

RUSSIA'S WAR IN UKRAINE FORCES ARCTIC CLIMATE PROJECTS TO PIVOT

Scientists are finding workarounds as relations with Russian partners break down.

By Alexandra Witze

Although the war in Ukraine is severing partnerships between researchers inside and outside Russia across many fields of science, it is having a particularly profound impact on climate science in the Arctic. Russia makes up a huge portion of the region, which is home to melting sea ice, thawing permafrost and massive wildfires – all of which must be monitored to understand and fight climate change.

As the war grinds on, climate scientists are repositioning themselves to adapt to a new normal that could last for years. Some are shifting to work in the North American Arctic, with others turning to remote-sensing technologies such as satellites to maintain essential measurements. “The fears are that we are embarking on a multi-year – maybe even decadal-scale – interference to Arctic collaborations,” says Matthew Druckenmiller, vice-president of the International Arctic Science Committee in Akureyri, Iceland.

Much of the research carried out in the Arctic is led by individual nations or Indigenous groups – but there is a decades-long tradition of scientific collaboration among these entities. Russian scientists have key roles, particularly in environmental

monitoring, at which they are world experts in tracking changes such as methane emissions from warming landscapes.

A dual-crisis situation

The war in Ukraine, where many thousands of people have died, has presented a unique dilemma for climate researchers. “We have a climate crisis going on that we’re trying to respond to, but then we also have a moral crisis that we can’t ignore,” says Brendan Kelly, a marine biologist at the University of Alaska Fairbanks. (*Nature* was unable to reach a number of Russian Arctic climate researchers for comment.)

Just days after Russia invaded Ukraine and world leaders placed economic sanctions on Russia, the European Commission halted all funds for science collaborations involving the Russian Federation. Other funding agencies and institutions have adopted similar policies. And in March, the Arctic Council – an intergovernmental body in Tromsø, Norway, that manages cooperation between Arctic nations and Indigenous peoples – paused its work. Russia chairs the council. The decision brought a halt to international research carried out under the council, such as assessment of radioactivity in the Arctic environment.

Some of that research might now restart,

after the seven Arctic Council nations, excluding Russia, announced last month that they would resume limited work. But the broader consequences for Arctic science are likely to be severe and long-lasting – and to worsen the longer the war lasts.

Some of the biggest Arctic-climate contributions by Russian scientists come from permafrost studies. Permafrost covers more than 60% of Russia; as temperatures rise, it is thawing at a quickening pace and releasing more heat-trapping gases such as methane into the air, further exacerbating global warming.

Permafrost data were already fragmented among many nations before the invasion of Ukraine (T. J. Bouffard *et al. Land* **10**, 590; 2021), and the war has made things worse. “I’m worried about data loss, that Russia becomes this greyed-out area on the map,” says Sarah Marie Strand, a permafrost researcher and executive director of the Association of Polar Early Career Scientists in Tromsø.

One major new initiative, a privately funded US\$41-million effort led by the Woodwell Climate Research Center in Falmouth, Massachusetts, had planned to work on new and existing observation towers in Russia, among other places, to measure carbon dioxide and methane from thawing permafrost. The team has changed to working entirely in Canada for the moment, says project member Brendan Rogers, an Arctic researcher at Woodwell.

In the meantime, scientists outside Russia can gather some of the relevant information they need through remote sensing. But tools are limited: few satellites can reliably track methane emissions in the Arctic, and a French–German mission known as MERLIN, which will improve satellite tracking of Arctic methane, isn’t expected to launch until 2027 at the earliest.

Some collaborations with scientists in Russia continue on a personal basis. For instance, University of Alaska Fairbanks permafrost researcher Vladimir Romanovsky has been informally travelling to Russia, and continues to talk to his colleagues there. He usually collects permafrost data across Alaska each summer while his Russian collaborators do the same on their territory. “I believe that science should go on, no matter what,” he says – but he doesn’t know whether he and his colleagues will be able to share data this year.

Over the short term, global Arctic science might be able to weather the temporary loss of Russian participation. But over the long term, the rupture in relations could permanently degrade the quality of Arctic climate science.

“We’re all kind of on hold,” says Julie Brigham-Grette, a geologist at the University of Massachusetts Amherst who established Russian collaborations at the end of the cold war. “We don’t know if Russia will become like North Korea, where there’s very little exchange.”



A scientist studying sea-ice change drives along a beach in Nunavut, Canada.

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