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### DOE Biological and Environmental Research User Facilities

Louis J. Terminello

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# DOE Biological and Environmental Research User Facilities

October 8, 2019

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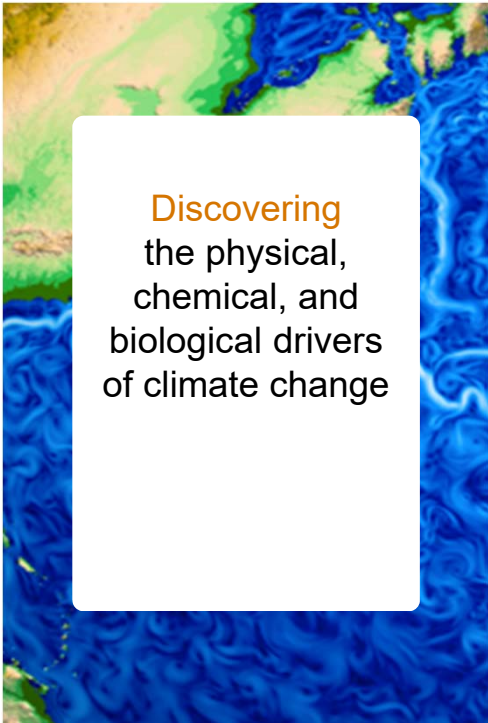
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# BER Seeks to Understand Complex Biological and Environmental Systems Across Scales of Space and Time



Exploring  
the frontiers of  
genome-enabled  
biology



Discovering  
the physical,  
chemical, and  
biological drivers  
of climate change

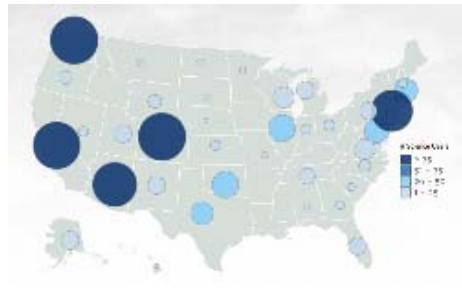


Seeking  
the biological,  
geochemical, and  
hydrological  
determinants of  
environmental  
sustainability and  
stewardship

Crosscutting: BER Scientific User Facilities (ARM, JGI, and EMSL)

# DOE's Office of Biological and Environmental Research Stewarded User Facilities: ARM & JGI

## Atmospheric Radiation Measurement User Facility



- ▶ ARM is a multi-laboratory user facility involving nine national laboratories
- ▶ Three fixed & three mobile ground-based atmospheric observatories collect data in diverse climate regimes around the world
- ▶ Bombardier Challenger 850 regional jet new to ARM Aerial Facility
- ▶ \$68M operating budget
- ▶ >400 ground-based and 50 aerial instruments
- ▶ ~100 instrument types
- ▶ 1,173 users worldwide
- ▶ [www.arm.gov](http://www.arm.gov)

## Joint Genome Institute



- ▶ JGI's mission is to advance genomics in support of the DOE missions in bioenergy, carbon cycling, and biogeochemistry
- ▶ Walnut Creek, California facility opened in 1999
- ▶ ~280 staff
- ▶ ~\$70M annual funding
- ▶ >8,000 data downloaders
- ▶ 1,882 users worldwide in FY 2018
- ▶ >13,000 portal users in FY 2018
- ▶ [jgi.doe.gov](http://jgi.doe.gov)

# BER User Facility: The Environmental and Molecular Sciences Laboratory



- ▶ EMSL is a national user facility in Richland, Washington
- ▶ Supports BER's mission to achieve fundamental understanding and prediction of complex biological, Earth, and environmental systems for energy and infrastructure security
- ▶ Unique collection of >150 instruments and a supercomputer
- ▶ 560 users from around the world
- ▶ 262 active user projects
- ▶ \$44.8M operating budget
- ▶ [www.emsl.pnnl.gov](http://www.emsl.pnnl.gov)

## Signature Capabilities:

- ▶ NMR
- ▶ Mass spectroscopy
- ▶ Surface science
- ▶ Microscopy/electron microscopy
- ▶ High performance computing/data



## EMSL Science Program

