

CFES Mentorship Medal citation: Christopher Burn

Christopher Burn has trained the majority of Canada's professional permafrost scientists, including almost all who have become northern residents to pursue their careers. His research focuses on the thermal and hydrological regimes of permafrost terrain, especially the response of permafrost to climate change and other disturbances. In the last decade, he has expanded his scope to study the stability of highways built upon permafrost and the cost implications of climate change for northern infrastructure. He first undertook field research at Mayo, Yukon, in 1982, and began his career working with Professor J. Ross Mackay, Canada's world authority on permafrost. Data on the ground temperature response to climate warming and geomorphological disturbances, especially thermokarst, have been collected from various sites in the area for 40 years. Working with Dr Mackay, Dr Burn extended his research program in 1989 to include Garry Island and the Illisarvik experimental drained-lake site on Richards Island. The program has led to two principal books, 96 articles in refereed journals, 23 refereed conference papers, 38 chapters in books, and 59 other scientific publications. Seventy-eight of these contributions have been co-authored with graduate students. Almost all of Dr Burn's graduate students have completed field-based theses in central Yukon or the Mackenzie Delta area. These projects have normally been conducted in collaboration with northern agencies, especially Indian and Northern Affairs Canada (now CIRNAC), the Northwest Territories Geological Survey, and Yukon Highways and Public Works. In several cases, the students were subsequently hired by these agencies. In total, he has supervised five PhD candidates and 38 Master's students to completion. Eight graduate students are currently in program, two of whom have become northern residents to complete their field research during the pandemic. Of Dr Burn's 59 graduate trainees, 31 students have followed a career in northern or permafrost science, and 17 reside north of 60°N. These mentees work as research scientists at the Geological Survey of Canada, the Northwest Territories Geological Survey, l'Université Laval, and the Aurora Research Institute in Inuvik. Others have contributed their training to northern decision-making boards or the regulatory sector. Dr Burn's most recent contribution to the training environment for students is a formal partnership for research and teaching between Carleton University and the First Nation of Na-Cho Nyäk Dun, signed in 2020, that has already produced 48 student project reports for Chief and

Council and resulted in the Canadian Permafrost Association's annual meeting in 2022 being co-sponsored by and co-developed with the three northern Yukon First Nations (Na-Cho Nyäk Dun, Tr'ondëk Hwëch'in, and Vuntut Gwitchin), making it the first national meeting in the Earth Sciences to be developed in equal partnership with First Nations. Dr Burn was awarded a D.Sc. by Durham University in January 2018 for his research contributions and later the same year was honoured by the Governor General with the Canadian Polar Medal. In November 2022 he received the Martin Bergmann Medal for leadership in Arctic science from the Royal Canadian Geographical Society.