

Canadian Ice Shelves Breaking up at High Speed

(Ottawa) – Canadian ice shelves are changing at an unexpected rate, with almost 50 per cent lost in the last six years, experts say.

Carleton University's Derek Mueller says this summer has resulted in the near-complete loss of one important ice shelf and the largest remaining shelf separated into two distinct remnants.

"This is our coastline changing," says Mueller, a researcher in the Department of Geography and Environmental Studies. "These unique and massive geographical features that we consider to be part of the map of Canada are disappearing and they won't come back."

After taking stock of this summer's changes using satellite imagery, Mueller notes that the ice shelves have declined appreciably nearly every summer since 2005. This rapid attrition will have lasting effects, he says.

This summer alone, most of the Serson Ice Shelf broke away and the Ward Hunt Ice Shelf has now split into two separate pieces. This ice loss equals up to three billion tonnes or about 500 times the mass of the Great Pyramid of Giza.

"Since the end of July, pieces equaling one and a half times the size of Manhattan Island have broken off," says Luke Copland, researcher in the Department of Geography at the University of Ottawa. He warns that oil companies need to sit up and take notice as more icebergs will be floating down from the North and may threaten rigs in locations such as the Beaufort and Chukchi seas.

Mueller blames a combination of warmer temperatures and open water for recent ice shelf calving. "The ice shelves were formed and sustained in a different climate than what we have now. As they disappear, it implies we are returning to conditions unseen in the Arctic for thousands of years."

Arctic ice shelves, old and thick, are relatively rare. They are markedly different than sea ice, which is typically less than a few metres thick and survives up to several years. Canada has the most extensive ice shelves in the Arctic along the northern coast of Ellesmere Island. These floating ice masses are typically 40 metres thick (equivalent to a 10-storey building), but can be as much as 100 metres thick. They thickened over time via snow and sea ice accumulation, along with glacier inflow in certain places, and are thought to have been in place over most of the past several thousand years .

Mueller and Copland's research into ice shelf changes is funded by the Natural Sciences and Engineering Research Council of Canada, the Polar Continental Shelf Program and ArcticNet.

The degradation of the Serson Ice Shelf was noted by the Canadian Ice Service, Environment Canada at the beginning of August (<http://www.ec.gc.ca/glaces-ice/>). CIS provided imagery that was important for the delineation of the current ice extent.

The Ellesmere Island ice shelves are known to harbour unique microbial life, which are particularly vulnerable to the impacts of climate change.

Professor Warwick Vincent, director of the Centre for Northern Studies at Laval University, has studied these organisms since 1998. His team is based each summer at Ward Hunt Island in Quttinirpaaq National Park to monitor the ecological shift from ice-dependent to open water ecosystems.

Professor John England, an NSERC Northern Chair at the University of Alberta, has inferred that the ice shelves have been in place for up to 5,500 years from examining driftwood and other materials that he found behind them.

The Serson Ice Shelf is named after Harold Serson (1926-1992) a scientist with the Defence Research Board who contributed to the study of ice shelves and related phenomena along the northern coast of Ellesmere Island.

Images and maps are available at:

<http://http-server.carleton.ca/~dmueller/iceshelves/summer2011.html>

See this release online:

For more information:

Caitlin Kealey
Media Relations
Carleton University
613-520-2600, ext. 8718
613-818-7956
Caitlin_Kealey@carleton.ca

Derek Mueller
Dept. of Geography & Environmental Studies
Carleton University
613-520-2600, ext. 1984
derek_mueller@carleton.ca

Luke Copland
Dept. of Geography
University of Ottawa
613-562-5800, ext. 2826
luke.copland@uottawa.ca