

# Climate change is turning parts of Antarctica green, say scientists

Researchers map 'beginning of new ecosystem' as algae bloom across surface of melting snow

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Snow algae on Anchorage Island in Antarctica. Photograph: Dr Matt Davey/University of Cambridge/SAMS/AFP via Getty Images

Scientists have mapped "the beginning of a new ecosystem" on the Antarctic peninsula as microscopic algae bloom across the surface of the melting snow, tinting the surface green and potentially creating a source of nutrition for other species.

The British team behind the research believe these blooms will expand their range in the future because global heating is creating more of the slushy conditions they need to thrive.

In some areas, the single-cell life-forms are so dense they turn the snow bright green and can be seen from space, according to the study, published on Wednesday in the journal Nature Communications.

Biologists from the University of Cambridge and the British Antarctic Survey spent six years detecting and measuring the green snow algae using a combination of satellite data and ground observation.



Study author Andrew Gray geotagging the snow algae blooms. Photograph: Dr Matt Davey/University of Cambridge/SAMS/AFP via Getty Images

The result is the first large-scale algae map of the peninsula, which will be used as a baseline to assess the speed at which the white continent is turning green due to the climate crisis and potentially offering sustenance to other species.

They have already found the algae have formed close bonds with tiny fungal spores and bacteria. "It's a community. This could potentially form new habitats. It's the beginning of a new ecosystem," said Matt Davey of Cambridge University, one of the scientists who led the study.

He described the algae map as a missing piece of the carbon cycle jigsaw in the Antarctic.



Antarctic temperature rises above 20C for first time on record

<https://www.theguardian.com/world/2020/feb/13/antarctic-temperature-rises-above-20c-first-time-record>

It identifies 1,679 separate blooms of green snow algae, which together covered an area of 1.9 sq km, equating to a carbon sink of about 479 tonnes a year. This is equivalent to the emissions of about 875,000 car journeys in the UK, though in global terms it is too small to make much of a difference to the planet's carbon budget.

Almost two-thirds of the green algal blooms were found on small, low-lying islands around the north of the peninsula, which has experienced some of the most intense heating in the world, with **new temperature records** being set this summer. The snow algae were less conspicuous in colder, southern regions.

Scientists have previously observed an increase in green lichen and moss, but these grow extremely slowly compared with algae. In future, they will also measure red and orange algae and calculate how the presence of such colourful forms might be affecting the heat-reflecting **albedo quality** of the snow.

"I think we will get more large blooms in the future. Before we know whether this has a significant impact on carbon budgets or bio albedo, we need to run the numbers," said Andrew Gray, the lead author of the paper.