POST-DOC
MODELING SOCIO-ECOLOGICAL SYSTEMS: APPLICATION TO SUSTAINABILITY IN THE GLOBAL SOUTH (PANAMA)

DESCRIPTION OF PROJECT

We seek a post-doctoral researcher to help develop *the Panama Research and Integrated Sustainability Model (PRISM)*, dedicated to helping guide sustainable development and providing a country-level platform for sustainability science in Panama.

PRISM builds upon strong existing research and training partnerships developed over 17 years between McGill University and Panamanian institutions, including three programs - the Panama Field Study Semester (undergraduate level), the Neotropical Environment Option (graduate), and the Biodiversity, Ecosystem Services, Sustainability program (graduate), which have trained or are training >500 undergraduates (>50 from Panama) and >80 graduates (29 from Latin America). These partnerships involve > 40 McGill faculty members, across 7 departments and 4 faculties, the UNESCO Chair in Sustainability Dialogues, and institutions in Panama, including the Smithsonian Tropical Research Institute (STRI) and the Universidad Católica Santa María la Antigua (USMA), as well as connections with NGOs (e.g., WWF), INGOs (e.g. FAO), and multiple levels of government. Thus, there is substantial human and social capital in place, which offers an opportunity to leverage existing expertise to develop PRISM into a truly unique and integrative research tool.

In this stage of the development of PRISM, we aim to derive a first-generation nationwide spatially-explicit computational model, to quantitatively project how urban development of Panama City will affect natural assets across the country. Countries in the Global South face particular challenges in developing sustainably, given comparatively limited resources, high population growth, less regulation, and less scientific information and capacity than post-industrialized countries. In this regard, Panama represents an exemplar of these challenges, and is characterized by rapid economic growth (10.6% in 2011) and population growth (>40% by 2050), is a hub of international shipping traffic (Panama Canal), and has a highly skewed wealth distribution (ranking 17/136 in the world). This urbanization trend will have wide-ranging consequences, far beyond the boundaries of cities, and Panama faces substantial concerns about unplanned development, where the sustainability of the country's natural assets (e.g., forested land, water basins, biodiversity) might be set aside for economic interests.

RESPONSIBILITIES

The successful candidate's main task will be to build statistical/computational models to link urban development scenarios to Panama's natural capital. This will build on existing components of PRISM, which include models for biological components of natural capital (e.g., alpha-diversity and the country-wide distributions of 7000 plant species), as well as physical processes linked to water availability, pollution, and land-use. Simultaneously, PRISM's Panamanian collaborators are co-leading the development planning for Panama City in the coming decades. In combination, these initiatives could allow estimates of environmental impacts ranging from biodiversity loss, changing land-use (e.g., agriculture and deforestation), and water quality and quantity. Focal aspects for the post-doc could include (but are not limited to) models of human migration, social networks, alternative food production scenarios, and/or economic drivers.

We envisage the post-doc working in a collaborative, multidisciplinary setting, and travelling between different labs of PRISM collaborators, to best utilize the diverse expertise and knowledge of team members. Further, the post-doc should be able and willing to travel between Montreal and Panama, work with our partners in both locations, and be able to discuss his/her work with a diverse audience, including scientists from diverse fields, government officials, NGOs, and local stakeholders.

REQUIREMENTS

- The applicant should have a PhD in a relevant field (e.g., ecology, computer science), and have proven expertise building computational models.
- Knowledge of programming languages (with a preference for R).
- Excellent communication and organizational skills, self-motivated work ethic, intrinsic need to produce quality output, and desire to gain the most from this experience are critical to success in this role.
- A strong research publication record in the applicant's relevant field, with articles focused on developing statistical/computational models.
- Expertise in handling large datasets, as well as overcoming limited data (e.g., Bayesian modeling).
- Assets for the position include multidiscplinary expertise and spanish language proficiency

THE POSITION

The position is for a full-time post-doctoral researcher, and offers full funding for 3 years, ideally starting early in 2018. We offer a competitive remuneration package, and additional benefits such as networking and training opportunities with the Smithsonian Tropical Research Institute (STRI), the Quebec Center of Biodiversity Sciences (QCBS), McGill's Sustainability Systems Initiative (MSSI). McGill University is located in Monreal (Canada), which is a dynamic, cosmopolitan city which hosts the Convention on Biological Diversity (SCBD) and is a hub of Future Earth, an international research initiative towards global sustainability.

HOW TO APPLY

Applications should be sent to brian.leung2@mcgill.ca as one single pdf document, with the subject line: "PRISM application post-doc", by **Dec 21, 2017**. The pdf should include 1) cover letter (<1 page), introducing yourself and highlighting your qualities and your fit for the position, 2) Curriculum Vitae, 3) names and contact information of 3 referees.