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All eyes north

The Arctic — particularly Greenland — needs to become a major focus of research for years to come.

Halfway through the International Polar Year (IPY), which actually stretches from March 2007 to March 2009, it is clear that polar research has received exactly the kind of boost that its planners were seeking. As of last month, more than 160 projects were under way with full or partial funding. Some 60 countries are involved, including such unexpected ones as Portugal and Iran.

Public outreach has been particularly successful, with children and students getting involved in polar celebrations, video links to researchers in the field and websites. The ranks of polar artists are swelling with painters, sculptors and even a puppeteer. There are IPY stamps and IPY coins, and Sweden has made toilet paper with the IPY logo on it.

More seriously, several multidisciplinary, multinational projects have now begun. Europe is deep in the throes of planning its icebreaker-cum-drillship, the *Aurora Borealis*, for launch in 2014. Denmark has started its next Greenland ice-core drilling project. In Antarctica, teams have drilled through the ice shelf to the sediment below, and others are planning an assault on the buried Gamburtsev Mountains.

Yet for all this apparent vigour, major problems remain for polar research — chief among them funding. A number of IPY-approved projects struggled to get off the ground last year, as money for them was slow to come from national governments. This includes the US National Science Foundation (NSF), the powerhouse of polar research, which was hamstrung by, among other things, the late approval by Congress of its 2008 budget.

Some money is now flowing. According to IPY managers, around $400 million in new funds is being distributed across the entire IPY; added to the $800 million that would normally be spent worldwide on polar research during that time, they argue it's like getting three years' funding in two years.

But that doesn't solve the tougher issue of how resources should be allocated. With its long tradition as the scientific continent, Antarctica has historically drawn the lion's share of funding. The NSF, for instance, spends about $325 million on the continent annually, largely to maintain its massive research infrastructure there. Arctic sciences, in contrast, get about $100 million.

Attention needs to shift northwards, and fast. The precise north–south balance can certainly be debated. But consider how surprised researchers have been by the sudden and dramatic shrinking of the Arctic sea ice in recent summers. That fact alone signals that more monitoring and modelling is needed to understand what might happen next.

"The entire polar-research community needs to come together to monitor Greenland's meltdown on a comprehensive scale."

The most pressing Arctic question concerns the future of the Greenland ice sheet (see page 798). Too little attention is paid to monitoring its ice loss each summer and modelling what that might mean for the future. In total, Greenland's ice could raise the sea level by 7 metres — far less than the 21 metres locked in Antarctica, but far closer to complete meltdown. Yet Greenland gets just $10.5 million annually of NSF money — $9 million of which goes on logistics. Denmark pours twice that amount in, but it is still not enough.

Currently, a handful of individually motivated researchers heroically rush to the island each summer to set up monitoring stations. They capture the jerky motions of the massive outlet glaciers that are dumping Greenland's ice into the sea, and videotape the huge meltwater lakes that form on the ice sheet each summer and then drain away into oblivion. They patch together data from a motley collection of remote-sensing satellites, trying to capture the changes in Greenland's ice as they happen.

But they can only do so much. The entire polar-research community needs to come together to monitor Greenland's meltdown on a comprehensive scale. In the best of worlds, the IPY would open the eyes of those who control the purse strings to the need for more Arctic monitoring. Members of the US Congress, for one, have been happily signing up for trips to the South Pole and to Summit Station atop Greenland. It remains to be seen whether those visits will make any difference when it comes to Congress voting on money for the NSF — or whether the NSF would even choose to give more money to its Office of Polar Programs given the competing demands on its resources. But it is time to spend more on Greenland, and to think more about Greenland, and to make sure this continues for years to come. ■

A ghost of battles past

The US veterans' administration should go ahead with a much-delayed study of Agent Orange.

Even by government standards, a near 30-year delay in getting a study approved is extreme. But that is essentially what has happened with a proposed large-scale epidemiological study of the possible effects of the defoliant Agent Orange and other combat factors on US veterans of the Vietnam War. This US administration, or the next, would do well to heed the advice issued last month by the National Academy of Sciences that such a study should now proceed.

The academy argues that new data, and advances in geographical information systems (J. M. Stellman *et al. Nature* **422,** 681–687; 2003), could plug a significant gap in earlier epidemiological studies (see page 786). Today, a study should be able to provide key information about when and where troops were exposed to the defoliant, which contained highly toxic compounds called dioxins. And advances in computing and databases mean that the study would cost a fraction of earlier estimates.