



In honor of the approaching International Polar Year, we present the first in a series of occasional articles about polar exploration—and polar explorers. This week, we profile Professor Elizabeth Morris, a highly regarded scientist who is also a lively and engaging colleague in the field.

The Perpetual Glaciologist

Glaciologist Liz Morris, of Cambridge's Scott Polar Research Institute (SPRI), is an extremely busy woman – not surprising considering that she has undertaken a skidoo traverse from the coast of Greenland to Summit Station on the Greenland Ice Sheet twice this year, and has been on five field expeditions to both Greenland and the Canadian Arctic in the past three years. In fact, she was initially too busy with fieldwork to contribute to this article; we had to wait until she returned from the latest traverse to catch her for an interview.

On these long treks across Greenland, Liz takes measurements in support of the CryoSat Calibration and Validation project. CryoSat is a satellite designed to use synthetic aperture radar and an interferometric radar altimeter to measure changes in surface elevation of the cryosphere, including sea and glacier ice. Unfortunately, CryoSat 1 crashed into the Arctic Ocean just hours after its launch in the fall of 2005; CryoSat 2 is scheduled for launch in February, 2009. In spring 2004 and 2006, however, Liz traversed from close to the coast up to Summit Station, at the top of the ice sheet, doing the same traverse in reverse in the fall. During each trip, she drilled boreholes into the ice and measured the vertical density profile using a neutron probe. Since she takes regular measurements, she can observe the compression of annual snow layers and determine locations of highest and lowest densification. This is particularly important for validating CryoSat measurements that use a surface location to determine the mass balance of the ice sheet, and can therefore be significantly affected by densification.

The traverses are long and can be tiring: Liz and her research partners, Geoff Somers, John Pailthorpe and, this fall, Martin Hignell, snowmobile to a new location each day and set up both the camp and their experiment, only to take it all down the next morning and head on. "It makes me feel

a connection to nomadic cultures of the past," muses Liz, but she is quick to add that she looks forward to a bath and a celebration with her friends near the end. Thus while the science itself is interesting, there seems to be a spiritual aspect to the fieldwork that Liz finds hard to resist. "I do love polar travel," she says. "I find working in a harsh environment stimulating and challenging and I love the wild beauty of the vast open spaces of the ice sheet." Unlike lab science, field science allows for the unexpected – both in working



Liz Morris logs a density profile. Photo: Geoff Somers

conditions and everyday events. "I didn't expect to see a flight of ducks travelling low across the centre of the ice sheet!" says Liz. The lure of the Arctic has her already making plans for a North Greenland traverse in 2008.

When asked what she thinks of while in the field, Liz says, "I think about how to work as efficiently as possible, how to keep my equipment running in bad weather, and how to help other team members if I can." These traits of being well-organized and generous have become a large part of Liz's reputation amongst her colleagues and others who have had the chance to work with her.

"When I was hired as a post-doc at SPRI, I emailed her for advice about parts of town to avoid or seek out when finding housing," says colleague Bob Hawley. "She responded that...my wife and I should stay with her at her house in Cambridge while we looked for a place to live. We lived with her for a month, and it was fantastic to have her hospitality."

Katie Hess, who just this summer traveled with a team from Summit Station to replace one of Liz's skidoos, agrees. "She gets amazingly excited about her work, her expeditions, and

even more so her data analysis," she says. "I remember her and Bob comparing their logging data and she said to me very excitedly 'See here, Katie, our wiggles are matching up just perfectly.' She has such a friendly, motivated and enthusiastic nature."



Liz Morris and Martin Hignell at the end of their August, 2006, traverse. Photo: Ed Stockard

Fairbanks

The rainy August weather finally broke this weekend in time for the [annual sandhill crane festival](#), which is timed to coincide with the birds' peak migration through Tanana Valley.

Roy Stehle, Tracy Dahl, and Joe Yarkin finished their annual maintenance and some upgrades to the [Ivotuk hybrid power and communications system](#) last week, returning to Fairbanks toward the end of the week (more later on this). On their return to Fairbanks, Roy and Tracy installed a web cam enclosure experiment outside the Fairbanks office: they're developing an enclosure less prone to icing than the one at Ivotuk.

The Fairbanks staff also arranged late-season logistics for upcoming projects. In addition, they reconciled "many invoices," Marin Kuizenga writes, worked on Toolik Field Station construction resupply, and on receiving, cleaning and repairing field gear.

Toolik Field Station

Jill Ferris joined Jay Burnside at Toolik to observe the generator module upgrade and efforts to prepare the station for winter operations. The work progresses well. Tracy Dahl also visited the station to inspect the new generator module and switchgear. "The new switchgear at Toolik will allow [station personnel] to run the generators in various combinations for maximum efficiency," notes Tracy. That's "a strategy we are likely to follow at Summit as well, while also incorporating renewable energy into the mix," he continues.

Jay reports that Toolik has "regular frosts now but the days warm to a reasonable degree. The tundra is changing color quickly and the caribou are hiding from the bow hunters out in full force this week." Meanwhile, the Air Logistics helicopter has gone off contract for VPR and is working with Doug Kane (University of Alaska) on Alaska Department of Transportation work until September, when Doug will again visit the [Kuparuk River watershed study](#) area.



The other crane-fest in Alaska, this one at Toolik. Photo: Jay Burnside

Around the State

Jay and Jill also traveled to Barrow to review work that was completed on the [Barrow Environmental Observatory](#) boardwalk system installed to replace the matted trail. Some researchers were still working there, and they commented on how well the boardwalks work this season. They appreciate being able to ride bikes along the trail now, which saves considerable time traveling between and working on the various instruments and experiments dispersed in the area.

As for the annual trip to test and maintain the power/communications system at Ivotuk, Tracy Dahl gives this report: "Despite a lot of typical North Slope fall weather (read: almost constant precipitation right around the freezing point) the trip to Ivotuk went extremely well. There was no major equipment down, no failure codes, no real problems to address. As such, we got through the routine annual maintenance in record time. The installation of the new web cam enclosure went pretty well too."

Several researchers finished science projects last week:

- The Anthony [Fiorillo \(Southern Methodist University/ Dallas Museum of Nature and Science\)](#) and Paul [McCarthy \(University of Alaska\) dinosaur project](#) team departed its field site along the Colville River. After several days of weather delays, the excavated materials were slung into Umiat by helicopter and transported to Fairbanks with Wright Air. All field team members are out of the field at this time, and the paleontological material is en route to Texas.
- The Evergreen helicopter finished flying out of Atqasuk and Barrow, supporting various teams, including the [Walt Oechel \(San Diego State University\) carbon flux](#) team and the [Wendy Eisner \(University of Cincinnati\)](#) project interviewing Inuit elders about [lake drainage](#) around the area.

[Carin Ashijan](#) (Wood's Hole Oceanographic Institution) and team continued ocean [sampling work](#) aboard the R/V *Annika Marie* along the coast of Barrow. Next month, collaborator [Sue Moore](#) (National Oceanic and Atmospheric Administration) will conduct [aerial bowhead whale surveys](#). The team also has been working closely with Inuit elders to assess the [subsistence whaling economy in Barrow](#).

As our summer research support season winds down, we are scaling back newsletter publication to once a month. We'll resume weekly publication as field activities pick up again in April. We'd like to thank all the staff and researchers who provided us news from the field, internet headlines, and photos, as well as the front-page article subjects who patiently answered questions and read proofs. See you in October!

GREENLAND News

Kangerlussuaq

Two big birds migrated south to New York on Sunday, August 27, after an intensive effort to refuel Summit Station and Raven Camp, and to remove summer people and cargo from Greenland for the winter. When all was said and done, the two Guard LC-130s flew 14 missions to Summit, delivering over 24,000 gallons of fuel and some cargo, and removing almost 170,000 pounds of cargo, of which more than 122,000 belonged to DISC, the deep drilling project preparing to send gear to West Antarctica this fall.



A DISC container just fits the C-130 cargo hold. Ben Toth in foreground. Photo: Ed Stockard

DISC ice cores—as well as those from 8 other research projects—were shipped on a “cold deck” plane (a flight with the heaters turned off) on August 27. In addition to the Summit flights, the Guard flew to Raven Camp to begin winterizing the 109th's training facility. The close-out crew, along with Mark and Lou Albershardt, will leave a buttoned-up Camp Raven this week.

Our Kangerlussuaq team also assisted several science groups. Bob Hawley (Scott Polar Research Institute) visited Summit and Raven to take measurements for his [optical borehole stratigraphy](#) project and to train the Summit staff to measure for him over the winter. Four staff from New York's American Museum of Natural History accompanied the researcher, shooting footage for a documentary.



Skier 94 returns to Kangerlussuaq. Photo: Ed Stockard

The Yong Song Huang (Brown University) field team returned to Kangerlussuaq to retrieve five sediment traps they installed in area lakes in April. Yong Song's work aims at [reconstructing temperature and precipitation records](#) for the last 8,000 years at a relatively fine time scale (e.g., about every decade).

In addition, Senator John McCain (Arizona) led a group of American politicians on a tour of Greenland designed to witness first-hand the effects of climate warming on the island's glaciers. They touched down in Kangerlussuaq and enjoyed a private meal with Danish dignitaries at the Roklubben Restaurant before spending the night at the Airport Hotel. Dorthe Dahl-Jensen, the well-known Danish ice core scientist, also attended. US scientist Martin Truffer (University of Alaska), in town en route to visit his [GPS sites at the Jakobshavn Glacier](#), was available to meet with the delegation, but the delegation's agenda was already full.

Summit Station

Fourteen LC-130 visits in seven days made for a very busy week at the station. Warm temperatures the week before (the weather observer reported freezing rain!) made for “soft, sticky skiways,” Robin Abbott reported, which lowered the plane's ACL (Allowable Cargo Load). Still, the weather turned cold, and within days the skiways were again hard enough to support maximum cargo limits.

It's no small task to ready Summit for winter: in addition to fueling operations, many structures, pieces of equipment and machines must be winterized and stored, and the wintering crew has to absorb the tasking of the departing summer crew—that's a lot of turnover! Everyone pitched in to get the station ready for winter. Finally, on August 26, the last Guard bird dipped its wings and flew into the blue, leaving Russ Howes, Cherie Howes, Lana Cohen, and Andy Clarke to tend to the station during the first phase of winter, 2006/07.

Morris has had a lengthy career that shows no signs of slowing down. With BSc and PhD degrees in Physics from the University of Bristol, her research has included mathematical modeling of physical processes in snow, extensive fieldwork in the Arctic and Antarctic regions, and experimental laboratory studies on ice and snow. She has been the President of the International Glaciological Society for the past three years, and was the President of the International Commission on Snow and Ice for six years. Her contributions to polar research have not gone unrecognized: in 2003 she was awarded the Polar Medal, and she has been appointed OBE (Officer of the British Empire) in the Millennium Honours List for services to Polar Science.

Liz is also somewhat of a pioneer in the field of glaciology. She's one of very few women to have such a successful career in this area, particularly one involving extensive field research, which is traditionally male-dominated. "If you asked her if she thought of herself as a pioneer in that way she'd probably laugh out loud," says Hawley. "She's

definitely jumped some hurdles along the way: for example, she was one of the first British women to reach Antarctica with BAS. But she's just been doing what she wants to do along the way and getting it done."

Liz faces mandatory retirement this fall from her position as the National Environment Research Council's (NERC) Arctic Science Adviser. However, when asked if she will slow down she says, "No chance!" She will stay on at SPRI as a senior associate, and thus is still eligible to be a principal investigator on NERC projects despite her retired status. Liz loves her snow and ice research, and she's not quite ready to leave it all behind. —Sarah Boon

Sarah Boon is a glaciologist in Canada who also enjoys field science,

and hopes the number of women in glaciology will continue to increase.

For more information on Liz and her research, go to: <http://www.spri.cam.ac.uk/people/morris/>

Thanks to Professor Morris for her contributions to this article.



Research partner Geoff Somers drills the hole for the density measurement instruments. Photo: Liz Morris

SCIENCE & Other News

[Vladimir Romanovsky, Torre Jorgensen, Larry Hinzman and others discuss the draining of Alaskan wetlands and ponds as permafrost melts.](#)

[ARCUS has a new media archive.](#)

[Drifting and wandering: Ancient sediments from Svalbard, Norway, when analyzed for magnetic signature, give some credence to the true polar wander theory, say researchers from Princeton University.](#)

[With shipping traffic on the rise, Arctic waters need more regulation, say Inuit leaders.](#)

[Life, and research, at NASA's Mars analogue summer camp on Devon Island.](#)

[Polar bears just can't get a break.](#)