

Climate crisis: Third of Antarctic ice shelf area 'at risk of collapse' if emissions aren't rapidly reduced

## [Climate crisis: Third of Antarctic ice shelf area 'at risk of collapse' if emissions aren't rapidly reduced](#)

The Independent (United Kingdom)

April 8, 2021 Thursday 3:08 PM GMT

Copyright 2021 Independent Digital News and Media Limited All Rights Reserved

**Section:** INDEPENDENT PREMIUM; Version:1

**Length:** 923 words

**Byline:** Harry Cockburn

**Highlight:** Antarctica's imperilled [ice shelves](#) are the only barrier maintaining the world's coastlines as we currently know them, writes Harry Cockburn

### Body

---

The [ice shelves](#) which fringe Antarctica could be **at** major **risk** of **collapse**, potentially releasing "unimaginable" amounts of water into the ocean, if temperatures reach 4C above pre-industrial levels, research has warned.

The UN's IPCC has [already said](#) that as current global heating trends continue and if [emissions](#) are not **rapidly** halted, then our planet is on course to see average temperature rises pushing towards 4C by the end of the century.

In this scenario, more than a **third** of the [Antarctic](#)'s [ice shelf area](#) could be **at risk** of **collapsing** into the sea, the researchers claim.

Scientists **at** the University of Reading said their study was the most detailed ever done in terms of forecasting how vulnerable the enormous floating platforms of [ice](#) surrounding Antarctica will become as the [climate crisis](#) worsens.

As temperatures rise they said we are likely to see "dramatic **collapse** events caused by melting and runoff", which would have "unimaginable" impacts on sea level rise.

Read more:

- Extinction Rebellion announces 'wave' of action against banks over fossil fuel investments
- Pollution from Europe's coal plants responsible for 'up to 34,000 deaths each year'
- [Climate](#) activists divided over whether Cop26 should still go ahead if online only
- Bitcoin mining is disastrous for the environment - it is time for governments to intervene
- Welcome to Dunbar, Scotland's first zero-waste town

Antarctica holds vast quantities of [ice](#) - around 90 per cent of all [ice](#) in the world.

Climate crisis: Third of Antarctic ice shelf area 'at risk of collapse' if emissions aren't rapidly reduced

Dr Ella Gilbert, a research scientist in the University of Reading's Department of Meteorology, said: "**Ice shelves** are important buffers preventing glaciers on land from flowing freely into the ocean and contributing to sea level rise.

"When they **collapse**, it's like a giant cork being removed from a bottle, allowing unimaginable amounts of water from glaciers to pour into the sea."

"We know that when melted **ice** accumulates on the surface of **ice shelves**, it can make them fracture and **collapse** spectacularly. Previous research has given us the bigger picture in terms of predicting **Antarctic ice shelf** decline, but our new study uses the latest modelling techniques to fill in the finer detail and provide more precise projections.

She added: "The findings highlight the importance of limiting global temperature increases as set out in the Paris agreement if we are to avoid the worst consequences of **climate** change, including sea level rise."

The research found that 34 per cent of the **area** of all **Antarctic ice shelves** -around half a million square kilometres -including 67 per cent of **ice shelf area** on the **Antarctic** Peninsula, would be **at risk** of destabilisation under 4C of warming.

However, the scientists said limiting temperature rise to 2C, as per the upper limit of the Paris agreement, rather than 4C, would halve the **area at risk** and potentially avoid "significant sea level rise".

The researchers also identified Larsen C -the largest remaining **ice shelf** on the peninsula, which split to form the enormous A68 iceberg in 2017 -as one of four **ice shelves** that would be particularly threatened in a warmer **climate**.

The research team **at** Reading used state-of-the-art, high-resolution regional **climate** modelling to predict in more detail than before the impact of increased melting and water runoff on **ice shelf** stability.

**Ice shelf** vulnerability from this fracturing process was forecast under 1.5C, 2C and 4C global warming scenarios, which are all possible this century.

Every summer, **ice at** the surface of the **ice shelf** melts and trickles down into small air gaps in the snow layer below, where it refreezes.

However, in years when there is a lot of melting but little snowfall, the water pools on the surface or flows into crevasses, deepening and widening them until the **ice shelf** eventually fractures and **collapses** into the sea.

If there is water collecting on the surface of the **ice shelf**, the scientists said it could be vulnerable to **collapse** in this way.

This is what happened to the Larsen B **ice shelf** in 2002, which fractured following several years of warm summer temperatures. Its **collapse** caused the glaciers behind the **ice shelf** to speed up, losing billions of tonnes of **ice** to the sea.

The researchers identified the Larsen C, Shackleton, Pine Island and Wilkins **ice shelves** as most **at-risk** under 4C of warming, due to their geography and the significant runoff predicted in those **areas**.

Dr Gilbert said: "If temperatures continue to rise **at** current rates, we may lose more **Antarctic ice shelves** in the coming decades.

"Limiting warming will not just be good for Antarctica -preserving **ice shelves** means less global sea level rise, and that's good for us all."

Andrew Shepherd, Professor of Earth Observation **at** the University of Leeds, told The Independent: "**Ice shelves** have fringed Antarctica for thousands of years, and their **collapse** during our lifetime is an iconic example of **climate** change.

Climate crisis: Third of Antarctic ice shelf area 'at risk of collapse' if emissions aren't rapidly reduced

"This new study shows that melting **at** their surface is set to double with every 2C of global warming and spread southwards to parts of the continent where huge reservoirs of inland **ice** may lose their protective barrier.

"If that happens, we can expect rapid increases in sea level rise along every coastline of our planet."

The research is published in the journal Geophysical Research Letters.

Read More

[Lara Trump says Bernie Sanders 'exactly right' on 'scary' Twitter ban of Donald Trump](#)

[Thomas Tuchel learns his biggest Chelsea lesson yet](#)

[Bollywood outcry as censor appeal process is scrapped without warning](#)

## Classification

---

**Language:** ENGLISH

**Publication-Type:** Newspaper; Web Publication

**Journal Code:** WEBI

**Subject:** GLACIERS & ICEBERGS (92%); **CLIMATE** CHANGE (90%); **EMISSIONS** (90%); AGREEMENTS (89%); RESEARCH REPORTS (89%); SCIENCE & TECHNOLOGY (89%); CLIMATOLOGY (78%); COASTAL **AREAS** (78%); EARTH & ATMOSPHERIC SCIENCE (78%); GLOBAL WARMING (78%); OCEANOGRAPHIC & ATMOSPHERIC SERVICES (78%); EXPERIMENTATION & RESEARCH (77%); METEOROLOGY (77%); POLLUTION & ENVIRONMENTAL IMPACTS (76%); DIGITAL CURRENCY (73%); DEATH RATES (72%); TRENDS (72%); UNITED NATIONS (72%); COLLEGES & UNIVERSITIES (69%)

**Industry:** **EMISSIONS** (90%); ENERGY & UTILITIES (78%); GLOBAL WARMING (78%); DIGITAL CURRENCY (73%); COAL FIRED PLANTS (71%); COLLEGES & UNIVERSITIES (69%); COAL INDUSTRY (51%)

**Geographic:** EARTH (79%); ANTARCTICA (95%); UNITED KINGDOM (90%); EUROPE (78%); SCOTLAND (78%)

**Load-Date:** April 8, 2021