Opportunity Title: USDA-ARS SCINet/AI-COE Postdoctoral Fellowship in Food Security Agency in Alaska
Opportunity Reference Code: USDA-ARS-SCINet-2023-0228

Organization U.S. Department of Agriculture (USDA)

Reference Code USDA-ARS-SCINet-2023-0228

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
- 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. 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 12/31/2023 3:00:00 PM Eastern Time Zone

Description ***Applications are reviewed on a rolling basis.**

ARS Office/Lab and Location: A postdoctoral research opportunity is available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Northern Great Plains Research Laboratory (NGPRL) in Mandan, North Dakota, or Southeast Watershed Research Laboratory (SEWRL) in Tifton, Georgia; teleworking is an option.

The USDA ARS mission involves problem-solving research in the widely diverse food and agricultural areas encompassing plant production and protection; animal production and protection; natural resources and sustainable agricultural systems; and nutrition; food safety; and quality. The programs are conducted in 46 of the 50 States, Puerto Rico, and the U.S. Virgin Islands. For ARS to maintain its standing as a premier scientific organization, major investments in computing, networking, and storage infrastructure are required. Training in data and information management are integral to the integrity, security, and accessibility of research findings, results, and outcomes within the ARS research enterprise.

Research Project: The SCINet/Big Data Research Participation Program of the USDA ARS offers research opportunities to motivated postdoctoral fellows interested in solving agriculture-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 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 computing (HPC) clusters. The objective of this fellowship is to facilitate

cross-disciplinary, cross-location research through collaborative research on problems of interest to each applicant and amenable to or requiring the HPC environment. Training will be provided in data science, scientific computing, AI/machine learning, and related topics as needed for the fellow to complete their research.

Throughout the course of this research project, the Fellow will have the opportunity to gain experience in two efforts where we will develop (1) a methodology for a baseline measurement of food agency in Alaska through the lens of biophysical and socioeconomic drivers, (2) a berry forecasting tool to predict berry growth with community-driven research with the Alaskan Quinhagak community. Food agency focuses on understanding the drivers of food security and insecurity and is the ability of an individual, community, or nation to meet their food acquisition and preparation goals. The Fellow will identify existing data (including geospatial/remote sensing data) and will conduct research to create a baseline framework for describing food agency in Alaska. The fellow will have the opportunity to gain experience in 1) Data collection and integration from multiple sources, 2) Multi-disciplinary data harmonization for modeling purposes, and 3) Creative, empirically-based modeling approaches to address questions that are not yet integrated into existing mechanistic models. Specifically, the Quinhagak community relies on berry foraging as a large component of their food agency. Therefore, a berry forecasting tool will be developed as a specific application integrating biophysical and socioeconomic drivers to understand the impacts of climate change on traditional foraging locations as permafrost thaws and soil hydrology changes impacting Rubus chamaemorus / populations. The Fellow will collaborate with community members, tribal governments, and university partners to use geospatial data provided by partners to develop this community tool to predict Salmonberry harvests in the face of environmental changes.

Learning Objectives: The Fellow will have the opportunity to learn social science theory and methodology, transdisciplinary modeling, soil health, statistical and economic modeling. The Fellow will have the opportunity to be mentored by three supervisors spanning environmental modeling, big data management, statistical modeling, conservation psychology, anthropology, soil and water science, and agricultural economics. The main learning objective of the Fellow will be in the application of a social theoretical framework to analyze biophysical data and develop a baseline of food agency in Alaska. The Fellow will be encouraged to spend immersive time in Quinhagak, Alaska to meet with community members and learn firsthand about the importance of berry picking for Yuuyaragq. Additionally, the Fellow will have the opportunity to be an active scientist within the USDA-ARS NGPRL, SEWR and the University of Alaska, Fairbanks. The Fellow will also be able to take online courses in applied scientific tools, such as R, Python and statistics and to learn collaboration and leadership skills through workshop and working group experiences.

Mentor(s): The mentor(s) for this opportunity is Claire Friedrichsen (Claire.friedrichsen@usda.gov). Please contact the mentor if you have

questions about this opportunity.

Anticipated Appointment Start Date: 2023; start date is flexible and will depend on a variety of factors.

Appointment Length: The appointment will initially be for two years 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 will receive a monthly stipend commensurate with educational level and experience. The current stipend range for this opportunity is $85,000 - $95,000/year plus a supplement to offset a health insurance premium.

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 ORISE.ARS.SCINet@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields or be currently pursuing the degree with completion prior to start of appointment.

Preferred Skills:

- First authorship of scientific manuscripts
- Landscape surveying and differential GPS for GIS analysis
- Remote sensing data collection, imagery correction, and/or analysis
- Multi and hyperspectral imagery workflows
- Soil and plant physiology modeling
- Programming skills for statistical analysis
- Systems frameworks and systems modeling
- Multidisciplinary data analysis, especially as it pertains to the biophysical and socioeconomic agricultural systems
- Excellent written and oral communication skills
- Experience in team and collaborative circumpolar indigenous or arctic

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community driven research

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (48 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)