Iceberg twice size of Luxembourg breaks off Antarctic ice shelf

The Gaurgian

Satellite data confirms 'calving' of trillion-tonne, 5,800 sq km iceberg from the Vast iceberg splits from Antarctic ice shelf

Nicola Davis
@NicolaKSDavis

Wednesday 12 July 2017 10.53 BST
First published on Wednesday 12 July 2017 10.16 BST

A giant iceberg twice the size of Luxembourg has broken off an ice shelf on the Antarctic peninsula and is now adrift in the Weddell Sea.

Reported to be "hanging by a thread" last month, the trillion-tonne iceberg was found to have split off from the Larsen C segment of the Larsen ice shelf on Wednesday morning after scientists examined the latest satellite data from the area.

The Larsen C ice shelf is more than 12% smaller in area than before the iceberg broke off – or "calved" – an event that researchers say has changed the landscape of the Antarctic peninsula and left the Larsen C ice shelf at its lowest extent ever recorded.

"It is a really major event in terms of the size of the ice tablet that we've got now drifting away," said Anna Hogg, an expert in satellite observations of glaciers from the University of Leeds.

At 5,800 sq km the new iceberg, expected to be dubbed A68, is half as big as the record-holding iceberg B-15 which split off from the Ross ice shelf in the year 2000, but it is nonetheless believed to be among the 10 largest icebergs ever recorded.

The huge crack that spawned the new iceberg grew over a period of years, but between 25 May and 31 May alone, the rift grew by 17km – the largest increase since January. Between the 24 June and 27 June the movement of the ice sped up, reaching a rate of more than 10 metres per day for the already-severed section.

But in the end it wasn't a simple break – data collected just days before the iceberg calved revealed that the rift had branched multiple times. "We see one large [iceberg] for now. It is likely that this will break into smaller pieces as time goes by," said Adrian Luckman, professor of glaciology at Swansea University and leader of the UK's Midas project which is focused on the state of the ice shelf.

Adrian Luckman @adrian_luckman
The Larsen-C rift opening over the last 2 years from #Sentinel1
9:47 PM - 31 Jan 2017

Unlike thin layers of sea ice, ice shelves are floating masses of ice, hundreds of metres thick, which are attached to huge, grounded ice sheets. These ice shelves act like buttresses, holding back and slowing down the movement into the sea of the glaciers that feed them.

"There is enough ice in Antarctica that if it all melted, or even just flowed into the ocean, sea levels [would] rise by 60 metres," said Martin Siegert, professor of geosciences at Imperial College London and co-director of the Grantham Institute for Climate Change & Environment.

But while the birth of the huge iceberg might look dramatic, experts say it will not itself result in sea level rises. "It's like your ice cube in your gin and tonic – it is already floating and if it melts it doesn't change the volume of water in the glass by very much at all," said Hogg.

Following the collapse of the more northerly Larsen A ice shelf in 1995 and Larsen B in 2002, all eyes have turned to Larsen C.

But Siegert is quick to point out that the calving of the new iceberg is not a sign that the ice shelf is about to disintegrate, stressing that ice shelves naturally break up as they extend further out into the ocean. "I am not unduly concerned about it – it is not the first mega iceberg ever to have formed," he said.

Andrew Shepherd, professor of Earth Observation at the University of Leeds, agreed. "Everyone loves a good iceberg, and this one is a corker," he said. "But despite keeping us waiting for so long, I'm pretty sure that Antarctica won't be shedding a tear when it's gone because the continent loses plenty of its ice this way each year, and so it's really just business as usual!"

Luckman said that while the Larsen C ice shelf might continue to shed icebergs, it might regrow. Nevertheless previous research by the team has suggested that the remaining ice shelf is likely less stable now that the iceberg has calved, although it is unlikely the event would have any short-term effects. “We will have to wait years or decades to know what will happen to the remainder of Larsen C,” he said, pointing out that it took seven years after the release of a large iceberg from Larsen B before the ice shelf became unstable and disintegrated.

Q&A

How significant is the release of the Larsen C megaberg?

What’s more, Luckman stressed that while large melt ponds were seen on Larsen B prior to its collapse - features which are thought to have affected the structure of the ice shelf - those seen on Larsen C are far smaller and are not even present at this time of year.

And while climate change is accepted to have played a role in the wholesale disintegration of the Larsen A and Larsen B ice shelves, Luckman emphasised that there is no evidence that the calving of the giant iceberg is linked to such processes.

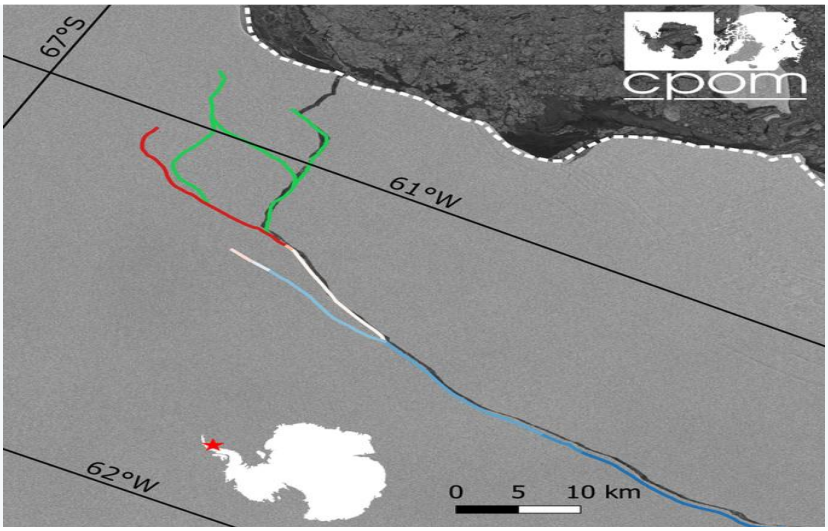
Twila Moon, a glacier expert at the US National Ice and Snow Data Center agrees but, she said, climate change could have made the situation more likely.

“Certainly the changes that we see on ice shelves, such as thinning because of warmer ocean waters, are the sort [of changes] that are going to make it easier for these events to happen,” she said.

Luckman is not convinced. “It is a possibility, but recent data from the Scripps Institute of Oceanography actually show most of the shelf thickening,” he said.

The progress of the rift, and the loss of the iceberg, has been carefully followed by analysis of radar images from the European Space Agency’s mission, which provides data from the region every six days.

“Before we would have been lucky if we had got one satellite image a year of an event like this, so we would not have been able to watch it unfold,” said Hogg, pointing out that the radar system allows data to be collected whatever the weather and in the dark, while technological advances mean more data that can be downloaded than for previous satellites.



The news of the giant iceberg comes after US president Donald Trump announced that the US will be withdrawing from the 2015 Paris climate accord – an agreement signed by more than 190 countries to tackle global warming. “Truly I am dismayed,” said Moon of the move.

Now at the mercy of the ocean currents, the newly calved iceberg could last for decades, depending on whether it enters warmer waters or bumps into other icebergs or ice shelves.

I appreciate there not being a paywall: it is more democratic for the media to be available for all and not a commodity to be purchased by a few. I'm happy to make a contribution so others with less means still have access to information.
Thomasine F-R, Sweden

If everyone who reads our reporting, who likes it, helps to support it, our future would be much more secure.

Become a supporter