



Cold Trail

Newsletter of the Cryosphere Specialty Group
Association of American Geographers

Issue 5, March 2008

Del Levia, Editor

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Brooks Range, dependent only on an occasional resupply of food and mail and your several colleagues, was a great learning experience.

Although I consider polar soils to be part of the cryosphere and my formal training, my real cryospheric career began in summer 1961. I was fortunate to be hired by the U.S. Army's Cold Regions Research and Engineering Laboratory (CRREL) and to be given essentially a "free" reign to develop a meaningful mission-oriented basic research program on frozen ground. CRREL had just been created that year through the merger of the Snow, Ice, and Permafrost Establishment (SIPRE) and the Arctic Construction and Frost Effects Laboratory (ACFEL). This marriage had brought together two cultures; one based on engineering and the other on basic research. A new generation of researchers was being hired in Hanover, New Hampshire, to start confronting northern environmental challenges. The net results over the next several decades from both the newcomers and old timers were major accomplishments in virtually all aspects of basic and applied cryospheric research. Fortunately the CRREL and NSF funded bibliographic projects, based for many years at the Library of Congress and more currently at the American Geological Institute, and the CRREL library itself, provide and preserve access to the vast body of international cryospheric literature. Needless to say that many cryospheric heroes worked in or passed through CRREL and its SIPRE predecessor in the second half of the 20th century.

My own years at CRREL between 1961-1985 provided me with unprecedented opportunities to pursue and coordinate basic permafrost research in Alaska, with the main focus at Barrow. In the 1960s we launched projects on summer hydrology, active layer dynamics and morphology, permafrost and ground ice stratigraphy and their geochemistry. Most of our projects involved mobilizing our CRREL logistics from Hanover and Fairbanks, and always

involved the readily available support staffs and equipment at Barrow through the Naval Arctic Research Laboratory (NARL). Also available at CRREL were many enlisted military personnel and commissioned officers that held master's and doctoral degrees. A number of these highly trained and motivated individuals provided year-round support to the Barrow research. Several were indispensable, including Paul Sellmann and Robert Lewellen, the latter completing his doctorate in Geography at the University of Denver. Other permafrost projects based at Barrow from the USGS, Iowa State University, Tufts University, Smith College, and among other institutions, contributed to camaraderie in the research environment. It was during these earlier days that we first encountered Sam Outcalt, leading eventually to many fruitful endeavors and ultimately to long-lasting collaborations with his former graduate students Fritz Nelson and Ken Hinkel.

The early 1960s also marked a Cold War breakthrough with our Soviet colleagues. The U.S. convened the First International Conference on Permafrost, held in November 1963 at Purdue University. Five senior Russians permafrost researchers attended, as did the "father" of North American permafrost Siemon Muller and other Americans, including Troy Péwé, Art Lachenbruch, Link Washburn, and Robert Black. Our Canadian colleagues included several with roots in U.S. geography, including Roger Brown and Ross Mackay, both graduates of Clark University. The "Purdue" conference was the first opportunity to present our Barrow results to an international audience. Contact with our European and eastern European colleagues continued through the International Geographical Union's periglacial commissions. These activities took me to my first foreign international conference in 1967 in Poland, followed in 1969 to Yakutsk, Russia, with the first large group of western scientists to visit Siberia. The latter was the "dry run" for the Soviet hosting of the

Second International Conference on Permafrost in July 1973 in Yakutsk.

Interest in ground ice increased in the 1960s as the International Hydrological Decade (IHD) undertook an effort to revise an estimate of global ice volume. Our 1960s ground ice data were used as a tool to revise the estimate of underground ice in a project led by Fritz Muller, then at McGill University. These efforts continued under the International Commission on Snow and Ice (ICSI) and its Underground Ice Group that I chaired for a brief period.

A new dimension of tundra research was unfolding by the end of the 1960s. Barrow was selected as the U.S. intensive research site for the International Biological Programme's Tundra Biome project. The IBP was an experiment in the development of ecosystem science and related modeling. The U.S. IBP management, under the auspices of the National Academy of Science and mainly funded by NSF, requested that I serve as the Director of the U.S. Tundra Biome project that included coordination of sites at Prudhoe Bay, interior Alaska, and Niwot Ridge, Colorado. CRREL agreed to support my administrative duties and the added research in Alaska. This contribution of considerable resources was provided in support of Public Law 91-438, which requested that federal agencies contribute to the IBP. Industry played an important role at Prudhoe Bay. Our main goal was to develop a predictive understanding of how tundra ecosystems functions. The research and related funding brought together a team of 50 investigators and many students and post docs over a four-year period, the majority of whom worked on the well-instrumented terrestrial and aquatic research sites at Barrow. Suffice to say this was a major effort that by 1980 had led to three national synthesis books, over 100 master's and doctoral dissertations, and hundreds of peer-reviewed papers. Studies of snow cover properties and phenology, year-round microclimate and gas fluxes, active layer dynamics, and lake ice

all contributed to the success of the Tundra Biome program. As in the 1960s, scientific military personnel from CRREL contributed to both the Barrow and Fairbanks research, some of which concerned oil spill impacts and recovery. The CRREL editorial staff, headed by Steve Bowen, edited many of the voluminous Tundra Biome documents.

The 1970s were busy in many other ways. The U.S.-Soviet Bilateral Agreement on Environmental Protection began in earnest in 1974 with a number of joint visits throughout Soviet Union. I chaired Area X of the Agreement on Protection of Northern Ecosystems, which included permafrost and pipelines. A special symposium was organized on geography of polar countries in Leningrad in summer 1976 during the XXIII International Geographical Union. In the mid 1970s, I coordinated a second NSF program on Research on Arctic Tundra Environments (RATE) that laid the foundation for the Arctic LTER site at Toolik Lake. I also coordinated a series of USGS, DOE and FHWA bioenvironmental projects in northern Alaska, along the Trans Alaska Pipeline route, and in the National Petroleum Reserve Alaska. These projects included researchers from many universities and particularly the Ohio State University and University of Colorado. One very notable publication was the CRREL production in 1980 of the *Geobotanical Atlas of the Prudhoe Bay Region, Alaska* with colleagues Skip Walker, Kaye Everett and Pat Webber. Also during the 1970s we were called on to participate in National Academy of Sciences committees and reports related to offshore and pipeline-related permafrost. The Third International Conference on Permafrost was held in Edmonton in July 1978, with Chinese attending for the first time.

The 1980s were a transitional period to official "retirement." Back home in Hanover, I had already assumed management responsibilities for the Earth Sciences Branch that included major remote sensing and wastewater management programs. My

spare time shifted in helping to organize the Fourth International Conference on Permafrost held at the University of Alaska in Fairbanks in July 1983 and chairing the U.S. Permafrost Committee.

In 1985 I was offered and accepted a new staff position in the NSF Division of Polar Programs in support of the Interagency Arctic Research and Policy Act of 1984. I staffed the activities of the congressionally mandated Interagency Arctic Research Policy Committee (IARPC) chaired by the director of NSF. While at NSF, I developed and edited the new journal *Arctic Research of the United States*, helped initiate the Arctic Social Science program, and coordinated the development and revisions to the mandated Arctic Research Plans. I retired from the U.S. Government after 30 years of service in late July 1991.

In August 1991 I visited Chukotka and returned to Barrow to revisit my 1960s sites. The Barrow visit helped to initiate the development of the Barrow Environmental Observatory (BEO), approximately 7500 acres of privately-owned tundra land that is set aside for research and long-term observations. I continue to chair a BEO committee that oversees the annual activities, including monitoring of snow and active layer depths, permafrost temperatures, and coastal erosion.

The International Permafrost Association (IPA) was also founded in Fairbanks at the 1983 conference. I devoted “free time” to IPA activities and helped in preparations for the 1988 Fifth International Conference in Trondheim, Norway. Many new international permafrost activities emerged in these formative years, including projects on climate change, terminology, mapping, and data access and rescue. In order to track these developments in pre-internet days, we started the News Bulletin *Frozen Ground* in 1989 to report on the activities of the IPA working groups and member countries. In Beijing in 1993 during the Sixth International Conference on Permafrost (ICOP) I

succeeded J. Ross Mackay as IPA Secretary General, was elected to the IPA Executive Committee in 1998 during the Seventh ICOP in Yellowknife, Canada, and became IPA President in 2003 in Zurich during the Eighth ICOP. During the 1990s, I led the international IPA team to produce the USGS *Circum-Arctic Map of Permafrost and Ground Ice Conditions*, participated in the development of the Circumpolar Active Layer Monitoring (CALM) and Arctic Coastal Dynamics (ACD) programs, and the development of the Global Geocryological Database (GGD) and the Global Terrestrial Network for Permafrost (GTN-P). The accomplishments and history of the IPA during its first 25 years will be reported in Fairbanks in June 2008 during the Ninth ICOP. During the mid 1990s, U.S. and Canadian participants in the IPA developed stronger connections with AAG. Ron Alber, Fritz Nelson and Jess Walker among others shared in promoting the collaboration with the frozen ground community that led to discussions to form our cryosphere specialty group.

The eight international conferences on permafrost have been mentioned chronologically in this essay. The more than 1500 peer-reviewed papers that have appeared in their proceedings over a 40-year span are testimony to the role permafrost has served in the recent development of this branch of the cryospheric sciences. I share the distinction with geographer Jess Walker that he and I are two of the three participants to have attended all eight conferences. Hopefully the legacy will continue in June 2008 in Fairbanks, Alaska, when an additional 350 papers will be added to the collection during the Ninth International Conference on Permafrost. Several other permafrost legacies are evolving during this IPY period. The newly organized Permafrost Young Researchers Network (PYRN) now has over 400 members in more than 35 countries. The IPY project “Thermal State of Permafrost” is developing a global “snapshot” of permafrost temperatures and active layer depths and a sustainable

database based on a permanent observatory network. As might be expected, Barrow is an important location as a global permafrost observatory.

Epilogue: Looking back on events and accomplishments that may have contributed to my selection for the 2008 Matthes Award, I feel obligated to share this recognition with my numerous co-workers and colleagues who have contributed to these many activities and to CRREL and the resources and people of Barrow. Finally, my wife Celia and two sons, Kevin and Michael, deserve special appreciation for enduring and joining me on much of this polar journey.

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Items to be discussed at this year's Business meeting

The Cryosphere Specialty Group Business Meeting will be held on Thursday, April 17, 2008 at 11:55am. The reason for an earlier meeting time is that there was a scheduling conflict with the Physical Geography Reception.

1. **Call for Nominations:** Andrew Grundstein and Anna Klene complete their terms on the Board this month. Thanks are in order for their excellence service to the CrSG. Two replacements will be elected at the Business Meeting on April 17. To date, Larry Smith (UCLA) and Kolia Shiklomanov (University of Delaware) have been nominated. I will still accept nominations. Please send them to me directly via email at dlevia@udel.edu. Nominations will also be accepted from the floor during the business meeting.

2. Formalization of the selection protocol for the Matthes awardee:

I propose the following selection protocol be formally voted on by CrSG members: a) Mid January-Chair solicits nominations from the whole Group. Self nominations are permissible The nomination must be accompanied by a paragraph or two explaining why the nominee should be selected by the Selection Committee. The Selection Committee is a five member Committee composed of CrSG Chair, Secretary/Treasurer, and the three members of the Board of Directors; b) after a period of 1 week, the nominations will close. The Selection Committee will then discuss the nominees for a period of one week; c) at the conclusion of this discussion (first week of February), the Chair will send an official ballot to the Committee members for a vote. The majority candidate will be selected and announced; d) the awardee will then be requested to supply a personal essay for Cold Trail. The essay will convey his/her contribution to cryospheric science and highlight future directions for their subfield.

This was the protocol employed in the selection of Dr. Jerry Brown for the 2008 Francis Emile Matthes Award.

3. Does the CrSG want to engage in any IPY activity as a whole? Do we want to collaborate with the IGU on IPY activity? These important questions should be addressed.

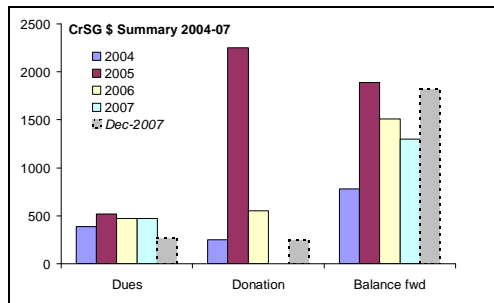
4. New Business

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Treasurer's Report

I have tallied our annual budget summaries as dues, donations* and balance going forward for the past four fiscal years (AAG fiscal year ends 31 August). Our balance on 31 August 2007 was about \$1300. As of 31 December 2007, our total balance was \$1800, accounting for additional dues and donations received between Aug-Dec, which will be accrued to next budget year (included below as *Dec-2007*). Some summary points:

- We receive roughly \$500 annually from membership dues, down from \$520 in 2005 to \$474 in 2007.
- Donations are generally a smaller and more variable revenue stream, featuring what seems a “banner year” in 2005. We sent out a letter of solicitation reminding folks of the opportunity to give before the end of the tax year 2007.
- Our annual expenses are not large, and we have upped our 2008 donation to the Phys Geog Reception to \$500.



*These exclude the “donations” from other groups dedicated to the annual Phys Geog reception at AAGs.

It should be clear those membership dues and donations are critical to the financial health of CrSG and the level of activities it can support. **Please contribute what you can to CrSG.** Both small and large contributions are welcome!

Make checks out to **AAG**, **note that the contribution is for the Cryosphere Specialty Group** and send to:

Bryan Mark
Department of Geography
The Ohio State University
Columbus, OH 43210

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Graduate Student Participation in the CrSG

To increase our numbers significantly we need involvement by more AAG members, particularly graduate students. **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. This is critically important as it pertains to the Tarr Session.**

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CrSG Activities: 2008 Boston Meeting

The CrSG Business Meeting will be held on Thursday, April 17, 2008 at 11:55am. Please plan to attend!

Sponsored and CoSponsored CrSG Sessions

Details about speakers, their affiliations, paper abstracts, and non sponsored talks

rest of the globe. The poles are recognized as sensitive barometers of environmental change, thus polar science is crucial to understanding the planet and our impact on it. The poles are also exceptional archives of what the Earth was like in the past, and offer a unique vantage point for many terrestrial and cosmic phenomena.

We are now half way through the two years of IPY, and currently experiencing maximum activity, not just amongst scientists. Teachers, artists, students, polar visitors, explorers, young scientists, arctic residents, journalists, photographers, and film-makers are all collaborating with researchers to raise awareness about the polar regions, and increase polar literacy. It is very much a grass-roots effort and everyone is encouraged to join in!

In addition to a wide range of local and national educational activities, International Polar Science Days are being launched every three months. These focus on a specific aspect of real and current research and have recently looked at Sea Ice, Ice Sheets, and our Changing Earth. In June we will be learning more about Polar Land and Life, and in September, People. Each event utilizes a range of tools including live web events, videoconferencing, press releases, school activities, community initiatives, virtual balloon launches, and a compilation of relevant web resources. The emphasis is on direct interaction between polar scientists and the global community that is accessible, fun, easy, and rewarding for all.

For more information, please visit the IPY website , www.ipy.org.

Rhian Salmon, IPY Education and Outreach Coordinator
Ipy.ras@gmail.com

- **CRREL ice core publication:** Chester C. Langway, Jr. has published a CRREL monograph: ERDC/CRREL TR-08-1, entitled *The History of Early Polar Ice Cores*. It is likely that some of you may find this work useful. The report is available at:

<http://www.crrel.usace.army.mil/library/technicalpublications-2008.html>

- **NICOP:** For those interested in permafrost research, I encourage you to see the attached registration information for the Ninth International Conference on permafrost.

- **Polar bear debate:** The fate of polar bears in the face of climate change is a matter of fierce debate in the Arctic. The debate has sparked particular interest in the use of forecasting techniques. Interested readers are encouraged to read papers on the subject. The following two papers reach very different conclusions:

- Amstrup, S.C, Marcot, B.G. and Douglas, D.C. (2007). Forecasting the rangewide status of polar bears at selected times in the 21st century. USGS Alaska Science Center, Anchorage, Administrative Report.
- Armstrong, J.S., Green, K.C., and Soon, W. (2008). Polar Bear Population Forecasts: A Public-Policy Forecasting Audit. Working Paper Version 61. See www.publicpolicyforecasting.com



Conference Registration Form

<http://www.nicop.org>

OVERVIEW

On behalf of the United States, the University of Alaska is honored to host the 2008 International Conference on Permafrost (ICOP) under the auspices of the International Permafrost Association (IPA). The Ninth International Conference on Permafrost (NICOP) marks the 25th anniversary of the formation of the IPA and the Fourth ICOP (1983), both having taken place at the University of Alaska Fairbanks. The fourth International Polar Year (IPY) will be celebrated in 2008, as will be the 50th anniversary of the International Geophysical Year (IGY), and the 125th anniversary of the first International Polar Year (IPY). Both the International Union of Geological Sciences and the International Geographical Union, IPA parent organizations, will hold their international congresses in August 2008. The International Year of Planet Earth will also be celebrated in 2008. Taken together, summer 2008 represents a special time to celebrate our national and international permafrost heritage. Special efforts will be made to involve young researchers, educators and students of all ages, and native communities from all countries with an interest in permafrost science and engineering. The [U.S. Permafrost Association](#) (USPA), incorporated in Alaska as a not-for-profit organization, is the parent organization for the NICOP. A U.S. National Committee has been established under the USPA to assist the University of Alaska's Local Organizing Committee (LOC) as a co-sponsor and co-organizer of the conference.

IMPORTANT DATES

Field trip payments: \$100 deposit now; final due by March 31, 2008
(refundable up to May 15, 2008)

Submission of extended poster abstracts: (March 15, 2008)

Pre-registration payments: Early Bird until March 31, 2008

Registration for courses: see web for details

AGENDA

The main technical conference events will take place on the campus of the [University of Alaska Fairbanks](#) during the week of June 29 - July 3, 2008. The format of the formal meetings will remain much the same as in prior conferences and include local field trips, and pre- and post-conference extended field trips. Approximately 150 contributed papers will be presented orally; with other contributions to be presented as posters. Several pre-conference courses and workshops for graduate students and professionals, and for K-12 teachers and students are planned. The official language will be English. Conference updates will be posted on the web site (<http://www.nicop.org>) as information becomes available.

Contact Elizabeth Lilly at elilly@nicop.org for questions.

Ninth International Conference on Permafrost

Conference Registration Form June 29-July 3, 2008 Fairbanks Alaska

Registration Information:

Name: _____ Badge Name: _____
 Company Or Agency: _____
 Address: _____
 City: _____ State: _____ Zip+4: _____ Country: _____
 Business Phone: _____ Fax #: _____
 E-Mail Address: _____

You may register
 ONLINE: www.nicop.org
 By FAX: (866) 592-5122 (North America)
 1+1+(866) 592-5122 (International)
 By MAIL: NICOP Registration
 P.O. Box 81538
 Fairbanks, Alaska 99708

Registration Fees:

NICOP	FULL		STUDENT*		ONE-DAY	
	By 3/1/08	After 3/1/08	By 3/1/08	After 3/1/08	Anytime \$150	
	\$400	\$450	\$200	\$250		\$ _____

One-Day registrants please circle day of attendance: SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY

Must be **postmarked** by 3/01/08 to receive early rate. Registration includes – All Sessions, Exhibits, Refreshment Breaks, BBQ, CD-Rom Proceedings

- Senior/Retired Discount** (Registrant must be retired and 65 years or older to qualify. Full and One-Day Registrants only) - **\$100** x _____ = \$ _____
- Printed Conference Proceedings** **\$50** x _____ = \$ _____

*Applications for students and young researchers to cover local costs will be available Fall of 2007. Paper or extended abstracts will be required for consideration.

Extra Purchases:

- Riverboat Discovery July 1, 2007 **\$65** x _____ = \$ _____
- NICOP Banquet July 2, 2007 **\$50** x _____ = \$ _____
- Accompanying Person(s) includes access to conference events and local tours (banquet / Riverboat Discovery not included) **\$150** x _____ = \$ _____

Short Courses (For credit courses 1 & 3 a UAF Summer Session Registration form will be e-mailed to you to complete and return)

- Course #1: Introduction to Permafrost and Frozen Ground Engineering (undergraduate and graduate students) 1 credits June 25-27, 2008 **\$90/\$170** x _____ = \$ _____
- Course # 2: (Cancelled)
- Course #3: Understanding the Role of Permafrost in a Rapidly Warming Climate (K-12 teachers) 1 credit June 23-27, 2008 **\$60** x _____ = \$ _____
- Course #4: Workshop on Foundations in Permafrost and Frost-Susceptible Soils (professionals) June 28, 2008 **\$90** x _____ = \$ _____

Field Trips (pre-registration)

Field trips require \$100 deposit as long as space is available. Refer to website for availability.

Pre-Conference Excursions

- A1 – Yukon Territory, Canada (Estimated - \$3000) July 15-27, 2008 **\$100** x _____ = \$ _____
- A3 – Teck Cominco Red Dog Zinc Mine, Northwest Alaska (Estimated - \$500) CANCELLED June 27, 2008 **\$100** x _____ = \$ _____
- A4 – Dalton Highway – Fairbanks to Prudhoe Bay (Estimated - \$925) July 22-27, 2008 **\$100** x _____ = \$ _____
- A5 – Alaska Pipeline Engineering Solutions – Fairbanks to Prudhoe Bay (Estimated - \$600) June 27-28, 2008 **\$100** x _____ = \$ _____
- A6 – Pogo Mine Tour (Estimated - \$150) June 27, 2008 **\$100** x _____ = \$ _____

Post-Conference Excursions

- B2 – Arctic Coastal Plain – Fairbanks to Prudhoe Bay (Estimated - \$2100) July 4-9, 2008 **\$100** x _____ = \$ _____
- B3 – Northwest Alaska (Beringia) – Nome and Seward Peninsula (Estimated - \$825) July 4-8, 2008 **\$100** x _____ = \$ _____
- B4 – Central Alaska – Fairbanks to Denali National Park (Estimated - \$425) July 4-6, 2008 **\$100** x _____ = \$ _____
- B5 – Teck Cominco Red Dog Zinc Mine, Northwest Alaska (Estimated - \$500) CANCELLED July 4, 2008 **\$100** x _____ = \$ _____
- B6 – Front Range and San Juan Mountains, Colorado (Estimated - \$650) July 4-10, 2008 **\$100** x _____ = \$ _____

GRAND TOTAL = \$ _____

Payment Information:

Full payment must accompany registration form. Payment must be made by one of the following:

- Check** - US dollars only, payable to the US Permafrost Association.
- Credit Card** - Circle one below.

Discover Master Card Visa JCB

Card #: _____ Exp Date: _____ CSC Code: _____
 Cardholder Name: _____ Signature: _____