

CLIMATE CHANGE

Algae speed up Greenland ice melt

Project probes how microbes affect ice sheets.

BY ALEXANDRA WITZE

Researchers are fanning out across the Greenland ice sheet this month to explore a crucial, but overlooked, influence on its future: red, green and brown algal blooms. These darken the ice, causing it to absorb more sunlight and melt faster.

The £3-million (US\$4-million) Black and Bloom project is the first to systematically measure how algae are changing the amount of sunlight that Greenland's ice sheet bounces back into space. "We want to know how much of the darkness is due to microbes and how much to other factors" such as soot or mineral dust, says principal investigator Martyn Tranter, a biogeochemist at the University of Bristol, UK.

The heart of the study is a region measuring half a kilometre long on each side, near Kangerlussuaq, Greenland. The researchers will spend six weeks collecting samples of black carbon and microorganisms while measuring incoming sunlight and reflectivity. The project will continue for two more summers, exploring different parts of the ice sheet.

"They're extremely lazy algae — they sleep for nine months and then wake up and have a party," says team member Liane Benning, a biogeochemist at both the University of Leeds, UK, and the German Research Centre for Geosciences in Potsdam. The blooms create vast, colourful fields of 'watermelon snow'.

Last month, Benning and her team reported that algal blooms across the Arctic could reduce reflectivity by 13% over the melting season (S. Lutz *et al. Nature Commun.* 7, 11968; 2016). Their results should enable climate modellers to improve estimates of how the ice sheet — which holds enough water to raise sea levels by 7 metres — is likely to melt in coming decades. The past several years have seen record temperatures and melting across Greenland.

Black and Bloom will provide "a one-of-a-kind data set" to help researchers understand Greenland's future, says Marco Tedesco, a geophysicist at the Lamont-Doherty Earth Observatory in Palisades, New York. ■



People line up to buy groceries outside a supermarket in Caracas.

Q&A Claudio Bifano

Venezuelan science under siege

The political and economic crisis in Venezuela continues to worsen. As the price of oil — the country's major export — has fallen, Venezuela has struggled to pay for imported goods while maintaining socialist economic policies put in place by former president Hugo Chávez. Claudio Bifano, a chemist at the Central University of Venezuela in Caracas, continues to teach despite rolling blackouts, food lines and increasing violence. "This is not a good time for the country, but we have to keep working," he says. "We have to keep living." Bifano, who is also the president of the Latin American Academy of Sciences, spoke to Nature about how Venezuelan scientists are coping with the turmoil.

What is daily life like for Venezuelans?

There is a serious scarcity of food and medicines, and there is high inflation, so the little that people can buy is extremely expensive. We depend on what the government imports, and as the credit that the government uses for imports is shrinking, it is more difficult to import. This is an economic model that has proven absolutely inefficient.

How are the food shortages affecting society?

We're already seeing a malnutrition problem. Many schools can no longer serve lunches, and the schools that still provide lunch, in a couple

of states, as far as I know, serve 40% of what they used to provide. In a few years, we'll see the consequences of children and youth who were malnourished and had poor health care. Those problems will affect the country's development.

How are universities weathering the crisis?

Universities are becoming degraded because of incomprehensible policies. Of the budget that autonomous universities receive from the state, 95% goes to pay personnel and only 5% is left for infrastructure, graduate programmes, research, outreach and everything else that