A hot summer for glaciologists

plus

• Stable isotopes and food
• Fun science for kids in Nome
• How to buy a new AIL microprobe
Welcome to the Fall 2012 newsletter. As we begin another academic year, it is my pleasure to welcome many new faculty and staff to CNSM. Welcome also to our new graduate and undergraduate students. We have an exciting year ahead of us as we are experiencing increased enrollments in many of our programs. Across CNSM, undergraduate majors are up 13% over last year. We are also looking forward to moving into the new Life Sciences Facility in the late spring.

Last year saw the graduation of 32 MS and 25 PhDs from CNSM! This number of PhDs was half of the UAF total, which for the first time, pushed us to the 50 PhD mark, significant for various research university classifications. As our programs grow, and other doctorate programs come on line, I expect our numbers to increase. In this newsletter are the names and projects for our doctoral graduates. Congratulations to each of them and to our MS and BS graduates.

Our faculty continue to excel. Last spring, Professor Sergei Avdonin of the Department of Mathematics and Statistics (DMS) received the Usibelli Award for Research Excellence. Also from DMS, Professor Elizabeth Allman was selected as a member of the inaugural class of Fellows of the American Mathematical Society. Congratulations to Sergei and Elizabeth. Other faculty achievements are discussed in the department reports; please take a look at those.

This summer, our Girls on Ice, and Alaska Summer Research Academy (ASRA) had successful years. The Girls on Ice program, under the direction of Assistant Professor Erin Pettit, added an Alaska program with nine girls. The team was led by three of our graduate students, Joanna Young, Barbara Truessel and Marijke Habermann. For ASRA, we have seen a changing of the guard with the retirement of Jeff Drake as the ASRA Director and the departure of Kate Pendleton as the ASRA Coordinator. We welcome the new team of Laura Conner, Director, Tiffany DeRuyter, ASRA and GK-12 Outreach Coordinator and Lori Gildehaus, Administrative Assistant. This past summer saw 46 students at our day program in June and 129 students in our residential program in July. A new program for us was GeoFORCE Alaska, led by Associate Professor Sarah Fowell and UAF Alaska alumnus Peter Flaig. This program is an expansion of one developed by the University of Texas Austin, and brought 16 students from the North Slope Borough for a one-week program looking at the geology of Alaska.

As I reported in the last newsletter, in the upcoming year, we will formalize the creation of the Department of Veterinary Medicine. I am pleased to report that we received some Legislative appropriation to start hiring faculty for the program. This department will manage a new graduate program in Veterinary Medicine that will be a ‘2+2’ program with Colorado State University (CSU). Students will do the first two years of vet school here in Fairbanks, and then the final two years at CSU. This program will provide access for Alaska students looking at careers as Doctors of Veterinary Medicine, and is an exciting collaboration for us.

This past year saw some changes as well. June Champlin retired after 24 years of service to the Department of Geology and Geophysics. I first met June when I was hired as a new Assistant Professor back in 1989, and June was very helpful in guiding me in my days as department chair. Thank you, June, for your dedicated service to the department and to CNSM. In the college, we have been blessed with quality staff who stay with us for long periods of time. It is that continuity that makes the departments run smoothly and makes my job a lot more enjoyable. Thanks to all CNSM staff!

Give us your email to enjoy the next CNSM newsletter online! You will also receive email updates with the latest CNSM news. Help save money and trees by sending your email to mmmurphy3@alaska.edu.
Honor Roll of Donors and Industry Partnerships

We’d like to take this opportunity to publicly thank donors and industry partners of the College of Natural Science and Mathematics. Through contributions or hands-on involvement, they have joined with the college to support our commitment to academic excellence, research and service.

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.

We wish to thank the following donors and partners:

**CORPORATIONS/COMPANIES**
- Alyeska Pipeline Service Company
- Alzheimer’s Disease Resource Agency of Alaska, Inc.
- American Chemical Society
- ConocoPhillips Alaska, Inc.
- Eli Lilly and Company Foundation
- Fairbanks Memorial Hospital
- Golden Valley Electric Association, Inc.
- Kinder Morgan Foundation
- Panco, Inc.
- Teck Limited
- The Boeing Company
- United Way of the Tanana Valley

**INDIVIDUALS**
- Robert Alexander and Becky Stemper
- Sue Broadston
- Nellie Brown
- Brian and Amber Brubaker
- Cathy Cahill and Gregory Walker
- Terry and Mimi Chapin
- Dwain and Joan Davies
- Robert and Karen Day
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- Caroline Nguyen
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- Frank Parr
- Randolph and Sara Phillips
- Aqa Qaderi
- L.J. and Christine Rowinski
- James Schauer
- Rich and Patricia Seifert
- Katherine Simpson
- Robin and Mike Smith
- Emelia Van Wyhe
- George Wang
- Jesse White
- Debi-Lee Wilkinson
- Jerry and Barbara Zelenka

**NEW FACULTY**
- Peter Delamere, Associate Professor of Space Physics
- Cheryl Frye, Professor of Neuroscience and Director, Alaska INBRE
- Cathy Hanks, Associate Professor of Geology
- Tamara Harms, Assistant Professor of Ecology
- Chris Iceman, Term Instructor of Chemistry
- Jochen Mezger, Term Instructor of Geology/Field Camp Director
- Andrej Podlutsky, Associate Professor of Molecular Biology
- Igor Polyakov, Professor of Atmospheric Sciences
- John Williams, Visiting Assistant Professor of Physics
- Xiangdong Zhang, Professor of Atmospheric Sciences

**WELCOME**
- Tiffany DeRuyter, Alaska Summer Research Academy / Educational Outreach Program Manager
- Carrie Green, Office Manager, Geology & Geophysics
- Libby Miles, Graduate Student Coordinator, Chemistry & Biochemistry
- Tiffany Piser, Administrative Assistant, Dean’s office
- Anupma Prakash, Associate Dean and Director of CNSM Division of Research (DOR)
- Heather Pyland, Travel and Purchasing Coordinator, DOR
- David Robinson, Safety Technician, Biology & Wildlife
- Meghan Murphy, Public Information Officer / Recruitment Coordinator, Dean’s office

**FAREWELL**
- Jeff Drake, Director of Alaska Summer Research Academy
- Kate Pendleton, Public Information Officer / Recruitment Coordinator, Dean’s office
- Karen Quist, Administrative Assistant, Dean’s office
- Vanessa Santana, Grant and Proposal Coordinator, DOR
- Marvin Schulte, Associate Professor of Neurotoxicology and Biochemistry
- Chris Wyatt, Term Instructor of Geology

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Stable Isotopes as Food Markers

By Diana Campbell

Diane O’Brien, a nutritional ecologist, thought it was a no-brainer to use stable isotope signatures to discover what people are eating.

She used these naturally occurring markers frequently to study the diets of butterflies and other bugs. Stable isotopes as food markers are a commonly used tool for ecologists—those who study living things and their relationship with each other and the environment.

But when she presented the idea that stable isotopes could be helpful in Alaska Native health studies to a panel of biomedical advisors during the early days of the Center of Alaska Native Health Research, she was met with resistance.

“They were skeptical,” said O’Brien, a CANHR researcher and professor of biology and wildlife at the University of Alaska Fairbanks.

So O’Brien set out to prove that, indeed, stable isotopes could show what people were eating. Her project, called “Developing a Novel Set of Diet Pattern Biomarkers Based on Staple Isotope Ratios,” began in 2006 and was funded by the National Institutes of Health. She, along with others in her laboratory, identified nitrogen and carbon stable isotope ratios as two markers in subsistence and market foods by working with Yupiit who live in Alaska’s Yukon Kuskokwim Delta.

“Our bodies are made up of different elements, mostly oxygen, carbon, hydrogen, nitrogen, calcium and phosphorus,” O’Brien explained. “Isotopes are atoms of a single element with a slightly different mass, often referred to as ‘heavy’ and ‘light.’”

The ratio of those naturally occurring heavy and light stable isotopes varies in the foods people eat. Certain foods are particularly distinct.

“Atoms from our food become part of our bodies, including both heavy and light isotopes,” she said. “Those distinct isotopes are what we thought would show us what people eat.”

“Currently, scientists ask people what and how much they ate over a time period,” said Andrea Bersamin, the director of CANHR’s Nutrition and Physical Activity Core.

The tool, called a food recall, can provide researchers with a lot of information about food and its relationship to health, but it’s time consuming, expensive and tedious. It’s not completely accurate either, as it depends on people’s memories and their willingness to admit to everything they ate for a midnight snack, Bersamin noted.

O’Brien’s challenge then was to show that measuring stable isotopes could provide dietary information that was reliable and useful to health research. To begin, O’Brien and her team analyzed 280 subsistence and market foods, which Bersamin had identified as important to Yupiit, for their stable isotope signatures.

O’Brien found that the nitrogen isotope ratio was very high in marine foods, such as fish and seals, while the carbon isotope ratio was high in market foods because of corn. Corn is used as a sweetener in sugary drinks, feed for livestock and has a particularly high carbon isotope ratio.

She then tested blood and hair samples of 68 Yupiit living in Southwestern Alaska for these and other stable isotope markers. She and her team compared the findings with information from four food recalls given to the 68 participants to see how well they captured actual diets.

“We were able to confirm our suspicions that stable isotopes were great dietary markers of fish and corn-based sweeteners,” said Sarah Nash, a UAF PhD candidate who works with O’Brien.

The team then used the stable isotope ratios to study how diet varies in the Yupiit.

“We confirmed that intake of traditional foods increased with age, and intake of market foods decreased with age,” she said, “the stable isotopes show this pattern very strongly.”

Those Yupiit who said they were traditional Yup’ik also had high nitrogen stable isotope ratios, Nash said.

In this way, stable isotopes can be an indicator of cultural practice, O’Brien said. In her previous life as a bug scientist, diets tended to be simple. Not so with human diets, which are complicated by food availability, preference and social practice.

“There is a strong cultural

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**Definitions**

**Stable isotopes** are atoms of a single element with a slightly different mass, often referred to as ‘heavy’ and ‘light.’ The slight differences are due to the number of neutrons in the atom’s nuclei. They are termed stable because they do not decay spontaneously.

**Unstable isotopes** are atoms of a single element with slightly different mass but are deemed unstable because they either have too many or too few neutrons in their atom’s nuclei. They are radioactive and decay.

**Isotope ratio** is the balance of the heavy and light stable isotopes. This balance is used as a measurement.

**Food recall** is a survey in which a certified interviewer asks a participant about the kind of food and how much he/she has eaten over a 24-hour period. The information can be used in nutritional studies or to help the participant understand what nutrients may be lacking in his/her diet.

**Yupiit** is the plural of Yup’ik.
relationship to food,” O’Brien said. “When you’re measuring stable isotopes, you are measuring cultural practices.”

CANHR’s scientists are eager to use O’Brien’s stable isotopes, given the known health benefits of eating fish.

“Diane’s findings offer many possibilities,” Bersamin said. “Using natural stable isotopes as food markers could save a lot of time and money as they are an accurate measure of fish consumption.”

Glaciology Events Attract Glaciologists From Around the World

By Regine Hock, Professor of Geophysics

This was a hot summer for UAF’s glaciologists! UAF’s glaciology group held the second International Summer School in Glaciology from June 10–20, 2012. The tiny village of McCarthy at the tongue of Kennicott Glacier in the Wrangell Mountains provided an ideal setting for the ten-day intense course. Students gained a comprehensive overview of the physics of glaciers and current research frontiers in glaciology through formal lectures, group work, advised projects, glacier excursions and interactions with nine instructors from UAF and outside Alaska. The course was attended by 27 graduate students from a dozen countries including Argentina, Australia, Austria, Belgium, Brazil, Canada, Denmark, France, Germany, and the United Kingdom.

Mosquito-bitten, but glaciologically better informed, many of the students then attended the Annual Symposium of the International Glaciological Society which was hosted by UAF only a few days later. With 270 participants from around the world, attendance exceeded all expectations. More than 80 oral presentations and almost 200 poster presentations centered around the symposium’s theme “Glaciers and ice sheets in a warming climate.” Many presentations addressed the widespread retreat and thinning of glaciers in Alaska and other regions in the world as well as the direct implications for sea-level rise and streamflow.

In addition to professional exchanges, the symposium provided ample opportunity for social interactions outside of the lecture hall. A banquet was held on the Riverboat Discovery and a barbeque at the UA Museum of the North. Halfway through the conference, participants could choose between different afternoon excursions in the vicinity of Fairbanks including Chena Hot Springs, the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) permafrost tunnel, gold-panning and a visit to Poker Flat Research Range. About 40 participants went on a two-day pre-exursion to Denali National Park, while more than 50 glaciologists joined a four-day excursion to Valdez including a boat trip to Columbia and Meares Glacier after the symposium concluded.

On the Web: http://canhr.uaf.edu

Diane O’Brien is an Associate Professor of Biology in the Dept. of Biology & Wildlife, CNSM with a joint appointment with the Center for Alaska Native Health Research (CANHR), Institute of Arctic Biology. Diana Campbell is CANHR’s communication specialist and a tribal member of the Native Village of Venetie. CANHR is part of UAF’s Institute of Arctic Biology and largely funded by NIH’s National Institute of General Medical Sciences.
Spectroscopic Mapping in Real Life

By Anupma Prakash, Professor of Geophysics

On August 31, 2012, the College of Natural Science and Mathematics (CNSM) and the Geophysical Institute (GI) co-hosted a talk entitled “Application of imaging spectroscopy to mapping the Deepwater Horizon oil spill and terrestrial and planetary mineral mapping” given by well-known researchers Roger Clark and Gregg Swaze of the US Geological Survey Spectroscopy Lab (http://speclab.cr.usgs.gov/). The speakers began by explaining the principles of spectroscopy, then showed several spectacular applications of imaging spectroscopy for mapping surface lithology, vegetation species, bear habitats, glacial ice, and geothermal systems, and for locating minerals on Earth and on other planets. They presented a detailed case study of the Deepwater Horizon oil spill, explaining how imaging spectroscopy provided estimates of the quantity of oil spilled, and how the technique can save millions of dollars in future response operations by providing the location, extent, volume, and nature of oil involved in an accident. The talk was attended by administrators, faculty, staff, students, and representatives from the Alaska Division of Geological and Geophysical Surveys and the Alaska Department of Environmental Conservation.

For more information on their collaborative research in Alaska, contact Tom Trainor (tptrainor@alaska.edu) or Anupma Prakash (prakash@gi.alaska.edu).

Congratulations, 2012 CNSM PhD Recipients!

Eric Adamson, PhD, Space Physics
**Thesis:** Magnetohydrodynamic Simulations of Plasma Dynamics in the Magnetospheric Cusp Region. **Major Professor:** Antonius Otto

Michael Anderson, PhD, Biological Sciences: Biology
**Thesis:** Sources of Variation in the Symbiotic Association between Alnus and Frankinia in Interior Alaska. **Major Professors:** Roger Ruess and Donald Taylor

Jessica Coltrane, PhD, Biological Sciences: Wildlife Biology
**Thesis:** Ecological and Physiological Adaptations of the Porcupine to Winter in Alaska. **Major Professors:** Peregrine Barboza and Donald Spalink

Maegan Daniello-Weltzin, PhD, Biochemistry/Molecular Biology
**Thesis:** Investigation of the AllostERIC Modulators Desformylflustrabromine and 4-(2-hydroxyethyl)-1-Piperazineethanesulfonic Acid (hepes) interactions. **Major Professor:** Marvin Schulte

Matthew Druckenmiller, PhD, Geophysics
**Thesis:** Alaska Shorefast Ice: Interfacing Geophysics with Local Sea Ice Knowledge and Use. **Major Professor:** Hajo Eicken

Julie Elliott, PhD, Geophysics
**Thesis:** Active Tectonics in Southern Alaska and the Role of the Yakutat Block Contrasted by GPS Measurements. **Major Professor:** Jeffrey Freymueller

Oceana Francis, PhD, Atmospheric Sciences
**Thesis:** Atmospheric Forcing of Wave States in the Southeast Chukchi Sea. **Major Professor:** Uma Bhatt

Heather Huson, PhD, Molecular Genetics: Interdisciplinary Program
**Thesis:** Genetic Ancestry Modeling and Performance Association in the Alaskan Sled Dog. **Major Professor:** Jonathan Runstadler

Kyle Joly, PhD, Biological Sciences: Wildlife Biology
**Thesis:** Winter Range Studies of the Western Arctic Caribou Herd, Northwest Alaska. **Major Professors:** T. Scott Rupp and F. Stuart Chapin III

Katrina Knott, PhD, Biological Sciences: Biology
**Thesis:** Contaminant Exposure and Associated Biological Responses in Southern Beaufort Sea Polar Bears. **Major Professor:** Todd O’Hara

Trixi Lee, PhD, Biology Sciences: Biology
**Thesis:** Expression and Mechanisms of Hibernation in the Arctic: The Alaska Marmot and Arctic Ground Squirrel. **Major Professors:** Diane M. O’Brien and C. Loren Buck

Karen Mager, PhD, Biological Sciences: Wildlife Biology
**Thesis:** Population Structure and Hybridization of Alaskan Caribou and Reindeer: Integrating Genetics and Local Knowledge. **Major Professor:** Kris J. Hundertmark

Irina Mueller, PhD, Biochemistry/Molecular Biology
**Thesis:** The Effect of Mitochondrial Ultrastructure on Function and Thermal Tolerance in Antarctic Nototenioid Fishes. **Major Professor:** Kristin M. O’Brien

Marc Mueller-Stoffels, PhD, Physics
**Thesis:** Reversibility of Arctic Sea Ice Retreat — A Conceptual Multi-Scale Modeling Approach. **Major Professor:** Renate Wackerbauer

Lola Oliver, PhD, Geology
**Thesis:** Characterization of Permafrost Development by Isotopic and Chemical Analysis of Soil Cores Taken From the Copper River Basin and an Upland Loess Deposit in Interior Alaska. **Major Professor:** Vladimir Romanovsky

Santosh Panda, PhD, Geology
**Thesis:** Permafrost Distribution Mapping and Temperature Modeling Along the Alaska Highway Corridor, Interior Alaska. **Major Professor:** Anupma Prakash

Peter Rinkleff, PhD, Geology
**Thesis:** Transport and Formation Processes For Fine Airborne Ash From Three Recent Volcanic Eruptions in Alaska: Implications For Detection Methods and Tracking Models. **Major Professors:** Catherine F. Cahill and Jonathan Dehn

Jennifer Roach, PhD, Biological Sciences: Biology
**Thesis:** Lake Area Change in Alaskan National Wildlife Refuges: Magnitude, Mechanisms, and Heterogeneity. **Major Professor:** Brad Griffith

Maciej Sliwinski, PhD, Geology
**Thesis:** Geochronology of the Late Devonian “Punctata” Event in the Western Canada Sedimentary Basin. **Major Professors:** Michael T. Whalen and Rainer J. Newberry

John Styers, PhD, Computational Aurora Studies: Interdisciplinary Studies
**Thesis:** An Interdisciplinary Computational Study of Magnetosphere-Ionosphere Coupling and its Visual and Thermal Impact in the Auroral Region. **Major Professor:** Gregory Newby

Kenneth Tape, PhD, Biological Sciences
**Thesis:** Arctic Alaskan Shrub Growth, Distribution, and Relationships to Landscape Processes and Climate During the 20th Century. **Major Professors:** Roger W. Ruess and Jeffrey Welker

Caroline Van Hemert, PhD, Biological Sciences: Wildlife Biology
**Thesis:** Ecological and Physiological Adaptation of the Alaskan Sled Dog. **Major Professors:** Todd O’Hara and Diane M. O’Brien

Robert Wilson, PhD, Biological Sciences: Biology
**Thesis:** Genetic and Phenotypic Divergence Within and Between Cinnamon Teal (Anas Cynoptera) and Blue-Winged Teal (A. Discors). **Major Professor:** Kevin McCracken

Jiang Zhu, PhD, Atmospheric Sciences
**Thesis:** Investigation on Cirrus Clouds by the Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation Data. **Major Professor:** Kenneth Sassen
It Isn’t Easy to Spend a Million Dollars Wisely

By Ken Severin, Advanced Instrumentation Laboratory Director

In September 2011 (gee, that long ago?), the Natural Science Foundation (NSF) awarded UAF a bit over a million dollars for the replacement of the Advanced Instrumentation Laboratory’s (AIL) electron microprobe. The group on the proposal includes Jim Beget, Rainer Newberry, Jessica Larsen, Elisabeth Nadin, Pavel Izbekov, and me, all with the Department of Geology and Geophysics or the Geophysical Institute. And although they weren’t formally on the proposal, Mary Keskinen (Geology and Geophysics), Karen Spaleta (AIL-ICPMS guru) and PhD students (and potential microprobe geeks) Sarah Henton De Angelis and Owen Neill contributed a huge amount to the writing and final instrument selection.

The terms of the proposal included significant matching funds which were provided by the Vice Chancellor for Research, the Geophysical Institute, CNSM, and AIL.

With only two vendors, you might think that it would be pretty easy to make a choice. WRONG! Part of it is history (AIL’s existing microprobe is a Cameca, and it is hard to change suppliers), and part of it is that, while JEOL and Cameca both make excellent instruments overall, there are subtle differences in the way the instruments (and companies) operate. And probably worst of all, this is a bunch of money, and ultimately I am responsible for the purchase, helped us turn out a solid request for quotes, and made sure we didn’t run afoul of any of the dreaded “rules” (hey, we’re PhD scientists, we know what is going on). Although we didn’t always enjoy having to follow the rules, overall I’m pretty sure they helped us squeeze every last dime out of the vendors.

What is an “electron microprobe?” It is an instrument that bombards a solid sample with a micron-sized beam of electrons in order to produce x-rays that give the elemental composition of the sample on the micron scale. Meaning you could get about 20 analyses across the width of a typical human hair. Over its 20-year life at UAF, the Cameca has provided data that played a significant role in about 20 awarded PhDs and more than 50 awarded MS degrees. Most of them have been in geology (volcanology and economic geology take the crowns), with materials science, quaternary geology, mineral engineering, fisheries biology, and anthropology also represented.

What will the new microprobe, a JEOL JXA-8530F, let us do that we couldn’t do before? Improved electronics will let me spend less time fixing it, but probably more importantly, we will be able to analyze smaller areas and have even greater instrument sensitivity than before. This improved sensitivity can be used for either more rapid analysis (transects across an otolith in 10 minutes instead of an hour) or looking for the invisible gold (really) that keeps the Pogo Mine going.

We are looking forward to delivery of the new beast in March 2013 and, if things go as planned, it should be operational by this summer. It will be installed in 156A Reichardt.

For detailed information on sample requirements and capabilities, contact Ken Severin, kpseverin@alaska.edu, 5821, or visit the AIL website: www.uaf.edu/ail.

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2012 CNSM Master’s Degree Recipients

- Spencer Audie, MS, Biology
- Odille Bastille, MS, Mathematics
- Matthew Campbell, MS, Biology
- Amber Churchill, MS, Biology
- Dyre Oliver Dammann, MS, Atmospheric Science
- Daniella Della-Guistina, MS, Physics
- Angela Ekstrand, MS, Geophysics
- Louise Farquharson, MS, Geology
- Todd Fortun, MS, Environmental Chemistry
- Heather Gates, MS, Wildlife Biology
- Spencer Giles, MS, Chemistry
- Daniel Glass, MS, Biology
- Laura Gutierrez, MS, Biology
- Brooke Hill, MS, Wildlife Biology
- Mary Hogan, MS, Biochemistry/Molecular Biology
- Austin Johnson, MS, Geophysics
- Patrick Joyce, MS, Environmental Chemistry
- Tania Lewis, MS, Wildlife Biology
- John Mayfield, Jr., MS, Atmospheric Science
- Paula Dubrawa Moriera, MS, Atmospheric Science
- Stephanie Mrozek, MS, Geology: Economic
- Jonathan Nigg, MS, Chemistry
- Mitali Patil, MS, Biochemistry
- David Roon, MS, Biology
- Jozef Slowik, MS, Biology
- Lisa Smith, MS, Molecular Mechanisms of Infectious Disease: Interdisciplinary Studies
- Kevin Stack, MS, Geology
- Srikamal Soundararajan, MS, Physics
- Jean Talbot, MS, Atmospheric Science
- Ashley Wallace, MS, Environmental Chemistry
- Patrick Wallace, MS, Physics
Chemistry Learning Center

The Department of Chemistry & Biochemistry is proud to announce that the Chemistry Learning Center (CLC) is now up and running. The CLC was created to address a growing concern. General chemistry is traditionally a very difficult course. This is not only the case at UAF, but nationwide as well. That being said, chemistry is a fundamental science and general chemistry is a required class for several majors. So, the question was, “How do we increase student success without compromising the integrity of the class?”

The purpose of the CLC is to do just that: increase student success while maintaining the integrity of the course. There are two strategies used to achieve this goal. The first strategy is one-on-one coaching. This is basically tutoring. Undergraduate coaches and teaching assistants (TAs) meet with students to help them gain a better understanding of the material and increased confidence in their abilities. However, ultimately, it is up to the student to use what they learn when it is time to perform. That is why we have chosen to use the term ‘coaching’.

The second strategy is Supplemental Instruction (SI). In SI, students meet for regularly scheduled sessions to review and digest the material that was presented in lecture. The sessions are led by an undergraduate student who was previously successful in general chemistry. These leaders come to the sessions with a plan and keep everyone focused and on-task. SI is free to all students enrolled in the class, voluntary and anonymous. Currently, only Chem 105 is supported with SI. However, we are planning to expand it to include Chem 106 in Spring 2013 and we would love to see it expanded further in the future.

For more information on the CLC, please visit our website at www.uaf.edu/chem/clc/. Or feel free to contact Jacy Pietsch at 474-6287, jpietsch@alaska.edu.

CNSM Student Travel Grant Recipients

- **Lori Bogren**, CHEM, 2012 International Hibernation Symposium, Semmering Austria
- **Kevin Colson**, BWL, Field Research, Glacier Bay National Park AK
- **Heather Craig**, BWL, North American Ornithological Conference, Vancouver BC
- **Gregory Deemer**, ATM, NOAA’s 37th Climate Diagnostics and Prediction Workshop, Ft. Collins CO
- **Nilesh Dixit**, GEO, American Geophysical Union, San Francisco CA
- **Dashelle Feierabend**, BWL, Alaska Chapter of the Wildlife Society Annual Conference, Anchorage AK
- **Rachel Frohman**, GEO, American Geophysical Union, San Francisco CA
- **Emily Garrett**, BWL/SNRA, Alaska Chapter of the Wildlife Society Annual Conference, Anchorage AK
- **Breanne Gilbert**, BWL, Alaska Bird Conference, Anchorage AK
- **Elizabeth Goldsmith**, BWL, Rabies in the Americas Conference, San Paulo Brazil
- **Matthew Gruber**, ATM, American Geophysical Union, San Francisco CA
- **Moriah Hunstiger**, CHEM, American Chemical Society Rocky Mountain Regional Meeting 2012, Westminster CO
- **Eric Hutton**, GEO, Annual American Association of Petroleum Geologists Conference, Long Beach CA
- **Kim Jochum**, BWL, Pathways to Success Conference 2012: Integrating Human Dimensions into Fisheries & Wildlife Management, Breckenridge CO
- **Sara Johansen**, BWL, Society for Neuroscience Conference 2012, New Orleans LA
- **Ketsiri Leelasakultum**, ATM, 11th Annual Community Modeling & Analysis System Conference, Chapel Hill NC
- **Terilyn Lawson**, CHEM, American Chemical Society Rocky Mountain Regional Meeting 2012, Westminster CO
- **Hirotsugu Mori**, GEO, Society of Vertebrate Paleontology Annual Meeting, Raleigh NC
- **Bryan Mosher**, BWL, Society for Neuroscience Conference 2012, New Orleans LA
- **Keith Oster**, BWL, Alaska Chapter of the Wildlife Society Annual Conference, Anchorage AK
- **David Podrasky**, GEO, Meeting of Northwest Glaciologists 2012, Seattle WA
- **Canrong Qiu**, CHEM, Advanced Photon Source - Argonne National Lab, Chicago IL
- **Alec Rizzo**, GEO, American Geophysical Union, San Francisco CA
- **Derek Starkenburg**, ATM, American Geophysical Union, San Francisco CA
- **Lila Tauer**, BWL, North American Ornithological Conference, Vancouver BC
- **Paul Tschida**, CHEM, American Chemical Society Rocky Mountain Regional Meeting 2012, Westminster CO
- **Lindsay VanSomeren**, BWL, The Wildlife Society National Conference, Portland OR
Aiming for the Stars
Alaska Interior Medical Education Summit 2012

By Carolyn Chapin, Biology and Wildlife Academic Advising Coordinator

The inaugural Alaska Interior Medical Education Summit (AIMES), held in October was a stellar success! Opening comments by Dean Paul Layer and Mike Powers, CEO of Fairbanks Memorial Hospital, provided a glimpse of current health care trends and demands to over 150 participants. With the increasing demand for health care professionals of all levels, AIMES provided high school and college students an opportunity to explore several dozen choices for careers and education in health-related fields.

Students chose one of seven break-out sessions each hour, covering topics from writing a personal statement for medical school to volunteer experiences. Panel discussions, hands-on activities and small group discussions provided a variety of interactions for students with health care providers and educators from Fairbanks to Boston. Practitioner panels provided a general overview of careers while small group discussions helped students with specific questions.

Medical sessions included traditional MD as well as DO, ND, and PA information. UAF’s Community and Technical College (CTC) had two full classrooms — one for nursing careers and education programs, and the other filled with Allied Health opportunities from medical billing to dental hygienist. CTC also provided well-received sessions on EMT, Paramedic Academy, and Fire Sciences programs. UAF Institute of Arctic Biology (IAB) and local veterinarians had a full room of students interested in options for their field as well. The final two rooms for break-out sessions covered nearly a dozen specialties with food for thought for all participants.

This event could not have occurred without the generous support of CNSM Dean’s Office, INBRE, IAB, CTC, and FMH. Class and lab space was provided by CNSM Departments of Physics and Geology & Geophysics. Also grateful for the coordination and planning assistance from CTC — Christa Bartlett, Jenifer Filotei, Wendy Johnson, Vaughan Hoefler, Cathy Winfree, Shirley LaForge, Sherry Wolf, and Chuck Kuhns as well as AHEC’s Megan Gooding and UAF Academic Advising Center’s Donald Crocker; from INBRE — Andrea Ferrante, Jack Chen and Cathy Griseto; from CNSM — Hild Peters; from Department of Biology & Wildlife — Sandy Lewis, Deanna Fitzgerald and Jeff Baxter. A huge thank you to all who presented and we hope you will join us again next year. For a full list of vendors and presenters, please see our event website at https://sites.google.com/a/alaska.edu/aimes/ and check back for details in fall 2013 for next year’s event.

ESTES: New Director and New Name

The CNSM grant and proposal office called the Engineering Science and Technology Experimental Station — or ESTES — was established in 2001 within the then College of Science Engineering and Mathematics (CSEM). In the last decade, much has changed. Engineering moved out of CSEM, and the college was re-named the College of Natural Science and Mathematics (CNSM). Consequently, the research foci also changed with less emphasis on engineering and technology, and greater emphasis on disciplinary research in natural science and mathematics, and interdisciplinary research that cuts across several disciplines. It was time for a new name. ESTES transitioned to the new CNSM Division of Research.

In September 2012, Anupma Prakash stepped in as the Director for CNSM Division of Research. Prakash is committed to “provide the best possible service to facilitate the stewardship of funded research and scholarly activities for our faculty, staff, and students”. When questioned on how she would go about this, she said “Slow and Steady!” Anupma Prakash is a Professor in Geophysics (Remote Sensing) at UAF and has a joint appointment between the Geophysical Institute and the Department of Geology and Geophysics within CNSM. She moved to Alaska in 2002. Visit her website www.gi.alaska/profile/anupma-prakash for more information on her teaching, research, and outreach activities at UAF.

In FY12, CNSM Division of Research administered a total of ~45 sponsored activities and grant submissions. These resulted in approximately 8 million dollars in funding (including FY11 awards that came through in FY12, and UA Foundation funds). The division has gotten off to a great start in FY13 with over 20 proposals submitted to federal and state agencies, and four grants already awarded. The largest of these (over 1.2 million dollars) is the National Science Foundation’s Informal Science Education award ‘Project STEAM’, for which Laura Carsten Conner serves as a Principal Investigator. ‘Project STEAM’ is focused on integrating art with science to build science identities among girls in grades (rising) six through eight.

The CNSM Division of Research has its office in Reichardt Building 352.
Education and Public Outreach Updates

New Office of Education and Public Outreach

The CNSM Office of Education and Public Outreach was formally launched in September of 2012. Students, teachers, faculty, and the general public can connect to a number of programs and opportunities through our website, www.uaf.edu/cnsm-outreach. The office hosts a number of K-12 outreach programs, including the Alaska Summer Research Academy (ASrA), directed by Laura Conner, the Girls on Ice program, directed by Erin Pettit, the Alaska Statewide High School Science Symposium (ASHSSS), directed by Abel Bult-Ito, and the annual CNSM Science Potpourri event.

ASrA offers a two-week camp in June for middle school students, and another in July for high school students. We reach about 150 students every summer through hands-on, problem-based learning experiences, many of which are set in a real-world research context. Offering a module through ASrA is a great way to meet the broader impacts component of grants. Contact Laura Conner (lconner@alaska.edu) or program manager Tiffany DeRuyter (tderuyter@alaska.edu) to discuss opportunities.

Girls on Ice is a summer program that exposes girls to science in a wilderness context. This year, Girls on Ice expanded, offering experiences in both the Cascade Mountains and in Alaska. Contact Erin Pettit (pettit@gi.alaska.edu) to volunteer with the program. The Alaska Statewide High School Science Symposium (ASHSSS) is another way for UAF scientists to get involved with high school students. Students work on intensive, individual science projects under the mentorship of a faculty member or graduate student, then go on to compete in the statewide high school science symposium. Contact Abel Bult-Ito to get involved (abultito@alaska.edu).

A newly funded NSF grant, Project STEAM (PIs Laura Conner, Mareca Guthrie, Stephen Pompea of NOAO in Arizona, and Carrie Tzou of UW Bothell), will be launching a Colors of Nature summer academy for girls that explores the connections between art and science. The program will also offer a science café program to the public featuring scientists that use art in their work.

Opportunities for UAF students include Alaska Native Science and Engineering Program (ANSEP), directed by Brian Rasley. ANSEP is focused on creating new professionals in science, engineering and mathematics among indigenous students, although others interested in these subject areas are welcome to join. Contact Brian Rasley (btrasley@alaska.edu) for more information. UAF graduate students can increase their teaching and communication skills through 12-month fellowships offered through the GK-12 CASE program (PIs Laura Conner, Richard Boone and Kevin Winker). Students receive a $30,000 stipend in return for a weekly commitment of 15 hours, which are spent working alongside of K-12 classroom teachers. Contact program manager Tiffany DeRuyter (tderuyter@alaska.edu) for more information.

The office is now offering services to CNSM faculty as well. We can partner with faculty to offer outreach experiences, serve as project evaluator on grants that require an evaluation component, or assist with ideas and writing of the broader impacts section of grant proposals. Contact Laura Conner to learn more about these services.

Outreach to Nome

The Nome Elementary School hosted a UAF Community Science Night on October 26th. Kids and their parents extracted their own DNA, watched planetarium shows, made smoke rings, explored light and sound, and learned about careers in science over the course of the evening. UAF Fairbanks programs represented included the Alaska Summer Research Academy (ASRA), the NASA-funded traveling planetarium program, BioPreP, the NASA-funded Eyes on the Arctic climate change program, and the Globe program. The UAF Northwest campus presented a human skeleton and other hands-on displays, the Bering Land Bridge National Preserve hosted a paleontology “dig,” and members of the Norton Sound Economic Development Corporation (NSED) talked about fishery-related careers. Laura Conner, Ed Moriarty, and former UAF student Jenna Schmidt were featured on KNOM radio to talk up the event and to communicate that science is fun. Over 200 people attended the event.

Presenters included Kyle Campbell, Chris Cannon, Laura Conner, Kevin Davis (NSED), Tiffany DeRuyter, Ian Herriott, Claudia Ihl (Northwest campus), Charlie Lean (NSED), Ed Moriarty (MIT), Jenna Schmidt, Elena Sparrow and Jennifer Thelan (Bering Land Bridge National Preserve).

Ian Herriott, DNA Lab Coordinator with Alaska BioPreP, and Jenna Schmidt, UAF graduate student and former ASRA genetics instructor, do fun science with students at UAF Community Science Night in Nome.
The Northern hemisphere atmospheric circulation has radi-hydrological cycle and reduction of sea ice. They found that and their contributions to the observed intensification of the Arctic-global climate interactions. They investigate changes synoptically. Zhang and his students have been working on the role fall. His research expertise is in regional climate modeling and air-sea interaction. Two grants were recently funded by NSF. One of them is for continuation of his observational Arctic program called Nansen and Amundsen Basins Observational System (NABOS). This funding allows three Arctic cruises in 2013, 2015 and 2017. He currently is looking for a student. A paper led by Polyakov's former DAS MS student Rebecca Legatt appeared in Tellus.

Zhang is teaching ATM644 Synoptic Analysis/Forecasting this fall. His research expertise is in regional climate modeling and synoptic. Zhang and his students have been working on the role of atmospheric dynamics in Arctic climate system changes and Arctic–global climate interactions. They investigate changes in the atmospheric circulation and synoptic weather systems, and their contributions to the observed intensification of the hydrological cycle and reduction of sea ice. They found that the Northern Hemisphere atmospheric circulation has radically changed during recent decades. This change dramatically enhanced the poleward moisture transport and increased the Eurasian precipitation and river discharge into the Arctic Ocean. A paper on these findings has been published in Nature Climate Changes and it received considerable media attention. Zhang and his students also identified intense storm systems over the Arctic Ocean and examined their developing mechanisms and impacts on sea ice and the ocean. The New Scientist magazine and the NASA Earth Observatory interviewed Zhang about the superstorm that occurred over the Arctic Ocean and its potential impacts on the new record low of sea ice this summer.

Uma Bhatt spends her sabbatical in Madrid, Spain for the Academic year 2012-13. She works with D. Mata-Sanchez and R. Garcia at Complutense University Department of Vegetation Science on climate-vegetation links. This research is a great opportunity to study climate links with vegetation in the Boreal Forest and the Iberian Peninsula using climate analysis and downscaling techniques. During her absence, Gerhard Kramm is teaching her ATM645/445 Atmospheric Dynamics class. Bhatt had co-authored two pieces in the Bulletin of the American Meteorological Society (BAMS) annual NOAA-sponsored State of the Climate volume on the atmosphere and on vegetation in the Arctic in 2011. Her student, Peter Bieniek, finished his PhD. He also published the climate divisions paper in July 2012 in J. Applied Meteorology and Climatology. Bieniek took on a post-doc position in the International Arctic Research Center (IARC).

Richard Collins developed and taught ATM101X Weather and Climate of Alaska, a science class for non-science majors in e-delivery format last spring. Offering this class in e-delivery format tripped the enrollment compared to the former face-to-face delivery format, and demand was higher than seats available in the class. Due to the huge student request, DAS offered this class for the first time in fall. Collins also took on the responsibility of an associate directorship of the Geophysical Institute. Please congratulate him when you see him. Collins’ student Brita Irving defended her MS thesis “Rayleigh Lidar Studies of Mesospheric Inversion Layers at Poker Flat Research Range, Ch Tanika, Alaska”. As part of her studies, Irving extended the scope of the current lidar system by a factor of 10 and developed new analysis of lidar and satellite data for understanding the weather of the middle atmosphere. In addition to her academic success, Irving was a member of the UAF women’s hockey team that placed second in nationals in March 2012 (see News Miner story at http://newsminer.com/bookmark/17852009/). As part of the Polar Aeronomy and Radio Science Summer School, Alex Hirzel from Michigan Tech University worked with Collins’ student Cameron Martus on making measurements of noctilucent clouds. Noctilucent clouds are high altitude ice clouds that appear in the polar summer. The students participated in observations at the Lidar Research Laboratory at Poker Flat Research Range. Lidar measurements of the clouds were made during visual displays so that the students could see the clouds that they were measuring from a distance of 80km. These measurements contribute to ongoing studies of the summertime polar atmosphere. The measurements were facilitated by improvements made to the lidar system by Irving as part of her MS thesis.

Javier Fochesatto and his graduate students worked on continuous experiments to determine the turbulent heat fluxes (sensible and latent) as well as water vapor and CO₂ fluxes in the Black Spruce boreal forest that covers semi-continuous permafrost on the UAF campus. About 1.2km across the forest, they also perform large-scale area average sensible heat fluxes to control the model parameterizations using the satellite inputs. This parameterization is the Two-Source Energy Balance Model that is developed in collaboration with Jordi Cristobal, a post-doc in the Geophysical Institute’s Remote Sensing Group. They installed a new eddy-covariance tower in the Caribou Poker Creek Watershed Area on a south-facing mountain slope where the vegetation is composed of aspen and some black spruce. Fochesatto also performed a small experiment over the snow-melt season to obtain initial signatures for a future proposal. He also worked with Watcharee Riouren, a graduate student in the School of Natural Resources and Agricultural Science (SNRAS), and other investigators across the campus, on performing measurements of the energy balance and multi-scale fluxes. He and his graduate students are looking at coherent structures in the canopy flow, improving the QA/QC of turbulent measurements, and developing new algorithms and testing old ones. The goal is to extend...
Nicole Mölders worked on establishing a ship-emission inventory for southeastern Alaska that bases on ship characteristics and their GPS-recorded cruise data. She and her graduate students will use this inventory to examine the impact of ship emissions and the cruise pattern on unsightable accumulation of particles under the inversions in Glacier Bay National Park and various wilderness areas in Southeast Alaska under current and future climate. Mölders and her graduate student Ketsiri Leelasakultum adapted the Environmental Protection Agency (EPA) regulatory model CMAQ for application to the Fairbanks nonattainment area. A private for-profit company (Sierra Research Inc.) now uses this Alaska-adapted version of Community Multiscale Air Quality Modeling System (CMAQ) to perform the simulations for the development of the State Implementation Plan for Fairbanks. Mölders’ student Huy Tran developed a tool that can interpolate mobile measured PM$_{2.5}$-concentrations into the neighborhoods for public spatial air-quality advice. Ted Fatthauer finished his MS degree with a thesis on the relation of pollen and meteorology. He plans to continue his education at UAF for an interdisciplinary PhD under Mölders’ guidance.

Kenneth Sassen continues to remotely sense the clouds and aerosols of the Interior of Alaska at the Arctic Facility for Atmospheric Remote Sensing with the involvement of his students. This facility will also be used in his spring class, ATM666 Atmospheric Remote Sensing, as a unique hands-on teaching aid. His research group concentrates on the analysis of this long-term dataset, as well as on the application of the new generation of NASA satellites in the A-train formation to discover new facets about atmospheric Arctic conditions.

DAS welcomes five new graduate students: Bithi De (advisor Zhang), Abraham Endalamaw (advisor Bolman), Amy Hendricks (advisors Walsh/Saito), Michael Madden and Michael Pirhalla (advisor Mölders).

DAS students were very active in publishing their research. Bieniek, Oceana Francis (Bhatt/Atkinson), Matt Gruber (Fochesatto), Jeannie Talbot (Bhatt), Ketsiri Leelasakultum and Huy Tran (both Mölders) published first authored papers under the guidance of their advisors. DAS students are also otherwise quite successful. Talbot and Leelasakultum won the Alaska Weather Symposium 2012 best student poster and oral presentation awards respectively. Leelasakultum and Huy Tran won the Atmospheric Sciences Graduate Student Publication award. Leelasakultum also won the Atmospheric Sciences Graduate Student Travel Award. Matthew Gruber won a CNSM Student Travel Award. Please congratulate them when you see them. DAS would like to thank the donors who make these awards possible through their donations. These awards mean a lot to the students and make a real difference in their academic lives and professional development. We hope to receive further donations from alumni, faculty, friends, and staff for support of awards in the future.

DAS is proud to announce that Oceana Francis, a 2011 DAS PhD graduate, took a faculty position at the University of Hawaii. Francis is the first DAS graduate to become an assistant professor.

DAS now has a Facebook page. Like us on Facebook to be informed about seminars, parties, the T-shirt competition, award deadlines, publications, defenses, available research or teaching assistantships or other exiting departmental events. DAS is a very active, successful atmospheric sciences department. If you want to be part of a winning team, apply for admission in Alaska’s only Atmospheric Sciences MS and PhD programs here in CNSM at UAF.

**Department of Biology and Wildlife**

By Christa Mulder, Chair and Professor of Biology

We welcomed four new faculty members this semester (and the end of the spring semester)! Jack Chen is a virologist who joins us from Mississippi State University. He is the Deputy Director for the Alaska State Virology lab and will be teaching Virology. Andrea Ferrante is an immunologist who joins us from the Blood Research Institute in Wisconsin. He will be teaching Immunology and a course in his specialty. Tamara Harms is an ecosystem ecologist who worked as a postdoctoral fellow with Jay Jones at UAF. She will be teaching Ecosystem Ecology, and a course in data analysis for graduate students. Andrej Podlutsky works on DNA repair and cancer; he comes to us from the Health Sciences Center at the University of Texas and will be teaching Introduction to Cell and Molecular Biology and a course in cancer biology. We are very excited about this expansion of our faculty and range of courses we will be able to offer to students!

Our graduate program remains very active. We graduated 14 MS and 11 PhD students in 2012 so far, and welcomed 28 new graduate students: 19 MS students and 9 PhD students. This brings our
Our undergraduate majors continue to increase as well: we now have 453 Biology and Wildlife majors, and 37 pre-majors. We just submitted the paperwork for new undergraduate curricula for the BS and BA in Biological Sciences; assuming it is approved, we will be offering our BS undergraduates the option of concentrations in 1) Cell and Molecular Biology, 2) Physiology, and 3) Ecology and Evolutionary Biology.

The Life Sciences Seminar Series has had a very dynamic set of speakers this fall. A highlight was the visit by Dan Simberloff, the Graduate Student Invited Speaker and a professor at the University of Tennessee in Knoxville. While best known for his experimental work with E.O. Wilson on island biography in the 1960s, his work in a large range of fields, including the use of null models in community ecology and the threats posed by invasive species, has had a major impact on the development of ecology.

Dr. Simberloff gave two presentations, met with many graduate students and multiple lab groups, and visited the Bonanza Creek Long Term Ecological Research (LTER) site with several graduate students.

Department of Chemistry and Biochemistry
By William Simpson, Chair and Professor of Chemistry

We welcome our new undergraduate and graduate students to the Department of Chemistry & Biochemistry and look forward to a great year. Our total number of undergraduate majors and pre-majors has grown to 72 students. We also welcomed seven new graduate students to our programs at our Graduate Student Orientation on the first day of the semester. These new students replace the seven undergraduate and 11 graduate students (nine M.S. and two PhD) who graduated last spring. Congratulations to these new graduates and their mentors! You can read about their successes in the 2012 version of the AlasChemist, which was prepared by Mist D’June-Gussak and is available from our website www.uaf.edu/chem/.

During the first half of the semester, we have been focusing on the Chemistry and Biochemistry Seminar Series. All are welcome to attend our hour-long talks at 4:00 p.m. on Tuesdays in Reichardt Building Room 201. We have had three external speakers: Mark Bussel, Don Blake, and Paul Helquist (sponsored by the American Chemical Society). In addition, Tom Green gave a seminar on opportunities and careers in chemistry and biochemistry as well as undergraduate advising information. During three weeks of seminar, we had departmental faculty members give “speed talks” on their research to inform undergraduate and graduate students as well as fellow faculty of their recent work. That was a lot of fun and informative for all who participated.

In the fall, we were joined by two new department members. Assistant Professor Sarah Hayes arrived after completing her Mendenhall (U.S. Geological Survey) fellowship to become our new faculty member in Analytical / Environmental Chemistry. We also were very excited to have Visiting Assistant Professor Chris Iceman join us to help with General Chemistry, Undergraduate Research, and making improvements to these courses. We also welcome a new staff member, Libby Miles, who is taking on the critical role of graduate program coordinator. She is already getting settled and being productive improving our programs and procedures. We are very excited to have Libby with us. She will work with our graduate students and of course the rest of our staff and the graduate program coordinators, Kelly Drew (Biochemistry and Molecular Biology) and Tom Trainor (Environmental Chemistry). Speaking of Professor Trainor, he was promoted to full Professor last year and Brian Rasley was tenured and promoted to the rank of associate professor. Congratulations Professors Trainor and Rasley!

In teaching news, we are excited to have a good offering of graduate courses this year with the return of faculty members on sabbatical helping us to be able to offer these courses. We have been working upon improving student success in General Chemistry and began the Chemistry Learning Center. Thanks to the Department of Geology & Geophysics for helping identify space where we can hold one-on-one coaching sessions with students and also Supplemental Instruction (SI) sessions related to General Chemistry I (Chem F105x). We look forward to expanding the SI program to all 100-level offerings after we have established its success in our first trial course. Big thanks go to Professor Iceman, Jacy Pietsch (Laboratory Manager) and Emily Reiter (Laboratory Coordinator) for their hard work getting the CLC and SI sessions working. Of course, our successes hinge upon the excellence of our faculty and staff — thanks to all for the hard work. It has been a busy start to the academic year, and we look forward to a great semester and year.

Department of Mathematics and Statistics
By Anthony Rickard, Chair and Professor of Mathematics

The Department of Mathematics and Statistics (DMS) welcomes new mathematics graduate students Kris Kilpatrick, Ben LaChance, and Mark Layer and new statistics graduate students Alyssa Crawford, Qingjia Li, and Yuhao (Bobby) Wu. DMS also welcomes all students back to UAF for the 2012-2013 academic year and encourages UAF students enrolled in 100- and 200-level mathematics or statistics courses to take advantage of the Math Lab — see www.uaf.edu/dms/mathlab/Math-Lab-Schedule.pdf for the Fall 2012 Math Lab schedule.

Elizabeth Allman, Professor of Mathematics, has been selected as a member of the inaugural class of Fellows of the American Mathematical Society. The AMS selected Dr. Allman for this honor based on her distinguished contributions to mathematics. Induction of Dr. Allman and other AMS Fellows will take place on Friday, January 11, 2013. Also, Dr. Allman has been invited to be an Erskine Fellow at the University of Canterbury in Christchurch, New Zealand.

Ed Bueler, Associate Professor of Mathematics, recently led workshops and technical conferences in Germany and Italy focusing on the Parallel Ice Sheet Model (PISM). Since PISM
Student opinion surveys are one measure of teaching excellence. While high student opinions of a course do not assure that a course is an excellent course, engaging students is an important step in the process of learning. At the end of each semester, an Instructional Assessment System Survey (IAS), also known as student opinion of instruction, is formally given to every class in the university system.

As dean, I would like to recognize CNSM faculty, instructors, adjuncts and lecturers who taught courses highly rated by students during the last semester.

The criteria for recognition is having received an overall IAS score of greater than or equal to 4.5 (median of terms 1-4) in a course with at least eight students responding. A score of 4.5 indicates that 75% of students rated the course as very good to excellent.

Congratulations to the following on their efforts in teaching during spring semester 2012.

**Biology & Wildlife**
- Perry Barboza
- Andrea Bersamin
- Donie Bretharte
- Karsten Hueffer
- Mary Beth Leigh
- Kristin O’Brien
- Todd O’Hara

**Chemistry & Biochemistry**
- Kelly Drew
- Tom Green
- Bill Howard

**Geology and Geophysics**
- Pat Druckenmiller
- Sarah Fowell
- Rainer Newberry
- Anupma Prakash
- Wes Wallace
- Chris Wyatt

**Mathematics & Statistics**
- Leah Berman
- Julie McIntyre
- John Rhodes

**Physics**
- David Newman
- Antonius Otto
- Hui Zhang

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Chris Benshoof, a 2006 DMS graduate, was named Alaska Teacher of the Year! He is currently a mathematics teacher at Lathrop High School in Fairbanks.

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Celebrating Teaching Excellence Spring 2012

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was first developed by Dr. Bueler and colleagues at UAF in 2003, it has been refined, upgraded, and the PISM team expanded to include international collaborators from Germany, Denmark, and the Netherlands. PISM, a software program which is publicly available, is an extensive effort to better understand the physics of ice sheets.

Alexei Rybkin, Professor of Mathematics, directed a student research team in development of mathematical models of the tsunami run-up problem on inclined bays of arbitrary shape. Dr. Rybkin’s Research Experience for Undergraduates (REU) project has received ongoing funding from the National Science Foundation. Matt Harris, the student REU team leader during summer 2012, said, “I was surprised by the amount of times I used concepts from seemingly disjointed classes in order to solve a problem — it [REU] has changed my outlook on mathematics and has caused me to have even more drive to get into the research field as well as changing the way I live on a daily basis.” Members of the Summer 2012 REU team Jeremiah Harrington and Lander Ver Hoef, both of UAF, gave a DMS colloquium presentation on 10/11/2012 entitled, Tsunami Modeling in Trapezoidal Shaped Bays.

Dana Thomas, former UAF Vice Provost and Professor of Statistics, is now Vice President for Academic Affairs for the University of Alaska system. Dr. Thomas is a former chairman of DMS, and the department benefitted greatly from his 6 years of leadership and his 25 years overall as a member of the DMS faculty.

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Department of Physics
By Curt Szuberla, Chair and Professor of Physics

An alumnus comes back as joint-appointed faculty member!

Peter A. Delamere is an associate professor who came to the Physics Department in October 2012 from the University of Colorado. He received a BA in physics from Carleton College (cum laude), Northfield, MN in 1991 and received his PhD in Physics here at the University of Alaska Fairbanks in 1998.

His research focuses on comparative magnetospheric physics with an emphasis on the numerical simulation of space plasmas using hybrid (kinetic ion, fluid electron) and multi-fluid techniques. Dr. Delamere has studied the solar wind interaction with the giant magnetospheres of Jupiter and Saturn, comets, Pluto, and the plasma interaction at Io. In addition, he has developed models to study the flow of mass and energy through the inner magnetospheres of Jupiter and Saturn to study the internally-driven dynamics of these systems.

Dr. Delamere will start teaching his first class, PHYS 102, Energy and Society in the Spring 2013 semester. Enroll and try his class out!

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**Department of Physics**

By Curt Szuberla, Chair and Professor of Physics

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Student Poster Award Winners

The Alaska Geological Society 2012 Technical Conference was held at UAF on September 22 and 23. Jeff Freymueller (Geophysical Institute and UAF Dept. of Geology & Geophysics) opened the conference with a very well-received keynote presentation: Measuring Active Tectonics, Hydrology, and the Cryosphere using Geodesy. A lively poster session followed, and the afternoon concluded with hors d’oeuvres, a social hour, and awards. This year, AGS sponsored two $100 prizes for the best graduate student poster presentations in geology and geophysics. Of the 19 posters in the session, 15 were presented by students, all of whom are enrolled at UAF. Seven geology posters and eight geophysics posters were evaluated by panels of three judges: professional geologists and UAF faculty whose students were not presenting. The judges universally praised the quality of the students’ research and found it very difficult to select a single winner from each division. They also noted that second-year students were at a disadvantage competing against students with multiple years of data and analyses. Therefore, in addition to the two prizes for best poster, the judges chose to award three honorable mentions for promising research.

Honorable Mentions

Best Geology Poster by a Second-year Student was awarded to MS student Rachel Frohman for her presentation Neotectonics Around Alaska: Identifying and Characterizing Active Faults co-authored by W. Wallace and R. Koehler.

Best Geophysics Poster by a Second-year Student was awarded to MS student Arvind Chittambakkam for his presentation Geothermal Exploration at Pilgrim Hot Springs, Alaska co-authored by R. Daanen, C. Haselwimmer, A. Prakash, M. Mager and G. Holdmann.

Best Poster by an Undergraduate was awarded to BS student Jessica Eicher for her presentation Layered Gabbros of the Nelchina Complex, Alaska: A Summary of Fieldwork and Lab Analyses from the Summer 2012 Field Season co-authored by A. Kentner and E. Nadin.

Awards

Best Poster — Geology was awarded to MS student Rachel Westbrook for her presentation Vegetation of the Central Beringian Lowlands: Evidence of a Glacial Refugium Found in IODP Expedition 323 Sediment co-authored by S. Fowell, N. Bigelow and S. VanLaningham.

Best Poster — Geophysics was awarded to PhD student Yuning Fu for his presentation Seasonal Hydrological Loading in Southern Alaska Inferred by GPS and GRACE, and Slow Slip Events in the Southern Central Alaska Subduction Zone co-authored by J. Freymueller.

Quaternary Field Trip

On September 23, Jim Beget (UAF Dept. of Geology & Geophysics and Geophysical Institute) led a half-day field trip to two classic Quaternary loess sequences in the Fairbanks area. Trip participants enjoyed sunny skies and temperatures that reached nearly 70° while examining loess, paleosols and volcanic ash (below left) at Gold Hill (below right) and Halfway House. The universal favorite stop was the trench at Halfway House, which exposes glacial loess units interbedded with interglacial paleosols, providing a nearly continuous record of terrestrial climate from marine oxygen isotope stages 1 through 6.