



PHD STUDENT REQUIRED

PhD position in applied remote sensing, revegetation of mine sites and plant ecology

Spatial study on spontaneous vegetation recolonization starting from planted restoration islands by combining drone-based LiDAR and multispectral surveys

Project description: The use of planted patches of topsoil on open and degraded lands could facilitate the establishment of forest species while reducing the quantity of topsoil required for revegetation. The research project will take place on two mine tailing facilities where patches of topsoil planted with trees were created 14 years and 20 years ago. This project aims to study how these patches influence forest recolonization and plant succession in terms of vegetation structure and composition at the scale of the tailing facilities using airborne drone surveys. The project will combine the acquisition and processing of LiDAR and multispectral surveys to meet these objectives. The use of machine learning tools could be considered for data processing. The publication of three journal papers is targeted for this PhD. The project will be carried out in collaboration with private and public partners managing mining sites to be rehabilitated, within a multidisciplinary research team. The benefits of the project will contribute to improving monitoring of afforestation and plant biodiversity on mining sites after reclamation thanks to the development of innovative approaches using remote sensing tools.

Location: The candidate will be based at the Research Institute on Mines and the Environment (RIME) at the Rouyn-Noranda campus of the Université du Québec en Abitibi-Témiscamingue (UQAT). This work will be performed under the supervision of Prof. Marie Guittonny and Vincent Boulanger-Martel, supported by a team of specialized professionals. RIME targets the search for more environmentally sustainable solutions for the life cycle of mines.

Duration: 4 years – start winter 2024 or subsequent semesters, depending on the availability of the candidate

Research funding: Alliance funded project from the Natural Sciences and Engineering Research Council of Canada (NSERC) and the UQAT-Polytechnique Research Institute on Mines and the Environment (RIME).

Scholarship: \$23,000 to \$26,000 CAD / year.

Candidate profile:

- MSc in agronomy, ecology, geography, geomatics, forest engineering or other relevant fields.
- Experience in the acquisition and treatment of remote sensing data.
- Capacity to read and write scientific texts in English.
- Multidisciplinary work experience is an asset.
- Proficiency in software such as ArcGIS, ENVI or QGIS will be considered an asset.
- **People from underrepresented groups in science** (women, members of first nations, newcomers) are strongly encouraged to apply.



To apply: Submit 1) your curriculum vitae, 2) a motivation letter, 3) your university transcripts and 4) the contact details of two referee or two letters of reference. Applications will be reviewed upon submission and until the position is filled. **Submit your application or questions to marie.guittony@uqat.ca et vincent.boulanger-martel@uqat.ca.**

UQAT: HIGHER LEARNING ON A HUMAN SCALE

Research at RIME

The Research Institute on Mines and the Environment (RIME) at UQAT is located in the heart of a region rich in active mine sites and is the only university in Québec that has made the mining sector a distinctive element of its contribution to science and technology. RIME supports research that targets the development of environmental solutions for the entire life cycle of a mine. RIME-UQAT is:

- A multidisciplinary and dynamic work environment;
- Close proximity to mining companies in Québec;
- Several research chairs in mining and the environment;
- Cutting-edge laboratories and research equipment;
- Renown professors in mining and the environment;
- Research projects anchored within the needs of the industry.



Study in the heart of Québec's great outdoors

Set in a region where wilderness, lakes, and forest stimulate creativity and foster talent, UQAT is different by nature. With 22,000 lakes and endless miles of boreal forest, Abitibi-Témiscamingue is a dynamic place full of creative people, new ideas, and bold projects. [See what our students have to say!](#)

A world of high-calibre research

Research activities at UQAT are producing remarkable results in a range of scientific fields. According to the 2023 independent firm RESEARCH Infosource Inc., UQAT is ranked among the 3 Canadian universities mainly active in Canada for per-faculty research intensity in the undergraduate category (full-service universities, excluding universities with medical schools).

With more than \$24 million in research per year and state-of-the-art laboratories, UQAT is an exceptional environment for graduate students. Many of our students have achieved excellence in their chosen fields and many of our professors have been recognized for the quality of their research and their innovative spirit. [Find out more](#)