber/research/cesd/>



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