

Council of Chairs of Canadian Earth Science Departments: Report from the Trenches – 2008

Memorial University

Earth Sciences at MUN has the highest increase in total course registrations (i.e. “bums in seats”) over last year **for all academic units on the St. John’s campus** (our increase is 25.8%). The St. John’s campus has a decrease of 4.8% this year in total undergraduate registration. Within the Faculty of Science, four departments besides us are showing an increase (Statistics 6.0%, Math 2.3%, Computer Science 1.2% and Biology 0.3%), while the remaining five departments are showing a decrease. The Faculty of Science as a whole shows a decrease of 0.7% in total course registrations for this Fall 2008 over the same time last year.

Earth Sciences has a 91.9% increase in the number of geology and geophysics majors over the past three years. In 2008-09 we have 168 majors up from 86 in 2005. It is unclear if this trend will continue with the current global economic crisis.

We have 20 new PhD students in 2008 (about 70 total M.Sc. and Ph.D. students and that is on the rise with the new faculty appointments and the faculty appointments made over the past four years).

Four new faculty were hired in 2008 in the following areas: exploration geophysics, environmental geochemistry, and petroleum geology, and starting in April 2009 a hydrogeology. Currently we are trying to recruit for a named chair mineral deposits funded in part by a local junior exploration company (Altius) but that is linked to a NSERC Associate Industrial Research Chair proposal being successful.

On the down side, much of the research equipment in the Earth Sciences Department is aging and either needs to be replaced or new equipment for new initiatives needs to be obtained and finding the money is a big problem. The CFI and NSERC RTI-1 programs with support from the Province of Newfoundland and Labrador, and Memorial University, have been very helpful, but we need much more money than those programs are able to provide on a realistic timescale.

St Francis Xavier University

The Department of Earth Sciences has 7 permanent faculty: one CRC-Associate Professor, 4 full professors, one Associate and one Assistant Professor. In addition there are two limited term appointments at the rank of Assistant Professor. All tenured and tenure-track faculty in our department hold NSERC Discovery Grants.

Dr. David Risk (PhD Dalhousie) has joined our department as a new tenure track position in Environmental Sciences. Dr. Risk area of research is in Biogeochemistry with a strong emphasis in methods development and instrumentation.

In January 2008 the new Environmental Sciences Program (ESP) became a reality at StFX. Most of our faculty actively participated in the development of this program and continue to participate in the Biogeochemistry and Environmental Physics degree streams offered. The ESP is intended to prepare students for graduate school in areas not traditionally supported in our University. Dr. Lisa Kellman a CRC in Environmental Sciences and a department member has become the coordinator of this new program.

Our faculty level of service to the international scientific community remains high with several faculty taking up editorial responsibilities in journals such as GSA Bulletin (Murphy), GroundWater (AE- Ferguson), J. Geophysical Research (AE- Beltrami).

Graduate studies at the MSc level has been actively promoted in our department in the last few years and all our permanent faculty support graduate students at the MSc., PhD. and PDF levels.

The Environmental Sciences Research Centre (Kellman, Director) has now become a multi-institutional research center with faculty from six universities from Canada and abroad and has a complement of about 30 researchers and staff. ESRC faculty at StFX have been successful in obtaining \$2.5 million in research funding in 2008.

Geology Department, Saint Mary’s University

The Department of Geology at SMU is now all settled in a newly renovated Science Building, with all its pros and cons. An atrium is being built adjacent to the Science Building, which will keep entertaining us with noise for a while, but which will eventually enhance life at Saint Mary’s. We have now acquired a permanent technician, Dr. Xiang Yang (PhD in Geology, China University of Geoscience, Beijing), for our Regional Geochemical Centre (an XRF facility), with a salary paid by the university. Our past technicians for the RGC were not affiliated directly with the university, and were therefore deprived of benefits and security, which resulted in a high turnover and all the troubles that come with it. This improved situation will allow the RGC to grow in the future, and perhaps eventually ally with the LA-ICP-MS facility that is managed by our Chemistry Department. Xiang is also managing our SEM facility, which includes a hot-cathode CL device that was recently obtained by Georgia Pe-

Piper. In terms of exciting news for our students, Jacob Hanley will lead them in a field trip to South Africa this spring to look at several world class deposits of economic minerals. Our enrollment remains on the high side for this year, and our graduating students are still doing very well in the job market, with nearly all of them finding employment in Geology.

Dalhousie University Earth Sciences

Faculty numbers have stayed steady at 15 professors and instructors. Our two newest hires, Fedortchouk and Nedimovic have developed courses in geophysics and petrology. Our next hire by spousal appointment will be Isabelle Coutand, beginning January 2009, who may contribute to teaching and research strengths in geochronology, petrology, tectonics, and landscape evolution. We may consider this a growth position but actually she fills a significant hole in thermochronology left by the retirements of Peter Reynolds and Marcos Zentilli who remain active.

Student numbers have remained steady overall, with about 1078 students in our first-year geology and geography classes (persons in seats) and 36 students (mostly majors) in the 2nd year classes. We had an average enrollment in our honours programme (12). However, in 2008 fall we have the fewest number of honours students in a decade (6).

Employment possibilities have remained as strong as anyone can remember, with many petroleum and mining companies knocking on the door. It remains a challenge to encourage and liaise with the companies, as well as to get students to apply in time for industry's deadlines. Our formal linkage with Shell is in its third year, and we hope it will be renewed. Over the three year period, Shell donated \$200k for Nova Scotia and Trinidad field programmes, summer student research, and equipment. A large bequest has enabled us to replace most of the 40-year old petrographic microscopes.

Acadia University - Earth and Environmental Science

The Department of Earth and Environmental Science was formed in July, 2007, by merging the former Department of Geology with the program in Environmental Science. The department head, Rob Raeside, continues to serve as the Acting Dean of Pure and Applied Science and Sandra Barr is the Acting Head of E & ES for 2008-2009. The Environmental Science program continues to be managed by a multidisciplinary advisory committee involving faculty from Chemistry and Biology, as well as E & ES. The merged department has 8.5 faculty positions, one of which is a CRC in

biogeochemistry, and more than twice as many students as when it was a Department of Geology (strength in numbers, one hopes). The department continues to offer BSc programs in geology, environmental geoscience, and environmental science, and MSc degrees in geology and applied geomatics, the latter in collaboration with the Nova Scotia Centre of Geographic Sciences.

In October, 2008, we opened our thin- and polished-section preparation facility to external users in a formal way, so that our technician could increase his work time to 5 (from 4) days/week. The hope is that fees from external users will cover the extra salary day - pricing is competitive and submissions are welcome (\$20/thin section and \$32/polished section). Undergraduate student numbers are approximately equal in the geoscience and ENVIS streams and appear steady. Overall enrolment at the university stabilized in 2008-2009, we hope ending the downward trend seen in previous years. Even so, belt-tightening continues across campus. Sabbatical replacements are minimal and on only a part-time basis; we had to ask one faculty member to defer his sabbatical this year as we were unable to secure part-time replacements. Unlike in a larger centre, finding qualified replacement staff in the Wolfville area is challenging, and we anticipate that this problem will be on-going.

UQAM

The representation of women in the department increased significantly during the academic year 2007-08 with the hiring of Claire Perry and Laxmi Sushama. The number of faculty women represents actually 20% of the academic staff. Claire Perry is a recipient of the NSERC University Faculty Award. She is an expert of modeling the geodynamic processes. Laxmi Sushama is a recipient of Canada Research Chair (Tier 2). She is an expert in regional climate modeling.

Three new tenure track positions commencing June 1, 2009 in the areas listed below are worth noting and recruitment will start before March 2009.

Stable Isotopes Geochemistry

Applicants with experience in research and teaching who are willing to develop an ambitious research program in stable isotope geochemistry applied to climate change and/or paleoceanography, or to environmental studies are invited. However, all candidates demonstrating an outstanding record in isotope geochemistry are encouraged to apply.

The main site of work is the Research Center GEOTOP affiliated with the department of Earth and Atmospheric Sciences. It is an interdisciplinary

research network with faculty members from UQAM, McGill University, UQAR, Université Laval, Concordia and Université de Montréal. It operates first class trace element, stable and radiogenic isotope laboratories for research in Earth System Science. The successful candidate will hold his/her teaching appointment at UQAM.

High Performance Computing (HPC) applied to Earth and Atmospheric Sciences

HPC can be defined as a computer infrastructure that is at least 100 times more powerful than a state-of-the-art desktop machine and might be, by today's standard, tens of thousands more powerful. Data can come from diverse sources, stored and fed into the HPC computers for analysis. The resulting outputs may be as simple a Boolean verdict or as complex as a high-precision multi-dimensional image. The area of simulation of the impact of climate change is much in need of HPC for the development of a realistic model. The Research Center ESCER affiliated with the department of Earth and Atmospheric Sciences is the main site of work. The incumbent will teach at the undergraduate and graduate levels at UQAM. The successful candidate must assume leadership in spearheading program development and scientific community outreach.

Ocean Environment Modeling

UQAM is particularly interested in applications for the support and bridging of the two Research Centers ESCER and GEOTOP. The regional Earth system will be coupled with the dynamics of the oceanic climate, palynology, paleontology... Marine biologists will also be involved considering the coming of the International Polar Year.

McGill University

Our Earth System Science (ESS) BSc program is so far highly successful, doubling its enrollment each year. The ESS program is done with the Departments of Geography and Atmospheric & Oceanic Sciences, and this collaboration has drawn the three departments closer. We continue our HRSDC-funded student exchange program with Mexico and the USA in the field of Earth Hazards, and we plan to expand it this year to include Europe. Locally, we are collaborating with Dawson College in Montreal, to encourage CEGEP students to study earth science at the university level. We have established a new Undergraduate Research Fund in the department, to support student research at this level. We are currently advertising for two positions in sedimentary systems; one position is for the TH Clark Chair in Sedimentary &

Petroleum Geology. Undergraduate enrolments are increasing, and graduate enrollments are steady, with most new graduate students from outside Canada.

Carleton University – Department of Earth Sciences

Our faculty complement is static at 9.5, but Brian Cousens (officially) joined the department on July 1, 2007, replacing Gail Atkinson, who resigned in December 2006 to take up a Canada Research Chair Tier 1 appointment at the University of Western Ontario. We are currently advertising for a new faculty appointment in mineralogy for July of 2009.

Our undergraduate enrolment continues to grow, and we now have nearly 110 students in our programs, up about 10% from last year. We are now at the limit of our resources (teaching staff, space, teaching equipment), and have had to restrict enrolment in our second year courses. Graduate student numbers are steady in the mid 20's, but we are hoping to increase the numbers next year. With the current economic situation, we all might find recruiting graduate students a little bit easier.

Department of Geological Sciences and Geological Engineering, Queen's University

Budgetary Issues

The budgetary situation in the University has not changed, thus all Departments in our Arts & Science Faculty had to absorb a 5% cut for the 2008/2009 academic year. We are at the limit of what we can cut and don't look forward to the next budget year, unless Queen's decides to follow other universities and go into deficit financing. The Department is continuing its alumni fund raising drive for our field endowment fund which is currently slightly above \$1.3M. We hope that this fund continues to increase and throw eventually an annual interest of about \$80,000 to \$100,000 for field trip, field school and field lab expenditures.

Staffing

In the spring of 2008, Bob Dalrymple decided not to continue with a second 5-year headship term. The headship committee reconvened and chose Dr. Gerhard Pratt. As the Dean's office did not meet Gerhard's request to reinstate at least one of the previously lost positions, Gerhard resigned and took up the position of Chair in Earth Sciences at the University of Western Ontario. Herb Helmstaedt was "unretired" to be acting head for one year until a new department head can be found.

Enrolments

Undergraduate enrolment in second year increased substantially this year, and the breakdown for all years is shown below:

Degree Program	2nd Year	3rd Year	4th Year	Total
Geol. Science	47	23	29	84
Geol. Engineering	28	23	36	87
Total	75	46	65	171

Graduate enrolment remained steady, with 23 PhD and 37 MSc students currently in house.

York University

The Department of '*Earth and Space Science & Engineering*' at York University is a highly diversified department of pure and applied 'geophysics' encompassing Atmospheric Science, Meteorology, Earth Science, Geomatics, Geomatics Engineering, Space Science and Space Engineering. Over the past two years ESSE at York has expanded in terms of tenure track positions in our Earth Science, Geomatics, and Geomatics Engineering streams; but sadly, this has not been reflected in new undergraduate recruitment into our 'Earth Science' and "Geomatics Engineering" programs.

The current York Department of '*Earth and Space Science & Engineering*' fulltime complement consists of **8** "*Atmospheric & Space Scientists*"; **8** "*Earth Science & Geomatics Engineers*" (including our most recent recruit Dr. Gunho Sohn); and **8** "*Space Engineers*". We have an on-going search for a new "*Atmospheric/Space Scientist*"

The recent statistics on enrolment in our Specialized Honours Degree in "*Earth Science*" and our Specialized Honours Degree in Applied Science in "*Geomatics Engineering*" are as follows:

"*Earth Science*" and "*Geomatics Engineering*":

Current Level 4 *expected to graduate* Spring 2009 6

Current Level 3 "Spring 2010 2

Current Level 2 "Spring 2011 5

Current Level 1 "Spring 2012 8

Our peak graduate figure for these programs was 15 in Spring 2007

University of Toronto

The Chair, Sandy Cruden, is on a mid-term sabbatical this year, so Dick Bailey is acting chair until June 30, 2009. Otherwise, there are no significant faculty changes since last year's report. Sandy's summary of the teaching and research

situation last year is still reasonably accurate, and should be read in conjunction with this: earth science continues to be spread over multiple departments (Geology, Physics (geophysics and atmospheric science), Chemistry (atmospheric), Civil Engineering (rock mechanics and geodesy), Mineral Engineering, Geography (physical) on the downtown campus alone) on three campuses; the Dean's review of this dispersed situation has led to the striking of further committees rather than specific action at this point. Undergraduate program enrolments in Geology and related programs on the St. George (downtown) campus total 123: Specialist (21), Major (45), Minor (39), Geology and Physics Specialist (7), Environmental Geoscience Major (11). Service teaching reaches well in excess of a thousand students in other programs. There are 48 graduate students, of which 35 are Ph.D. students, 10 are 1-year MSc students, and 3 are part-time or 2-year MSc students. We are currently searching for a geology assistant professor, preferably structural or tectonophysical, for the Mississauga campus. Because of Faculty ongoing budget cuts (2% of total budget including salaries, each year for three years starting with 2008-2009), and the abolition of early retirement at the University of Toronto, it seems very unlikely that hiring over the next few years will be as active as over the last few years. Indeed, abolition of mandatory retirement seems to have led (forced?) the President and Provost away from the concept of deterministic 5-year plans for faculty complement, at least for the moment.

Brock University, Department of Earth Sciences.

Enrollments in undergraduate majors have more than doubled in the past ten years. However, Faculty complement has dropped over the same period by two and in 2006 we had our strength diminished further by the transfer of one person to an administrative position, and another to part-time administrative duties. On the positive side, we are presently interviewing for a "hard-rock" tenure-stream appointment at the Assistant Professor level. We face the retirement in 2009 of Keith Tinkler, a fluvial geomorphologist, and we hope to replace him with tenure-stream appointment. However, our Faculty of Math & Science faces a 5% budget cut owing to reduced enrolments in other departments, and we are unsure how that will affect us. Our graduate numbers have risen from 3 Master's students in 2005 to 19 in 2008. While our administration considers this laudable, it causes strains on accommodation (space is at 25% the provincial standard) and teaching (no effective reduction in load for graduate teaching, although this is under review). Several faculty also supervise or co-supervise PhD students at other universities. As our graduate numbers

suggest, our faculty remain largely research active. Prof. Dan McCarthy received \$300K from the Ontario Government for his research on biomonitoring, and Prof. Uwe Brand was appointed as a Brock University Chancellor's Chair in Research Excellence, which provides teaching relief as well as \$15K per year in research funding for the next three years. Prof. Martin Head, who took over as Chair in 2008, was successful in 2007 with a \$73K NSERC equipment grant for a Leica fluorescence and vitrinite reflectance research microscope. This seems to be the only such equipment in central Canada.

University of Waterloo

As the smallest department in the Faculty of Science (27 regular and research faculty), we continue to maintain strong teaching and research programs. Undergraduate student numbers are healthy. We are delighted this year to have small increases in our Honours Earth Sciences and Honours Geological Engineering programs. There are major increases in numbers in first and second year EARTH courses compared to last year. Graduate student numbers remain steady at around 115.

Currently, we are searching for a position in the Solid Earth Sciences. A major fund-raising drive continues to establish the Farvolden Endowed Research Chair in Groundwater. Alan Morgan (Quaternary Geology) will be retiring in 2009. Annual research funding remains strong at around \$8M in grants and contracts.

Department of Earth Sciences, University of Western Ontario

Current status:

- 22 Full-time faculty; 10 post-doctoral researchers, research associates and instructors; 66 graduate students, 4 administrative support staff, 8 technical support staff; 93 undergraduate students enrolled in years 2, 3 and 4.
- One of seven departments within the Faculty of Science.
- Relatively junior faculty profile – 7 out of 22 professors are assistant professors.
- Major departmental research themes: Earth and Planetary Sciences, Resource Geoscience, Tectonic Processes and Natural Hazards, Earth and Climate Evolution.
- Undergraduate and Postgraduate degree programs in Geology, Geophysics and Environmental Earth Science.
- Large involvement in bio-geo through CFI and NSERC funded projects (CRC, and major CFI projects). Significant involvement in tectonics and natural hazards (CRC, IRC). Growing involvement in Planetary Sciences.

- \$41M “Initiative to Enhance Economic and Energy Resource Geology”
- Major Changes in the past two years:
- Loss of two mid-career faculty members through resignations (Geophysics, Igneous Petrology).
- Re-hire of Geophysics position into Departmental Chair.
- Moving forward on re-hire of Igneous Petrology Position, advertising soon.
- Donation of the “Bill Bell Chair” in Petroleum Geology, advertising soon
- Steady growth of Undergraduate program (20% increase since 2005-2006, doubling since 2000-2001).
- 30% increase in graduate student numbers since 2005-2006.
- Budgets are regularly constrained by an “Initial Budgetary Adjustment” of 2%-3% reduction per year. Recent financial developments will mean further downward pressure on budgets.

University of Windsor Department of Earth & Environmental Sciences

The department currently consists of a mix of earth and environmental science faculty (8 of these have the environment as a primary focus, 4 have a mixed crustal and environmental research and 2 are crustal studies only). Some of our faculty are involved with administrative positions, such as Associate Dean of Science, Program Coordinator for Environmental Studies program and Great Lakes Institute for Environmental Research Director.

12 of 14 faculty members have active research funding from a variety of sources.

Evaluation of our undergraduate programs in the department went through rigorous internal review based on the external reviewer's suggestions that was part of the 7-year review cycle mandated by the ministry. The overall opinion is that the department is delivering good quality programs. However, there were some suggestions to trim some programs and focus in some area to attract more majors. The department presented a comprehensive proposal to the University program development committee (PDC), which over sees program status and changes, to reorganize all undergraduate programs (currently 5 programs) into one program “Environmental Science Program” with optional Geoscience concentration for professional registration. The goal is to provide more focused, environmentally oriented undergraduate programs that best use our resources, fit with the University strategic plans, and provide students with relevant and high-quality undergraduate education. PDC overlooked at this

proposal and insisted that if we must go with our plan then an unrealistic student enrolment target would be enforced and monitored every year or the program would be faced with elimination. The battle continues this Fall with the University administration. We are currently pushing the idea of establishing in the future a school of the environment that hosts the department, the environmental studies program (which is part of the Centre for Interfaculty Programs) and build strong ties to the Great Lake Institute for Environmental Research (GLIER). The current enrolment (majors) in our 5 programs is 54 students.

The graduate enrolment is healthy (13 PhD, and 4 M.Sc. students) and most of our PhD students receive various scholarships; both internal and external. However, the University last year decided to raise the fees for international students by 40%, which has affected greatly the enrolment in all science and engineering programs as the international students represent a good portion of our enrolment.

McMaster University: School of Geography and Earth

Sciences (SGES) M. Altaf Arain (Associate Director, representing Pavlos Kanaroglou, Director of School)

Current status: The School of Geography and Earth Sciences (SGES) consists of 28 full-time (15 Science and 12 Social Science) faculty members. Four of these faculty members are teaching professors or contractually limited appointments (CLAs). SGES offers a B.Sc. Honours Earth & Environmental Sciences (EES) program with specialist streams in Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate. The EES Honours programs graduate approximately 30 students per year. Our undergraduate enrolments numbers have also increased over the past year and we now have 107 students in our science programs. In 2007 we taught 12922 students in all of our undergraduate courses, with 40.8% in service courses. Our graduate student numbers have increased substantially over the past year and as of September 2008, we now have 37 PhD, 20 MSc and 15 MA students (total 72 students). In addition to this, we also have 10 part time students, 6 PhD and 4 MSc.

Recent events: Dr. Pavlos Kanaroglou who served as an Interim Director last year was appointed as the Director of School. Two new Associate Directors for the School, Dr. M. Altaf Arain (Physical) and Dr. Rob Wilton (Human Geography) were also appointed. We developed a new 'Strategic Research Plan' for the School after thorough discussions and consensus of faculty

members. Discussions about undergraduate and graduate teaching lead to many changes and improvements in our teaching programs. SGES collaborated with the Faculty of Science in the introduction of a "direct entry" program where students enter into a Level I Environmental and Earth Sciences undergraduate program. Similarly we have introduced a "direct entry Ph.D program" where top undergraduate students are admitted directly into our Ph.D program. In 2008 SGES enrolled two students in the direct entry Ph.D program. There were a number of curriculum changes introduced over the last year, including slight changes to the structure and content of the Honours B.Sc. Earth and Environmental Sciences (EES) program to create more distinctive specialist streams such as Aqueous Environmental Geochemistry, Earth Sciences, Environmental Hydrology and Climate. We also introduced a new Honours B.Sc program in Environmental Sciences that is less constrained than the EES program. We have also offered a combined Honours Program in Biology and Environmental Sciences jointly with the Biology Department. All of our Geo courses have been relabelled as Geography, Environmental Science or Earth Science and cross-listed where appropriate to make the content of the courses more obvious to undergraduates. A new internship program has been introduced from September 2008. Our undergraduate program in Earth and Environmental Sciences qualifies our students for professional certification as Geoscientists in the Province of Ontario (P.Geo) certification. Construction and renovation of Burke Science Building was completed. It includes new classrooms, teaching and research labs as well treat room, photocopy and kitchen facilities for students. Grad Student Open house held was held on October 21 (Social Science) and October 22 (Science). The 2nd Annual Learning and Leading Professional Development Workshop for Geography & Earth Science High School teachers was held on June 26th, 2008 at McMaster University.

Future issues: We have advertised an isotope geochemist position to replace a faculty member who moved to another country. Efforts are being made to seek University approval to hire a Cold Region Hydrologist as part of Schools Strategic Research Plan. A new annual lecture series "Woo Water Lecture" will be introduced from November 19, 2008 in the honour of Dr. Ming-ko (Hok) Woo for his incredible research career and dedication to the training of the current generation of Canadian environmental hydrologists. We plan to hold a School retreat in early December to discuss Career Progress/Merit (CP/M) plan currently implemented in the School. 10th Annual GIS Day will be organized on December 2nd, 2008.

Department of Geology, University of Regina

- 1) The Department trains Geology students at undergraduate (BSc & BSc Honours) and graduate (MSc & PhD) levels. Students completing our geology degree are eligible to apply for professional accreditation with the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).
- 2) The Department held a visioning exercise in 2008 to help plan the future course of the department.
- 3) We are in the process of formalizing our PhD program from a special case PhD program.
- 4) The department is developing a co-op and internship program for Geology majors supported by industry.
- 5) Student numbers continue to grow, most 2nd, 3rd and 4th year classes are at capacity or overload, we have 100 declared Geology majors in 2008 and at least another 20 who are in the process of changing their major to Geology in the Faculty of Science or are joint Geol/Geog BSc students
- 6) The Department had 5 undergraduate theses (2008), 15 Masters (1 completed) and 1 PhD student and 1 Post Doc. enrolled in our program.
- 7) We maintained our undergraduate offerings assisted by two fulltime Geology Lab Instructors and numerous graduate and undergraduate Teaching Assistants.
- 8) Our lecture component was aided with the addition of Dr. Maria Velez in a tenure track lecturer position, giving additional stability to our program in Paleontology and Quaternary environments. Our 7 adjunct professors continue to play an important role in teaching undergraduate and graduate courses, and supervision of undergraduate and graduate theses.
- 9) In 2008, the 7 current faculty members in the Dept. of Geology (1 on secondment) collectively held 3 NSERC Discovery grants, other grants, contracts and support in kind from government and industry, such as SER and the GSC.
- 10) We currently have five visiting scientists from China and had another 2 earlier in 2008.
- 11) The department continues to develop and maintain our 3 state of the art research labs, the "Geofluids Characterization and Modeling Laboratory," run by Drs. Hairuo Qing and Guoxiang Chi, the "Geomodeling and GIS Laboratory," administered by Dr. Stephen Bend and the "Faculty of Science Scanning Electron Microscope Laboratory" managed by Dr. Ian Coulson.

- 12) Drs. Ian Coulson and Maria Velez were awarded an ISOF new initiatives grants to aid in the development of an international geological field trip to Colombia for senior students in February 2009.
- 13) The student society, the D.M. Kent Club of Geology continues to grow and was very active holding several events this past year. They are established student chapters in the GAC, APEGS and both the Canadian and American Association of Petroleum Geologists.
- 14) The Department enjoyed many seminars this year from students, faculty and visitors from government (SER, GSC, NWT) and industry (NEXEN, Shell, SINOPEC) and other universities (Can and International). We also welcomed a number of distinguished lecturers on various speaking circuits, CSPG, GAC etc.
- 15) We continued public outreach, recruitment and retention through our departmental poster publicizing the Graduate Program in Geology, public presentations, labs and field trips for local school groups.
- 16) The department again is grateful for numerous donations from industry that supported a number of visiting speakers to the department, and materials for labs. We thank individual donors and a number of anonymous donations used towards our equipment and field trip fund. We appreciate the ongoing donations that support six individual prizes presented annually honouring our brightest and best Geology students.
- 17) The department requires new tenured faculty to cover growing enrolment and to offset secondments, sabbaticals and retirements. Immediate concerns are the lack of teaching space and materials for our expanding class sizes. We continue to upgrade the optics and petrology labs to better meet the needs of students and faculty, cognizant of the requirements for professional accreditation and demands from industry, but we are desperately seeking funds to replace our 60 year old second hand optical microscopes.

University of Saskatchewan: Dept. of Geological Sciences

- Kyle Larson will join us in May 2009 as new Assistant Professor in Tectonics
- Faculty complement will then consists of 2 Canada Research Chairs, 2 endowed research chairs, and 12 regular faculty (Associate Dean of Science, 8 Full Professors, 2 Associate Professors, 1 Assistant Professor) 1 Term Assistant Professor, 4 active Emeritus Professors, and 11 Adjunct Faculty
- Undergraduate programs in Geology, Geophysics, and Environmental Earth Sciences meet new CGSB requirements, which APEGS follows, whereas

Paleobiology does not.

- 29 B.Sc. graduates in 2008, including 1 in Geophysics and 2 in Paleobiology, all of whom are employed (18 in minerals, 8 in petroleum, 2 in grad school, 1 in environmental). One graduate won the University Medal of Science at Fall Convocation. Graduation rate has been consistent at about 25 for a number of years.
- However, we now have 213 declared majors in the department, up from 76 in 2006, which is causing a strain on resources, particularly in labs (e.g., 2008-09 Term 1 Mineralogy – 90 students for the 2nd year), and field schools. The Dept was asked to write a position paper to the College on the situation, which will be submitted to the province and senior administration requesting additional resources. Courses are oversubscribed and so an enrolment cap will be placed on courses to reduce enrolment if no resources forthcoming.
- Graduate student population steady. We have 36 graduate students, including 16 PhD and 15 women.
- All faculty except one have NSERC Discovery grants, as well as the Term Assistant Professor, two Adjunct Faculty, and one Laboratory Manager. Total research funding in excess of \$3M.
- Dr. Jim Hendry awarded Earned Doctor of Science from UofS, Oct 2008.
- Ore Gangue undergraduate society will celebrate 75 years in March 2009

Department of Earth and Atmospheric Sciences, University of Alberta

Faculty: Recruited Damian Collins (Human Geography, from Auckland; Assistant Professor); John Gamon (Environmental Informatics, from California State Los Angeles; Professor); Christian Haas (Sea Ice Geophysics, from Alfred Wegener Institute, Germany; Professor and Alberta Ingenuity Scholar); Lindsey Leighton (Invertebrate Paleontology, from San Diego State; Associate Professor); Richard Stern (Manager for the Canadian Centre for Isotopic Microanalysis, from Geoscience Australia; Faculty Service Officer); Robert Summers (Human Geography, formerly Faculty Lecturer; Assistant Professor); Bruce Sutherland (Geophysical Fluid Dynamics; from Department of Mathematics and Statistical Sciences; Professor); John-Paul Zonneveld (Petroleum Geoscience, from GSC Calgary; Associate Professor); We were successful in obtaining an Endowed Chair in Water Resources Science with funding from Encana.

Lost: Antonio Simonetti (ICPMS Facility Manager, to Notre Dame); Michael Caldwell (Seconded as Chair of the Department of Biological Sciences for 5

years); Philippe Erdmer has taken phased early retirement over the period 2008-2011.

Technical Staff: Recruited Heather Budney (Teaching Support, Sedimentary Geology and Paleontology); Heather Clough (Mineral Separation); David Pirie (Thin Section Facility); Henry Zhang (High Performance Computing and Scientific Visualisation)

Major Awards: Larry Heaman and Robert Creaser were elected Fellows of the Royal Society of Canada; George Pemberton was elected as a 2008 University Professor.

Curriculum: After a three year process we completed a total revision of our undergraduate curriculum. As a result, our normal teaching load will now be 2.5 single semester courses per year.

Major Equipment: We took delivery of a second electron microprobe (Cameca) and of the Cameca IMS 1280 ion microprobe that will be the flagship instrument of the Canadian Centre for Isotopic Microanalysis. We also acquired two Zeiss EVO 15 SEMs (with EDS, EBSD and CL detectors), and a new Triton TIMS instrument. We will shortly be purchasing a new XRD system with a donation from Conoco Phillips.

Mount Royal College Calgary - Department of Earth Sciences

In March 2008 the Government of Alberta gave MRC the right to award 'University -level baccalaureate degrees' in Arts, Science, Nursing, Communication, Justice Studies and Business. In September 2008, 356 students entered the BSc General Science major, 25 of whom will be admitted into the 2nd year of the Geology major in Fall 2009. Our first graduating class will be in Spring 2012. We expect strong competition for the 25 places given the student numbers in our first year courses: 150 in Physical Geology and 75 in Historical Geology We have recently hired two new full-time geology faculty: Michelle DeWolfe from St Mary's/Laurentian and Jeff Pollard from Memorial/North Carolina/Edinburgh. This brings our FT faculty complement up to five geologists and three geographers. We anticipate hiring at least one more FT geologist and one additional Instructional assistant in the near future.

Faculty can choose to follow the Teaching/Service/Scholarship stream which includes 9 hours of teaching per week per semester or the Teaching/Service stream which includes 12 hours of teaching per week per semester. This is the first time that 'Research' has been part of the formal job description for faculty at MRC.

Two new teaching labs are being constructed which will give us four in total. Research funds, research space and storage problems are our major concerns at the present time – economic issues aside!

University of Calgary

The Department of Geoscience at the University of Calgary is one of the largest Earth Science departments in Canada, with 38 full-time academic staff, 18 support staff, 12 emeritus professors and 35 research staff funded through external grants. The department has expertise in a broad range of pure and applied solid Earth Sciences, in energy-related research and environmental science. The department has experienced substantial growth in the past 5 years and operates by far the largest university program in Canada, with about 400 undergraduate majors and 170 graduate students. This growth is following a trajectory recommended in the 2005 unit review, with 14 new faculty members appointed in the past 2 years and several searches currently underway.

Most of the recommendations of the last unit review have been successfully implemented, including recent appointment of a two Canada Research Chairs in Hydrogeology and Solid Earth Geochemistry, respectively. In 2007 the Tamaratt Teaching Professorship in Geoscience was established with a mandate to develop and implement a multi-faceted plan to improve the learning experience of students through projects that address student engagement in geoscience courses, science literacy and participation in the science education research community. Two faculty searches are currently underway, in Applied Geophysics and Unconventional Gas Research (EnCana Chair).

Renaming of the department in 2007, from Geology and Geophysics to Geoscience, represents an important and particularly visible change. The new name is more inclusive, reflecting the breadth of multi-disciplinary teaching and research that occurs within our academic unit. Shortly after the change in name, Dr. David Eaton was appointed as Head of the Department in October, 2007. In September 2008, the Department released a new 5-year strategic academic plan (available at http://geoscience.ucalgary.ca/files/geoscience/Geoscience_strategic_plan_2008_2013.pdf). The plan includes a new mission statement: "To be an internationally recognized top-tier research department in Energy Geoscience, with complementary strengths in solid Earth processes, subsurface imaging, environmental and arctic studies, while providing comprehensive student-centred programs recognized for excellence world-wide."

Construction is currently taking place on a new campus building, called the "Energy, Environment and Experiential Learning" building. When complete in 2010, the EEEL building will house new teaching facilities including a state-of-the-art core laboratory.

UBC Okanagan

There have been no personnel changes at UBC Okanagan over the past year. However, we are looking for a senior industry research chair to head up the new Fipke Laser Ablation lab (interested bodies contact John Greenough). Similarly we are looking for a technician to operate the instruments. Dr. Jeff Curtis became the Head of Unit 3 (Chemistry Earth and Environmental Sciences) this summer.

The Canadian Journal of Earth Sciences office moved to UBC Okanagan at the start of January. In the same month we ordered over \$1,000,000.00 of instrumentation (Photon Machines EXCIMER laser, Thermo Element XR ICP MS, Thermo X-Series ICP MS, and Thermo iCAP ICP OES). Fipke has also contributed \$1,000,000.00 to help build the lab that will house the instruments. It begins construction in December and will be finished around May 2009. We received a Western Economic Diversification grant (\$350,000.00) to help with this project.

Three people in EESc have (or will soon have) new CFI labs in the Fipke Centre for Innovative Research. Dr. Robert Young is organizing the Cordilleran GSA Meeting to be held at UBC Okanagan from May 7 to 9. Sessions and Field Trips for the meeting are being organized as I write this. For information see: <http://people.ok.ubc.ca/rtryoung/index.htm>

The Freshwater Science Degree Program underwent a major overhaul this year. Honours degrees are now possible but students can also do FWSc without doing a major project. The Earth and Environmental Sciences Program is being overhauled this fall. Environmental Sciences (EESc 101) is being offered for the first time this fall. It has increased our first year "bums in seats" by 70% and did not hurt enrolment in Introductory Earth Sciences (Geology). There seems to be 10 to 15 students in each of 3rd and 4th year. The "Course Union" is very active and planning a trip (to Hawaii?) for the winter.

Earth and Ocean Sciences-University of British Columbia

There have been small increases in graduate student (171 to 174) and undergraduate course (5740 to 5923) enrolments with program enrolments

dropping from 353 to 338. Within undergraduate programs, geological engineering, geology, atmospheric science and environmental sciences remain healthy whereas geophysics and oceanography are causing concern. Improving the quality of undergraduate students remains a focus that involves outreach within UBC and into the schools. We are now in the second year of the Carl Wieman Science Education Initiative which saw EOS receive \$2 million over 5 years to improve the quality of undergraduate teaching and learning. Three Instructors have been hired short term to help with this initiative.

Continuing cuts to the operating budget have resulted in the permanent loss of a two Faculty positions (in sedimentary geology and a biological oceanography) but funding has been released for a tenure track Instructor position in support of the burgeoning environmental sciences program. Poor returns on endowments that support three EOS chairs are causing concern. Additional cutbacks to the operating budget have been largely mitigated by increased provincial funding for graduate students as well as increased international student enrolment funds. UBC has moved to an across-the-board 25% overhead charge on grants and contracts (NSERC and selected others excepted). This caused considerable concern although in the long term it should generate more funds for operating the Department. Before the global financial meltdown, plans for financing a new building, the Earth Systems Science Building, were moving forward swiftly with \$21 million pledged by industry, UBC committed, and the Provincial government sending encouraging signals. Now all is uncertain and so space (capacity and quality) continues to be an issue.

The big events this year have been EOS successfully hosting the Goldschmidt conference and UBC reaching the grand old age of 100.

University of Victoria (2007-08), Kathy Gillis

In August, the School of Earth and Ocean Sciences moved into a new building, after 18 years of being located in 5+ locations. We're still sorting through deficiencies but are delighted to finally have a home base for our students, faculty and staff. As an interdisciplinary School, an important change is that our jointly appointed faculty in fields of oceanography (joint with Biology and Physics) are now co-located with the rest of the School. A real plus for our Undergraduate programs is that our teaching labs are now housed in the new building, rather than 20 minutes from their instructors offices.

SEOS faculty complement has remained steady in the past two years, with 23 faculty, seven of whom are jointly appointed. The BC government cut

university budgets last Spring, so we will lose a position with the next resignation/retirement. Our undergraduate enrollments continue to increase somewhat. In our first year and outreach courses, 1110 students are enrolled and ~110 students enrolled in our major and honours programs. We remain under pressure to have higher undergraduate enrollments; to achieve this we have introduced a "Climate and Society" course this year and will add a course in "Natural Hazards" starting in 2009.

Our graduate numbers continue to be steady (42 MSc, 32 PhD), although it is increasingly challenging to meet our university targets, set as a result of new provincial funding.