



## Postdoctoral Research Associate in Remote Sensing of Soil Moisture Dynamics

A full-time postdoctoral position is available with the Soil Physics-Hydrology and Pedometrics Labs, in the Department of Soil, Water, and Ecosystem Sciences (SWES) at the University of Florida (UF) in Gainesville. The project is a cooperative effort between the UF and USDA-NRCS (U.S. Department of Agriculture – Natural Resources Conservation Service) scientists.

### Project Description

A key to understanding the sensitivity of the hydrologic cycle to climate change is quantifying the future states of soil moisture, as a key hydrologic state variable that controls various hydrologic processes including evaporation, transpiration, infiltration, runoff, and subsurface flow. It is important for numerous hydrological, ecological, climatological, and agriculture applications, as well as to improve our understanding of the water, energy, and carbon cycles. Significant advances in satellite remote sensing observations and availability of nationwide soil data together with advances in state-of-the-art data-driven models provide an exceptional opportunity for understanding the effect of climate change on soil moisture dynamics. The project aims to develop novel physical models that integrate multisource multiscale satellite observations (optical, thermal and microwave), nationwide NRCS soil survey database, atmospheric forcings, Artificial Intelligence (machine learning and deep learning) and data assimilation techniques to estimate and map real-time soil moisture dynamics with high spatiotemporal resolution while accounting for uncertainties in the contiguous U.S. (pedometrics research).

The participant is anticipated to harmonize and analyze large ground and satellite datasets, develop physics-informed deep learning models, publish research findings in peer-reviewed journals and present at meetings/conferences, and assist in mentoring graduate students.

### Qualifications

- Ph.D. in Soil Science (soil physics), Hydrology, Civil and Environmental Engineering (Water Resources), Earth/Atmospheric Science, Agricultural and Biological Engineering, Remote Sensing, or closely related fields
- Track record of publications in peer-reviewed journals
- Strong oral and written communication skills
- Excellent computational skills and programming in Python, MATLAB, or a similar language.
- Prior experience in hydrological modeling, remote sensing, geospatial analysis, machine learning, cloud computing and analyzing large data sources are advantages.

Interested applicants are required to submit a cover letter detailing their background and experience, a CV, and contact information for three references to [Dr. Ebrahim Babaeian](mailto:ebabaeian@ufl.edu) at [ebabaeian@ufl.edu](mailto:ebabaeian@ufl.edu) and [Dr. Sabine Grunwald](mailto:sabgru@ufl.edu) at [sabgru@ufl.edu](mailto:sabgru@ufl.edu). The review of applications starts immediately and will continue until the position is filled. Only shortlisted candidates will be contacted and interviewed virtually. Start date is Oct. – Dec. 2023 (flexible)