



Message from the Head

The fall semester has been a busy time for the Department. We hosted our annual awards night and meeting of the Geomatics Engineering Advisory Committee (GEAC) in late October. Both events gave us the opportunity to meet with external supporters and recognize the valuable contributions they make to our success. I welcome Eric DesRoche of Intermap Technologies as our new GEAC chair, and I thank the outgoing chair O'Brian Blackall for his generous commitment and service to the Department. We are in the process of hiring new faculty members in the areas of

geodesy, GIS and biomedical engineering, and we anticipate further hirings related to the Energy and Environment expansion. By fall of 2007 we will have several new faculty members in place. We will continue to build strength in our core areas and expand in new areas of opportunity. I am pleased to congratulate Dr. Naser El-Sheimy on his five-year appointment as Department Head effective January 1, 2007. Naser has an outstanding record in teaching and research, and he has previous leadership experience in both industry and academia.

We are very fortunate to have him in this new role and I look forward to working under his strong vision and leadership. As my own six-month term as Acting Head ends I would like to thank staff, colleagues and students for their support. You strive for excellence and continue to maintain a world-class reputation. I have taken pride in representing such a strong Department.

Susan Skone
Associate Professor and
Acting Head

Professor Naser El-Sheimy Appointed Head



Dr. Naser El-Sheimy has been appointed Head of the Department of Geomatics Engineering for a five-year term effective January 1, 2007. Dr. El-Sheimy received a BSc and MSc in Civil Engineering from Ain-Shams University, Egypt in 1984 and 1991,

respectively, with specialization in surveying engineering, a Post Graduate Diploma in Photogrammetry and Remote Sensing from The International Institute for Aerospace Survey and Earth Science (ITC), The Netherlands, in 1989, and a PhD in Geomatics Engineering from the University of Calgary in 1996.

Dr. El-Sheimy's success in research and teaching, along with his industry experience and many leadership roles, will bring strong leadership to the Department. He will undoubtedly serve the Department and the Schulich School of Engineering well during the upcoming years!

Inside this issue:

Congratulations	2
Research News	2
Visitors	2
Research Spotlight	3
Alumni Voice	3
Department Activities	4
Coming Events	4

Congratulations

• Congratulations to students who completed their graduate studies: Sanjeet Singh, MSc; Rebeca Quinonez-Pinon, PhD; Matthias Weigelt, PhD; Mohamed El-Habiby, PhD; and Jalal Al-Azizi, MEng.



Rebeca Quinonez-Pinon successfully defended her PhD thesis.

• Dr. Gao was selected as the winner of the 2006 INTERMAP Award for his paper "Airborne Kinematic Positioning Using Precise Point Positioning Methodology" published in GEOMATICA.

• Abdel-Rahman Muhsen was awarded the 'ALSA Graduate Student Scholarship'. Abdel is supervised by Dr. Michael Barry.

• Dr. Alexander Braun was awarded the Engineering Student Society award "For

excellence in teaching and displaying enthusiasm for engineering to students" in Geomatics. Dr. Braun was selected by the Third and Fourth year students.

• Rita Cheng is the winner of the Governor Generals Gold Medal at the Master's Level. The Governor Generals Gold Medal recognizes outstanding scholastic achievement amongst students graduating at the Masters level. Her supervisors were Dr. Ayman Habib and Dr. Janet Ronsky.

• Professor Gérard Lachapelle, CRC/iCORE Chair in



Wireless Location, was elected Fellow of the Royal Institute of Navigation during the Annual General Meeting of the latter in

London on October 13, 2006 in recognition of his fundamental work related to satellite-based navigation. The award was presented by His Royal Highness the Duke of Edinburgh, Patron of the Institute.



Carina Butterworth accepts the R.M. Hardy Graduate Scholarship from Ashok Sehgal, the Vice-President of APEGGA.

• Carina Butterworth won one of the two APEGGA R.M. Hardy Graduate Scholarships. The Excellence in Education awards ceremony was held on Tuesday, Nov. 7.

• GNSS06 Best Presentations awards were given to Gerard Lachapelle, Elizabeth Cannon, Chris Goodall, Saurabh Godha, and Cecile Mongredien.

Research News

• Emeritus Professor Alec McEwen returned at the end of September 2006 from Afghanistan where he submitted a report containing recommendations for the introduction of a land registration system to serve the rural areas of the country. This

represented a continuation of land tenure research that he undertook in five Afghan provinces and 15 villages in 2005 as part of a project funded by the European Union. Dr. McEwen is now engaged as a legal consultant in Tajikistan for the proposed

establishment of laws and procedures that will facilitate the granting of mortgages for farm development purposes, with agricultural land users' rights held under a Land Use Certificate offered as collateral for the loans. EuropeAid is sponsoring this assignment.

Visitors

• On October 04, Dr. John D. Bossler, a consultant and a former Director of the Center for Mapping at The Ohio State University (OSU) in Columbus, Ohio,



reflected on his career in Geomatics. He discussed his assignments throughout his career in NOAA and the positions he held. He discussed the technology used at that time and how it has changed, and gave his

personal view about what he believes lies ahead.

• Dr. Marco Leupin (Advisor to governments, development banks and private companies) from Berne Switzerland, visited the Department from October 9 to October 28, to provide several lectures to the ENGO 500 class.

• Special Presentations were given by Dr. Rossen Grebenitcharsky, Delft Institute of Earth Observations and Systems, TU Delft, The Netherlands; Dr. Jeong Woo Kim, Department of Geoinformation

Engineering, Sejong University; and Dr. Jacob Flury, Centre for Space Research, The University of Texas at Austin.

• Guest speaker, and former faculty member of Geomatics, Dr. Vincent Tao, visited the department on November 16 to give a special presentation called 'Evolution or Revolution? On-line Mapping and Geomatics'. Dr. Tao is now Director of Microsoft Virtual Earth, responsible for the technology and business development of Microsoft Virtual Earth program.

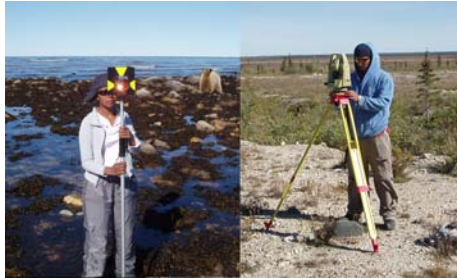
Research Spotlight

Polar Bears, Belugas and Trig-levelling in Churchill

Article by Dr. Alex Braun (Gravity Field and Geodynamics)

In September 2006, Dr. Alexander Braun, PhD student Vidyavathy Renganathan and 4th year student Prakhar Shrivastava conducted a field campaign in Churchill, Manitoba. This research project is funded by the Northern Research Funds (NRF) and the Churchill Northern Studies Center (CNSC), which also served as the base for the field campaign. The main objective of the project is to provide in situ elevations of different landforms (wetland, tundra, tidal flats, rock outcrops, ocean and sea ice) which are co-located with satellite altimetry ground tracks. The elevations can be directly compared and provide a calibration/validation tool for satellite data. In situ data was collected with a Leica TC-805 Total Station and tied into the existing benchmarks including a permanent GPS station at Churchill. About 10 km of levelling data was collected along the ICESat and Jason-1 satellite ground tracks. An initial comparison shows excellent agreement of the elevations at the decimetre-level, with significant variations up to 80 cm in rough terrain as the satellite averages over a circle of 70 meter in diameter. While levelling through tundra, boreal forest down to the coast and into the ocean, the presence of polar bears and beluga whales

made the campaign a little bit more exciting, particularly at times, when we had to leave one of us behind without a rifle. On the fifth day, we finally saw our first



polar bear (*Ursus maritimus*) and observed it for quite a while using the telescope of the TC-805. It was swimming in the Churchill river, where we observed dozens of beluga whales (*Delphinapterus leucas*) earlier. Plans are currently underway to continue the survey over sea ice and ocean in May 2007.

Emerging Mapping Technologies

Article by Dr. Ayman Habib (Digital Imaging Systems)

The mapping community is witnessing significant advances in the available sensors such as medium format digital cameras and LIDAR systems. In this regard, the Digital Photogrammetry Research Group (DPRG) lead by Dr. Ayman Habib has been actively involved in the development of standards and

specifications for regulating the use of these sensors in mapping activities. More specifically, the DPRG has been working on developing new automated techniques for the calibration and stability analysis of medium format digital cameras. This research is essential since these sensors have not been developed with mapping applications in mind. Therefore, prior to their use in Geomatics activities, new standards should be developed to ensure the quality of the developed products. In another front, the persistent improvement in the direct georeferencing technology has led to the increasing adoption of Light Detection and Ranging (LIDAR) systems for the acquisition of dense and accurate surface information. However, processing of the raw LIDAR data (e.g., ranges, mirror angles, and navigation data) remains to be a non-transparent process that is proprietary to the manufacturers of LIDAR systems. Therefore, the DPRG has been focusing on the development of quality control procedures to quantify the accuracy of LIDAR output in the absence of the initial measurements. The conducted research by DPRG has attracted federal, provincial, and international funding from the GEOIDE network, British Columbia Base Mapping and Geomatic

continued on page 4

Alumni Voice

I graduated from Geomatics in April of 1996 and was wondering if I made the right choice by May of 1996. Directly after graduation I was working for a land surveying firm which specialized in oilfield surveys in Alberta. I do not recall if it was the dust, the mud or the mosquitoes that made my life most miserable. As time passed, and my professionalism matured, I realized that land surveying might be the most love/hate relationship ever foisted on mankind. There were days where thoughts centered on 'I am not paid enough for this' but usually they were 'I can't believe I am getting paid to do this'.

For the first nine years after graduation, I was employed by Focus. With a firm of that magnitude, there are endless opportunities that do not fall in everyday

surveying norm. As a result, I have worked in some truly incredible regions such as eight months in West Africa. The first time I saw a cobra cross the work-site I had one of those 'I am not paid enough for this' flashes but the other 200 or so days were 'I can't believe I am getting paid to do this'. Another career highlight was a hydrographic survey at the worlds most northerly mine. It was an eventful week of viewing narwhales, walruses, foxes, beluga whales and ancient Inuit ruins interspersed with some obligatory work.

Two years ago I started Point Geomatics, my own firm that deals only with 3D laser data. The market sector is still quite small and as a result, I have had to uncover many non-traditional markets for surveying. Along with the obvious applications in plants and volume determinations, I have

found work for scanning in national defense, heritage recording, underground mines and the movie industry.

My Geomatics Engineering degree from U of C provided a skill set that allowed for personal and professional growth channeled through fabulous experiences in many parts of the world. Since starting my own firm, I have hired two graduates from the department and I hope I can offer them equally interesting work situations.



Chris Tucker, BSc 1996



DEPARTMENT OF GEOMATICS ENGINEERING

Schulich School of Engineering
University of Calgary
2500 University Dr. NW
Calgary, AB Canada T2N 1N4

Phone: 403 220 5834
Fax: 403 284 1980
Email: geomatics@geomatics.ucalgary.ca

A Passion for Excellence

We're on the web:
geomatics.ucalgary.ca

continued from page 3

Services (BMGS), and the United States Geological Services (USGS). Last December, administrators from the BMGS and the USGS had a meeting at the department of Geomatics Engineering to discuss the research outcome and investigate the possibility of introducing North American Standards and Specifications to regulate the use of Medium Format Digital Cameras and LIDAR systems in the mapping industry.



L to R: Dr. Habib together with Mr. Paul Quackenbush (British Columbia Base Mapping and Geomatic Services – BMGS), Mr. Gregory Stensaas (United States Geological Survey - USGS), and Mr. Roger Balsler (R.W. Balsler Consulting Inc.) in a recent meeting at the Department of Geomatics Engineering to discuss the joint cooperation between UofC, BMGS, and USGS.

Department Activities

- Thank you to Dr. Susan Skone for being Acting Head for the past several months. She has done an excellent job and is to be commended for her hard work and diligence on many important issues.
- The Geomatics Engineering Liaison Committee (GELC) met on October 26.
- The Geomatics Engineering Advisory Committee (GEAC) met on October 27.
- Students Awards Night was held on October 26, 2006.
- Geomatics Pot Luck Christmas party was held December 20. Lots of international goodies made a tasty and diversified buffet. A special thank you to Allan Tew who brought Santa to the party.



L to R:
Ossama Al-Fanek, Ghena Al-Fanek, Qais Marji,
Mohannad Al-Durgham, Chang Jae Kim,
all enjoying the Christmas Potluck.

Coming Events

- Career Day—February 08, 2007.
- Departmental Awards Competition—Deadline January 15, 2007.
- Graduate Courses, Winter Schedule: ENGO 633—Atmospheric Effects on Satellite Navigation Systems; ENGO 663—Satellite Altimetry and Applications; ENGO 667—Advanced Topics in Photogrammetry; ENGO 699.58—Estimation and Computational Analysis; ENGO 699.59—Quality Assurance and Quality Control for LIDAR Systems ENGO 699.60—Special Studies in Advanced GNSS Topics; ENGO 699.61—Advanced Digital Imaging.
- Look for upcoming information on our fourth year project course presentations and industry presentations. Watch for Posters.

Sites to Visit:

<http://www.cig-acsg.ca/page.asp>

<http://www.apegga.com/>

<http://www.ucalgary.ca/%7Eamcewen/>

<http://www.pointgeomatics.ca/>

<http://www.ion.org>