







Master, PhD and Postdoctoral projects ArbrenVil: Development an urban forestry of precision to optimize forest cover in cities

We encounter urban and peri-urban trees daily, benefiting from their air filtration, rainwater capture, and temperature reduction. Yet, inadequate planning and maintenance can harm them, leading to costs and premature mortality. Moreover, amidst global changes, these trees face various stressors like droughts, storms, and new pests and diseases.

Our interdisciplinary project combines urban forestry, tree biomechanics, functional ecology, urban soil biodiversity, ecophysiology, ecohydrology, building physics, artificial intelligence, and remote sensing. Its aim is to enhance urban tree planting and maintenance planning using advanced science-based tools and approaches.

In partnership with Hydro-Québec, Jakarto, and numerous cities and municipalities in Quebec, this large-scale project focuses on six research axes to establish precision urban forestry. Emphasizing urban and peri-urban tree maintenance while reducing risks to the electrical grid and public health, it fosters knowledge exchange and expertise sharing to develop innovative diagnostic approaches, guides, and tools tailored to the needs and constraints of field managers.











We are seeking individuals passionate about forest ecology, urban trees, and climate change adaptation to join our dynamic, multicultural interdisciplinary team. We welcome individuals from all backgrounds and identities to thrive in a stimulating, inclusive, equitable, and respectful research environment. The lead researchers are committed to using clear, flexible criteria to assess candidacy excellence and aim to promote visible minority representation in recruitment.

We currently offer various master's, PhD, and postdoctoral projects (flexible dates):

- Axis 2: Early crown controls: Developing approaches to increase tree cover and ensure better safety measures around the electrical grid.
 - Master's, PhD, or postdoctoral project
 - Supervised by Sylvain Delagrange, ISFORT, UQO, and Christian Messier, UQAM.
- Axis 3: Application of mobile terrestrial LiDAR: Developing algorithms for better intervention and protection of urban trees.
 - PhD or postdoctoral project
 - Supervised by Martin Béland, Université Laval, and Christian Messier, UQÀM.
 - Possibility to work in Quebec City or Montreal

This postdoctoral (or PhD) project will be part-time and combined with another project focusing on:

Estimating leaf area density in Canadian and American coniferous forests using terrestrial LiDAR data.

The candidate will be responsible for acquiring and analyzing terrestrial LiDAR data. The candidate will be part of Martin Béland's Digital Forest Lab (Université Laval) and collaborate with Jean-François Côté from the Canadian Forest Service. Knowledge of programming languages such as Matlab, C, and Python is required, as well as the ability to work as part of a team in the field.

- Axis 6: Development and integration of new modules into the SylvCiT tool to aid in better urban forest management to increase resilience and benefits.
 - Master's or PhD project in computer science
 - Supervised by Marie-Jean Meurs, Department of Computer Science, UQÀM. https://sylvcit.ca/







Minimum Education Requirement: Bachelor's, Master's, or PhD in Biology Sciences, Environmental Sciences, Forestry, or Geography (Axes 2 and 3). Bachelor's or Master's in Computer Science (Axis 6). Or any other relevant discipline.

Work Location: Complexe des sciences, UQAM; ISFORT, UQO (S. Delagrange) or Université Laval (M. Béland).

Remuneration: Scholarships of \$22,500 (PhD) per year and \$18,000 (Master's) per year. Postdoctoral salary between \$40,000 and \$60,000 per year depending on experience and qualifications. Possibility to seek additional financial assistance elsewhere to supplement the amounts.

If you are interested in a project, please contact Annick St-Denis (st-denis.annick@uqam.ca) with your CV and a cover letter as soon as possible.

In the media:

- Resté branché Épisode du dimanche 17 septembre 2023 | Découverte (radio-canada.ca)
- Améliorer les techniques d'élagage des arbres : le point avec C. Srivastava (radio-canada.ca)
- L'homme qui détournait les arbres | La semaine verte (radio-canada.ca)
- <u>Grâce à la technologie : SylCIT | En ligne | Télé-Québec (telequebec.tv)</u>