Opportunity Title: Postdoctoral Research Opportunity in High Performance Computing

Opportunity Reference Code: USDA-ARS-2020-0006

Organization	U.S. Department of Agriculture (USDA)
Reference Code	USDA-ARS-2020-0006
How to Apply	A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. 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.

If you have questions, send an email to USDA-ARS@orau.org. Please include the reference code for this opportunity in your email.

Description ***Applications will be reviewed on a rolling-basis.**

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.

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 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.

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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.

Anticipated Appointment Start Date: After October 15, 2019

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. The initial appointment is for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time at ARS in the Beltsville, Maryland, area. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

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.

For more information about the ARS Research Participation Program, please visit the **Program Website**.

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

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).