

For the first time in human history, the North Pole can be circumnavigated

Melting ice opens up North-west and North-east passages simultaneously. Scientists warn Arctic icecap is entering a 'death spiral'

By Geoffrey Lean, Environment Editor

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Open water now stretches all the way round the Arctic, making it possible for the first time in human history to circumnavigate the North Pole, The Independent on Sunday can reveal. New satellite images, taken only two days ago, show that melting ice last week opened up both the fabled North-west and North-east passages, in the most important geographical landmark to date to signal the unexpectedly rapid progress of global warming.

Last night Professor Mark Serreze, a sea ice specialist at the official US National Snow and Ice Data Center (NSIDC), hailed the publication of the images – on an obscure website by scientists at the University of Bremen, Germany – as "a historic event", and said that it provided further evidence that the Arctic icecap may now have entered a "death spiral". Some scientists predict that it could vanish altogether in summer within five years, a process that would, in itself, greatly accelerate.

But Sarah Palin, John McCain's new running mate, holds that the scientific consensus that global warming is melting Arctic ice is unreliable.

The opening of the passages – eagerly awaited by shipping companies who hope to cut thousands of miles off their routes by sailing round the north of Canada and Russia – is only the greatest of a host of ominous signs this month of a gathering crisis in the Arctic. Early last week the NSDIC warned that, over the next few weeks, the total extent of sea ice in the Arctic may shrink to below the record low reached last year – itself a massive 200,000 square miles less than the previous worst year, 2005.

Four weeks ago, tourists had to be evacuated from Baffin Island's Auyuittuq National Park because of flooding from thawing glaciers. Auyuittuq means "land that never melts".

Two weeks later, in an unprecedented sighting, nine stranded polar bears were seen off Alaska trying to swim 400 miles north to the retreating icecap edge. Ten days ago massive cracking was reported in the Petermann glacier in the far north of Greenland, an area apparently previously unaffected by global warming.

But it is the simultaneous opening – for the first time in at least 125,000 years – of the North-west passage around Canada and the North-east passage around Russia that promises to deliver much the greatest shock. Until recently both had been blocked by ice since the beginning of the last Ice Age.

In 2005, the North-east passage opened, while the western one remained closed, and last year their positions were reversed. But the images, gathered by Nasa using microwave sensors that penetrate clouds, show that the North-west passage opened last weekend and that the last blockage on the north-eastern one – a tongue

of ice stretching down to Russia across Siberia's Laptev Sea – dissolved a few days later.

"The passages are open," said Professor Serreze, though he cautioned that official bodies would be reluctant to confirm this for fear of lawsuits if ships encountered ice after being encouraged to enter them. "It's a historic event. We are going to see this more and more as the years go by."

Shipping companies are already getting ready to exploit the new routes. The Bremen-based Beluga Group says it will send the first ship through the North-east passage – cutting 4,000 nautical miles off the voyage from Germany to Japan – next year. And Canada's Prime Minister, Stephen Harper, last week announced that all foreign ships entering the North-west passage should report to his government – a move bound to be resisted by the US, which regards it as an international waterway.

But scientists say that such disputes will soon become irrelevant if the ice continues to melt at present rates, making it possible to sail right across the North Pole. They have long regarded the disappearance of the icecap as inevitable as global warming takes hold, though until recently it was not expected until around 2070.

Many scientists now predict that the Arctic ocean will be ice-free in summer by 2030 – and a landmark study this year by Professor Wieslaw Maslowski at the Naval Postgraduate School in Monterey, California, concluded that there will be no ice between mid-July and mid-September as early as 2013.

The tipping point, experts believe, was the record loss of ice last year, reaching a level not expected to occur until 2050. Sceptics then dismissed the unprecedented melting as a freak event, and it was indeed made worse by wind currents and other natural weather patterns.

Conditions were better this year – it has been cooler, particularly last winter – and for a while it looked as if the ice loss would not be so bad. But this month the melting accelerated. Last week it shrank to below the 2005 level and the European Space Agency said: "A new record low could be reached in a matter of weeks."

Four weeks ago, a seven-year study at the University of Alberta reported that – besides shrinking in area – the thickness of the ice had dropped by half in just six years. It suggested that the region had "transitioned into a different climatic state where completely ice-free summers would soon become normal".

The process feeds on itself. As white ice is replaced by sea, the dark surface absorbs more heat, warming the ocean and melting more ice.

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