BER EESSD New Initiatives for FY22 RDPP and RENEW

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2022 ARM-ASR Joint User Facility & PI Meeting

DOE Support for Broadening Participation

▸ FY22 saw the adoption of the President's Justice40 initiative

  ▸ Goal is for 40% of the benefits of federal investments in certain areas, *including climate change,* to communities that have been historically marginalized

▸ DOE support for broadening participation in Office of Science Programs

  ▸ Office of Science Workforce Development for Teachers and Scientists conducted roundtables and webinars to better understand institutional barriers

  ▸ Opportunity to follow through on ideas for bringing new investigators to EESSD and supporting training for students

▸ Two new FOAs: RDPP and RENEW

Research Development and Partnership Pilot (RDPP)

▸ RDPP FOA was developed out of an understanding that lack of familiarity with BER EESSD activities, projects, and user facilities is a significant barrier to participation for many institutions.

▸ This was the first FOA with a focus on technical assistance to build capacity and broaden institutional participation in BER's climate, Earth, and environmental sciences.

▸ Applications were asked to demonstrate interest in:

   a) developing plans and capabilities to position the applicant to propose to future Earth and Environmental Systems Sciences Division (EESSD) FOAs;

   b) developing partnerships with existing EESSD funded projects at DOE national labs or universities;

   c) or leveraging ARM or EMSL user facilities in their teaching or research.

RDPP FOA

▸ Program Managers: Shaima Nasiri (ASR) and Brian Benscoter (ESS)
  ▸ Support from all of BER

▸ FOA-0002688 was released 23 February 2022

▸ Applications were due 20 April 2022

▸ Award size: $50K to $150K, with a single budget period of 18 to 22 months

▸ We received 53 applications and made 35 awards for a total of $4.7M.

▸ Awards span all EESSD program areas

▸ Priority was given to applications from institutions that had not received an EESSD award during the past 7 years and/or that have a history of training and mentoring students from populations that are under-represented in climate and environmental sciences.

RDPP Awardees (1/3)

- **Adeyemi Adebiyi, University of California, Merced:** Building collaboration to advance our understanding of regional climate impacts of dust in California's San Joaquin Valley

- **Henrique Barbosa, University of Maryland Baltimore County:** Using LASSO to bridge the gap between model and observations and to learn about atmospheric convection

- **Loretta Battaglia, Texas A&M University, Corpus Christi:** Connecting the Texas Gulf Coast with COMPASS to build research opportunities and career bridges for an underserved community

- **Solomon Bililign, North Carolina A&T State University:** Studies of optical and chemical properties of aged and fresh biomass burning absorbing aerosols for climate models

- **Kenneth Carroll, New Mexico State University:** Hydro-EKG: In-Stream Streaming-potential (SP) Electrical Monitoring of the Lifeblood of Watersheds during Disturbance

- **Tanya Cheeke, Washington State University:** Building inclusive capacity and partnerships to tackle soil-water-microbe-root feedbacks in forest regeneration after wildfires

- **Umberto Ciri, University of Puerto Rico at Mayaguez:** Large-scale offshore wind farm effects on weather and climate in Puerto Rico

- **Richard Damoah, Morgan State University:** Developing Urban Aerosol and Boundary Layer Observation and Research Capability at Morgan State University

- **Aritra Dasgupta, New Jersey Institute of Technology:** A Scientist-in-the-Loop Data Analytics Framework for Intelligent Simulation Model Tuning and Validation

- **Naresh Devineni, City University of New York – City College:** Understanding Climate and Extreme Weather Events in the Greater New York Area

- **Minghui Diao, San Jose State University:** Developing Partnership between San Jose State University and DOE Lawrence Livermore National Laboratory to Enhance Climate Research Equity and Inclusion

RDPP Awardees (2/3)

- **Hamed Ebrahimian, University of Nevada:** Environmental Extremes: Building a new research partnership between the University of Nevada Reno and the Pacific Northwest National Laboratory

- **Salah Aldin Faroughi, Texas State University:** ESMs Latent Space Exploration for Uncertainty Quantification and Spatiotemporal Downscaling

- **Daniel Foti, University of Memphis:** Building partnerships for development of sustainable energy systems with atmospheric measurements

- **Joseph Galewsky, University of New Mexico:** Using stable isotopes in water vapor to study the interdependence of clouds, atmospheric aerosols, and precipitation processes

- **Naruki Hiranuma, West Texas A&M University:** Characterization and application of a high-resolution microfluidic device in atmospheric ice nucleation research and integrated science teaching

- **Dafeng Hui, Tennessee State University:** Simulating Greenhouse Gas Emissions of a Peatland Ecosystem Under Global Warming and Elevated CO_2 at the SPRUCE Experimental Site

- **James Kang, University of Texas Rio Grande Valley:** Greenhouse gas flux response in biochar- and compost-amended urban soils under simulated soil hydrologic dynamics

- **Jalene LaMontagne, DePaul University:** Developing plans and partnerships for incorporating tree reproduction to understand Earth system change

- **Sarah Ledford, Georgia State University:** Broadening participation in (sub)Urban watershed Science in the Southeast (BUSS)

- **Hongyi Li, University of Houston:** A strategic partnership between the College of Engineering at University of Houston and Pacific Northwest National Lab

- **Jianwei Li, Tennessee State University:** On Improvement of Soil Organic Carbon Modeling and Simulation via Integrated Deep Learning and Data Assimilation Approaches

- **Hamidreza Norouzi, City University of New York – New York City College of Technology:** Sustainable DoE Partnerships to Advance Fundamental Research in Earth and Environmental System Sciences at an Underrepresented Institution

RDPP Awardees (3/3)

- **Bruce Prince, Texas Southern University:** Computational Modeling of Atmospheric Processes (CMAP) A Research Development and Partnership Pilot (RDPP) proposal

- **Pallav Ray, Florida Institute of Technology:** Surface Heat Flux and its Association with the MJO in the Tropical Western Pacific using ARM Observations

- **Wendy Robertson, Central Michigan University:** Expanding Collaborative Capacity to Address Climate Resiliency in the Great Lakes Region

- **Cody Sheik, University of Minnesota, Duluth:** Multisystem feedbacks from a changing climate: Do altered hydrological dynamics control vadose zone carbon nutrient cycling and storage in shallow aquifer systems?

- **Kenneth Tobin, Texas A&M International University:** Characterization of Root Zone Soil Moisture and Herpetofaunal Biodiversity in the Southern Great Plains

- **Allison Veach, University of Texas at San Antonio:** Examining respiration and carbon flow in intermittent, urban rivers using novel chamber methodologies

- **Yonggang Wang, State University of New York – SUNY Oswego:** Using COMBLE observations to characterize boundary-layer convective precipitation in Arctic cold air outbreaks

- **Loren White, Jackson State University:** Capabilities and Partnerships for Environmental Microclimate Investigations

- **Jeffrey Wilcox, University of North Carolina at Asheville:** Building research capacity in Southern Appalachian mountain wetlands

- **Joseph Wilkins, Howard University:** RDPP: Accelerating Diversity in DOE Climate Science and Resilience Research

- **Xi Yang, University of Virginia:** Building an interdisciplinary and interagency collaboration between DOE BER and the University of Virginia

- **Haofei Zhang, University of California, Riverside:** Collaboration with the ARM and EMSL Facilities to Study the Composition and Hygroscopicity Relationship in Atmospheric Aerosols.

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EESSD Outreach Activities

▸As part of the RDPP activities, we will be conducting a series of EESSD outreach activities this year (FY23)

▸Open to all (not just RDPP awardees)

  ▸Webpage with information is under development

▸Webinars and roundtables with EESSD program managers, SFAs and other sustained EESSD project, and user facilities

▸To assist with the planning, organization, and implementation, we will be bringing on a 25% detailee

▸If you have ideas for outreach topics, please let us know

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Reaching a New Energy Sciences Workforce (RENEW)

‣ RENEW is a cross-Office of Science (SC) Initiative https://science.osti.gov/Initiatives/RENEW

‣ RENEW aims to build foundations for SC research and training at institutions and for student populations historically underrepresented in the U.S. science and technology (S&T) ecosystem

‣ RENEW leverages SC's unique national laboratories, user facilities, and other research infrastructures

‣ Open new career avenues for the participants, forming a nucleus for a future pool of talented young scientists, engineers, and technicians with the critical skills and expertise needed for the full breadth of SC research activities

‣ SC-wide initiative, with FY 22 FOAs from six SC Programs

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BER RENEW FY-22 FOA-0002757

▸ Program Managers: Shaima Nasiri (ASR) and Brian Benscoter (ESS)

▸ RENEW-Earth and Environmental Systems FOA-0002757 was released 25 May 2022

▸ Pre-applications were due 29 June 2022; full applications were due 24 August 2022

▸ Goal of the FOA is to provide support for experiential training and mentorship for institutions to:

1) Develop new partnerships with the BER-supported EESSD SFAs at the DOE national laboratories, to enable sustained undergraduate and graduate student participation in EESSD-relevant research;

2) Facilitate undergraduate and graduate student participation in EESSD research programmatic and user facility outreach and training activities; and

3) Foster the development of climate and environmental science training capacity and research at under-represented institutions.

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RENEW-Earth and Environmental Systems FOA-0002757

‣ Barriers to engagement in EESSD climate and environmental science research and student training can be surmounted by fostering partnerships and collaborations with BER-supported research at the DOE national laboratories

‣ This FOA will provide support for experiential training and mentorship for institutions to:

1) Develop new partnerships with the BER-supported EESSD SFAs at the DOE national laboratories, to enable sustained undergraduate and graduate student participation in EESSD-relevant research;

2) Facilitate undergraduate and graduate student participation in EESSD research programmatic and user facility outreach and training activities; and

3) Foster the development of climate and environmental science training capacity and research at under-represented institutions.

‣Focus on <u>developing experiential training, student mentoring, and institutional capabilities</u> through research-focused collaborations with existing EESSD-SFA research projects at DOE national laboratories.

    ‣Collaboration with one or more SFAs was required of all applications

‣Total of $3 million in FY22 funds anticipated.

‣Total 4-year awards ranging from $300,000 to $800,000

‣Approximately 4-5 awards are anticipated

‣Review panel has occurred. We expect the decisions to be announced in late 2022.

Lessons Learned

▸ Add more time where possible – less well-resourced institutions need more time at all stages of the FOA cycle

▸ Make FOAs as clear as possible – provide information and resources to make it easier for new applicants to respond

▸ Availability – reiterate that applicants can reach out to program managers with questions about the FOA