

The State of BER

March 9, 2011

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U.S. DEPARTMENT OF
ENERGY

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Challenging Times

Many proposals, Much confusion, Few Answers



Biological Systems Science

(dollars in thousands)

	FY 2010	FY 2011 Request	FY 2012 Request
Genomic Science	165,565	176,891	241,509
Radiological Sciences	46,675	42,327	34,322
Ethical, Legal, and Societal Issues	5,000	5,000	0
Medical Applications	8,226	4,000	0
Biological Systems Facilities & Infrastructure	84,300	84,950	90,173
SBIR/STTR	0	8,779	10,258
Total, Biological Systems Science	309,766	321,947	376,262

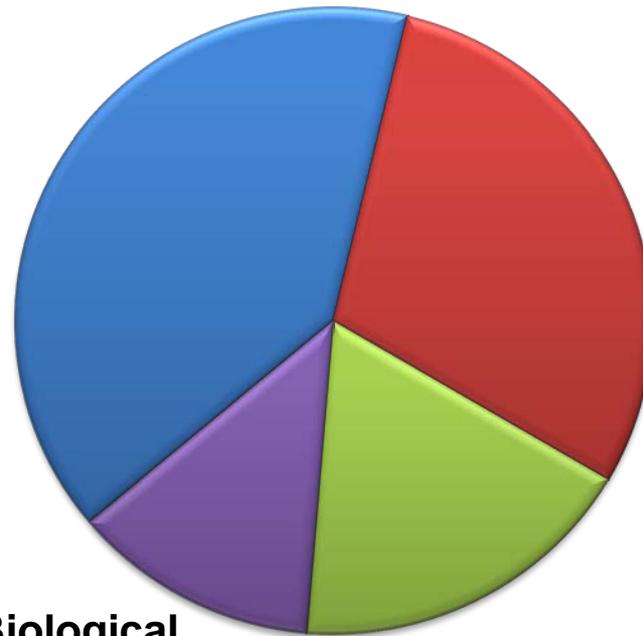
Climate & Environmental Sciences

(dollars in thousands)

	FY 2010	FY 2011 Request	FY 2012 Request
Atmospheric System Research	26,385	28,396	26,392
Environmental System Science	83,048	81,531	101,177
Climate and Earth System Modeling	69,081	85,622	77,294
Climate and Environmental Facilities and Infrastructure	99,751	101,333	128,171
SBIR/STTR	0	8,071	8,604
Total, Climate and Environmental Sciences	278,265	304,953	341,638

**BER FY 2012 Congressional
\$717,900
(dollars in thousands)**

**Biological
Systems Science
Research
\$286,089**



**Climate and
Environmental
Sciences
Research
\$214,067**

**Climate and
Environmental
Facilities and
Infrastructure
\$128,171**

**Biological
Systems
Facilities and
Infrastructure
\$90,173**

Proposed New Opportunities for FY 2012 - BSSD

- Development of new synthetic molecular toolkits for understanding natural systems combined with computer-aided design testbeds (+\$69.2M)
- Further development of systems biology knowledgebase to integrate microbial community genomic, proteomic, and transcriptomic experimental data sets (+\$6.1M)
- Initial development of life science experimental stations and instrumentation providing access to proposed new x-ray fluorescence and absorption nanotomography undulator beamlines (+\$4.1M)

Proposed New Opportunities for FY 2012 - CESD

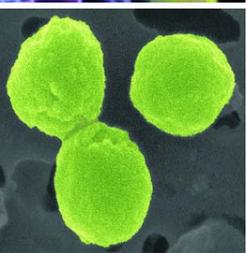
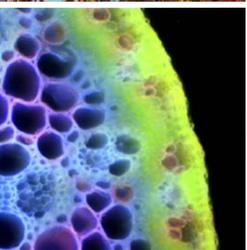
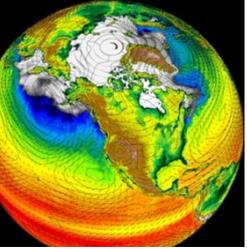
- Prototyping of experimental infrastructure needed to initiate the next-generation ecosystem-climate change experiment, with a focus on arctic tundra (+\$10M)
- Research on carbon cycle multi-scale dynamics to describe the presently observed system noise (+\$9.7M)
- Enhanced research to develop numerical methods and model testing and validation for a comprehensive coupled, high resolution earth system model (+\$6.2M)
- New remote sensing and in situ measurements of clouds and aerosols over arctic land, ice, and ocean surfaces. A new fixed ARM site in the Azores for remotely sensed measurements of marine clouds and aerosols. (+\$25.8M)
- Acquisition of new EMSL instrumentation. (+\$3.2M)

Significant Transitions for FY 2012 - BSSD

- Funding is reduced for studies on bystander effects and adaptive immune function, and completed for research on genome instability and DNA damage in single cells in response to low dose radiation exposure. (-\$11.6M)
- Ethical, Legal and Societal Issues research is completed as a stand-alone activity. (-\$5M)
- Funding for the Artificial Retina effort is completed with integration and pre-clinical testing of a 240 electrode retinal device as a basis for fabrication of a 1,000 electrode device. (-\$8.2M)

Significant Transitions for FY 2012 - CESD

- Completion of a series of research projects focused on the cycling of carbon sequestration associated with long-studied field sites. (-\$3.6M)
- Completion of the education program. (-\$1.5M)



Personnel Recruitments and Changes



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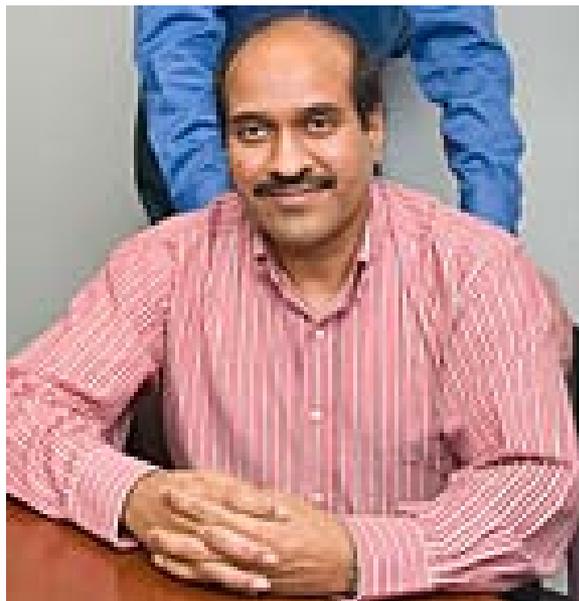
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Farewell

Anna Palmisano
Retired
November 2010



Kiran Alapaty
Moved to EPA
December 2010



Marvin Stodolsky
Retired
February 2011



Welcome

Dan Stover
Ecology



Pablo Rabinowicz
Genomics



Dorothy Koch
Climate Modeling

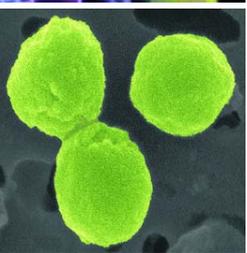
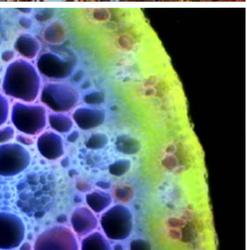
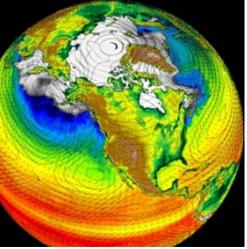


Arriving April 2011

Patrick Horan, Science Assistant

Looking

- Associate Director – Announcement closed January 31
- Atmospheric Scientist - Hiring “pause” due to CR



Awards and Honors



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2009 Presidential Early Career Award for Scientists and Engineers (PECASE)

- Thirteen DOE/NNSA awardees announced December 2010
- **Jacob M. Hooker, Brookhaven Lab.** For pioneering research on adapting modern synthetic chemistry to the development of new tools for tracking and quantifying biochemical transformations and the movement of complex molecules in living systems, as well as outreach and mentorship to visiting students and scholars.
- **Trent R. Northen, Lawrence Berkeley Lab.** For pioneering analysis of metabolomic features of biological systems with previously unattainable sensitivity and spatial resolution, providing new insights impacting biofuel development, understanding biofilms, and biological responses to low dose ionizing radiation; and for community service and diverse educational outreach.

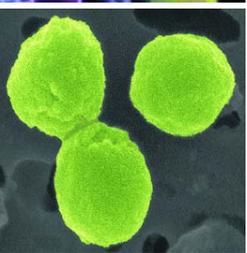
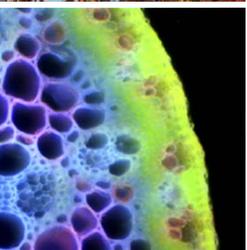
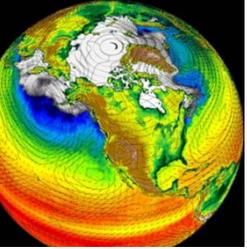


Early Career Awards: Supporting the next generation of young scientists

- Early career is defined as no more than 10 years past Ph.D.
- 7 BER awards (3 laboratory, 4 university) in FY 2011; 5 year awards, universities - \$750,000, national labs - \$2,500,000
- FY 2011 Awards to be announced later this spring

SC Graduate Student Research Fellowships: Supporting the next generation of young scientists

- Due to late resolution of FY 2011 budget, no solicitation in FY2011.
- postponed until FY2012—potentially Fall 2011.



Interagency Interactions



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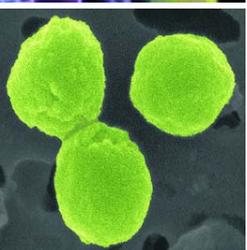
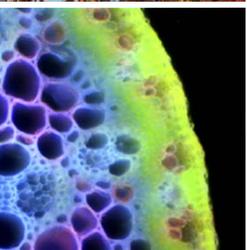
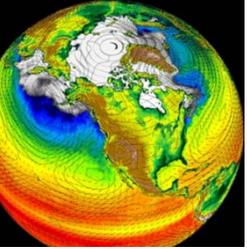
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NSF-DOE-USDA Regional Climate Modeling

- Five year interagency program to develop more powerful models that can help decision-makers develop adaptation strategies addressing climate change.
- FY 2010 solicitation – NSF - ~\$30 million; DOE ~\$10 million; USDA ~\$9 million. DOE and USDA decisions pending availability of FY 2011 funds.
- Models will be designed to support planning for the management of food and water supplies, infrastructure construction, ecosystem maintenance, and other pressing societal issues at more localized levels and more immediate time periods than can existing models.
- Renu Joseph – BER Program Manager





Biological and Environmental Research:

- Trans-disciplinary science
- Systems-based, data intensive and diverse research
- World class, high impact user facilities
- Scientific partnering to meet DOE mission needs