

DOE Climate Modeling Science Team Meeting

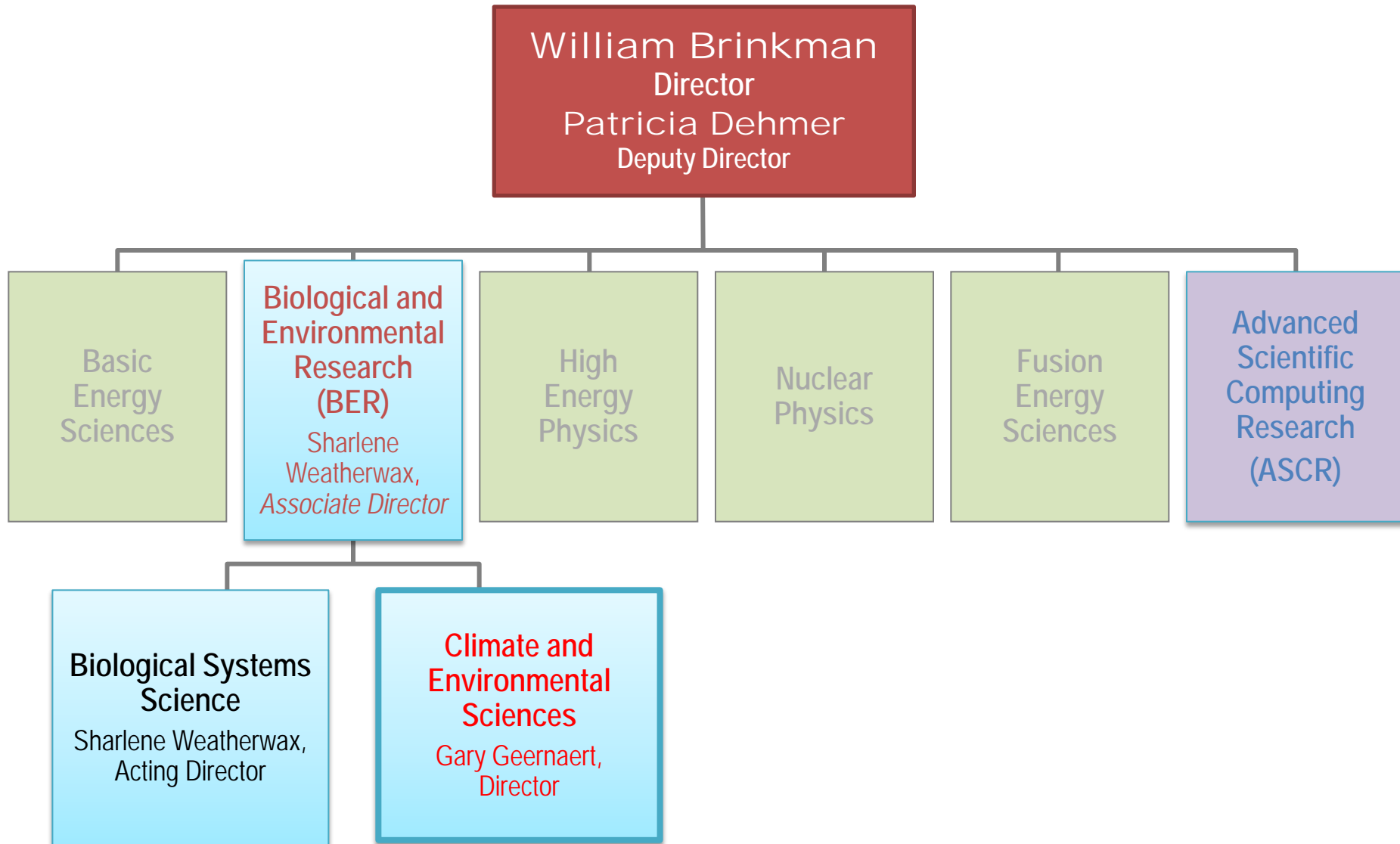
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Climate and Environmental Sciences Division
Biological and Environmental Research

September 22, 2011

Hyatt Grand Washington, DC

Department of Energy Office of Science



Why DOE?

The Energy-Climate Nexus

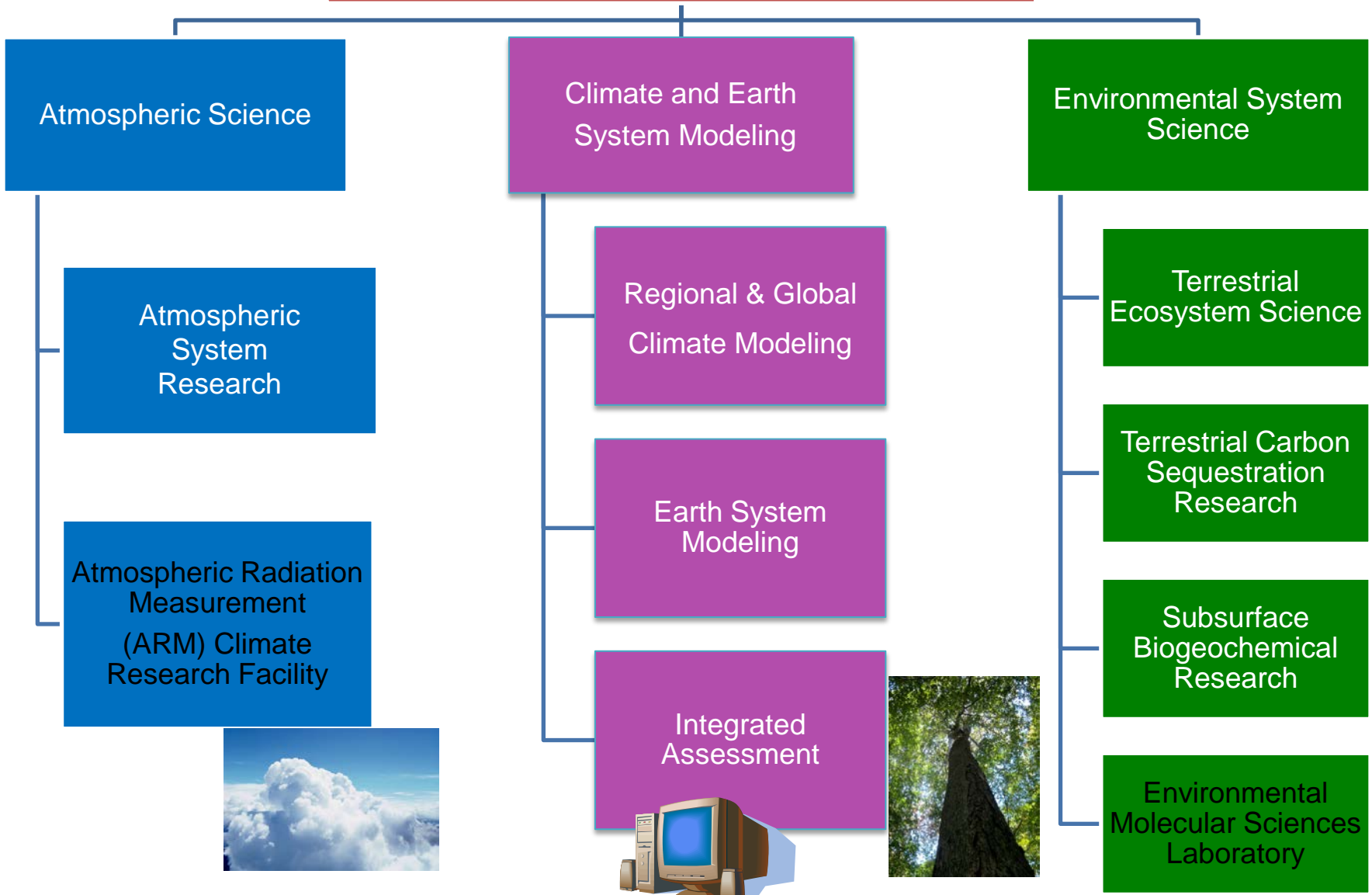
Greenhouse gases are emitted during energy production...
and climate change will impact energy production

DOE seeks to:

- Understand the effects of GHG emissions on Earth's climate and the biosphere
- Provide world-leading capabilities in climate modeling and process research on clouds and aerosols, and the carbon cycle
- Provide unique, world-leading capabilities in cloud and aerosol observations and large scale ecological experiments
- Build foundational science to support effective energy and environmental decision making



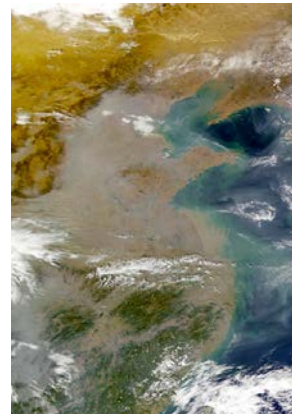
Climate and Environmental Sciences



Climate and Environmental Sciences Division Goals (Currently developing a new strategic plan)

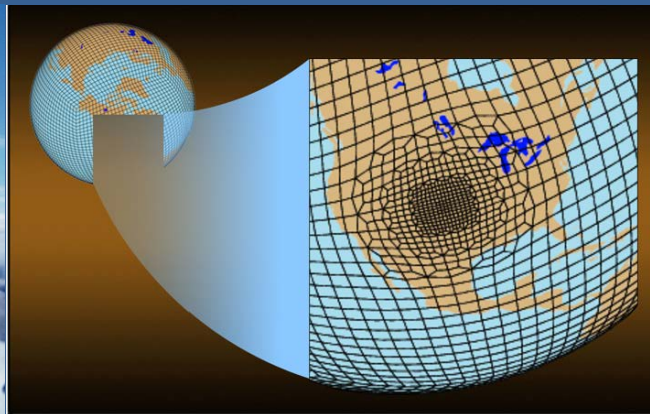
To advance a robust predictive understanding of Earth's climate system and to inform the development of secure and sustainable solutions to the Nation's energy and environmental challenges under global change.

- Develop models, informed by measurements, to project changes in climate and extremes
- Identify climate vulnerabilities, thresholds, tipping points
- Establish uncertainty characterization frameworks to prioritize research investments and to inform climate data users



Climate Modeling as CESD integrator: Links between Atmospheric Sciences Research/Atmospheric Radiation Measurement (ASR/ARM) and Climate Modeling

- Develop Community Atmosphere Model (CAM) clouds, aerosols and dynamics
- Apply ARM and other cloud/atmosphere/aerosol datasets to improve and test model
- Use model to discern most sensitive and uncertain elements of CAM to inform ASR research and ARM deployments



Climate Modeling as CESD integrator: Links between Terrestrial Ecosystem Sciences (TES) and Climate Modeling

- Develop Carbon cycle in Community Land Model (CLM)
- Apply Ameriflux and other TES datasets to improve and test CLM
- Use model to discern most sensitive or uncertain elements of CLM to inform TES research



GoAmazon2014

One year campaign to study land-aerosol-cloud interactions in the green Amazon and downwind of polluted Manaus.

Collaborative between ARM/ASR, modeling and TES



Next Generation Ecosystem Experiment (NGEE-Arctic)

Develop a high-resolution model representing Arctic permafrost ecosystems with an interdisciplinary approach including model-inspired observational and experimental components



GoAmazon2014

With Scott Martin
Noon to 1PM



Next Generation Ecosystem Experiment (NGEE)

With Stan Wullschleger
1 to 2PM



Support of the Community Model
(Joint development of the **CESM**)

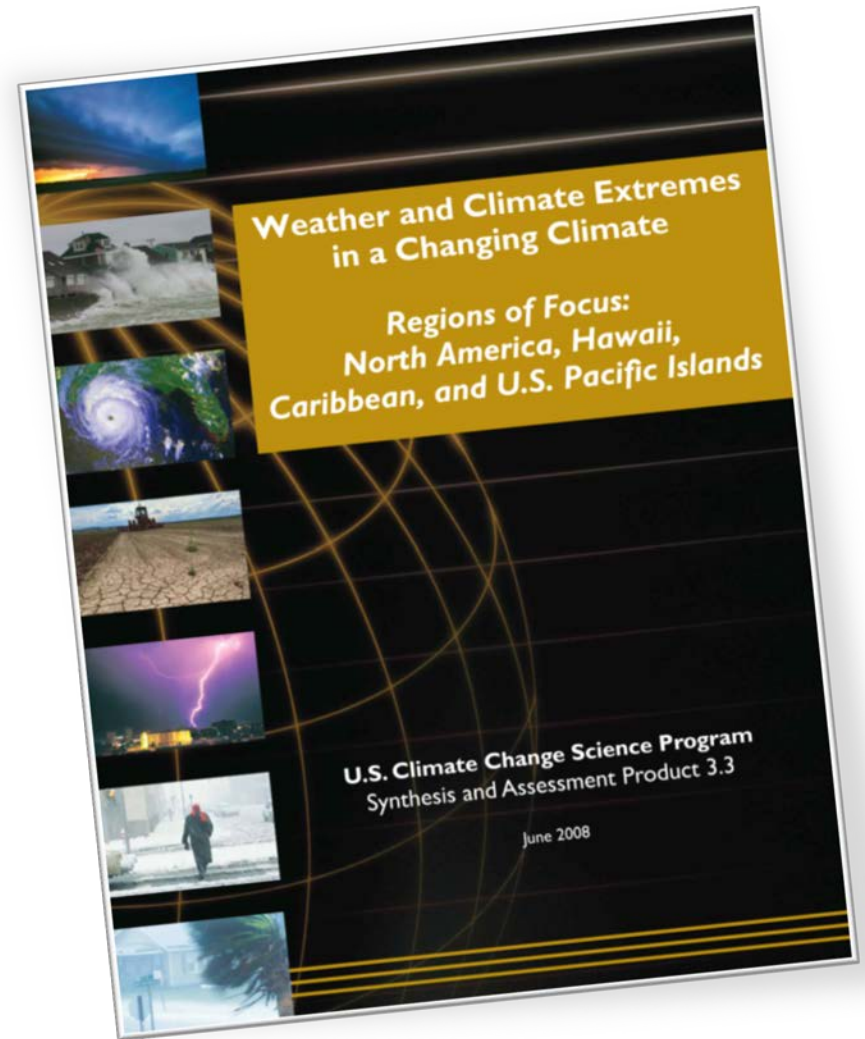
Coordination of distributed data
management: building the **Earth
System Grid Federation** linkage of
model and observational datasets to
users

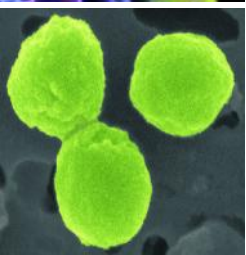
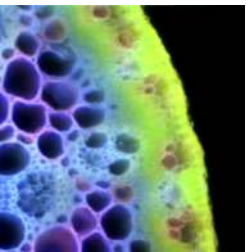
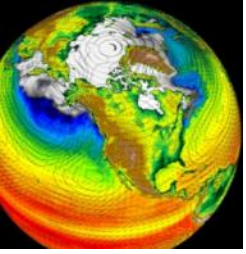
Leadership of **CMIP** efforts

Participation in **Interagency
solicitations** and MOUs (e.g., NSF-
USDA-DOE joint solicitation)

Contribution to **National Climate
Assessment**

Involvement in **USGCRP** activities





Thank you!

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