

Research Flash

Volume 15 February 11 2005



From the Director

Providing research and solutions for the world's cold regions

During the past few years many changes related to engineering at UAF have taken place. Two highly visible changes are the remodeling of Duckering Building and the creation of the new, combined College of Engineering and Mines (CEM).

Less visible, but equally important, is the growth of the research effort in INE. Since my tenure as Acting Director and Director of INE (5 years), our research budget has more than doubled, and this does not include the ~30% growth contributed when the former School of Mineral Engineering (SME) added their research effort as part of the reorganization. Our total research expenditures now exceed \$10 million annually.

With a new Dean joining CEM this summer, it is time for me to step down as the Director of INE (effective June 30, 2005).

INE has a bright research future, but also some significant challenges if it is going to continue growing. Good luck.

— Douglas L. Kane

www.uaf.edu/ine/index.html

New Faces in CEM and INE

New Faculty on Board

When planes are backed up at the airport and the weather is bad, how does an airline decide who gets home tonight and who waits until tomorrow? Ahmed Abdelghany, our new assistant professor in Civil & Environmental Engineering, knows how.

Ahmed comes to UAF from United Airlines, where he spent four years designing decision-making tools for operation and planning of airline business issues. In 2001, he completed a PhD in Transportation Engineering from the University of Texas at Austin, and he was lucky enough to work with one of the nation's top transportation engineering professors, Dr. Hani Mahmassani.

Ahmed's passion in research is examining the relation between demand, supply, and control for transportation systems. How do these forces influence each other in a given framework? What happens if both demand and control increase? Ahmed credits his PhD advisor, Dr. Mahmassani, with helping him develop this adaptable perspective for examining very different systems. To learn more about Ahmed's work, visit <http://www.uaf.edu/engineer>.

Ahmed says this is an exciting time for his family. He's always wanted to work in academia, and when his wife, Noha, finished her Master's in Biotechnology this January, they both knew it was time to move on. Fairbanks is filled with opportunities for research funding, notes Ahmed, and he's eager to get started. This semester he's teaching Engineering Decisions in a combined class for graduates and undergraduates, and on Friday (2/11) he's presenting his first research seminar, "An Optimization Model for Airline Corporate Travel Management."

When he's not cogitating on how systems work, Ahmed likes to watch soccer and play with his children, a two year old girl (Reem) and a four year old boy (Hadi). Noha and the children are traveling in Egypt right now, and Ahmed has lots of time to get acquainted, so be sure to say hello.

Meet Bloggin Bob

Bob Busey, Research Professional in the Water & Environmental Research Center, says his job is "making things run right." – a description too modest for his skills.

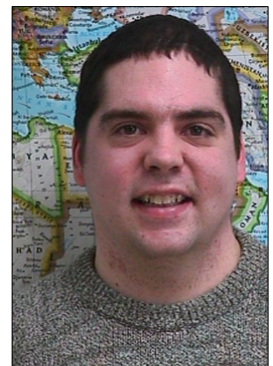
Bob has a BS in Mechanical Engineering from UAF and about five years' experience working in and around research. Since September 2004, he has set up lab and field instrumentation and done a huge amount of regular data collection at sites like the Caribou Poker Creek Research Watershed, Ivotuk, and the Kuparuk Oil Fields. In addition, he's "getting into" computer modeling. In a recent project, he conducted analyses to project Permafrost degradation throughout the Panarctic, using data from the Hadley Centre for Climate Prediction & Research. Bob's 50 and 100 year model simulations will help northern societies prepare for living in a warmer climate.

Bob says the best thing about winter fieldwork is that "you always end up with a crazy story." Quite a few of these stories are on **Bob's blog** (<http://rbusey.org/>), with some excellent pictures. Although he says the most challenging thing about fieldwork is working at -30F "or worse," Bob rode his bike to work throughout the latest cold snap.

In his free time, Bob hangs out with his dogs (a husky and a lab-husky cross), and hikes and camps all around Alaska. His favorite place so far is Summit Lake, near Paxson, although Rainbow Ridge runs a close second.



Ahmed Abdelghany, CEE.



Bob Busey, WERC.

Kudos

Congratulations to **David Ogbe**, College of Engineering & Mines faculty, who was recognized for his service as a 2003-2004 distinguished lecturer by the Society of Petroleum Engineers.

Congratulations to **Pieter deHart**, WERC PhD student, who just won a travel grant from the Alaska Quaternary Center, UAF, to attend an international conference in the Netherlands on marine mammals.

Congratulations to **Joel & Kayline Bailey**, (Joel is research staff in WERC), on the birth of their son, Jace Patrick Bailey, 27 January 2005. Jace Patrick was born prematurely at 30 weeks, so he had a rough start, but he's already gained another half a pound (he started at 3 lbs.), and has no apparent problems.

INE Publications

Butcher, EA, Ma, H, **Bueler, E**, Averina, V, and Szabo, Z. 2004. Stability of Linear Time-Periodic Delay-Differential Equations via Chebyshev Polynomials, *International Journal for Numerical Methods in Engineering* 59, 895-922.

Autier, V, and White, DM. 2004. Examination of Cadmium Sorption Characteristics for a Boreal Soil Near Fairbanks, Alaska. *J. of Hazardous Materials*, 106B (2004) 149-155.

Guo, L, Semiletov, I, Gustafsson, O, Ingri, J, Andersson, P, Dudarev, O, and **White, D**. 2004. Characterization of Siberian Arctic Coastal Sediments: Implications for Terrestrial Organic Carbon Export. *Global Biogeochemical Cycles*, 18(GB1036), doi:10.1029/2003/GB002087.

Stow, DA, Hope, A, McGuire, D, Verbyla, D, Gamon, J, Huemmrich, F, Houston, S, Racine, C, Sturm, M, Tape, K, **Hinzman, L, Yoshikawa, K**, Tweedle, C, Noyle, B, Silapaswan, C, Douglas, D, Griffith, B, Gensuo, J, Epstein, H, Walker, D, Daeschner, S, Petersen, A, Zhou, L, & Myneni, R. 2004. Remote Sensing of Vegetation and Land-cover Change in Arctic Tundra Ecosystems, *Remote Sensing of Environment*, 89 (2004) 281-308, doi:10.1016/j.rse.2003.10.018.

Urano, S, Kawauchi, K, Tomotsugu, Y, Okada, K, Yabe, K, Ishikawa, N, **Yoshikawa, K**, and **Hinzman, LD**. 2003. Relationships between Water Discharge and Permafrost Distribution in the Caribou Poker Creek Research Watershed, Interior, AK. In *Proceedings of the 4th International Workshop on Global Change: Connection to the Arctic*, November 6-7, Toyokawa, Aichi, Japan, 117-120.

Carlson, S, White, DM, and Harazono, Y. 2003. Use of Organic Matter Analysis to Better Understand Controls on Caribou Dioxide and Methane Flux in the Subarctic. In *Proceedings of the 4th International Workshop on Global Change: Connection to the Arctic*, November 6-7, Toyokawa, Aichi, Japan, 227-231.

Shur, Y, French, HM, Bray, MT and Anderson, DA. 2004. Syngenetic Permafrost Growth: Cryostratigraphic Observations from the CRREL Tunnel near Fairbanks, Alaska. *Permafrost and Periglacial Processes* 15:339-347.

Yoshikawa, K, Overduin, PP, and Harden, JW. 2004. Moisture Content Measurements of Moss (*Sphagnum* spp.) using Commercial Sensors. *Permafrost and Periglacial Processes* 15:309-318.

Berezovskaya, S, Yang, D, and Kane, DL. 2004. Compatibility Analysis of Precipitation and Runoff Trends over the Large Siberian Watersheds. *Geophys. Research Letters*, 31(L21502). doi:10.1029/2004GL021277.

Lin, HK. (2004). Extraction of antimony by a copper chloride extractant. *Hydrometallurgy*, 73:283-291.

Samanta, B, Bandopadhyay, S, Ganguli, R and Dutta, S. (2004). Sparse Data Division Using Data Segmentation and Kohonen Network for Neural Network and Geostatistical Ore Grade Modeling in Nome Offshore Placer Deposit. *Natural Resources Research*, 13(3):189-200.

From the Executive Officer:

Funding Opportunities:

The Center of Excellence for General Aviation (CGAR) is looking for researchers in the areas of Unmanned Aerial Vehicles (UAVs) and Aging Aircrafts. The areas for UAVs include: Command, Control and Communication; Flight Termination; Human Factors; and Risk Assessment.

The Aging Aircraft work centers on "Health and Usage Monitoring Systems (HUMS)". This area is mainly focused on structural fatigue monitoring.

If anyone is interested please contact Phill Harrington (x5866) or Ahmed Abdelghany (x6172); we can pass your contact information on to the right people at CGAR. Please share this information with any other researchers university-wide that might be interested.

UAF will also host CGAR's annual meeting, June 21 – 23, 2005. Registration is available on-line at the INE website. Thanks to Shannon Watson for all her work with this conference.

From the Editor

After a long hiatus, the *Research Flash* is back, and I hope you've missed it. We'll stick to our 3-week publishing schedule from now on.

Thanks to Rob Gieck and Doug Kane for designing our new logo, which incorporates the expertise of folks from the Petroleum Development Lab (PDL) and the Mineral Industry Research Lab (MIRL).

It's a brave new world folks; best to look forward with optimism.

For more info about the *INE Research Flash*, contact Sandra Boatwright at ffslb@uaf.edu

Submission deadline for issue #16: 25 February 2005.