

Climate and Environmental Sciences Division

– an update

Gary Geernaert

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Outline

- Welcome!
- Budget, Staffing
- Division strategic priorities
- Thoughts on SFAs and FOAs

Personnel Updates for CESD

- ASR Program Manager

Sally McFarlane



- New Data Informatics Program Manager

- Science Assistant

Climate and Environmental Sciences Division
(Gary Geernaert)
(Karen Carlson-Brown; Leslie Runion, TBD; Nver Mekerdijan)

Data informatics
PM

Atmospheric Science

Climate and Earth System Modeling

Environmental System Science

Atmospheric System Research
(Ashley Williamson; Sally McFarlane)

Regional & Global Climate Modeling
(Renu Joseph)

Terrestrial Ecosystem Science
(Mike Kuperburg, Dan Stover)

Atmospheric Radiation Measurement
(ARM) Climate Research Facility
(Wanda Ferrell; Rick Petty)

Earth System Modeling
(Dorothy Koch)

Subsurface Biogeochemical Research
(Todd Anderson, David Lesmes)



Integrated Assessment
(Bob Vallario)



Environmental Molecular Sciences Laboratory
(Paul Bayer)

How do we set CESD priorities?

How do we set CESD priorities?

- CESD strategic plan
 - BERAC reports
 - Workshop reports
 - DOE high level strategy and uniqueness
 - Conforms to OMB input; Congress
- Leveraging opportunities (e.g, other agencies, other nations – Europe, Brazil, etc.)
- **PI meetings like this one**
- **Game changing scientific discovery from DOE and other research**

CESD meetings/workshops

Recent Workshops influencing priorities

- Water cycle workshop: Sept 24-26, 2012
- IGIM CMIP meeting: Oct 3-4, 2012
- EU – US (ARM) joint meeting: Nov 13-16, 2012
- Model development strategy: Dec 7-8, 2012
- EMSL Workshop on Aerosol Chemistry: Jan 30, 2013
- NACP: February 4-7, 2013

Strategic Planning

The Energy-Environment-Climate Nexus

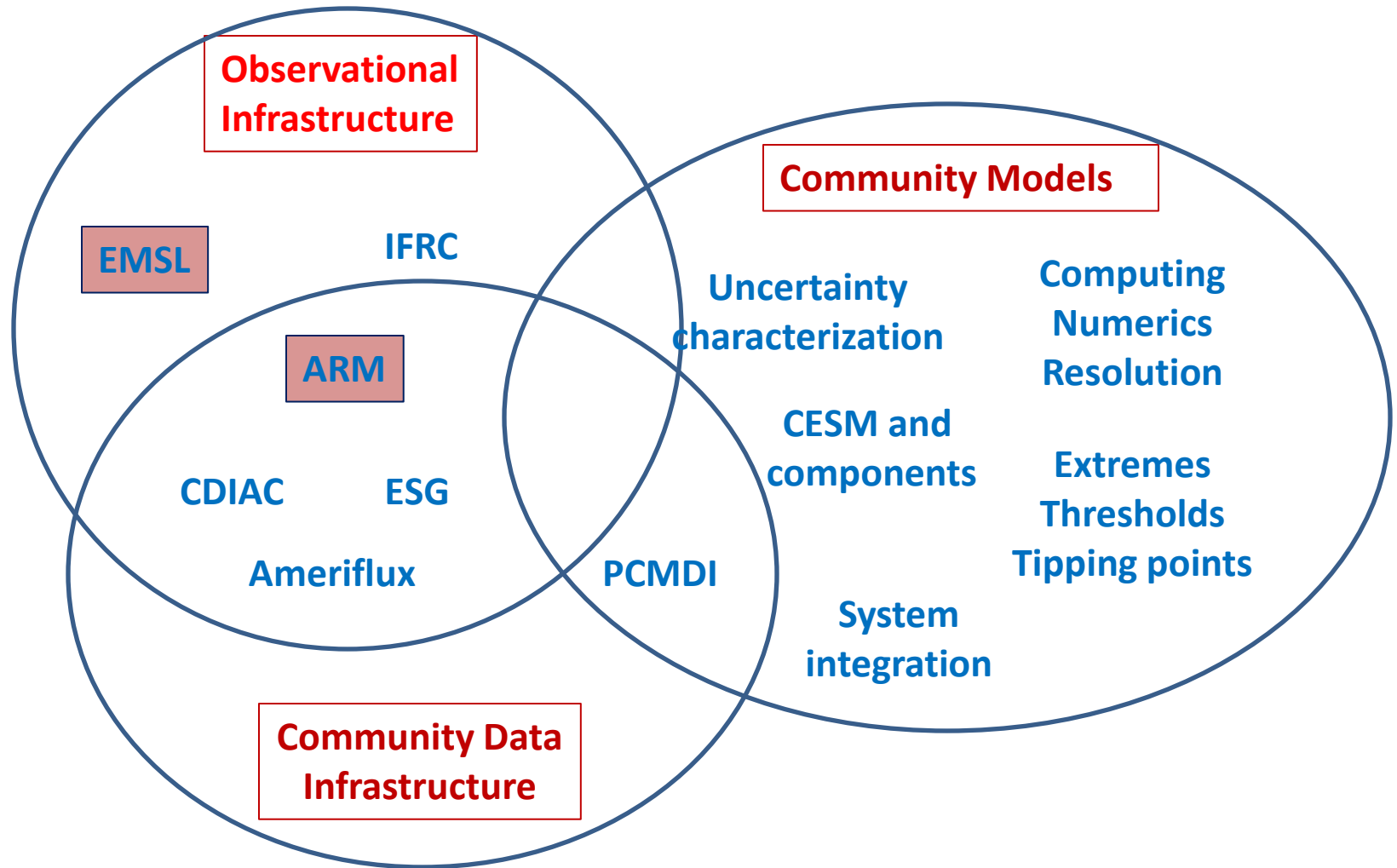
Greenhouse gases are emitted during energy production...
and climate change will impact energy production

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.**



Platforms for science integration



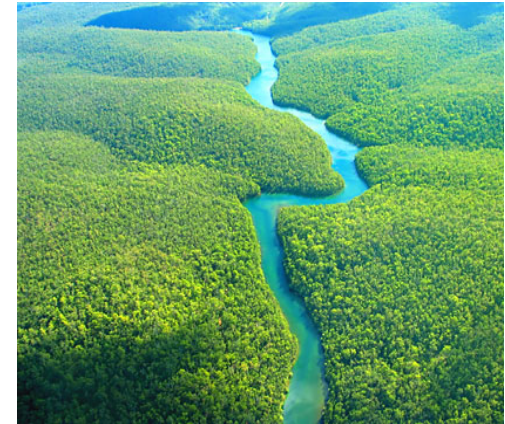
Climate & Environmental Sciences Division Strategic Goals

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.

Executing the strategic plan

- Accelerate capabilities in predictive modeling
- Observational and data capabilities: ARM, EMSL, data mgmt
- MODEX: analysis based integration of “modeling and experiment”
- Balanced funding mechanisms: SFA’s, boutiques, and university grants
- Interagency collaboration

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

BER User Facilities

- Joint Genome Institute
- Structural Biology Infrastructure
- Environmental Molecular Sciences Laboratory
- Atmospheric Radiation Measurement Climate Research Facility

- **Proposed: Data Analysis and Visualization Facility**

Questions ?