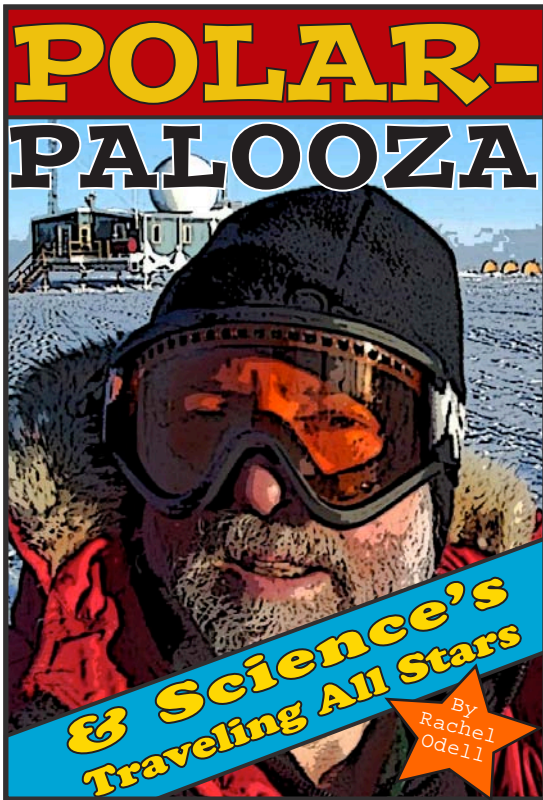


field notes

18 December 07



Chances are you may not make it to Alaska to visit a native village. A stop off in Kangerlussaq, Greenland, is probably not on your agenda, and the prospect of touring the under-ice living-room-sized food storage at NSF's Summit Station in Greenland is remote, at best. But you can experience those places—and many more—provided you have a fast Internet connection and three or four minutes.

Welcome to [POLAR-PALOOZA](#) (PPZA), where National Geographic meets home video and YouTube. PPZA is an on-line screening room of podcasts shot on location at the North and South Poles. The short clips give first-hand perspectives of the work scientists do. They include video and sound, but they don't follow a script, which means the viewer (you) gets the sense of being right there with the researchers in the moment.

And the subject matter is diverse. Videographers have spent time with village Elders on the northern-most edge of North America, explored the Arctic Ocean on an icebreaking research vessel, and documented scientists

drilling deep into the ice to withdraw cores. Explanation follows the action—in the last example, a scientist discusses why the ice cores are useful (in short, they provide clues about how rapidly and in what ways the planet is changing).

PPZA is the brainchild of producer Geoffrey Haines-Stiles and his partner, Erna Akuginow. The on-line clips show intimate, adventurous details of scientific field work in arctic regions. Funded by the National Science Foundation and NASA, the project aims to film and post a minimum of 30 podcasts on current research affiliated with the International Polar Year. The filming is only one aspect of this project. Equally important is a traveling road show, where Haines-Stiles and some of the featured scientists will tour more than 25 science centers around the United States to give live presentations, hence the "Palooza" component. Ultimately, he says, the goal is to inspire students to pursue science careers while fostering a greater understanding about Earth's complex climate system.

"There is a disconnect between how science is done in school and what it's like in the field," says Haines-Stiles, a science journalist who has been producing documentaries since the late 1970s.

By showing people video of life in Greenland, for example, and by introducing viewers to scientists who make their living (at least in part) camping on ice at negative 30 degrees to conduct their research, the project provides a direct link between working scientists and the public.

"We think about the 'Stories from a Changing Planet' tour much more as a performance than a lecture," says Haines-Stiles. "It's like we have a 'climate change' All-Stars Jazz band, and the music they know is their research. They're carefully choreographed to give you a perspective on the north and south poles." One of those "All Stars" is Mike Castellini, a marine mammal expert and professor at the University of Alaska at Fairbanks, who plans to join PPZA at several tour stops.

"Ordinarily, we scientists give a few public presentations on our work per year, to relatively small audiences," says Castellini, "To be able to reach much larger audiences with a high-profile team and presentation technology was too much fun to pass up."

Coordinating a project of this scope, however, is no easy task. Collecting footage can be difficult, as Haines-Stiles' crew found out this spring at Greenland's Swiss Camp, when they encountered the worst weather recorded in 15 years. High winds relegated them (and the scientists they



Haines-Stiles (bottom right) and videographer Ryan Vachon (bottom left), with Mary Albert's and Jeff Severinghaus's team of drillers, students and researchers: field research can be both fun and hard work! All photos by Geoff Haines-Stiles.

PPZA continued from page 1

intended to film) to their tents, and ice frequently condensed on the lenses of their small, lightweight Sony cameras.

But when they're not taking shelter, the one- and two-person video crews accompany researchers in the field, a big privilege for non-scientists who, like many of the people watching the PPZA videos, don't get many opportunities to suit up in down jackets and pants, set out on giant ice sheets, and probe the frozen landscape for clues and evidence of climate change. The unique setting and interesting scientists lend



[CReSIS](#) researcher Don Voigt works in Greenland as POLAR-PALOOZA team members film the action.



The midnight sun - low on the horizon - resulted in long shadows and spectacular yellowish light. The PALOOZA crew stayed up late and got up early to capture it.



Haines-Stiles with one of the small Sony HDV cameras in front of the Jakobshavn ice fjord, during the documentation of David Holland's oceanography experiment.

themselves to captivating video, and one of the most challenging components of this project is editing hours and hours of film into short segments, says Haines-Stiles. Generally the editing takes place in a dry office in Seattle. Occasionally, however, the videos are produced and uploaded online on location, exposing crews (and the film) to extreme conditions.

At Summit, for instance, the team edited in a Weatherport, and snow poured in the loosely sealed seams and across the floor, while the winds reached 25 knots.

Originally all of the content was intended for the Internet, but gathering a library of "visually powerful material with great science content" in the midst of the IPY and in a political climate that is audibly concerned about climate change inspired Haines-Stiles to raise money to produce a documentary.

It's a natural progression for the Englishman who migrated to the states more than 20 years ago. Oh his first big science gig, Haines-Stiles helped produce the award-winning 1980 PBS television series *Cosmos: A Personal Voyage* with astronomer and astrobiologist Carl Sagan. The experience instilled in him a new respect for science, which ultimately resulted in this project.

"I underwent a baptism of science by fire and realized you can have television tell interesting stories about subjects that would otherwise not get recognition," says Haines-Stiles. "That was a tipping point in my career."

Gone are the days of large, bulky cameras and multiple film crews. Modern equipment, says Haines-Stiles, produces a clear, sharp picture and sound that can be packaged into a tiny screen like that of an iPod and look good.

"I am surprised by how well the sense of the location comes across," says Haines-Stiles. "We have sound, picture, personality. It's a new form of story telling, and no one has written the book on what it should be like."

Still, he credits the topic—arctic and antarctic research—with the project's success.

"Everyone is interested in climate change," says Haines-Stiles. "The pub-

lic have read about what's happening at the Poles in the newspapers, and now they finally have a chance to see what's going on and hear from America's leading researchers, and folks who are living the changes up in Alaska." ●

Rachel Odell lives vicariously via the Internet on a regular basis when she's not riding her bike or running with her Australian Shepherd in Boulder, Colorado.

denver

Our entire team was in Denver last month at Red Rocks for several days of reflection and planning meetings. NSF's Renée Crain also joined us for a day. As the meetings proceeded, we began to understand in a statistical way why we're busier than the birds in the short Arctic summer*: We supported 20% more projects in 2007 (~152) than we did in 2006 (~123). Of these, nearly a third were affiliated with the [IPY](#). So, more projects--more complex, international, multidisciplinary projects. ●

field notes

Polar Field Services, a member of the CH2M HILL Polar Services team.

Jill Ferris, Operations Manager
field notes Production Team:

Oversight: Diana Garcia-Lavigne
Writing/Editing: Kip Rithner
Graphics/Writing: Susan Zager

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Send feedback/suggestions to:
kip@polarfield.com

greenland

Summit Station

"[W]e had a nice Thanksgiving and ate way more than we should have," reported Robert Kummelehne last month from the helm at Summit Station, confirming that in some ways, the holiday celebrated high up on Greenland's ice plateau mirrored celebrations going on at tables all over the states. Further evidence: a festive picture of Summit's team of four enjoying dinner complete with a turkey roasted to deep mahogany.



Thanksgiving in the Big House. Photos by Robert Kummelehne.

But in other ways, the team's Thanksgiving differed greatly from the classic: no football on the lawn at Summit, but instead, plenty of snow clearing, as high winds prior to the holiday created impressive drifts. "A huge amount of drift has been deposited near the snow melter, so for the time being, water is easy to make," commented Robert, demonstrating the glass-half-full attitude characteristic of Summiters.

During the winter and early spring, snow drifting is a major operational issue at Summit (an average 70cm of snow accumulates here each year!). The station's buildings act as snow guards, so



Snow clearing is a big job at Summit.



Summit science techs measure snow accumulation and tow a GPS unit to survey the surface elevation for correlation with ICESat, a study of ice-sheet topography.

a good blow can result in massive drifts around the buildings. For this reason, Summit's structures have roof hatches. Thus, in addition to tending to the clutch of experiments that run year-round, and completing annual maintenance, inventory and pre-season tasking, the Summit team must constantly groom the station during winter and spring.

Summit project manager Sandy Starkweather gave an inspiring presentation at the Denver planning meetings last month on the future of the station. Originally sited as a summer-only, deep-drilling camp in 1989, Summit has grown over the years into a facility that hosts important ongoing measurements and campaign experiments in climatology, glaciology, and atmospheric chemistry, to name a few. Though the research has grown to require some pretty tricky science and logistical support, the infrastructure itself has undergone little change. Instead, Summit has thrived on the creative problem-solving skills of the researchers and staff who work there.

Sandy has been working with PFS staff, researchers, the NSF, and others to develop a long-range plan for Summit—a plan that develops incrementally the Summit "camp" into a world-class international research post. Carefully. With attention to reducing the costs of operating the place, both financially and environmentally, while increasing the capabilities for more science, including campaign-style projects, remotely operated experiments, and telescience events.

In terms of the overall vision for Summit, Sandy recently wrote, "We want to retain the homey, community feel of

Summit. Sterile, industrial, generic is not our style. Where would we hang the rubber chicken?? We want folks to feel inspired and connected to the environment. We want to retain tent city [summer quarters for researchers, staff, and visitors] in order to promote this. It is not about neutralizing the fact that you are in the middle of an ice sheet; it is about connecting the community with that fact in a way that doesn't guzzle fuel or create maintenance headaches." More on the Summit long range plan in an upcoming issue of *field notes*. ●

in the media

Canadian journalist Ed Struzik spent nine months traveling around the Canadian Arctic to see for himself the changes being wrought by warming. He wrote about his experiences in a [series](#) that ended early this month. He writes about the land, animals, people, traditions, natural resources and the international political issues associated with warming in the Arctic. The audio slideshow should not be missed.

December 13th was an International Polar Day focusing on ice sheets. Get more details on the activities – loads of them suitable for classrooms – at the official [IPY site](#).

The World Wildlife fund is tracking the movements of six polar bear families (mothers and cub(s)) over the next year. In addition to the tracker, viewers can find videos, pictures, bear facts, and tips for folks interested in lowering their impact—plus a chance to ask questions of researcher Pete Ewins—[here](#).

*While rooting for an arctic-themed metaphor to describe how busy we've been in the first half of the IPY, we found this [fact sheet](#) on arctic plants and animals from USA Today.

Keep up-to-date
on field notes --
subscribe here!





The Alaskan Arctic science community lost a friend and coworker recently. Ed Serrano worked for two years as the Toolik Field Station helicopter pilot (Air Logistics). His flying also supported many researchers across the North Slope. Ed had an active interest in the projects he worked with, and often volunteered as a field assistant while transporting researchers. His ashes will be spread over a lake that researchers dubbed in his honor. His sense of humor was infectious, and his story telling was enjoyed by all. We will miss him. Photo: Mike Weintraub.

alaska

Toolik Field Station

Toolik Field Station saw a little action last month from researchers we support. A team led by Mike Weintraub visited the station early in the month for (U California) PI Josh Schimel's IPY study comparing [microbial physiology](#) via year-round experiments at Toolik and at Thule, Greenland. The team collected a variety of soil samples for study back at the university, using tools that included "a pry bar and sledgehammer to sample dry heath soils," wrote Mike Weintraub. "It's not easy getting soil samples out of the frozen tundra!" And Toolik in the off-season? "Fantastic!" ●



Jessie Cable, left, and Jessica Ernakovich drill soil cores at Toolik. Photo: Mike Weintraub

Winter on the Ivishak: A Conversation with Jonathan Benstead

By now, many of their colleagues regard 2007 field trips to the Arctic through the blurred lens of distant memory, details fading as they focus on analysis, papers, teaching, and so on. But for ecologists Jonathan Benstead and Alex Huryn (University of Alabama), the challenging field work is just beginning. For a [year-round study](#) of a perennial spring on the Ivishak River, on the North Slope of Alaska's Brooks Range, a team will visit the field site almost monthly throughout the winter. The ecologists hope to learn how seasonal changes affect the stream's food web. Among other things, they will examine how the extreme variations in light affect the stream's productivity. They also want to know if these streams, only 1% of available fresh water during summer, but 100% of it during the winter, are a winter hot spot (so to speak) for migrating fish like the Dolly Varden char (the top of the food web).

Having returned last month from their first off-season visit (though they've been making near-monthly visits since early last spring), the researchers are preparing for a long winter of recurring trips to the Ivishak, a place equal parts gorgeous and remote. We were curious about how the trip went, so we wrote to co-PI Jonathan Benstead.

So what were the conditions like on this trip?

It went down to about -10 F on this last trip. Mostly clear skies, a little snow (about 3 inches has accumulated so far).

Tell us about the work you did.

We did the usual stuff: we collected data for whole-stream metabolism and nitrogen and phosphorus uptake

rates, we downloaded our instruments for light data, collected nutrient chemistry samples, benthic invertebrate samples, fish gut samples, algae and moss samples, and litter decomposition samples.

Tell us about how you collect fish gut samples. We know you don't hurt the fish; give us the scatological details!

We flush the stomach contents back out of the mouth using a gentle stream of water.

Any surprises?

There seem to be fewer Dolly Varden [char] in the stream during the winter than during the summer, which has taken us by surprise.

Why?

We hypothesized that perennial springs would be part of the species' winter migratory pattern, so we thought we might see much larger numbers in the winter months.

How did the tomato (the red shelter) hold up?

The hut is very comfortable if you get everything inside organized. We used it for sleeping, cooking, preparing equipment and working with the fish.

Any memorable Arctic Moments—animals, weather, anything?

We saw very few animals. The [American dippers](#) were there as always. A pair of ravens. There were some good auroras one night.

Any research fatigue setting in at this point?

No—the trip was a good break from the office!

Thanks, Dr. Benstead! For more on the research, view the project record [here](#).

Above: The researchers arrive at the Ivishak site. They work, eat, and sleep in the red structure. Photo: Jon Benstead



ARMAP is your map, too

UTEP students work where practical experience meets the cutting edge

When Walker Johnson entered the PhD program in Ecoinformatics at the University of Texas at El Paso (UTEP) in 2006, he never imagined the opportunities that would come with developing the [Arctic Research Mapping Application](#) (ARMAP). During the last year, Johnson has presented ARMAP to thousands of scientists at nine national and international meetings and has explained the project's technical aspects to a group of National Science Foundation program managers. Johnson forms the backbone of the ARMAP project. He's the mentor, lead and supervisor for a handful of eager, capable, committed UTEP students who are taking arctic science planning to a new level.

Originally conceived as a tool for National Science Foundation program managers who enjoyed viewing all their projects on one map, ARMAP, a web-based Internet map server for the Arctic, includes a number of accessible state-of-the-art online tools that benefit research scientists, logisticians, media personnel, and armchair researchers alike. Anyone with basic computer skills can fly around the Arctic with ARMAP, pausing at will to explore natural features (mountains, rivers, trees), infrastructure (buildings, air strips, roads)—and the research done there.

Johnson believes in an integrated, multidisciplinary approach and is using ARMAP to explore these kinds of data and information management. The approach might just harness the chaos and waste created by current data management approaches, Johnson believes. "There is a

lot of money and effort going to data clearing houses. The problem is that everyone puts up their own stuff so there is lots of argument about funding, lots of data overlap, and duplication of effort," says Johnson.

"The students are responsible for figuring out the most efficient option and which option will likely prove most expandable in the future. We probably spend 80% of our time figuring out which direction we want to go with development," says the enthusiastic Craig Tweedie, an arctic ecologist who heads UTEP's Systems Ecology Laboratory and acts as ARMAP's scientist mentor. "This kind of science, Eco- and Bio-informatics, is evolving very quickly. Technically speaking, I can't keep up with these guys [the students]. We are developing a good reputation and we're finding that our students are in high demand."

Tweedie's role in ARMAP is in thinking about functionality. He's also the project's self-proclaimed "crash test dummy" as the first to test-drive new applications. Allison Gaylord, owner of [Nuna Technologies](#) in Homer, Alaska, provides technical guidance to the project as well. Gaylord transfers Tweedie's ideas about functionality into what is possible from a technical standpoint. Together, they translate their combined vision to the students and present four or five possible avenues for proceeding with a given technical challenge.

"I act as quality control by reviewing student contributions before they are posted to the Web," says Gaylord, who collaborates almost daily with students.

Gaylord, who has been involved in GIS database design, management and IMS development since 1991, wants to ensure that ARMAP applications keep pace with developing technology. "We want to develop our 3-D capabilities to include query and GIS functionality using a combination of ArcGIS Explorer and Google Earth software. We also 'clean up' exist-

ing data and metadata that are prioritized by the funding agencies by converting to a standard format. Our overall goal is to make data more user friendly."

William Manley of the University of Colorado's [Quaternary GIS Laboratory](#) at INSTAAR, and Mike Dover (CH2M HILL), Robbie Score, and Diana Garcia-Lavigne (PFS), are additional collaborators on the ARMAP project, which is funded by the [Arctic Sciences Division](#) within the National Science Foundation's Office of Polar Programs.

Johnson's background in herpetology and previous GIS experience motivates his interest in collating data and developing software to assist researchers. In addition to system maintenance and developing online video tutorials, Johnson works with UTEP technician Ryan Cody on GIS layer development. He mentors other students as well.

Undergraduates typically work on semester-sized independent studies projects and look to graduate students for guidance. The result of this symbiotic relationship is that students steadily and inexpensively build ARMAP while creating referenceable online products to show potential employers and graduate schools.

"When we present students with the opportunity to work on ARMAP with data from the Arctic, which is very sexy right now, they make the most of it and are very dedicated," Tweedie says of the ARMAP student work force. "At the end of the day, we have a group of extremely talented, laterally thinking individuals who more than step up to tackle some difficult problems."

Johnson isn't the only graduate student going places. At the American Geophysical Union meeting in San Francisco this month, Jerald Brady, a Master's student in Computer Science, unveiled ARMAP's new 3-D virtual globe application. ARMAP 3D runs in ArcGIS Explorer, a software tool that's similar to Google Earth, but with more GIS capabilities. Other contributors include Kuldeep Matharasi, an M.S. student programmer in Bioinformatics; Joaquin Aquilar, an undergraduate programmer in Computer Science, and Kathy Fernald, a PhD student in Environmental Engineering who has worked on layer development.

"I have millions of ideas that I could talk about for hours," declares Johnson, who says that he's always open for collaboration. --Marcy Davis



Johnson presents ARMAP at the 2006 Fall AGU meeting.