

Get The Globe in your pocket
Download our app for your iPhone or Blackberry

THE GLOBE AND MAIL 

[Sections](#)

[Home](#) » [News](#) » [National](#)

Violent Arctic storm a climate-change 'harbinger,' study finds

GLORIA GALLOWAY

OTTAWA

From Tuesday's Globe and Mail

Last updated Thursday, May. 19, 2011 7:34AM EDT



Dead vegetation is shown around a lake in the Mackenzie Delta. (Joshua Thienpont/Queen's University)

- 
- 
- 
- [A-](#)
- [A+](#)

The Inuvialuit living in the Mackenzie Delta of the Northwest Territories watched incredulously in September of 1999, as a particularly violent storm swept the Arctic Ocean 20 kilometres inland,

killing all vegetation in its path and leaving lakes infused with salt water.

Local elders said nothing like it had ever happened in the known history of their people – and it turns out they were right.

- [A railway to Arctic riches: economic boom, environmental threat?](#)
- [Coastal nations urged to preserve Arctic waters](#)
- [Warming trend could prove boon to Canadian farming](#)

Scientists from Carleton University in Ottawa and Queen's University in Kingston, who attribute the surge to global warming, have looked at tree trunks and lake beds to determine that no comparable event has occurred in at least 1,000 years.

“It’s just another example of how recent climatic factors seem to be out of our normal range of variability,” John Smol, a professor at the Paleocological Environment Assessment and Research Lab at Queen’s, said Monday as the study was about to be released.

The new findings, he said, are entirely consistent with various models of climate change that have been predicted by scientists who study the effects of rising global temperatures.

“We actually have evidence now that [global warming] has started happening and it isn't just part of some natural variability,” he said. “It’s sort of a harbinger or a bellwether of things to come. We’re only at the beginning of what’s going to be happening here.”

The land along the rivers and lakes of the Mackenzie Delta that was covered by the salty seawater remains dead even 12 years later, suggesting huge impacts should a surge of this kind occur in more populated regions further south.

When the Inuvialuit began reporting the phenomenon, Prof. Smol said he and the other team members asked themselves whether they could prove that the event was one of a kind. “Human memory only goes back a few generations so we try to push that record back into time,” he said.

Michael Pisaric of Carleton University and his team looked at tree rings from the 80-year-old shrubs that were the oldest forms of vegetation in the area that is now a dead zone. “And they said ‘No, nothing like the 1999 storm surge has happened in at least the last 80 years based on the tree rings,’” Prof. Smol said.

But the Queen’s researchers were able to take the record back even further by boring into the sediment at the bottoms of the local lakes that were formed about 1,000 years ago.

“It’s like a time machine. We call it a natural archive. In that mud is an incredibly rich record of what happened in the lake and around it,” Prof. Smol said.

Especially telling was the record left by diatoms, microscopic plant-like organisms. Some types of diatoms live in salt water and some live in fresh water.

“And, sure enough, around 1999, there is this big increase in salt-water diatoms. But, more importantly, it never happened before. So we can say this is truly an ecologically unprecedented

event,” he said.

What caused the surge? Prof. Smol said it was likely a combination of three factors, each one related in some way to climate change.

First was the decreased presence of sea ice, which acts like a swimming-pool cover on the ocean and prevents large waves from building during storms. Second was the rise in sea levels that has occurred as the ice melts. And third was the big storm, an “episodic” weather event that most models suggest will increase in severity and frequency as the climate gets warmer, Prof. Smol said.

“You put them all together you kind of have a triple whammy,” he said.

“Of course, what happens in the Arctic affects us all. It’s an early-warning indicator that can happen elsewhere.”

Published on Monday, May. 16, 2011 3:46PM EDT

- 
- 
- 
- [A-](#)
- [A+](#)

More top stories

- [The cuts are coming – but will anyone care?](#)
- [Parties face first cut to per-vote taxpayer subsidy](#)
- [A new mandate for Flaherty’s belt-tightening budget](#)
- [Ontarian has Canada's first case of E. coli linked to Europe](#)

[Home](#) [Life](#) [News](#) [Arts](#) [Commentary](#) [Sports](#) [Business](#) [Technology](#) [Investing](#) [Globe Drive](#)

[Business/People Search by](#)  [YellowPages.ca](#)

[Back to top](#) [View Full Site](#)

[Online Help](#) | © Copyright 2011 The Globe and Mail Inc. All rights reserved