

CRYOSPHERE

Arctic arch decline



EUROPEAN SPACE AGENCY

Geophys. Res. Lett. **37**, L03502 (2010)

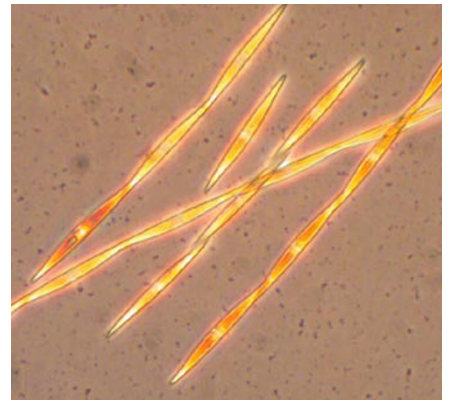
Each winter and spring, large ice blockages known as arches form along the straits leading out of the Arctic Ocean, preventing sea ice from drifting further afield. Scientists now report that in 2007 ice arches did not form along one of these passages, known as the Nares Strait, and that this

contributed to record low sea ice cover in the Arctic that year.

Ron Kwok of the Jet Propulsion Laboratory in Pasadena, California, and colleagues used satellite imagery to track the movement of sea ice through the Nares Strait, the passageway that separates Greenland from Ellesmere Island, from 1997 to 2009. The Nares Strait carries only ten per cent of the ice lost to the Atlantic each year, but it drains the oldest and thickest ice. They found that during typical winters and springs, ice arches develop at two key locations along the strait. Failure of these arches to form in 2007, however, meant that transport through the strait that year was more than twice the average over the 13-year study period.

The team warns that future warming in the Arctic could inhibit arch formation, allowing more sea ice to escape and enhancing the decline of summer sea ice cover.

Alicia Newton



NOAA

Charles Trick of the University of Western Ontario in London, Ontario, and colleagues studied the ability of *Pseudo-nitzschia* species in the sub-Arctic North Pacific Ocean to produce domoic acid under normal and iron-enriched conditions. They found that *Pseudo-nitzschia* species produce domoic acid even as part of their normal physiology during spring and that adding iron to the ocean favours the growth of these species. Once domoic acid is present in the water column, it too enhances *Pseudo-nitzschia* growth, found the researchers.

The authors suggest that large-scale ocean fertilization could result in toxin levels as high as one to two micrograms of domoic acid per litre, enough to cause widespread amnesic shellfish poisoning in humans and acute toxicity in seabirds and marine mammals.

Olive Heffernan

EXTREME EVENTS

Methane megapool



GORISBILLETOV, UNIVERSITY OF ALASKA, FAIRBANKS

Science **327**, 1246–1250 (2010)

The amount of methane being released from permafrost in the Siberian Arctic could rival that being vented from the entire world ocean, suggests new research. The study confirms what scientists have suspected for some time — that substantial quantities of the potent greenhouse gas are being released from sub-sea sites as the Arctic warms.

Between 2003 and 2008, Natalia Shakhova of the University of North Carolina and colleagues measured methane levels at 1,080 locations in the sea above the East Siberian Arctic Shelf, a vast area of shallow sea floor off Russia's northeast coast. From

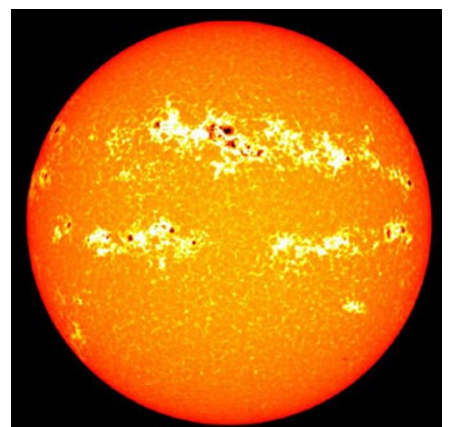
more than 5,000 at-sea observations, they found that than 80 per cent of the bottom waters, and over 50 per cent of the surface waters, are supersaturated with methane. The researchers detected methane in rising bubble clouds and trapped within the annual sea ice, suggesting that the gas escaped from sub-sea sediments. Combining these measurements, they estimate the annual release of methane from the East Siberian Arctic Shelf at just below 8 million tonnes per year.

The authors note that atmospheric methane levels have risen in recent years, providing further evidence of methane escape.

Anna Armstrong

CLIMATE VARIABILITY

Solar low scenario



NASA

Geophys. Res. Lett. **37**, L05707 (2010)

A weakening of the sun's activity, such as happened in the late seventeenth century, would only moderately offset global warming, finds a new study. The sun is

OCEAN SCIENCE

Poisonous cure

Proc. Natl Acad. Sci. USA doi:10.1073/pnas.0910579107 (2010)

Plans to counteract climate change by boosting the growth of oceanic algae could contaminate the ocean with deadly levels of a neurotoxin, say scientists. Although previous studies have shown that oceanic species of the genus *Pseudo-nitzschia* are harmless, new research finds that these species can, in fact, produce the neurotoxin domoic acid and that their toxicity is enhanced in iron-enriched waters.