

Postdoctoral Fellow

Assimilation of imaging spectroscopy data to improve the representation of vegetation dynamics in ecosystem models

A post-doctoral position in ecosystem model-data synthesis, remote sensing, and ecological forecasting is available with Dr. Shawn Serbin in the Department of Sustainability Studies (<http://www.stonybrook.edu/commcms/sustainability/>) at Stony Brook University (<http://www.stonybrook.edu/>), Stony Brook, New York.

This NASA-funded project focuses on the integration of remote-sensing data, specifically high-spectral resolution field and imaging spectroscopy data, within an efficient model-data assimilation framework, to improve the characterization of vegetation dynamics in terrestrial ecosystem models. The project is part of the larger predictive ecosystem analyzer (PEcAn) scientific workflow system (<http://pecanproject.org>), which aims to make ecosystem models, data assimilation, and forecasting more accessible, automated, and repeatable.

The primary objective is to comprehensively examine the potential for direct assimilation of optical remote sensing observations into sophisticated ecosystem models, starting with the Ecosystem Demography 2.2 model, to better initialize and constrain projections of surface energy balance, vegetation composition, and carbon pools and fluxes. The project combines remote sensing, radiative transfer modeling, ecosystem modeling, and advanced statistical and computation approaches to diagnose the drivers of spatial and temporal variability in the terrestrial carbon cycle and the sources of uncertainty in these estimates. The initial focus of the project is the temperate/boreal transition zone in northern Wisconsin, a region that is expected to show large climate change responses and is one of the most data-rich regions in the country, but will expand in scope to sites around the continental U.S. in years 2 and 3. The results from this project will provide an important step toward the operational capacity to assimilate reflectance observations, uniformly, within sophisticated ecosystem models with the goal of constraining model projections of energy, water, and carbon pools and fluxes of terrestrial ecosystems.

Qualifications:

Required qualifications are a doctoral degree in a relevant ecological, environmental, or computer science field. The ideal candidate would have experience with more than one of the following areas: ecosystem process

models, remote sensing data, imaging spectroscopy (i.e. hyperspectral) data, radiative transfer modeling in the optical domain, open-source programming environments (e.g. R, Python), linux, data assimilation, scientific writing.

Application Process:

The successful candidate will be hired through the Department of Sustainability Studies at Stony Brook University where Dr. Serbin holds an affiliate faculty position, but the candidate will be expected to spend their time within the Terrestrial Ecosystem Science & Technology (TEST; <http://www.bnl.gov/test/>) group at Brookhaven National Laboratory (www.bnl.gov).

Interested applicants are encouraged to submit a cover letter, CV, and contact info for 3 references to Dr. Shawn Serbin (sserbin@bnl.gov). Review of applications will begin on October 15th but will remain open until filled. A competitive salary and benefits package is available.