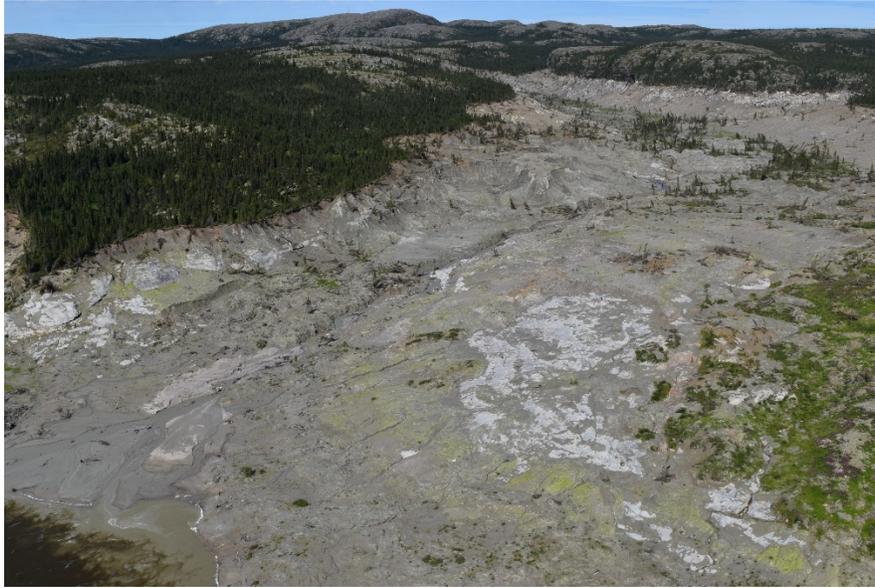


Master project in geotechnical engineering applied to landslides



Topic: Characterization of the flowslide that occurred in Kuujjuarapik

Project description : On April 22, 2021, a flowslide occurred in Kuujjuarapik, on the banks of the Great Whale River. This flowslide occurred in deposits of the Tyrrell Sea being extremely sensitive and not very plastic. The retrogression is estimated at 1.7 km and the volume of debris at 23 million cubic meters. This is probably the largest flowslide that has occurred recently in Quebec. The investigation of this flowslide, which will be done in collaboration with the Ministère des Transports du Québec (MTQ), is therefore an opportunity to be able to analyze and understand this singular event that occurred in particular soils and a region that has not been studied well. The objective of this project is therefore to explain the development of this flowslide, i.e. its retrogression and the runout of the debris. In practice, this master's project consists of:

- analyzing the landslide morphology using Lidar data and aerial photographs;
- performing various laboratory tests to determine the geotechnical and rheological properties of the materials involved in this landslide (sensitivity, consistency limits, scanning electron microscope observations and rheometer tests);
- simulate the post-failure using software in order to reproduce the conditions that led to the retrogression of the landslide.

Start of the project : As soon as possible.

Prerequisites: Bachelor's degree in civil engineering, geological engineering, water engineering, construction engineering or an equivalent bachelor's degree. Be rigorous, have good autonomy and enjoy team work.

Funding: Financing available for up to 2 years max.

Location: The student will work at the Laboratoire d'études sur les risques naturels (LERN, www.lern.fsg.ulaval.ca), located at the Faculté des sciences et de génie of Université Laval, which gathers for over 15 years graduate students, trainees, research professionals and professors from the Department de génie civil et de génie des eaux and the Department de géologie et de génie géologique developing and sharing expertise in geotechnical engineering applied to the study natural hazards. The student will therefore be received in an already well-established scientific research group that will allow the student to collaborate and meet other students and researchers working in this environment.

Please submit a letter of introduction, a CV and your transcript to :

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