BERAC June 6-7, 2012

Sharlene Weatherwax, Associate Director of Science
Biological and Environmental Research
## Current Budget Status

<table>
<thead>
<tr>
<th>Program Office</th>
<th>Current Approp.</th>
<th>FY 2012</th>
<th>President's Request</th>
<th>FY 2013</th>
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New Personnel & Personnel Changes

Pablo Rabinowicz
• Federal employee as of June 4
• Genomics, Biosystems design

Todd Anderson
• Director, Biological Systems Sciences Division

Robert Lee
• Summer intern
Office of Science Early Career Awards

• Program purpose:
  • to support the development of individual research programs of outstanding scientists early in their careers
  • to stimulate research careers in DOE Office of Science areas

• Early career is defined as no more than 10 years past Ph.D.

• 9 BER awards (3 laboratory, 6 university) in FY 2012
  • 5 year awards, universities - $750,000, national labs - $2,500,000
BER Early Career Scientists FY 2012 - Topics

(a) Biosystems Design for Bioenergy Production
(b) Arctic Terrestrial Ecosystem Science
(c) Subsurface Biogeochemistry
(d) Uncertainty Characterization for Integrated Earth System Modeling
BER Early Career Scientists FY 2012

Microbial Systems Biology Design for Bioenergy Production

- **John Dueber**
  - UC Berkeley
  - Making multi-enzyme pathway compartments in yeast

- **James McKinlay**
  - Indiana U
  - Interaction of metabolisms of co-cultured microbes

- **Samuel Payne**
  - PNNL
  - Proteomic analysis of complex environmental samples

- **Jennifer Reed**
  - UW Madison
  - Engineering cyanobacteria to improve butanol production

- **Garrett Suen**
  - UW Madison
  - How do three cow rumen microbes degrade cellulose

- **Jamey Young**
  - Vanderbilt U
  - Maximizing carbon flux from CO₂ to biofuels in cyanobacteria
BER Early Career Scientists FY 2012

Arctic Terrestrial Ecosystem Science

Ming Ye
Florida State
Reducing predictive uncertainty in groundwater reactive transport modeling

Subsurface Biogeochemistry

Celine Bonfils
LLNL
Detection/attribution of regional climate change - focus on drought precursors

Daniel Hayes
ORNL
Model-data perspectives on processes controlling permafrost carbon feedbacks to a warming climate

Uncertainty Characterization for Integrated Earth System Modeling
BER staff are well plugged in to interagency coordination

Key leadership roles

- Life Sciences Subcommittee (Committee on Science)
- USGCRP

**CESD-related OSTP activities include**

- Subcommittee for Global Change Research
- National Earth Observation Task Force on
  - Energy & Earth Data (lead)
  - Climate and Weather Observations
- US Group on Earth Observations
- Subcommittee for Ecological Science
- Interagency Arctic Research Policy Committee
- Air Quality Research Subcommittee
- Carbon Cycle Integrative Working Group
- Integration of S&T for Sustainability (ISTS) Task Force
- *Plus* - Strategic Environmental Research and Development Program
- *Plus* – Intergovernmental Panel on Climate Change
BER staff are well plugged in to interagency coordination

**BSSD-related OSTP activities**

- Synthetic Biology Working Group
- Working Group on Plant Genomics
- US-EU Task Force on Biotechnology Research
- Utilization of International Space Station as a National Laboratory Plus
  - (Sub-Interagency Policy Committee for Dual Use Research of Concern)
  - (National Science Advisory Board for Biosecurity)
  - (Interagency Microbial Forensics Advisory Board)
  - (Federal Experts Security Advisory Panel)
  - (Interagency Biorisk Management Working Group)
Interagency Research Activities & Coordination

- ARM Southern Great Plains – NASA, NOAA
- Climate & Earth System Modeling – NSF, USDA
- Sea Ice - NASA, NSF, international interest
- North Slope Carbon Fluxes – international, NASA
- GOAmazon - Brazil, NSF, NASA
- AmeriFlux – NSF, USDA, NOAA, NASA
- NGEE Arctic – NASA, IARPC

- Plant Feedstock Genomics - USDA
- Structural Biology – NIH, NSF
- Radiochemistry – NIH
- Low Dose Radiation Research – NASA, NRC
- Computational Biology – NIH, NSF
- Kbase - NSF