

Ice retreat creates new CO2 store

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Retreating ice in the Antarctic is allowing in "blooms" of phytoplankton

Retreating ice in Antarctic has allowed tiny aquatic plants to flourish and absorb 3.5 million tonnes of carbon from the ocean and atmosphere annually.

Researchers from the British Antarctic Survey say the new "carbon sink" of phytoplankton is equivalent to discovering a forest the size of Wales.

However, the authors added, the discovery would only have a "minuscule effect on climate change". The findings have been published in the journal *Global Change Biology*.

"What we are talking about are large ice shelves the size of an English county," explained lead author Lloyd Peck, a marine biologist for the British Antarctic Survey.

"When they disappear, we are getting new pieces of sea," he explained.

"In the past, you could not have had life where the ice was because it was perhaps 500m thick and stopped all light coming in. Once it had gone, then you have new areas for light to colonise."

Writing in the paper, Professor Peck and his colleagues observed: "A range of feedback mechanisms affecting climate change have been identified.

"These feedbacks are almost universally positive, enhancing rates of climate warming."

These included the warming of sea and air that led to a loss of ice cover, which in turn had reduced the amount of solar energy being reflected back into space by ice (the albedo effect).

Current major carbon sinks - forests and oceanic phytoplankton blooms - were also under threat, they added.

"The loss of glaciers and ice shelves is also thought of as a factor that will predominantly increase warming of the Earth because of changes in albedo and heat take-up in newly uncovered ground and ocean.

“ It is like finding a forest the size of Wales that nobody knew was there before ”

Professor Lloyd Peck,
British Antarctic Survey

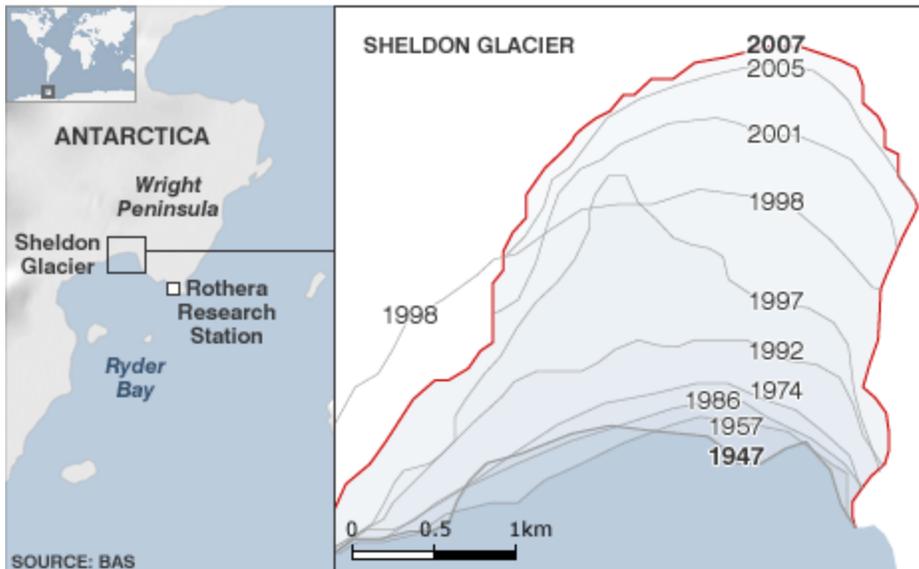
But, they said, the loss of ice cover resulted in the "opening up of new areas for biological productivity".

"One of the big take home messages from this research is that we have found new life that seems absolutely vast," Professor Peck told BBC News.

"It is like finding a forest the size of Wales that nobody knew was there before."

While the discovery of these new carbon sinks was "definitely a good thing", he added that they had "a minuscule effect on climate change".

Retreat of Sheldon Glacier 1947-2007



As well as absorbing vast amounts of carbon, the blooms are also having an incredible impact of coastal marine life, Professor Peck explained.

"At Rothera, I have seen great whales feeding in the part of the bay where the Sheldon glacier was 50 years ago.

He added that more initial herbivores, such as krill, were coming into the area to feed on phytoplankton.

"In fact, we are seeing probably more top predators too, such as killer whales, that are coming in to feed on the seals, who in turn are feeding those herbivores that are feeding on the phytoplankton."

Acid test

One long-term consequence of increased levels of carbon being absorbed into the oceans is acidification, which could have a detrimental impact on marine life.



"The prediction from the models shows that the polar oceans are going to change their pH a lot faster than elsewhere," explained Professor Peck.

What is ocean acidification?

He said that it was an issue that his team was currently researching and monitoring very closely. "We are looking at things like sea urchins that have a lot of calcium carbonate in their bodies. We are looking at how they can cope with this pH change.

"We think that animals in these parts of the world are potentially really vulnerable.

"Yes we have this new life, but a lot of animals that live in the Antarctic on the sea floor near the coastline are animals that use calcium carbonate a lot.

"If acidification happens, and it has the impact that we think it can, then it could be really bad for these types of animals."