

Biological and Environmental Research

The Program

The Biological and Environmental Research (BER) program advances world-class biological and environmental research programs and scientific user facilities to support DOE's energy, environment, and basic research missions. The program seeks to understand how genomic information is translated to functional capabilities, enabling more confident redesign of microbes and plants for sustainable biofuel/bioproducts production and improving the understanding of carbon cycling and biogeochemical processes in the environment. BER advances the climate and environmental sciences with a focus on understanding process level interactions that lead to predictability of the atmospheric, terrestrial, oceanic, and cryospheric components of the climate system, that in turn exploits long term observational capabilities, user facilities, and DOE leadership class computers.

The Request

The President requests 612,400,000 for BER, an increase of 3.4% over last year's appropriation.

The Reason

BER-supported researchers seek to understand complex biological, climatic and environmental systems, and the requested funds will go toward such efforts, including:

- Genomic Sciences, including Bioenergy Research Centers
- Mesoscale-to-Molecules research
- Climate and Earth System Modeling, including a new activity in Climate Model Development and Validation
- Atmospheric System Research
- Environmental System Science
- Climate and Environmental Data Analysis and Visualization, and
- The operation of BER's user facilities at optimal levels including
 - The Atmospheric Radiation Measurement (ARM) Climate Research Facility <http://www.arm.gov/>,
 - The Joint Genome Institute (JGI) <http://jgi.doe.gov/>, and
 - The Environmental Molecular Sciences Laboratory (EMSL) <http://www.emsl.pnl.gov/emslweb/>

The Research (and Developments)

- Aerosols and Atmospheric Rivers: <http://www.arm.gov/news/features/post/31950>
- Around the World in 52 Months: ARM's New Research on Climate Science Spans the Globe <http://www.arm.gov/news/features/post/30106>

- Learning the Language of Cell Life: Ames Laboratory Scientists use Genetic Markers to Discover the Rhizosphere <https://www.ameslab.gov/news/feature-stories/learning-the-language-cell-life-ames-laboratory-scientists-use-genetic-markers>
- Study May Help Slow the Spread of Flu <https://www6.slac.stanford.edu/news/2014-12-08-study-may-help-slow-spread-flu.aspx>
- The Termite of the Sea <http://jgi.doe.gov/termite-seas-wood-destruction-strategy-revealed/>
- Discovering the Undiscovered: Advancing New Tools to Fill the Microbial Tree of Life <http://jgi.doe.gov/discovering-undiscovered-tools-microbial-tree-of-life/>
- Boosting Batteries <http://www.emsl.pnl.gov/emslweb/news/boosting-batteries>
- Soot Science: New Study of Soot Could Improve Climate Models <http://www.emsl.pnl.gov/emslweb/news/soot-science>