

Study warns of cataclysmic melting of glaciers

BY RANDY BOSWELL, CANWEST NEWS SERVICE JUNE 22, 2009



Dr. Robert Anderson (University of Colorado) and Aaron Bini (graduate student, University at Buffalo) pause to take in the scenery of the Polar Sun Spire (1438 m above sea level) from the frozen surface of Sam Ford Fiord, Baffin Island.

Photograph by: Jason Briner, University of Buffalo

It's a little-known natural wonder along Baffin Island's rugged east coast, a spectacular, 110-km-long channel lined by towering cliffs that — despite its extreme remoteness — is a mecca for base-jumping enthusiasts from around the world.

But U.S. scientists who have reconstructed a cataclysmic glacial meltdown in prehistoric Canada say Nunavut's Sam Ford Fiord is also a sentinel of danger in the age of climate change, showing just how quickly the planet's massive coastal glaciers could disappear and send global sea levels surging.

Their study, published this week in the journal *Nature Geoscience*, says the rapid melting of the fiord's colossal, kilometre-deep glacier about 9,500 years ago is proof that similar features found today in Greenland, Canada and Antarctica could be lost "in a geologic instant."

That's several decades or even a few centuries in ordinary time — but fast enough that the scientists, led by State University of New York geologist Jason Briner, are sounding an alarm about the present-day implications.

"A lot of glaciers in Antarctica and Greenland are characteristic of the one we studied in the Canadian Arctic," Buffalo-based Briner states in a summary of the study, which presents evidence the Baffin Island glacier retreated at rates of up to 58 metres a year near the close of the last ice age.

"If modern glaciers do this for several decades, this would rapidly raise global sea level, intercepting coastal populations and requiring vast re-engineering of levees and other mitigation systems."

Many of the fiords with the world's largest coastal glaciers today are "strikingly analogous" to Sam Ford at the time of its "rapid deglaciation," Briner and two co-authors state in their Nature Geoscience article. "Thus tens to hundreds of kilometres of retreat of present outlet glaciers is possible in the coming centuries."

Researchers around the world are closely monitoring the conditions of ice shelves, glaciers and sea ice in the Earth's southern and northern polar regions.

Rising global temperatures, widely believed to have been fuelled by industrial-age carbon emissions, are generally blamed for accelerating glacial melts and opening long-frozen polar sea routes.

Last summer alone, Canadian scientists recorded the collapse of about one-quarter of the ancient, glacier-fed ice shelves along the north coast of Ellesmere Island.

"Indeed the collapse of ice shelves and the rapid retreat of large ice streams (such as the ancient one at Sam Ford Fiord) are not too dissimilar," Briner said Monday. "But tidewater glaciers like the one studied — and like the hundreds around the world that scientists are really worried about — calve off icebergs, and when they do so quickly, it is collapse-like."

And notably, Briner adds, the rapid calving and retreating of such mammoth coastal glaciers does significantly "contribute to sea-level rise."

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