



POSTDOCTORAL RESEARCHER WANTED

Postdoc opportunity in hydrogeological modelling in the context of mine site reclamation

Title: Prediction of the long-term performance of reclaimed mine sites including the effects of vegetation.

Context and project overview: The performance of soil barrier cover systems used to confine mine wastes relies on their ability to control the water balance. Yet, plants that establish with time on these covers impact their water balance and possibly their performance. Differing models are used to apprehend the hydrogeological behaviour of cover systems and evaluate their performance (for example: UNSAT-H, SEEP/W, HYDRUS et LEACHM). Such models can include vegetation parameters as boundary condition but models are rarely calibrated and validated including vegetation effects.

This research project aims at calibrating and validating hydrogeological models for several types of vegetated covers by using in situ field data that were collected at the short-medium term, then to evaluate the long-term performance of cover system with a mature vegetation. Field data are already available for the project and can be completed by in situ additional measurements when necessary.

Location: The researcher 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, under the supervision of Marie Guittonny and Bruno Bussiére. The RIME expertise is recognized in Canada and internationally. Nested in a mining region, the research is performed at the real scale on active and inactive mine sites, in collaboration with the managers of mine sites, to develop applied solutions. The 16 professors work as a multidisciplinary team in collaboration with a hundred or so master and PhD students, as well as twenty or so research technicians and professionals.

Financial support: A gross salary of 75 000 \$ per year for one year is provided (could be renewed).

Required profile: PhD in unsaturated hydrogeological modelling, mineral engineering, agronomy, plant physiology or any other relevant field. Required experience in numerical modelling. Demonstrated ability to write and publish scientific articles in English. Experience in the modelling of cover system performance or of soil-plant system an asset.

Start date: Summer or Fall 2022.

To apply: Send a curriculum vitae, a cover letter, and the contact information for two references to Marie Guittonny (marie.guittonny@uqat.ca). The position will be open until filled, with priority given to applications received first.

Marie Guittonny, Ph. D.

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