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Scientists Report Massive Ice Shelf Loss During Summer of 2008

***Canada's Ice Shelves Lose 23 % of their Area, Number Reduced
from Five to Four***

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Following the widely reported July calving from the Ward Hunt Ice Shelf in the Canadian Arctic, massive changes have occurred to ice shelves located along the northern coast of Ellesmere Island. The entire 50 km² Markham Ice Shelf broke away in early August and is now adrift in the Arctic Ocean. Two large sections of ice detached from the Serson Ice Shelf, shrinking this ice feature by 122 km² (60 %). The Ward Hunt Ice Shelf also continued to break-up, losing an additional 22 km².

"These substantial calving events underscore the rapidity of changes taking place in the Arctic," said expert Dr. Derek Mueller, who has been studying the far north of Canada as the Roberta Bondar Fellow in Northern and Polar Studies at Trent University. "These changes are irreversible under the present climate and indicate that the environmental conditions that have kept these ice shelves in balance for thousands of years are no longer present."

This summer's ice shelf loss totals 214 km², which is over three times the area of Manhattan Island. The detached pieces of ice shelves have broken into numerous 'ice islands' (tabular icebergs) whose fate could take many forms. "They could circulate in the Beaufort Gyre and float along the northern edge of the Queen Elizabeth Islands toward the Beaufort Sea or they could enter the Canadian Archipelago," explained Dr. Martin Jeffries of the US National Science Foundation and University of Alaska Fairbanks, and who has studied the Ellesmere ice shelves since 1982. The Canadian Ice Service, Environment Canada, is tracking the broken pieces.

"Reduced sea ice conditions and unusually high air temperatures have facilitated the ice shelf losses this summer" explained Dr. Luke Copland, Director of the Laboratory for Cryospheric Research at the University of Ottawa. "And extensive new cracks across remaining parts of the largest remaining ice shelf, the Ward Hunt, mean that it will

continue to disintegrate in the coming years". This means that Quttinirpaq National Park, Canada's most northerly, may soon lose its last remaining ice shelf after the loss of its other ice shelf, the Markham, this summer.

Only recently named for a respected Arctic scientist, Harold Serson, the Serson Ice Shelf dammed a 76 km² freshwater lake measuring approximately four meters deep that sits atop the sea water. The loss of this rare ecosystem is a possibility since it is dependent on the ice shelf staying intact. Dr. Warwick Vincent, Director of Laval University's Centre for Northern Studies and a researcher in the program ArcticNet, has been studying the ecology of northern Ellesmere Island for more than ten years. He has just returned from his latest expedition to the area, where he observed dramatic changes along the coast. "These ice shelves are formed from the Arctic's thickest and oldest marine ice" he says, "and the extent of their loss this season is significant. Unique ecosystems that depend on this ice are on the brink of extinction."

The Ellesmere ice shelves are composed of ancient sea ice and accumulated snow along with glacier ice in some cases. Up to 4,500 years old and approximately 40 m thick, these features are vastly different from ordinary sea ice. More than 90 per cent of Canada's ice shelves have been lost over the past century, with most of these losses occurring during a warm period in the 1930s and 1940s. Temperatures in the Arctic are now even higher than they were then and a period of renewed ice shelf break-up has ensued since 2002.

This research was undertaken in collaboration with the Canadian Ice Service with logistical support from Polar Shelf (Natural Resources Canada) and the Canadian Rangers (National Defence). Luc Hardy of Pax Arctica, an initiative in collaboration with Green Cross International, provided photos and satellite imagery. Financial assistance was provided by ArcticNet, Canadian Foundation for Innovation and the Natural Sciences and Engineering Research Council (NSERC) of Canada.

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For further information including satellite images and photos, please visit:

www.trentu.ca/iceshelf, www.ice.ec.gc.ca

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