Climate and Environmental Sciences Division

- Strategic Planning
- Executing the Plan

May 2014

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**Mission:** To advance a robust predictive understanding of Earth’s climate and environmental systems and to inform the development of sustainable solutions to the Nation’s energy and environmental challenges.

**Goals**

- Process knowledge and innovative computational methods advancing next-generation, integrated models of the human-Earth system.
- Process-level understanding of atmospheric systems and terrestrial ecosystems, extending from bedrock to the top of the vegetative canopy.
- Coupled biogeochemical processes in complex subsurface environments to enable systems-level environmental prediction and decision support.
- 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.
- Address science gaps that lead to solutions for DOE’s most pressing energy and environmental challenges.
Platforms for science integration

Observational Infrastructure
- EMSL
- IFRC
- ARM
- CDIAC
- ESGF
- Ameriflux

Modeling
- CESM and its branches
- Subsurface models
- Computing Software
- IA
- IAV
- Extremes
- Thresholds
- Tipping points

Uncertainty characterization
- System integration

Community Data Infrastructure
- PCMDI

System integration
Executing the strategic Plan

APPROACH: Bold leadership for each of 3 platforms, coordinated with USGCRP

- **Modeling**
  - Aggressive leadership to enhance/upgrade earth system modeling
  - Interfaces/interdependence with hydrology, subsfc, IA, IAV, demographics
  - Produce a next generation community earth system capability
  - Emphasize: water cycle, carbon cycle, extremes, tipping points

- **Observational infrastructure**
  - Observations exploit model enhancements (e.g., obs4MIPs)
  - MODEX: experiments inspired (in part) by modeling gaps/priorities
  - Exploit LES as an embedded analytical tool
  - “mega-sites” bridging atmospheric and ESS priorities

- **Big Data Analytics and Visualization**
  - Focus on integration of existing data archives (ESM, IA, IAV, subsfc)
  - Server side analysis
  - Partnerships and collaborations across DOE and other agencies
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Thank you!

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