PhD RESEARCH ASSISTANTSHIP AVAILABLE, UNIVERSITY OF MONTANA:

The past, present, and future of boreal fire feedbacks

Overview: A research assistantship is available to join an NSF-funded multidisciplinary effort studying feedbacks among climate, wildfires, and ecosystem change in Alaskan boreal forests. Arctic environmental change has widespread implications for future global climate, in part because of the immense amounts of carbon stored in biomass, soils, and permafrost. The fate of this carbon is closely tied to the stability of boreal forests, which have generally been resilient to changes in climate and infrequent, high-severity wildfires for millennia. Increasing fire activity due to climate warming threatens to undermine this resilience, in part through shorter fire-free intervals. A key unknown in the future fate of boreal forests is the magnitude and sign of the feedbacks among climate, wildfires, and ecosystem change. This project is investigating the past, present, and future of feedbacks among climate, fire, and forest ecosystems in central Alaska, focusing on identifying key thresholds to boreal forest resilience to climate change and wildfires. Across four institutions, the project integrates state-of-the-art approaches in paleoecology, contemporary field ecology, and fire behavior modeling.

The PhD student at the University of Montana (UM) will develop a projects broadly focused on the precedence and feedbacks among climate, wildfires, and vegetation change over the past 2500 years, utilizing newly collected and existing lake-sediment records. Research will be based out of the PaleoEcology and Fire Ecology Lab, where students typically pursue degrees through the graduate program in Systems Ecology. The UM student will integrate and interact with team members from Syracuse University (SU, Dr. Melissa Chipman), University of Colorado, Denver (CU, Dr. Brian Buma), and Colorado State University (CSU, Dr. Chad Hoffman). A PhD student at SU will focus on assessing biogeochemical change in new and existing lake-sediment records; a postdoc at CU will focus on assessing contemporary forest vegetation and fuels in recently burned sites; and a postdoc at CSU will focus on computational fluid dynamics modeling of wildland fire behavior and effects.

Qualifications:
- Excellent academic record, with a BS, BA, or MS (preferred) in ecology, biology, Earth sciences, geography, geology, or related field.
- Field work experience in plant or forest ecology, fire ecology, ecosystem ecology, and/or paleoecology; experience working in remote settings is an asset.
- Research experience including experimental design, data analysis/synthesis, statistical or ecological modeling; computer programming in Matlab or R is an asset.
- Strong verbal and written communication skills; publication record in refereed journals is an asset

Graduate student support:
- 3.5 years (12 mo/yr) research assistantship, including tuition waiver, health insurance, and competitive stipend. A one-semester teaching assistantship is intended to fill out 4 years of funding.

To apply: Interested candidates should contact Professor Philp Higuera, ideally by December 9th, 2022 (philip.higuera@umontana.edu) using the e-mail subject line “PhD position: boreal fire feedbacks”. Please include: (1) brief description of your research interests, professional goals, and relevant experience; (2) resume or CV, with undergraduate/graduate GPA; and (3) optional, writing sample from a relevant academic experience. Competitive candidates will be invited to participate in a phone/Zoom interview in Dec. or Jan., and from there potentially apply through the UM Graduate School, by the January 31st deadline. The successful candidates could start by June 2023 or earlier.