



Cold Regions Eco-Hydrology Field Course

**Cold Regions Research Centre
Scotty Creek Research Station
11-18 March, 2017**

The Cold Regions Research Centre (CRRC) at Wilfrid Laurier University (<https://coldregions.ca>) is offering an intensive field-based course on the physical principles of cold regions eco-hydrology and water resources. This course counts as a High School credit and as a credit toward the Environment and Natural Resources Technology Program (ENRTP) of Aurora College.

Students will learn about the factors governing eco-hydrological processes in cold regions landscapes including precipitation, interception, energy balance, snow accumulation and redistribution by wind, plant physiology, plant-snow interactions, over-winter moisture redistribution in vegetation, snow and soil properties, and greenhouse gas (GHG) flux processes. Each will be framed within the context of the southern Taiga Plains ecoregion. Students will be exposed to an overview of each subject, with recent scientific findings and new cutting edge theories, tools and techniques.

The course will take place at the Scotty Creek Research Station (SCRS), 50 km south of Fort Simpson, Northwest Territories. The SCRS (<https://www.scottycreek.com>) has operated since 1999 and is one of the largest research stations of its kind in northern Canada. It is also uniquely positioned in one of the most rapidly warming regions on Earth, where very high rates of permafrost thaw have caused widespread conversion of forests to wetlands, with profound effects on local ecosystems, water resources and greenhouse gas fluxes. The course will focus on field examinations to expose students to cold regions eco-hydrology, field instrumentation and measurement techniques, including the use of un-manned aerial vehicles (UAVs), a 25 m GHG flux tower used in collaboration with NASA scientists, and other state-of-the-art scientific infrastructure.

Field activities will be complimented by a written assignment designed to develop skills in problem solving and in synthesizing concepts. Each day will start with a condensed lesson on the primary subject, followed by field activities to examine the processes and measurement techniques relevant to the lessons. Points of interest on the land will be reached by snowshoe and snow mobile. These scientific activities will be complemented by a traditional knowledge component led by Elders from Fort Simpson.

Students will emerge from the course with a deeper understanding of cold regions environmental processes and feedbacks. The course is intended for senior high school students with an interest in environmental science, water resources, hydrology and/or ecology who are looking to broaden their understanding of cold regions eco-hydrological systems and processes.