



# Cold Trails

Newsletter of the Cryosphere Specialty Group  
Association of American Geographers



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Bryan Mark, Editor

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## Table of Contents

<b>Specialty Group Officers</b>	2	<b>CrSG business meeting &amp; discussion items for 2011 AAGs</b>	10
<b>Message from the Chair</b>	2	<b>Treasurer's Report</b>	11
<b>2011 Matthes Award Recipient announced</b>	4	<b>Graduate Student Participation in the CrSG</b>	11
<b>Invited biographical reflections By Fritz Nelson</b>	4	<b>CrSG sponsored sessions at AAG meeting (12-16 April, Seattle)</b>	11







through atlases and dreaming of adventure in faraway places.

After graduating (barely), I enrolled in Northern Michigan University, a small state school in the Upper Peninsula. NMU is located in one of the most beautiful settings imaginable, but it's not a place to go if you don't love the outdoors and the cold. I spent a lot of time hiking, snowshoeing, and skiing, and eventually trying to apply the ideas I gained from books and the classroom in trying to figure out how the landscapes surrounding Lake Superior might have come into being.

During my first two years at NMU I rambled along a crooked path through the humanities and social-science curricula until a friend recommended a course in geography, a discipline I hadn't even been aware existed as a college subject. It was a case of "coming home to a place I'd never been before." My first course was "Geography of the Soviet Union," taught by **Fillmore C.F. Earney**, an extremely gifted teacher, from whom I later took geographical research methods—another benchmark course for me. I transferred for a little over a year to the University of Montana, where I received good grounding in geology and glacial geomorphology, and then returned to NMU to finish up with a wide range of geography courses.

Following graduation, I played in an electric blues band for a year and then, after hitchhiking around North America for a couple of months, decided to give grad school a try. In 1974, the geography department at Michigan State was kind enough to admit me and offer an assistantship. Moving down to the hot, humid environment of southern

Michigan was a real shock and I decided in short order that field work somewhere "up north" was the way to go.

Opportunity came after taking a course in glaciology and glacial geology with **Maynard Miller**, who invited me to spend the summer of 1975 on the Juneau Icefield in southeast Alaska. That experience was a life-changer. I had done an independent study on periglacial geomorphology with my advisor at MSU, **Dieter Brunschweiler**, and being able to investigate patterned ground, rock glaciers, frost mounds, solifluction lobes, and other periglacial landforms in the field was exhilarating. I returned to the Icefield for the summer of 1976, and wrote a thesis on the distribution of periglacial features along a transect from Juneau to Atlin, British Columbia.

In the spring of 1976 I took advantage of the Big 10's traveling scholars program to enroll in a course at the University of Michigan called "Arctic and Alpine Environments," offered by **Sam Outcalt**. The demands of that course provided another awakening—my preparation in mathematics was woefully inadequate. That year, I began enrolling in early morning and evening math courses at local community colleges, eventually taking everything through differential equations.

Sam's course was also the beginning of a long association with him that eventually brought many coauthored publications—and my entry into the "Clan Mackay." The influence of Sam's doctoral advisor, **J. Ross Mackay**, whose work I had been reading voraciously, was apparent in Sam's views of things cryospheric. I'm very proud to have a place in an academic lineage that now involves five

generations of distinguished geocryologists, with family branches in several countries.

I transferred to U of M for my doctoral program in 1977 and in short order found myself on the North Slope of Alaska, working on a project with Sam and his former grad student **Cecil Goodwin**, then a professor at Penn State. Cecil was trained in electronics in the Air Force and had begun designing and building first-generation digital temperature data loggers. They worked fine, but the weak point in the system was the data-storage device—an electronic cassette tape recorder stored in a large wooden box that was heated with a propane-fired pilot light. I recall having to skip my Friday afternoon classes, fly from Detroit to Prudhoe Bay, remove and thaw the device, relight the pilot, and return to Ann Arbor, all over the course of a winter weekend! I spent three full summers living in a small trailer in the Prudhoe Bay area, which gave me abundant time to become familiar with the permafrost landscapes of Alaska's North Slope.

Also during that time I came into the orbit of **Jerry Brown**, first meeting him at our field site at Prudhoe Bay and later accompanying Cecil to CRREL's headquarters in Hanover to meet with Jerry and **Dick Haugen** (who also had studied at Michigan State with Dieter Brunnschweiler). Jerry is a force of nature, and you can discern his influence in the workings of virtually anything having to do with permafrost science.

My career as a grad student ended rather abruptly (and traumatically) when the University of Michigan's administration decided, amidst the recession of the

early 1980s, that it needed a sacrificial lamb to show it was capable of making "hard decisions." The Department of Geography was targeted and dispatched in short order, despite the protestations of the faculty senate and concerned scholars from around the country. This happened during my dissertation year. Let's just say that writing the document wasn't a slow, reflective process. The department was closed on June 30, 1982. It had been a wonderful place. The training I received in analytic cartography, spatial statistical analysis, and physical geography formed the basis of my career. Most of what I've done subsequently grew out of what I learned in that department.

During that period of academic blood-letting I decided it would be good to inoculate myself against unemployment in a slow economy by writing a proposal for a project that could provide both financial support and opportunities to pursue my scientific interests. Miraculously, the proposal passed muster at NSF and the three-year project came on line just as I finished the dissertation. Sam and I administered it through Michigan's geology department. Concerned with the genesis and dynamics of palsa-scale frost mounds, this project brought us back to central and northern Alaska. The graduate research assistant was none other than **Ken Hinkel**, an associate with whom I've worked every single year since 1982. Ken never seemed like a grad student to me—he appeared on the scene seemingly as a fully formed scientist, with great physical insight and intellectual discipline.

During the 1982-85 period, the grant allowed me to work on a variety of

subjects and build up my portfolio of publications. Academic jobs were scarce in those years. Postdoctoral appointments were almost unheard of in geography. In 1983, Sam and I developed the “frost-number,” a quantitative scheme for mapping and regionalizing permafrost that later became a useful tool in climate-change studies. I served as a consultant to the Canadian government’s Atmospheric Environment Service in 1985, on a project that used the frost number with an early general circulation model to investigate changes in permafrost distribution under a warming climate.

As for jobs, I finally got lucky just as the grant ran out in 1986 and was offered a position at Rutgers University in New Brunswick, New Jersey. Rutgers was an exciting place to be in those days—sprawling, unmanageable, interdisciplinary, well-funded, encouraging of innovation—and close to New York City. The place had a real *esprit de corps*. I was able to secure funding from NSF for my research in Alaska and so to continue field work. In 1988, as the USSR was becoming more open, I learned about upcoming opportunities to interact with Soviet scientists. A well-timed proposal to NSF was funded, leading to a trip to Leningrad, where I met **Oleg Anisimov**, a scientist and friend with whom I’ve now worked for more than two decades. We began collaborative research on a series of projects and papers concerned with the impacts of global warming in permafrost environments. During this period Oleg and I hosted each other for extended stays, and I was fortunate enough to be among the few U.S. scientists visiting the USSR to live in a private apartment and work in a Soviet

institute. That became quite normal after 1990 and we continued the exchange for many years.

My scientific involvements really began to expand after a sabbatical in academic year 1990-91, graciously hosted by the geography department at the University of Wisconsin in Madison. Soon after returning to New Jersey, I became involved with an interdisciplinary, NSF-funded project called the “Arctic Flux Study,” which was concerned with the flux of greenhouse gases in tundra environments of the North Slope. This was a very large project that involved ecologists, soil scientists, meteorologists, remote sensing people, and others, all conducting coordinated observation programs at a series of shared field sites. I was working with **Kaye Everett** of Ohio State’s Byrd Polar Research Center on “scaling up” observations on active-layer dynamics to an extensive area extending from the Brooks Range to the Arctic Ocean. The demands of this kind of collaborative work represented a steep learning curve for me because, like most field geographers of my generation, I was used to working with a small group of people on relatively modest problems. My Michigan training in spatial analysis proved very useful and our subgroup eventually created the first detailed, computationally derived maps of active layer thickness covering regional scales. These maps eventually became a spatial time series that continues to grow each year.

Also around 1991 we began work on the Circumpolar Active Layer Monitoring (CALM) program. Another of Jerry Brown’s ideas, this was the first international global-change monitoring program specifically devoted to

permafrost. It was a fairly revolutionary development, because the majority of permafrost studies had been a mostly “you-and-me” type of scientific enterprise up to that time. Using some of the ideas presented in a series of papers by **Roger Barry**, in which he proposed an open, collaborative scientific model for permafrost studies, we used CALM to develop a network of sites operated by people working together voluntarily and sharing data freely. The program was leveraged initially through involvement by investigators in the International Tundra Experiment (ITEX) program, with the enthusiastic support of an ITEX leader, **Pat Webber**, of Michigan State. We handled much of the initial set-up work through Rutgers, including developing and testing CALM’s sampling and data-management protocols. Grad student **John Fagan** was a perceptive and energetic participant in these undertakings. CALM has prospered for two decades, and now consists of more than 200 observatories in both polar regions and several mid-latitude mountain ranges. The program has been funded in five-year blocks of support from NSF, initially to Ken Hinkel at the University of Cincinnati (1998-2002), to myself at Delaware (2003-2008), and since 2009 to **Kolia Shiklomanov** at George Washington University. I’ve been privileged to be a Co-PI in each generation of the program.

In the fall of 1994, only a year after having been promoted to full professor at Rutgers, I moved to SUNY-Albany for personal reasons. My wife, Margaret Wilder, and I had been commuting for more than a decade, first between Ann Arbor and Bloomington, and then between New Brunswick and Ithaca, NY (Margaret had been a professor at both

Indiana and Cornell Universities). We were both offered positions at SUNY, and we jumped at the opportunity to finally be together on a full-time basis. At precisely this point in time my close colleague Kaye Everett succumbed to an aggressive cancer, and thereafter I was responsible for the permafrost component of the Flux Study. I had the good fortune to have had several excellent grad students during this period, including Kolia Shiklomanov, **Anna Klene**, and **Jerry Muller**, who collectively carried out a great deal of the active-layer subproject’s field work. The publications that grew out of their masters’ theses eventually were published in the open literature and continue to be well-cited studies.

It was during this period that **Jess Walker** advanced the idea of starting a cold-regions specialty group in the AAG. We worked with Ron Ablner, Jerry Brown, and Hugh French in getting the group off the ground. One of my contributions was to suggest the name “Cryosphere Specialty Group,” which was a fair number of years before the AGU adopted the same term. The group made its debut with sessions at the AAG’s 1996 meeting in Charlotte. I chaired the specialty group from 2003 to 2005, and started this newsletter. The name “Cold Trail” was suggested to me by a University of Colorado undergraduate, **Jeff Norris**, who had written a term paper about the specialty group.

My colleagues in the SUNY-Albany Department of Geography and Planning were a gracious and supportive group of people, and it was difficult to leave when the time came. It became clear, however, that the doctoral program we had hoped

for was not going to materialize, so in 1997 Margaret and I again packed up our books and bags and returned to the mid-Atlantic region. Kolia, Anna, and **Michael Walegur** all accompanied me in the move, to pursue their doctoral degrees at Delaware.

The Delaware years have been extremely busy, with a succession of funded projects devoted to field work and modeling. Although all were concerned with permafrost, they were topically diverse, ranging from field investigations of active-layer dynamics, through assessment of natural hazards, to modeling permafrost distribution at the global scale. Co-investigators have included Ken Hinkel, Roger Barry, Kolia Shiklomanov, Oleg Anisimov, and **Tingjun Zhang**. Graduate students who have worked on and contributed to these projects include **Jon Little, Melanie Schimek, Heath Sandall, Adam Campbell, Silvia Cruzatt, and Dima Streletskiy**.

Living in the mid-Atlantic region has also presented many opportunities to work on paleoenvironmental research problems. My contributions in this area have all been in collaboration with grad students, including studies of fossil periglacial landforms with **Kim Park Nelson, Mary Lemcke, Mark Demitroff**, and my former Rutgers grad student, **Susan Millar**, now at Syracuse University. Mike Walegur and I have continued climatic and permafrost investigations in the uplands of the Appalachian Mountains. My Delaware colleague **Cort Willmott** has been a continuous source of interesting scientific ideas and statistical advice that I've been able to use in various research projects.

In what I suppose to be a natural progression, a large number of opportunities have accompanied or grown out of my scientific research. These include the fulfillment of my high-school dreams of travel to exotic locales. In conjunction with my permafrost studies I've made extended visits to Siberia, Mongolia, the Tibetan Plateau, New Zealand, northern Canada, Svalbard, and many places throughout Europe. There have also been many opportunities to observe the inner workings of scientific institutions, among them as officer, board member, or working group member in the AAG, the International Permafrost Association, the Arctic Institute of North America, the Intergovernmental Panel on Climate Change, the Franklin Institute, the Arctic Research Commission of the U.S., the International Geographical Union, the U.S. Permafrost Association, and the American Geographical Society (AGS).

Membership on the Council of the AGS, in particular, has been both fruitful and a great deal of fun. After my appointment to Council in 2006, I was casting about for a way to contribute to the society, and began to spend time in the AGS archives in New York. I was immediately smitten with what must have been a latent infatuation with things historical. The long and distinguished involvements of American geographers in the polar regions is really something extraordinary. Beginning in the 1850s, the AGS sponsored a long list of polar expeditions, always insisting on the preeminence of scientific accomplishment over personal gain and glory. The achievements of American geographers in mapping, glaciology, and general exploration were at the forefront



## 2. Student involvement

We continue striving for greater student involvement; we aim to add incentive by proposing to reallocate more of our funds to student awards this year.

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### **Treasurer's Report**

*Overview by Tracy L. Deliberty, 3 April 2011*

Overview: The Cryosphere Specialty Group has a balance of \$2005 as of the end of February 2011. Since April 2010, our SG has brought in \$471 in dues, and spent \$350 contributing to the Physical Geography reception and \$153 on awards.

A balance forward in September 2010 was \$1636 which runs on the AAG fiscal year of September through August.

The expenses are in line with the last few years. We normally have one to two donations each year, but not this year; also, our expenses are limited. As we go forward, we can discuss to continue to carry a substantial balance or consider worthy ways we wish to spend the funds.

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### **Graduate Student Participation in the CrSG**

Currently our membership stands at 93, with 38 as students and 55 non-student. This translates to a slight decline in overall membership this year compared to last, but slightly better percentage (>40%) as student. To increase our numbers significantly we need involvement by more AAG members, particularly graduate students. It will help that our Board of Directors now has a Ph.D. student and recent graduate,

beginning Postdoc. **Please encourage your students to join CrSG (membership is free for them), to attend our sessions and business meetings, and to become involved in our activities.**

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### **Sessions and activities at the 2011 Seattle, WA AAG Meeting**

#### *Sponsored and Co-Sponsored CrSG Sessions*

We're sponsoring, co-sponsoring a number of sessions at the upcoming AAGs in Seattle (12-16 April). These are listed below in order of meeting appearance, with a few other related ones. More details about speakers, their affiliations, and links to paper abstracts, content may be accessed via the AAG website at: <http://www.aag.org/>.

#### **2121 Cryosphere Cryosphere Posters: cold regions monitoring/modelling and R.S. Tarr Student Paper Competition**

Wednesday, 4/13/2011, from 8:00 AM - 9:40 AM in 6ABC - Washington State Convention Center, Level 6

#### **2216 Global Ice and Snow - Monitoring and Modeline**

Wednesday, 4/13/2011, from 10:00 AM - 11:40 AM in 616 - Washington State Convention Center, Level 6

#### **3829 Cryosphere Specialty Group Business Meeting**

Thursday, 4/14/2011, from 8:00 PM - 9:00 PM in 306 - Washington State Convention Center, Level 3

#### **3529 Current Cryospheric & Related Science in the Alaskan Arctic 1**

Thursday, 4/14/2011, from 2:40 PM - 4:20 PM in 306 - Washington State Convention Center, Level 3

**3629 Current Cryospheric & Related Science in the Alaskan Arctic 2**

Thursday, 4/14/2011, from 4:40 PM - 6:20 PM in 306 - Washington State Convention Center, Level 3

**3129 Hydroclimatology I**

Thursday, 4/14/2011, from 8:00 AM - 9:40 AM in 306 - Washington State Convention Center, Level 3

**3229 Hydroclimatology II**

Thursday, 4/14/2011, from 10:00 AM - 11:40 AM in 306 - Washington State Convention Center, Level 3

**5228 Multi-temporal Remote Sensing of Snow and Ice**

Saturday, 4/16/2011, from 10:00 AM - 11:40 AM in 305 - Washington State Convention Center, Level 3

**2238 Polar Geography 2: Arctic Environment**

Wednesday, 4/13/2011, from 10:00 AM - 11:40 AM in 203 - Washington State Convention Center, Level 2

**2238 Polar Geography 2\*: Arctic Environment**

Wednesday, 4/13/2011, from 10:00 AM - 11:40 AM in 203 - Washington State Convention Center, Level 2

*\*Note:* the related sessions (4 in total) are sponsored by other SGs, and include:

**2138 Polar Geography 1: Arctic Geopolitics**

Wednesday, 4/13/2011, from 8:00 AM - 9:40 AM in 203 - Washington State Convention Center, Level 2

**2438 Polar Geography 3: Humans in the Arctic**

Wednesday, 4/13/2011, from 12:40 PM - 2:20 PM in 203 - Washington State Convention Center, Level 2

**2538 Polar Geography 4: The Future of the Arctic**

Wednesday, 4/13/2011, from 2:40 PM - 4:20 PM in 203 - Washington State Convention Center, Level 2

**4134 Water and Climate Change in Mountain Regions 1**

Friday, 4/15/2011, from 8:00 AM - 9:40 AM in 3A - Washington State Convention Center, Level 3

**4234 Water and Climate Change in Mountain Regions 2**

Friday, 4/15/2011, from 10:00 AM - 11:40 AM in 3A - Washington State Convention Center, Level 3

**5326 PiPG Classics Revisited: Climate Change and Its Consequences**

Panel; Saturday, 4/16/2011, from 12:00 PM - 1:40 PM in 303 - Washington State Convention Center, Level 3

**NOTE:**

*Physical Geography Reception is CANCELED*

The Physical Geography Reception has been a feature of the AAGs for a number of years, but was unfortunately canceled this year due to lack of response. If anyone is motivated to try and rekindle activity along this front, go for it; we plan to go to a nearby establishment after the Business Meeting to toast Fritz.

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