

# **Subsurface Biogeochemical Research Spring PI Meeting March 29-31, 2010**

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U.S. DEPARTMENT OF  
**ENERGY**

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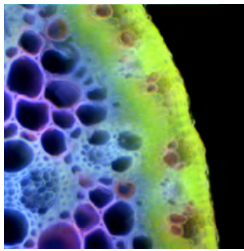
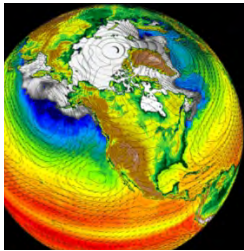
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# Welcome!

- Happy to be attending my third PI meeting as the Associate Director of BER
- We have made significant progress within BER
  - Reorganized into two divisions: BSSD and CESD
  - Restructured National Laboratory Programs into SFA's
  - Initiated strategic planning efforts for all major programs in BER -- Subsurface Biogeochemical Research held a successful workshop and the report will inform the development of a revised strategic plan
  - Will soon have a permanent director for CESD
- But there is more to be done....:
  - BER Strategic Directions – 2010 & Beyond

# BERAC Grand Challenges Workshop: Creating a Long Term Vision for BER Science

- What are the greatest scientific challenges in biology, climate and the environment that DOE will be facing in the long term (20 year horizon)?
- How should we position BER to address those challenges? What fields of science are needed to achieve future mission challenges?
- What new and innovative tools are needed to advance BER science?
- How can should we train the workforce of the future in integrative system science?



***BER Strategic Directions- 2010 & Beyond***  
**Science for Discovery:**  
**Understanding complex biological,  
climatic, and environmental systems  
across vast spatial and temporal scales**

- Revolutionize bioenergy production through transformational discoveries in biology
- Integration of climate theory, observation, experiment & modeling
- New capabilities for analyzing / managing data to predict & engineer biological systems
- Environmental sustainability & stewardship from predictive understanding across scales



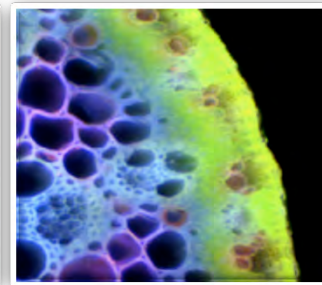
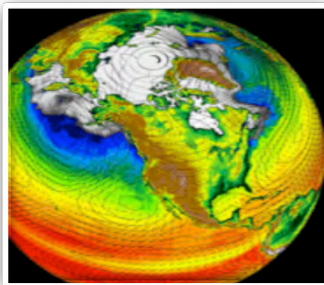
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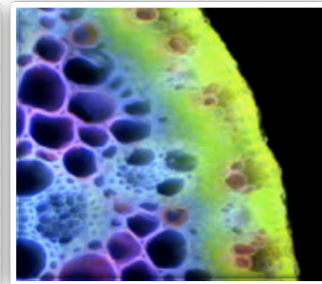
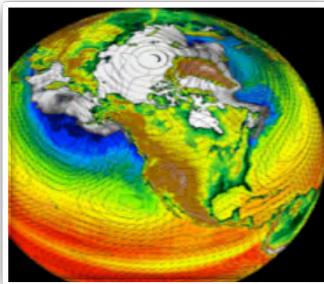
# BER: Driving science questions 2010

- What are the roles of the Earth systems (atmosphere, land, oceans, sea ice) in determining climate?
- How is information stored in a genome translated into active microbes, plants, and ecosystems?
- What are the biological and physical forces that govern the behavior of Earth's subsurface environment?



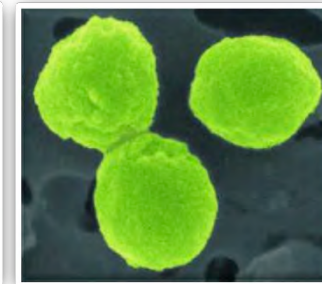
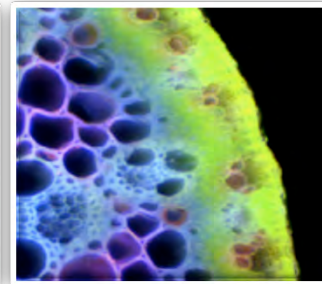
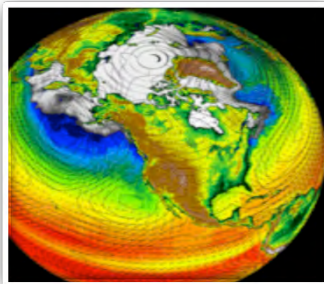
## BER Mission Priorities 2010

- BER provides the foundational science to:
  - Support the development of next generation biofuels
  - Understand and predict the potential effects of greenhouse gas emissions on Earth's climate and biosphere – the energy-climate nexus
  - **Understand and predict processes in subsurface environments**
  - Develop new tools to explore the interface of biological and physical sciences



## **BER Mission Priority: Understand and predict processes in subsurface environments**

- BER provides the foundational science to:
  - Understand and predict the mobility of metals and radionuclides in the subsurface
  - Understand and predict carbon and nutrient cycling in terrestrial ecosystems – including key subsurface biogeochemical and hydrological interactions that control ecosystem structure and function



# In Closing

- It's good to see old friends and colleagues and many new faces
- An exciting science agenda
- Important forum to exchange ideas and information between investigators and research communities
- I look forward to seeing the presentations and posters today
- Thank you and see you next year!



# EXTRA SLIDES

# Highlights of SBR PI-Meeting

## ■ Community Exchanges

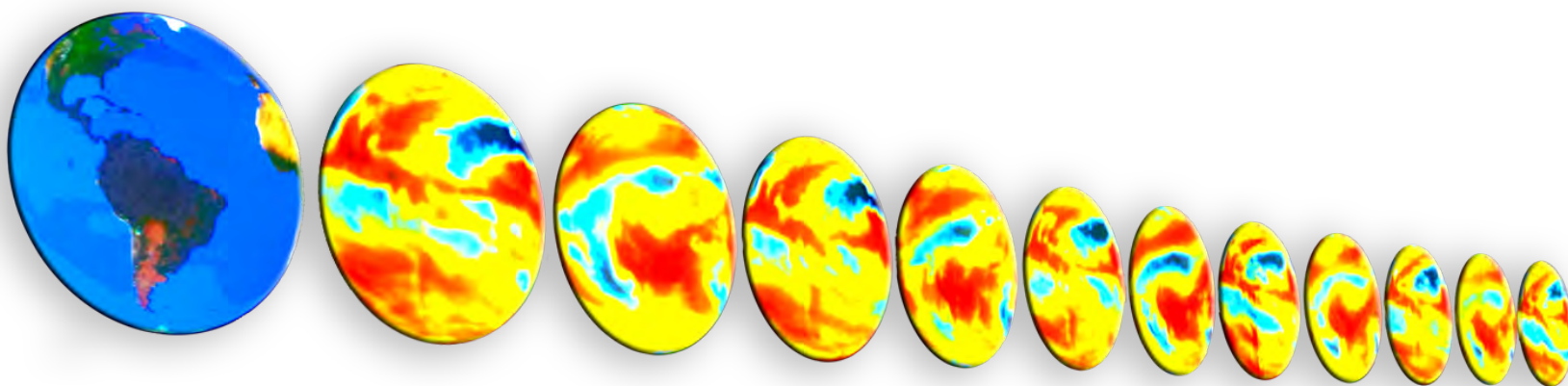
- ***Breakout Session A*** - Systems Environmental Microbiology: Innovative Approaches to Understand Cellular and Microbial Community Activity and Function
  - Highlights from Genomic Sciences in BSSD
- ***Margaret Torn*** - Carbon Cycling in Terrestrial Ecosystems: Research Challenges and Opportunities
  - Plenary presentation from CESD funded climate scientist
- ***Don Baer*** – New Capabilities at EMSL
  - Plenary presentation by EMSL chief scientist
- ***Juan Meza*** – Advanced Simulation Capability for Environmental Management (ASCEM)
  - Plenary presentation from the technical lead of the EM-ASCEM modeling initiative

## ■ Awards

- ***Darcy and Birdsall-Dreiss Lectures (first for DOE-Lab Investigators)***
  - Tim Scheibe (PNNL) – Darcy Lecturer
  - Susan Hubbard (LBNL) – Birdsall-Dreiss Lecturer
- ***PECASE Award Winner***
  - Alex Tartakovsky (PNNL)

# Biological and Environmental Research Approach 2010

- Understanding complex biological and environmental systems across many spatial and temporal scales
- Integrating science by tightly coupling theory, observations, experiments, models, and simulations
- Supporting **interdisciplinary research** to address critical national needs
- Engaging national laboratories, universities, and the private sector to generate the best possible science



**Seek to advance a holistic and predictive understanding of terrestrial ecosystems to support DOE's energy and environmental missions through interdisciplinary research**

