**Opportunity Title:** USDA-ARS Postdoctoral Research Opportunity in High Performance Computing
**Opportunity Reference Code:** USDA-ARS-2021-0249

**Organization** U.S. Department of Agriculture (USDA)

**Reference Code** USDA-ARS-2021-0249

**How to Apply**

***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

**Application Deadline** 9/30/2022 3:00:00 PM Eastern Time Zone

**Description**

***Applications will be reviewed on a rolling-basis and this posting could close before the deadline.**

**ARS Office/Lab and Location:** Multiple postdoctoral research opportunities are currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) located in Beltsville, Maryland.

This research opportunity is part of the SCINet Fellowship program at ARS. All postdocs will spend time at headquarters for some of their training, but will be based at ARS regional laboratories for more specific training. One of the goals of this research opportunity is to encourage cross-disciplinary, cross-location research; this will be done by placing postdocs in different regional labs based on their skillset and interests in regional locations. The strength of this fellowship program is the collection of postdocs and ARS' collection of regional labs.

**Research Project:** The SCINet/Big Data Program at ARS offers research opportunities to motivated postdoctoral participants interested in solving agricultural- and natural resource-related problems at a range of spatial and temporal scales, from the genome to the continent, and sub-daily to evolutionary time scales. One of the goals of the SCINet Initiative is to develop and apply new technologies, including artificial intelligence (AI) and machine learning, to help solve complex agricultural problems that also depend on collaboration across scientific disciplines and geographic locations. In addition, many of these technologies rely on the synthesis, integration, and analysis of large, diverse datasets that benefit from high performance computers (HPC). The objective of these opportunities is to facilitate cross-disciplinary, cross-location research through collaborative research on problems of interest to each participant and amenable to or required by the HPC environment. Training will be provided in specific AI, machine learning, deep learning, and statistical software needed for the HPC.

Agro-ecosystem dynamics at large spatial extents cannot be easily predicted by simply extrapolating from local, on-farm estimates. Agricultural yield, snow melt, and

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nitrogen or sediment in rivers are some examples where on-farm estimates need to be expanded to regional to continental scales through the integration of large data streams at fine-scale temporal resolutions. Research activities have been mainly conducted in local computing environments which constrains the applications in terms of computing capability and the size of the study area. High performance computing (HPC) or cloud computing are needed to enhance the scientific computing and data management capability.

**Learning Objectives:** The selected participant will have the opportunity to learn a range of computational skills needed to conduct large-scale agro-ecosystem analyses in an HPC or cloud-based environment. Under the guidance of a mentor, the participant will learn how to develop and co-lead ARS-wide workshops to synthesize and integrate climate and environmental data with land use data, and will help organize a community of scientific practice on this topic. The participant will also have the opportunity to collaborate with multiple USDA ARS scientists on data analysis projects, and to write collaborative scientific papers dealing with complex agro-ecosystem datasets at regional to continental scales.

**Mentor(s):** The mentor for this opportunity is Deb Peters (deb.peters@usda.gov). If you have questions about the nature of the research please contact the mentor(s).

**Anticipated Appointment Start Date:** Start date is flexible and will depend on a variety of factors.

**Appointment Length:** The appointment will initially be for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds.

**Level of Participation:** The appointment is full-time.

**Participant Stipend:** The participant(s) will receive a monthly stipend commensurate with educational level and experience.

**Citizenship Requirements:** This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the Guidelines for Non-U.S. Citizens Details page of the program website for information about the valid immigration statuses that are acceptable for program participation.

**ORISE Information:** This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

**Questions:** Please visit our Program Website. After reading, if you have additional questions about the application process please email USDA-ARS@orau.org and include the reference code for this opportunity.

## Qualifications

The qualified candidate must have received a doctoral degree in one of the relevant fields before the start date of their appointment.

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Preferred skills:

- Experience modeling of geo-spatial data and remote sensing data
- Experience working with large datasets and data mining approaches
- Proficiency in R and python
- Strong database skills
- Strong oral and written communication skills

**Eligibility Requirements**

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (4 👁)
  - **Earth and Geosciences** (1 👁)
  - **Environmental and Marine Sciences** (5 👁)
  - **Life Health and Medical Sciences** (10 👁)
  - **Mathematics and Statistics** (1 👁)
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).