

Avian Influenza:

entering the digital side of the lab

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A farewell to Dean Joan Braddock

Geothermal Energy is Hot!

Alaska Quaternary Center Turns 25

Notes



**Joan Braddock,
Dean**

It is somewhat bittersweet to write my last comments for the CNSM newsletter as dean of the college. I am honored to have served CNSM for the past five and a half years and am very grateful to the faculty, staff and students who make this a great college. I am particularly grateful to the faculty who have served the college as department chairs while I have been dean. I am also very grateful to the dean's office staff for their hard work and for keeping a sense of humor under stress.

I leave the college feeling good about a number of things including increases in the amount of funding for graduate teaching assistants and strong outreach programs. The Alaska Summer Research Academy, our outreach program for junior high and high school aged students, is poised to become a signature program for UAF. That program now draws students from all over the country for our two week summer camp, and has provided the college and UAF a great deal of visibility within the state. I am also pleased to have seen substantial increases in the numbers of Alaska Native students graduating from our programs and an increase in the numbers of Alaska Scholars enrolled in our programs.

During my tenure as dean I supported the founding of several new units including the Department of Computer Science and the Department of Atmospheric Sciences. Through our collaborations with research institutes at UAF, particularly the Institute of Arctic Biology and the Geophysical Institute, our graduate programs remain very healthy. The numbers of PhD students have increased in the past few years, a trend we hope to see continue.

While there are a number of needs in the college, I believe one of the highest priority needs is for new teaching and research space for life sciences programs. The Life Sciences Innovation and Teaching Facility is the number one new capital project on the UA request list. I urge the college to get behind this project, which will allow the Department of Biology and Wildlife to finally be consolidated on West Ridge. Life sciences at UAF is the largest program in the UA system but suffers from being scattered across campus, inhibited from growth by lack of space and hampered by lack of appropriate space for teaching laboratory courses in microbiology, molecular biology and cell biology. Please support this facility.

In closing, I want to again thank all of you for the opportunity to serve as your dean. The past five and a half years have been a wonderful chapter in my life. I wish each of you the best as we approach the holiday season.

Joan



**Paul Layer,
Associate Dean**

This semester brings us to an end of an era in CNSM. Dean Joan Braddock is retiring after a distinguished career as a teacher, researcher and leader. She has served as a role model for others here at UAF

and I thank her for her mentorship in my role as Associate Dean. The college is in a strong position to move forward, due primarily to Joan's leadership and she is leaving some big shoes to fill.

Elsewhere in the college, this year marks the 25th anniversary of the Alaska Quaternary Center. AQC has built a strong reputation as a focus for interdisciplinary studies of the last 2 million years of Earth's history with a special emphasis on the record preserved in the arctic. AQC is an active program that supports students and coordinates a speaker series. Congratulations to AQC for 25 years of commitment to excellence!

This December I will have the opportunity to accompany UA President Mark Hamilton and UA Vice President Daniel Julius to China to discuss inter-university collaborations between UAF and Chinese universities. Dean Braddock participated in previous trips, and I am excited about the prospects of promoting our excellent undergraduate and graduate programs abroad.

I also wish to thank those individuals and companies that have donated to the college, to our departments or to our programs such as ASRA. Your support allows us to provide augmentation to the college experience to students through ASRA (high school students) and student travel grants and scholarships (undergraduate and graduate students). Thank you once again.

So, as we move forward in a college without Joan, I am excited to be working with our wonderful staff, faculty and students. I look forward to learning more about what our faculty and students are discovering in the fields of mathematics and science, and to sharing their stories with you.

Paul

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We hold these relationships with donors and industry partners in high regard. They lend strength to the college and support our mission to produce outstanding graduates and a well-qualified workforce.

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Mission Statement

Through instruction and mentoring, the College of Natural Science and Mathematics promotes students' self-motivation to excel and guides them towards professional careers and public service in an environment of life-long learning.

Through research, the College advances knowledge of natural, physical, technological and numerical systems from a northern perspective.

Instruction, mentoring, research and outreach are brought together within undergraduate, graduate and continuing education programs to benefit Alaska, the nation and the world.

Vision Statement

The College of Natural Science and Mathematics is the education and research leader in science and technology for the public and private sectors of Alaska and the north.

Research and instruction are strengthened by competitive grants at the national level, to the benefit of the University and its students. Research, teaching, and outreach contribute to achieve a superior learning experience.

Vitality in scholarship is improved at all levels by recruiting and retaining the best and brightest faculty, staff, and undergraduate and graduate students.

Instructional programs use the most current technologies and methods to focus on developing skills for both scholarship and vocation to allow students to develop to their full potential and become the scientific leaders of the future. Leaders throughout Alaska seek our input for solutions to problems facing Alaskans.

This newsletter is a publication of the UAF College of Natural Science and Mathematics.



Thank You

Department Updates



Atmospheric Sciences

The Department of Atmospheric Sciences is proud of its last year's achievements. We were awarded departmental status in spring 2008 and our programs have been ranked 8th best nationwide by Academic Analytics for scholar activity. Mesquito dos Santos (advisor Atkinson) was awarded membership of the Golden Key Honor Society and won a Global Change Student Research Grant Competition sponsored by the Center for Global Change; Pai Mazumder (advisor Mölders) was awarded an EPSCoR Graduate Research Fellowship; Thurairajah (advisor Collins) received a travel grant to attend the International Laser Radar Conference; Legatt (advisor Polyakov) won an American Meteorological Society Bob Glahn Endowed Scholarship in Statistical Meteorology and a NOAA Hollings Scholarship; faculty won several research grants. Faculty and eight students participated in national and international conferences. Together faculty and students published various papers. Barbara Day received a staff award. In the last academic year, five students graduated with an M.S. degree; three of them continued their education towards a Ph.D., while two entered the work force. Two students joined the department, Malingowski in spring, and Legatt in fall 2008. Welcome to a great team.

~Submitted by Nicole Mölders, Department Chair

Computer Science

The Computer Science Department welcomed two new employees this fall. Connie Huizenga is the new administrative assistant. She is off to a great start and has undertaken some ambitious projects to revitalize the public face of the department. Joel St. John accepted the position as the Computer Science Lab Manager and is working hard to ensure that the lab environments provided to our student are truly state-of-the art. Our remote access security lab, designed by Dr. Brian Hay, is currently being used locally and by departments as far away as Florida for advancing security education. This is an incredible facility and is receiving a great deal of national attention. Efforts this year to improve our curriculum to meet the needs of our students and their future employers are focused on continuing the reorganization of the senior capstone experience to provide students with a wider breadth of practical and professional experiences that they can take with them when they leave UAF.

~Submitted by Kara Nance, Department Chair

Chemistry & Biochemistry

The bywords on campus this year are "community connections" and it turns out that we have been hard at work in this area already. We recently hired Natalie Monacci as stock clerk to replace Marlys Schneider, who retired last year. Besides keeping the storeroom in order, Natalie is helping bring chemistry to the community through outreach activities such as the chemistry demonstrations shown recently at Salcha Elementary School. The faculty and students also put on a "University Chemistry Teaching and Research Fair" which was aimed at high school students who might be interested in a chemistry career at UAF, and their teach-

ers and parents. The fair was organized by professor Bill Howard as part of the American Chemical Society's National Chemistry Week celebration. Bill is chairman of the ACS Alaska chapter this year. Chemistry research grants often have a community perspective built in. This year the department obtained a new Agilent gas chromatography-mass spectrometer (GC-MS) courtesy of NSF and Susan Henrichs, UAF Provost. One of the cool activities this past summer, which was created by professors Todd Gouin and Marina Castillo for Rural Alaska Honors Institute (RAHI) students, was to use the GC-MS for analysis of trace indoor volatile organic compounds. All in all, "Chemistry the Central Science" has been much in evidence around the community this year.

~Submitted by John Keller, Department Chair

Geology & Geophysics

Over Labor Day weekend, Paul Layer and Doug Christensen led a field trip to the Brooks Range for 26 faculty and students, including many of the incoming graduate students. Rainer Newberry also led part of the trip between Fairbanks and the Yukon River. The weather was perfect (no rain and no snow! and no mosquitoes!!!) and a fun time was had by all. We plan to make this trip an annual event as a way to introduce new students to the geologic richness of Alaska and as a way for students to meet one another and to get acquainted with the faculty. The trip was partially supported by donations from BP and Shell, and we thank them for their support. We are gearing up for our 6-week Field Camp for the summer of 2009. Field camp is required for all Geology B.S. students and this year we will be conducting part of the camp jointly with Geologic Engineering. This spring we will be hosting a geologic conference in conjunction with the Alaska Geological Society and the Alaska Division of Geological and Geophysical Surveys. The conference will be held on April 24th and will include talks and poster presentations. This fall, Andrea Krumhardt was added to our staff as the departmental Safety Officer. Welcome Andy! We are currently conducting searches for three new faculty members in Seismology, Remote Sensing and Igneous Petrology/Volcanology, and we are excited about the prospects of filling these positions that have been open for some time. Right now (October) we are in the midst of a flurry of Ph.D. and M.S. thesis defenses and should see a large group of students graduate this year. Congratulations to the students and their advisors!

~Submitted by Paul Layer, Professor

Mathematics & Statistics

Several undergraduate students worked on research projects in mathematics this past summer. Odile Bastille worked with Professor Alexei Rybkin on conservation laws for the Korteweg-de Vries equation, while Professor Ed Bueler mentored Ben Sperisen in a project on numerical analysis and visualization related to ice sheet flow. Professor Bueler's collaboration with Professor Martin Truffer on ice sheet modeling has drawn a number of visitors this fall, from the Danish Climate Center, Potsdam Institute for Climate Im-

pact Research, and ETH. Professors Allman and Rhodes are both currently research fellows in the special program on Algebraic Methods in Statistics and Biology, at the Statistical and Applied Mathematical Sciences Institute, in Durham, NC. They are co-leading the working group in Evolutionary Biology via web-based meetings, as well as making several visits through the year. On sabbatical this year, Professor Sergei Avdonin has been invited to visit University of Missouri Columbia, University of Nancy (France), and the Johann Radon Institute for Computational and Applied Mathematics (Austria). A comprehensive article on the design and analysis of resource selection studies recently appeared in *Biometrics*, authored by Professor Dana Thomas, former UAF faculty member Devin Johnson, UAF affiliate Jay Ver Hoef, and Aaron Christ. The paper connects animal telemetry data to resource selection, making connections to information theory and Bayes factors.

~Submitted by John Rhodes, Department Chair

Geothermal Energy Heats Up

by Amie Pappas

The business of geothermal energy is heating up, according to graduate student Amanda Kolker. When she began studying geothermal energy in 2003 there wasn't a lot of interest in the subject, or many jobs. Now, she says the job offers are pouring in, due to heightened interest in development.

"Everyone's talking about clean energy solutions," Kolker said. Her recently completed dissertation delved into the plausibility of using local hot springs as an energy source for nearby communities.



~Photo courtesy of Amanda Kolker

Alaska has 30 natural hot springs, of them Chena Hot Springs Resort uses its own power plant, which runs off hot water. Kolker decided to find out how many of these springs might be use-

able energy storehouses. She looked in central and western Alaska, comparing the geologic setting of Chena Hot Springs, and she evaluated the locations using the resort as a model.

"When I started, there was not much data on hot springs. Before Chena, these areas were not seen as power producing... at least not for electric grade quality power... but new technology is increasing the possibilities."

What attracted Kolker to geology was the sense of time as well as being outdoors. This drew her to pursue her Ph.D. at UAF.

Her research showed interesting results. "It looks like at least eight of the 30 hot springs could be used as an energy source... it all depends on politics, the future of oil, carbon taxes and subsidies."

Kolker added economics to her dissertation by way of scenarios based on different economic climates. An example she gave was whether geothermal energy could have the same long-term sustainability of diesel fuel. "While geothermal energy is expensive up front," Kolker said, "It does pay for itself in the long run."

While economics plays a role in the future of mass geothermal development, some corporations are not waiting around. Kolker, who is working as a consultant, says the field is growing fast and is becoming more lucrative. After attending a geothermal conference in Nevada, Kolker said it is obvious that the study needs more recruits to meet the demands of this growing vocation.

"UAF is forming a geothermal group which includes geologists and engineers and it would be great to include some economists as well...we need more students in the field."



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Avian Influenza: Entering the Digital Side of the Lab

by Falk Huettmann PhD, Assistant Professor, EWHALE lab -- Biology and Wildlife Department, Institute of Arctic Biology

Despite media attention, Avian Influenza (AI) is not well understood. If AI is as dangerous as widely assumed, it represents a dramatic threat, certainly for North America. Preparedness and investigation are key issues. In-time AI monitoring, detection and response have been enhanced with the help of digital and online resources. But by moving into the digital world of field and lab data, complexities enter the scene that are often difficult to foresee, which can be tricky to master on (e.g. science, fieldwork, employment, local community and infrastructure, research permits, data and software, funding and underlying business model)



Falk Huettmann at the Khingansky State Nature Reserve for AI investigations with UAF in the Amur region, Russian Far East.
~Photo courtesy of Falk Huettmann

If pathogenic AI entered the U.S. it would likely arrive via Alaska from China running through adjacent Russia. Our CEIRS (Center of Excellence for Influenza Research and Surveillance) team at UAF, were able to link ongoing AI study efforts in Alaska and North America with survey work in the Russian Far East. Surveying for AI sounds easier than it might appear: Neither the dispersal patterns, nor migration timing and locations of birds in the Russian Far East are well studied, or described in peer-reviewed literature. Beyond basic biology, in many instances, the exact taxonomy and subspecies distribution remains widely unknown. However, it is approximately known which species enter Alaska from Russia and Asia.

Landscape, infrastructure, political and international complications apart, our work resulted for the first time in a three-year seasonal data set collected with a consistent protocol that allows us to shed light on migration patterns, and AI dispersal, for over 150 species. Elsewhere, AI was found traditionally in

waterfowl; whereas passerines tend to give a low return of the survey investment (< 1 recovery for 1000 birds banded). In our work, we found that passerines migrating through Northern China, and specifically Japan, can actually yield in high bird band recovery rates (up to 15%). Based on the Russian and Japanese Bird Banding Centers, we just started to compile a unique set of recoveries allowing us to understand, and forecast, migration routes and timing related to AI. Further, we found that gulls and ducks related to Alaska carry in Russian Far East several subtypes of AI, and we now search intensively for genetic AI sequences. Most of the actual AI samples still are either in the labs (campaign 2007), or just got shipped for detailed work-up (campaign 2008). We hope to have at least 5 years of AI-related data, and currently work on analysis and publications of our findings involving students and all collaborators. Due to our close Russian and Japanese collaborations we are in the unique position now to mine for specific locations in the vast study area that have been described in the local grey literature to carry AI in the recent history.

A special aspect of our AI work are the digital components. This is not only a funding requirement by NIH (National Institutes of Health), but a necessity if we want to inform the global public with high-precision, in-time information regarding this disease event, which could potentially spread quickly and affect millions of human lives. Besides using database and metadata formats linking to BioHealthBase, Genbank, Freezerworks and international data centers and decision-makers, we think that using the 'handhelds' from our CEIRS partners in Los Alamos/UCLA provides us with a highly efficient option for data entry, data delivery, and for being in compliance with policies of many monitoring projects world-wide: Mega Science of the Future. Lessons learned here can be applied globally. For that reason we ran a pilot season at over 8 locations within our 'wild' study area testing the handhelds and their software. It became clear that our handhelds can fully contribute to Global Sensor Networks. They help us further to document data collection via automatic Metadata creation, making all data and findings accessible with the global community. It is our goal to provide a role model for global data collection, and being fully compliant with all standards promoted by NIH and IPY (International Polar Year). We also started to link actual lab work with metadata and online databases towards a consistent data flow model. As a result, we have now designed and implemented a database and dataflow online scheme that is soon on trial nationwide with some of the major hospitals in the nation participating in AI research.

All of this work is possible with our sophisticated team of Russian and AI collaborators on the ground and in the lab. Being able to build such an efficient team is at the core of this project. It helps us to run a complex support infrastructure at UAF, and to schedule, for instance, international flights, shipments and nitrogen containers in Russia for keeping AI samples valid for a genetic sequence analysis in Russia and in our labs in Alaska and UCLA, and also for remaining fully compatible with other CEIRS centers in the nation and elsewhere.



College News & Events

Dr. Sarah Petitto of the Department of Chemistry & Biochemistry holds the \$1,000 travel grant prize, won during CNSM's 2008 fall convocation.



F. Stuart (Terry) Chapin III, Distinguished Professor of the Department of Biology & Wildlife and the Institute of Arctic Biology won The Ecological Society of America sustainability science award for the paper, "Policy Strategies to Address Sustainability of Alaskan Boreal Forests in Response to a Directionally Changing Climate," published in the Proceedings of the National Academy of Sciences in 2006. The paper is part of a series of articles by new members of the National Academy of Sciences. Using Interior boreal forests as a case study, Chapin and a team of ecologists, anthropologists, an economist, a historian and a political scientist merged several different theories to address sustainability and applied this foundation to climate change effects in boreal forests and related policy strategies that emerged from the findings. Co-authors of the paper include Amy L. Lovcraft, UAF Department of Political Science; Erika S. Zavaleta and Joanna Nelson, University of California, Santa Cruz; Martin D. Robards, IAB Resilience and Adaptation Program; Gary P. Kofinas, IAB and UAF School of Natural Resources and Agricultural Sciences; Sarah F. Trainor, IAB; Garry Peterson, McGill University; Henry P. Huntington, Eagle River, Alaska; and Rosamond L. Naylor, Stanford University. The project was funded by the National Science Foundation and the U.S. Department of Agriculture Forest Service Pacific Northwest Research Station.

Dr. Richard L. Collins, Associate Professor of Atmospheric Sciences, Department of Atmospheric Sciences has been invited as faculty opponent for a thesis defense on aerosol and cloud studies using lidar techniques at the University of Gothenburg, Sweden, Department of Chemistry and Atmospheric Science.

Nicole Mölders, Professor of Atmospheric Sciences and Chair of the Department of Atmospheric Sciences, College of Natural Sciences and Mathematics and Geophysical Institute was appointed a member of the Budget and Finance Committee of the American Geophysical Union for the 2008-2010 term.

The Collegiate Cyber Defense Competition in which a UAF team participated is being featured in an upcoming documentary screened at the University of Washington. CNSM's Dr. Brian Hay was a major organizer of the event and is featured in the film.

The UAF TASK program was mentioned in the New York Times in September. The TASK program put STEM graduate students and a few advanced undergraduates (mostly from CNSM) into public school classrooms to enhance science education.

Tom Trainor, Associate Professor of Chemistry, was the recipient of the 2009 Mineralogical Society of America Award. This prestigious award is given once per year to recognize outstanding published contributions to the science of mineralogy by individuals near the beginning of their professional careers.

The American Association for the Advancement of Science (AAAS) Arctic Division and the Alaska Chapter of Sigma Xi honored six people for their contributions to arctic science research, education and outreach at the AAAS Arctic Division's recent annual conference. The conference is one of the nation's largest gatherings of arctic scientists. Sigma Xi is an international professional organization for researchers. The list of the honorees include: Author and UAF professor emeritus **Neil Davis** was honored by AAAS Arctic Division and Sigma Xi for support of arctic science and excellence in bringing science to the public. UAF media relations manager **Carla Browning** was recognized by Sigma Xi for her work communicating and perpetuating arctic science to the public. UAF professor and Alaska Statewide High School Science Symposium director **Gary Laursen** was recognized by AAAS Arctic Division for his service to secondary science, technology, engineering and mathematics students. West Valley High School science teachers **Greg Kahoe** (chemistry teacher) and **Travis Stagg** (physics teacher) were recognized by Sigma Xi for their work preparing their students for the rigors of research. Sigma Xi will also recognize Golden Key International Honour Society District 8 director **Nikki Laird** for her support of graduate students and for linking those students with Sigma Xi.

more...



College News & Events

CNSM Chemistry Professor Tom Clausen has been named director of the Alaska Native Science & Engineering Program (ANSEP).



CNSM Chemistry Professor Tom Clausen demonstrates how to use the Gas Chromatograph with Mass Selective Detector to high school students during National Chemistry Week. The recently acquired instrument is used for separating and identifying the components of volatile complex mixtures. Clausen was also recently named director of ANSEP. ~photo by MADJG

The CNSM Chemistry Department celebrated National Chemistry Week in October. Approximately 50 local high school chemistry students and their parents visited the Department of Chemistry & Biochemistry. Faculty members and UAF students displayed research posters and discussed their projects with the high school students, their parents, and at least one high school chemistry teacher. A display table was set up with information regarding enrollment in the UAF chemistry program for undergraduates. General chemistry text books and advanced course texts were also displayed. Professor Tom Clausen led tours of the nuclear magnetic resonance facility and the gas chromatograph/mass spectroscopy unit for the high school students and their parents. Professor John Keller demonstrated molecular modeling using HyperChem software and Professor Marvin Schulte gave some biochemical demonstrations.

The Computer Science Security curriculum was recertified by the National Security Agency and the Department of Homeland Security and allows UAF to continue to certify students in Information Assurance.

in their own words...

Student Profile: Agatha Light

I attended the CEDAR (Coupling, Energetics and Dynamics of Atmospheric Regions) 2008 Workshop in Midway, Utah in June (I presented a poster), and the PFISR Summer School at MIT's Haystack Observatory in Westford, Massachusetts in July. The purpose of the Poker Flat Incoherent Scatter Radar (PFISR) summer school was to teach students engaged in upper atmospheric research how to design experiments for, and access and analyze data from the new Poker Flat incoherent scatter radar.

Leading ISR scientists from the Millstone Hill facility, SRI International, and Boston University instructed an international group of undergraduate and graduate students on ISR theory, signal processing, data analysis, and the specifics of the PFISR system. One of the primary goals of the workshop was to facilitate a working relationship between students and the ISR staff at SRI, which is leading a collaborative effort in the development of AMISR, under a grant from the NSF.



~ photo courtesy of Agatha Light

After a series of introductory classes, the students were divided into research groups. Each group was allotted two hours of run time on PFISR. They had to decide how PFISR would operate during that time to meet a specific research goal that was determined by the group. The group members also had to familiarize themselves with the possible data outputs of PFISR made available by SRI International and find which datasets would help them achieve their research goal.

The students also learned how to use Madrigal, an open-source database used to share data from a variety of upper atmosphere research instruments, to access their data. These sessions stretched into the late afternoon, with students from around the world sharing their knowledge. On the last day of the workshop each group presented their findings to the other students and instructors. The instructors were impressed to find that each group had analyzed their data differently, each one exploring a different ability of PFISR. Some presentations even included comparisons to model ionospheres.

The workshop was an excellent educational experience. Not only did I learn useful information that will aid in my research, but I also got to meet and network with students and researchers engaged in similar research from around the world.

A Farewell to Dean Joan Braddock

by Aldona Jonaitis, Director, UA Museum of the North

Joan Braddock is a remarkable person. She is a wonderful scientist, exceptional administrator, excellent role model and a true friend. She can fly an airplane, identify fine wines by taste, and loves her dog so much that her license plate reads "Smoky." (Actually, this charming lab mix is called Smoki, but that license plate name was already taken). She is one of the most generous people I know. She is a life-long Alaskan, who grew up in Fairbanks and summered in a cabin at Lake Minchumina. In 1981 she met Doug Braddock, at the time also attending Michigan State University. Mutual friends introduced Joan and Doug because Doug had visited Alaska several times and love blossomed over breakfasts at the graduate dorm cafeteria. They married in 1983. Recently this wonderful couple celebrated their 25th wedding anniversary.

Joan attended UAF for both her undergraduate and graduate studies, receiving her Ph.D. from the School of Fisheries and Ocean Sciences. Her dissertation had been on aquatic microorganisms, so when a teaching job in microbiology in the Department of Biology and Wildlife was advertised, she applied. In 1990, she was the only tenure-track woman in that department as well as in the Institute of Arctic Biology.

At that time she was the sole woman in a faculty of 28 men. This was a new experience for her because during her graduate studies, there were about an even number of male and female students. At her first faculty meeting, Joan looked around and realized her unique position. She learned a great deal about being a woman in a man's world during those beginning years of her career.

By 1996 when she became a tenured Associate professor, one more woman had joined the tenure track faculty (today the department has 12 women and 24 men.) Throughout this time, Joan published widely in microbiology, earning the respect and admiration of her colleagues at the university and throughout her field. In addition, she was a dedicated teacher, a devoted mentor, and an inspiration for young women scientists. Joan accepted a two-year appointment in 1999 as Department Chair and Coordinator of the Graduate Program, beginning her brilliant career as an administrator. Her term as Chair was up in 2001 (when she was promoted to Professor), but by 2002, she was once again called upon to utilize her management skills as Associate Director, Institute of Arctic Biology. Then, when the Dean of her college, David Woodall, left suddenly in 2003, Paul Reichardt wisely appointed

Joan as Interim Dean. Joan did this job so well, and managed to gain the trust of the entire college (no simple feat, to be sure!), that Paul directly appointed her Dean. This was greeted with universal enthusiasm. For many years Joan and I were neighbors. We share both a love of animals as well as a need for exercise, so every weekday morning we met at 6:10 to walk our dogs. Our conversations ranged from food, fashion and wine to administrative situations and personnel concerns. It might have been hard to wake up so early, especially in the winter, but knowing that Joan and I would have a good conversation inspired me every day. During these walks, I learned so much about Joan, and my fondness for her deepened. She is profoundly caring with enormous compassion, completely dedicated to her staff, her students and her colleagues. When confronted with a problem, she looks at it from as many different perspectives as possible, working hard to be fair – something that is difficult in the complexities of a university. A very impressive quality Joan has is her ability to separate her professional life from her friendships. She simply will not make serious decisions based on her personal feelings. I admire her especially for the honesty and integrity that form the solid basis of her professional life.



Those who know Joan only as a scientist or an administrator have no idea of how rich a life she leads – she is a true Renaissance woman. She is a scientist who has a deep understanding of the arts, and attends many performances, visits galleries, and reads enthusiastically.

She is a talented gardener. She loves to travel around the state in her Roadtrek camper van piled with camping gear and dogs, as well as to exotic places like Kashgar, China and Hanoi, Vietnam.

For some people, their job is their life. For others, their job is one part of their life, albeit a very important part. Joan falls into the second category. On our morning walks, we speculated on what we might do when we left our respective jobs – there was a lot to imagine, and it all sounded good. More time with our friends and family! More travel! More fun with the animals! More books to read! More concerts to attend! More good meals with fine wine! The temptations got greater and greater, and one day we discovered we'd both made the decision to embark on the next phase of our lives, retirement. We were thrilled, and have never regretted the decision. The University has not quite let Joan go. After she retires from her position as Dean of the College of Natural Sciences and Mathematics on January 31, 2009, she'll serve part time as Interim Director of the UA Press, a position she accepted last month. Chances are she'll never really be left alone. People will always need her help. She'll always be part of UAF.



Do you have a story idea or interesting research to tell us about?
Contact the CNSM office of information to tell us about it.
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Alaska Quaternary Center

still rocks after 25 years!

by Nancy H. Bigelow, AQC Director

Since its formation in the early 1980s, the Alaska Quaternary Center (AQC) has been a magnet for students and researchers interested in the past two million years of Earth's history (the Quaternary period). With a particular focus on the North, the AQC's two-part mission is to promote Quaternary research through its invited speaker series (about 75 visitors since the early 1980s) and to support students through annual travel grants (about \$12,000 to 30 students since 1990) and research fellowships (about \$6000 to four students since 2005).

Our students represent the future of Quaternary science; their work is highly interdisciplinary and highly relevant to climate change because Quaternary research provides the framework for assessing the potential impacts of future change.

This year's travel grant winners attended national meetings and presented research on topics as diverse as archeology in northwest Alaska and human resiliency to past climate change, identification of buried glacial ice in the Matanuska Valley and the extent it survived previous warm periods, and the reconstruction of late Quaternary climate in southwest Alaska and the potential sensitivity of local climate to future change.



Hayley Lanier, this year's Hopkins research fellowship winner, is studying the Alaskan history of pikas, an alpine-dwelling small relative of the rabbit. Using DNA analyses she will determine whether pikas are recent arrivals and assess how closely related they are to Siberian and other North American species. Understanding pika history is critical because they are bell-weather of climate change and may reflect the overall health of alpine communities.

The AQC's speaker series invites nationally recognized experts in Quaternary science to give talks, visit with colleagues, and interact with students. This year's speakers include:

David Montgomery (November, 2008) a recent winner of a MacArthur award, is a geomorphologist interested in human impacts on the landscape.

Thomas McGovern (late February, 2009) is an archaeologist interested in human/environment interactions in Medieval Iceland.

Mary Edwards (March or April, 2009) is a paleoecologist focusing on vegetation/climate interactions during the late Quaternary.

Please visit

<http://www.uaf.edu/aqc>

follow the links for up-to-date information on the visiting speaker series and on student opportunities.



...Like a Rolling Stone

Math Professor John Gimbel takes a break from a math conference in Soderborg, Denmark by playing hamster inside a two-ton wheel cut from stone. The wheel, lubricated by water, turns by hand or by running inside. Also pictured is Stephan Brandt of Germany.

~photo courtesy of John Gimbel

Official Welcome to Interim Dean Dr. Paul W. Layer



Dr. Paul W. Layer is a Professor of Geophysics with the Geophysical Institute and Department of Geology and Geophysics.

He received a B.S. (1981) in Geology from Michigan State University and his M.S. (1984) and Ph.D. (1986) in Geophysics from Stanford University.

Prior to coming to UAF in 1989, he was a post-doctoral fellow in the Department of Physics at the University of Toronto. Dr. Layer's research area has focused on applying radiometric dating using the $40\text{Ar}/39\text{Ar}$ method to a number of geologic problems in Alaska, Mexico, Russia and elsewhere. Currently he and his students are investigating the age and uplift history of the Alaska Range, and on the timing of volcanism in the Mexico City area over the last 5 million years.

He has collaborated with researchers at UAF and other universities and with the Alaska Division of Geological and Geophysical Surveys, the United States Geologic Survey, and private mining companies and geological consulting firms. He has taught introductory geology, upper division-level geostatistics and graduate-level geochronology and has mentored M.S. and Ph.D. students.

He has served as department chair of the Department of Geology and Geophysics for nine years, president of the UAF Faculty Senate, and on numerous university-wide committees.



Natalie Monacci
Chemistry Stock Clerk



Dr. Chung-Sang Ng
Associate Professor of Physics



Sandra Jefko, Physics
Administrative Assistant



Robin Weinant
ANSEP Administrative Assistant



Connie Huizenga, Computer Science
Administrative Assistant



Kayley Moen, Dean's Office
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Matt Hutter, Dean's Office
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The poster features a smiling woman in a green jacket holding a bright orange crab. The background is a dark, textured surface, possibly a rock or a cave wall.

SCIENCE POTPOURRI '09



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