

HYDROLOGY

SI-111-SS Infrared Radiometer



Dr. William Quinton of the Wilfrid Laurier University has studied the hydrology of cold regions in Canada, where snowmelt runoff is a big contributor to local hydrology.

In one study, Dr. Quinton measured several variables in Yukon Territory, Canada, as a snowdrift containing 10,820 cubic meters of snow melted into runoff. Infrared radiometers mounted on a meteorological tower recorded the soil temperature at the downslope edge of the drift.

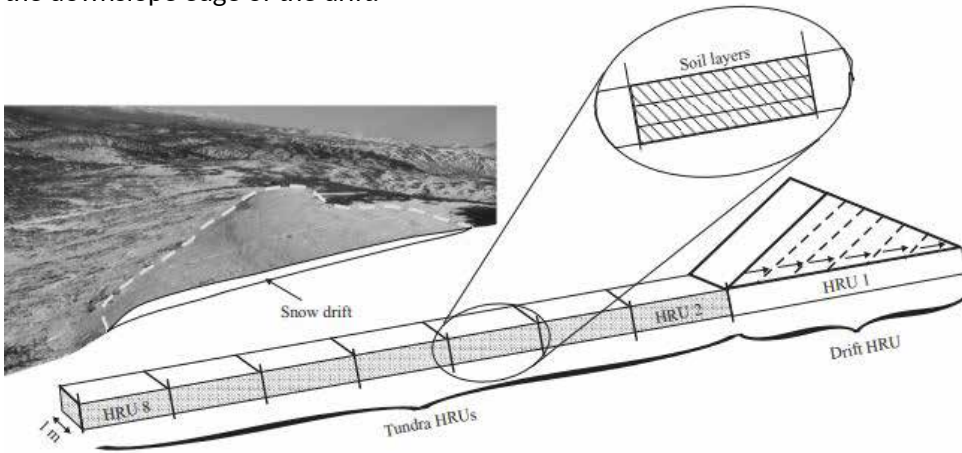


Image: Conceptual view of the hillslope under study. The photograph shows an aerial view across the crest of the hillslope that is covered by a late-lying snowdrift. The drift constitutes a single hydrological response unit (HRU). The 70 m distance between downslope edge of the drift and the stream bank is divided into 7 HRUs each of 10 m length. Together the HRUs represent a 1 m wide strip extending from the drift (HRU1) down to the stream bank (HRU 8).

Reference Article

W. L. Quinton, S. K. Carey, N. T. Goeller. Snowmelt runoff from northern alpine tundra hillslopes: major processes and methods of simulation. Hydrology and Earth System Sciences Discussions, European Geosciences Union, 2004, 8 (5), pp.877-890.

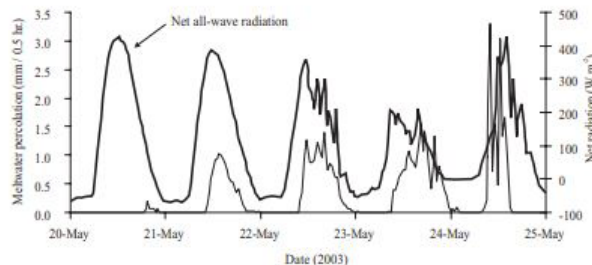


Image: Variation in the net all-wave radiation measured at the surface of the snowdrift and the meltwater percolation reaching the base of the melting snow drift in 2003.

Application Summary

Summary

Measuring ground surface temperature to measure snow runoff

Apogee Sensors Used

SI-111-SS

Contributing Organization

Dr. William Quinton of the University of Wilfrid Laurier

Location

Yukon Territory, Canada

