



## Press Release

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### Antarctic melt briefly offset as extreme El Niño brings extra snow

Unprecedented snowfall over Antarctica caused by an unusually intense spell of warming in the Pacific Ocean temporarily offset melting of the world's largest ice sheet, research suggests.

A shift in warm water in the ocean – caused by the so-called El Niño effect – led to large changes in atmospheric circulation and increased snowfall on parts of the Antarctic Ice Sheet.

The huge snowfall between 2015 and 2017 was sufficient to briefly offset the ice sheet's typical annual contribution to global sea level rise, which is normally around 0.4 millimetres, researchers say.

Even if such events were to become more frequent in the future, they would do little to counteract other factors – such as increasing air and ocean temperatures – driving melting of the ice sheet. Previous research suggests these factors could raise global sea levels by more than 50 metres if the ice sheet melted completely.

Scientists from the Universities of Edinburgh and Bristol identified increased snowfall over parts of the ice sheet – which covers more than five million square miles – using satellite data from 2002 to 2017.

Their analysis revealed that around 200 billion tonnes of snow fell on the ice sheet between June 2015 and March 2017, reversing a trend of increasing mass loss in previous years.

This coincided with the exceptionally strong El Niño of 2015-16, when waters in eastern parts of the Pacific reached more than 2.6 degrees Celsius above normal sea surface temperatures in the area. This was only the second time since records began that temperatures in this region had been so high, researchers say.

Warm weather can increase evaporation from the ocean, the team says, which could ultimately have led to the increased snowfall over the ice sheet.

No two El Niño events are the same, and their effects in Antarctica are likely strongly influenced by local conditions – such as air pressure – at the time, the scientists say.

Research on future El Niños – which occur around every two to seven years – will help improve understanding of how the Antarctic Ice Sheet responds to climate change.

The study, published in the journal *Geophysical Research Letters*, was partly funded by the Natural Environment Research Council. The study is available here: <https://doi.org/10.1029/2019GL084466>.

Lead author Julien Bodart, of the University of Edinburgh's School of GeoSciences, said: "Our study further confirms how vulnerable the ice sheet is to extreme El Niño events, and helps us better constrain sea level rise projections on short timescales. However, regardless of the severity of future El Niños, they will likely do little to counteract the long-term negative impact of climate change on Antarctica."

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