The Changing Face of the North

Marianne Douglas and the Canadian Circumpolar Institute are examining the North through many different lenses. (Photo: John Ulan)

The North is melting. But as the world's northernmost research university, the U of A is at the forefront of understanding these changes — from polar bears to glaciers

These are interesting times," observes Marianne Douglas, director of the Canadian Circumpolar Institute at the University of Alberta.

She's in her Pembina Hall office discussing this summer's unprecedented indicators of warming in the Arctic. The stories in the media have been, if anything, quite a bit more than "interesting." Sea ice levels dropped to a record low 3.41 million square kilometres in September, demolishing the previous record low of 4.17 million square kilometres in 2007. And on Greenland, satellite images at one point showed essentially the island's entire surface thawing. "I mean, the melt used to stop at about 2,000 metres above sea level. And now, the whole thing was above freezing this year," Douglas says. "That's … wow."

As one of the world's most northern research universities, the U of A is uniquely positioned — geographically and scientifically — to take a leadership role in studying, measuring, predicting and responding to the widespread effects of climate change.

The U of A's advantage extends well beyond its northern latitude. For decades, the university has built a reputation as a hotbed of northern studies, says Douglas. "I went to school in Ontario, and the U of A was always this big fortress of strong science in the North. That's something that's recognized across Canada."

Through her work with the Canadian Circumpolar Institute, Douglas has become familiar with the breadth of expertise at the U of A. "Almost every faculty on campus has somebody who works in the North, be it in economics, be it in anthropology, in engineering, and so forth," she says. "Everybody has a stake in the North."

Douglas is careful to draw a distinction between the fields of northern studies and climate change — but there is no escaping the deep and growing connection between them.

Renowned U of A Arctic and alpine ecologist David Hik, for example, spends an ever-increasing amount of his time thinking about — and talking about — climate issues. He sees the same trend reflected campus-wide. "Whether you're explicitly interested in climate change, or whether you're interested in something else, if you're working in the North, you're invariably going to be drawn into the impacts of climate change and climate warming," he explains.

Hik is midway through a four-year term as president of the International Arctic Science Committee, a non-governmental organization with representatives from 21 countries. In that role, he travelled to Iceland in September for the 10th Conference of Arctic Parliamentarians.

It's a heady position for a bio sci prof from Edmonton, but Hik says it reflects the U of A's overall strength and depth in the field of climate change. "At the U of A, there's a critical mass of people across different disciplines, sometimes working on their own and sometimes working in collaboration with each other, all of us with partnerships across the country, across the North and around the world that allow us to do a very good job at the research we're doing."

While Hik takes obvious pride in the quality of that research, he says it is equally important to communicate the resulting knowledge to the wider world — especially the people who shape public policy. "Whether it's local governments and communities in the North, or whether it's industry, or whether it's national governments and international bodies that are trying to come to terms with sustainability of this little green planet that we live on, we need to take the science outcomes of the more narrow research that's done in individual laboratories and make it available to that wider audience."

Hik points to his colleagues who are committed to communicating the impact of their studies across the faculties and beyond.

"We can reach out to industry, we can reach out to government, we can reach out to northerners and indigenous northerners and talk about what the implications of some of these changes are," says Hik.

Those changes affect not only the physical environment, but the social environment, as well. U of A Anthropologist Mark Nuttall is in the midst of a five-year research program on climate and society, in collaboration with the University of Greenland. He sees the social sciences playing a large and growing role in climate change research. "Until recently, climate change was seen as the prerogative of the natural sciences," he says. "And yet, as an anthropologist, I've always been interested in the environment and how people relate to the environment."

Through international bodies like the Arctic Council, Nuttall hopes to do his part to build bridges between the social sciences and the natural sciences.

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"When it comes to scientific models for climate change, how society copes with and responds to climate change is poorly understood," Nuttall says. "The natural sciences don't really grapple with the complexities of social life."

Greenland's island-wide thaw this past summer, for example, presented both challenges and opportunities for Greenlanders, depending on where they live, says Nuttall. "In the Far North, hunters who rely on the sea ice may perhaps find it harder to reach particular places. But if we go to the south of Greenland, where there is sheep farming and agriculture, grazing land is expanding. The last year or two, the potato harvest in Greenland has been spectacular. People are growing lettuce and broccoli and carrots. So the productive capacity of the soil, or the expansion of grazing land, is seen as a positive thing, as an opportunity."

Nuttall, Hik and Douglas are just a small cross-section when it comes to respected and influential northern research at the U of A. And when you build a critical mass of outstanding faculty, outstanding students invariably head your way. Interested in polar bears? We have ecologist Andrew Derocher, '87 MSc, '93 PhD, plus a long list of experts in the field. Interested in glaciology? You may want to study with people like Martin Sharp or Andy Bush.

Gabrielle Gascon is a prime example of this influx of talent. She made the dean's honour list at McGill when she completed her MSc, but chose the U of A as the place to pursue her PhD. "For my field, Arctic glaciology, it's the strongest option in Canada," she says.

Gascon, currently in her fifth year, loves being part of a wider community of Arctic researchers. As president of the Circumpolar Students' Association, she helps organize events such as the annual Northern Research Day in March, where students from across campus get the chance to present their research. She also enjoys the chance to socialize with peers from other faculties. "Right now on the executive there's me, from glaciology. There are two people from health sciences, and a guy from anthropology. We have members from bio science, renewable resources, civil engineering — so, it's social sciences and physical sciences all together," says Gascon.

Along with attracting northern scholars to Edmonton, the U of A is also establishing a physical presence in the North.

Northern environmental and conservation sciences professor Fiona Schmiegelow is directing a program in Whitehorse, in partnership with Yukon College. Graduates complete the program in the Yukon and receive a University of Alberta BSc — Canada's first Bachelor of Science program north of the 60th parallel.

The need for institutions like the U of A to make an investment in the North is clearly illustrated by the rapid changes taking place there. Some northern communities are seeing species so unprecedented in their area that there isn't even a word for them in the local language, says Schmiegelow. Dragonflies, for example, are showing up for the first time in some northern communities.

"Climate change in Northern Canada is really a conspicuous thing. It's not abstract. People are seeing it in their everyday lives — seeing changes in weather patterns, seeing changes in the distribution of snow, the recession of icefields. … There's a real need to invest in building capacity among northerners and northern institutions to help them respond to these rapid changes," she says.

The program draws heavily on distributed learning, using streaming video to connect students in Whitehorse with students in remote communities and with students and faculty "down south" in Edmonton. The resulting connection benefits everyone, Schmiegelow says. "From the U of A's perspective, it's offering opportunities not just to students in the North, but also to students and faculty from the south to be exposed to the issues in the North, and to contribute to their resolution in some ways."

David Hik points to Schmiegelow's program as one more sign of the U of A's momentum in northern studies and climate change. He would love to see the university go even further, cementing its place as a true global leader — possibly through some form of long-term initiative.

"We're now in a position to look at how we can sustain things in the long term," says Hik, "whether it's data management through our library resources, whether it's research capacity or training of students, or capacity-building in the North by expanding on the success that Fiona's had, or building the Circumpolar Institute into a larger organization.

"The potential is there."

-- By Scott Rollans

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