

Yale Applied Science Synthesis Program: Multiple Postdoctoral Associate Opportunities

The Yale Applied Science Synthesis Program (YASSP) is hiring multiple postdoctoral associates to conduct synthesis research on how land management practices affect carbon sequestration and storage in forests, grasslands, and agroecosystems. Policy makers and land stewards are evaluating ecosystems for their potential contributions towards natural climate solutions, and global assessments suggest that improved ecosystem management could make natural climate solutions an important component to reaching global goals of net-zero CO₂ emissions by 2050. The next steps from these coarser global assessments are finer-scale studies to assess the carbon mitigation potential and specific land management practices tailored to the ecological, social, and economic conditions of regional ecosystems.

We are searching for researchers with a desire to answer pressing questions in applied science and collaborate with a range of partners and stakeholders to develop research products that can inform policy and land management decisions. Postdoctoral associates will lead their individual projects that will focus on sourcing and synthesizing published and unpublished data to quantify the effects of land management on ecosystem carbon stocks and fluxes, and where possible other ecosystem services including biodiversity protection, pollution reduction, and supporting human livelihoods. Dissemination of the findings is expected through peer-reviewed literature, white papers, and presentations to external collaborators and other stakeholder groups.

We are particularly interested in recruiting researchers with expertise or interest in conducting research on a few priority topics and ecosystems where we have strong and well-established collaborations with a variety of stakeholders. However, we will consider applications from researchers with strong backgrounds who may be interested in working on similar questions within other ecosystems and encourage those researchers to apply.

- **Agroforestry and Silvopasture in Latin America:** Cattle pastures occupy over 600 million hectares across Latin America and produce approximately 23% of global beef and buffalo meat demand. The Global Network on Silvopastoral Systems promotes the scaling-up of silvopastoral systems worldwide to support sustainable livestock production by reducing ecological impacts on natural resources, improving food security and farm productivity, and mitigating climate change. Yale's Environmental Leadership and Training Initiative (ELTI; <https://elti.yale.edu>) has strong connections with livestock farmers throughout Latin America and expertise in implementation of silvopastoral practices in these ecosystems. This project would involve developing a synthetic empirical dataset of various silvopasture management practices (living fences and windbreaks, alley cropping, agroforestry, pasture with trees or high-density foraging shrubs) on above- and belowground carbon storage and quantification of how management influences C storage. The postdoctoral research will collaborate with internal and external ELTI researchers, farmers, and leaders to scope other key questions as well as develop ways to disseminate key findings to farmers and land managers.
- **Commercial Reforestation in Latin America:** Globally, tropical forest loss represents approximately 8% of CO₂ annual emissions and have the potential of sequestering 23% of the necessary CO₂ to keep global warming under 2 degrees by 2030. Reducing further forest loss as well as restoring and replanting once-forested areas are both key for meeting global climate goals. In Brazil, industrial plantations of native and nonnative trees are being established on abandoned working lands that were once forested. Some argue these plantations may assist with short-term carbon sequestration and climate mitigation, foster natural regeneration of native secondary forest trees, and have the potential to reduce further demand for forest wood products from primary forests. Whether commercial reforestation efforts can produce these benefits is currently

unknown, as is the scope of commercial reforestation efforts generally. This project would involve quantifying the area of land undergoing commercial reforestation within Latin America and then selecting a few regions to estimate potential carbon sequestration rates for these plantations. The postdoctoral researcher will work closely with faculty and student researchers at The Forest School who have connections to commercial forestry operations in the region.

- **Cranberry Farming in the Americas:** Cranberry farms are unique agroecosystems with high, but unquantified, potential for long-term C storage in their C-rich peat layers in the cranberry beds as well as in supporting forest, grassland and wetland landscapes surrounding the cranberry beds. Because cranberry farm ecosystems are diverse, to accurately assess C stocks across the entire cranberry ecosystem a researcher must integrate diverse methods, models, and data sources that prior researchers have used to assess C stocks for each of these individual ecosystem types as well as how cranberry management practices (nutrient addition, water table manipulation, cranberry harvesting) might alter C stocks within the agroecosystem. This project will involve working closely with cranberry farmers and researchers to develop a conceptual model and estimates of carbon stocks in cranberry bed ecosystems in the United States, Canada, and Chile.

YASSP is committed to structured mentoring activities to prepare the postdoc to succeed in their individual career path, and to provide opportunities to those under-represented in biogeochemical, ecological, applied, and data sciences. We value the expertise of researchers whose identities and experiences bring unique and important perspectives to land management decisions, and we aim to provide an inclusive and supportive environment for all research team members. This postdoctoral associate will join a collaborative and supportive research community that includes other postdoctoral associates in the Program, faculty and students at The Forest School, and other affiliated programs like the Yale Center for Natural Carbon Capture (<https://planetarysolutions.yale.edu/center-natural-carbon-capture>). Starting salary for the position is based on years of postdoctoral experience and will follow Yale's recommended postdoctoral salary scale (see: https://postdocs.yale.edu/sites/default/files/files/PD_salarymemo%202021.pdf). This position provides full medical benefits, long-term disability, paid family leave, retirement saving accounts, and many other resources (see here: <https://postdocs.yale.edu/applicants/yale-benefit-summary>), as well as funding for travel to professional conferences and workshops. The desired start date is between June 1 – August 1, 2022, where the initial funding is for 1 year with at least one additional year dependent on satisfactory progress.

To apply, send a single PDF that includes a cover letter explaining research interests and experience, the specific project(s) you are interested in work on, a CV, and listing three potential references. We anticipate that strong candidates will hold a PhD in the natural sciences that provides expertise in one or more of the following disciplines: applied data science and spatial analysis, biogeochemistry, biostatistics, ecosystem ecology, natural resource management, or restoration ecology. Applicants should discuss in their cover letter why they have a desire to conduct applied science and any prior experience applying research to management or policy decisions, as well as prior experience in data synthesis.

Applications or inquiries should be directed to Dr. Sara Kuebbing (sara.kuebbing@yale.edu) with the subject line “YASSP postdoc application”. We will begin review of applications on April 13, 2022 and consider applications until the position is filled.