

Phytoplankton is changing along the Antarctic Peninsula

12 March 2009

As the cold, dry climate of the western Antarctic Peninsula becomes warmer and more humid, phytoplankton - the bottom of the Antarctic food chain - is decreasing off the northern part the peninsula and increasing further south, Rutgers marine scientists have discovered. In research to be published tomorrow in the journal *Science*, Martin Montes-Hugo and Oscar Schofield report that levels of phytoplankton off the western Antarctic Peninsula have decreased 12 percent over the past 30 years.

Their paper, Recent Changes in [Phytoplankton Communities Associated with Rapid Regional Climate Change Along the Western Antarctic Peninsula](#), draws on 30 years of satellite data and field studies. Montes-Hugo is a postdoctoral researcher and Schofield is a professor of marine science at the Institute of Marine and Coastal Sciences in the School of Environmental and Biological Sciences at Rutgers University.

The Antarctic Peninsula is the northernmost part of Antarctica, stretching north to within 640 miles of Tierra del Fuego in South America.

"What is new is that we're showing for the first time that there is an ongoing change on phytoplankton concentration and composition along the western shelf of the Antarctic Peninsula that is associated with a long-term climate modification," Montes-Hugo said. "These phytoplankton changes may explain in part the observed decline of some [penguin populations](#)"

Researchers have noticed that populations of [adelle penguins](#), whose lifestyle requires an Antarctic climate, have dropped sharply in recent years in the northern part of the peninsula, while populations of sub-Antarctic penguins, such as chin-strap penguins, have increased.

"Now we know that climate changes are impacting at the base of the food web and forcing their

effects on up through the food chain," said Hugh Ducklow, co-author of the paper and co-director of the Ecosystems Center at the Marine Biological Laboratory in Woods Hole, Massachusetts. "Martin Montes-Hugo's elegant work, utilizing different satellite streams of data, nailed that down."

Scientists have long noted that the Antarctic Peninsula is warming faster than any part of the Earth during winter. According to Montes-Hugo, "In the North, sea ice cover is minimum in recent times and is accompanied by a greater wind mixing of the water column and more cloudy days," Montes-Hugo said. "The increased mixing and increased cloudiness mean less light, which means less photosynthesis and less phytoplankton. What's happening in the South is that there is less sea ice, but also less mixing and fewer clouds, which means more illuminated waters, more photosynthesis and more phytoplankton."

Source: Rutgers University ([news](#) : [web](#))

APA citation: Phytoplankton is changing along the Antarctic Peninsula (2009, March 12) retrieved 22 September 2020 from <https://phys.org/news/2009-03-phytoplankton-antarctic-peninsula.html>

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