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WEEKLY EDITION

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NEWS OCT 10, 2013 – 9:02 AM EDT

Arctic's last refuge from climate change now heating up

Air temperatures in the Hudson Bay Lowlands rose three degrees since the mid-1990s

By SARAH ROGERS



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A polar bear wandering the Hudson Bay Lowlands. (PHOTO BY JASON SHEATH)



An aerial view of the sub-arctic landscape typical of the Hudson Bay lowlands in Ontario. (PHOTO BY K. RUHLAND)

One of the last areas of the Arctic to see the effects of a warming climate is experiencing fast-rising









temperatures, say researchers at Queen's University, Laurentian University and Ontario's environment ministry.

The new study, released this week, shows that temperatures in the Hudson Bay lowlands — the subarctic region just west of James Bay — has seen air temperatures rise dramatically over the past 20 years.



Annual air temperatures recorded in Churchill, Manitoba went from about 0 C in the mid-1990s to 3 C by the end of the 2000s.

One of the study's authors, John Smol, a Canada research chair in environmental change, has studied the Arctic for 30 years.

"In most Arctic regions, [our data suggests] the warming started much earlier," Smol said. "The Hudson Bay lowlands were a big exception, because it was always choked with ice."

"We know now that sea ice in the Hudson's Bay has decreased by three weeks, which is significant."









But what actually hinted at a warming climate in the peat land-rich region was the algae, or diatoms, that researchers had been collecting on lake beds — some having been there for two centuries.

"Lakes are like a history book of what has happened over time," Smol said.



While some species of algae favour Arctic waters and others warmer waters, in 1995, researchers started seeing an abundance of the warmer water algae in places they hadn't before.

Another warning came in the form of large numbers of dead brook trout in the early 2000s, a species that migrates upriver from Hudson Bay to spawn.

Biologists determined the fish died of heat stress.

Smol now calls the rising temperatures "uncharted territory."

"Continued warming at the rate and magnitude currently underway will undoubtedly lead to more









pronounced ecosystem responses, the effects of which can cascade throughout the entire ecosystem," he said.

Scientists say the local polar bear population is completely dependent on the Hudson Bay sea ice, while hunting and fishing routes of the local aboriginal population are likely to be affected.







"This is also a global problem," Smol said. "Peat lands suck in carbon dioxide, but once they start drying up and dying, they actually start to release greenhouse gases."

Smol and his co-authors dedicated their study to Dr. Klaus Hochheim, <u>a University of Manitoba climate</u> scientist who died in a helicopter crash in the Northwest Passage last month.

Hochheim was leading a research group on the Canadian Coast Guard icebreaker Amundsen when the helicopter went down.

He died along with the pilot, Daniel Dubé, and the Amundsen's captain, Marc Thibault.

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