Department of Geography and Environmental Management
Faculty of Environment, University of Waterloo

ANNUAL REPORT TO FACULTY COUNCIL AND GENERAL ASSEMBLY
2020-21

The Department of Geography and Environmental Management (GEM) is ranked in the top 150 of the QS World University Rankings of Geography departments and occupies the fifth position in the country. It is also ranked in the top 75 Geography Departments according to the Shanghai Academic Rankings of Word Universities. On both counts, our success rests on the strong commitment of its faculty, staff and students to academic excellence in scholarship and learning and its vibrant, supportive and engaging environment within the Faculty.

2020-2021 was a challenging year for the Department with the complete upheaval of all our teaching and research programming as a result of the global pandemic. The impact of COVID-19 has been significant with field research seasons significantly curtailed, international and local field-based courses cancelled, and access to University buildings for staff, faculty, students severely restricted resulting in significant impacts on the way we teach, learn and conduct research individually and as a community. Despite these very major constraints, GEM has risen to the challenge of providing high quality undergraduate and graduate programming and conducting nationally and internationally recognized research. This has involved everyone’s effort including staff, faculty and students and at this time of the year, it is important to recognize everyone’s contribution, however large or small, in helping to ensure that the Department continues to thrive.

Academic Plans
The department offers undergraduate plans in Geography and Environmental Management, Geomatics, and Geography and Aviation; all but the Aviation program are available as regular and co-op streams. There is continued activity in the 2+2 and 1+2+1 undergraduate plans with Chinese universities, including Wuhan University, China University of Geosciences (Wuhan), China University of Geosciences (Beijing), Capital Normal University (Beijing). Our graduate thesis programs (Masters and PhD programs) continue to be strong. The Masters in Climate Change (MCC) program continues to strengthen with students being drawn from across Canada to this and the online Graduate Diploma in Climate Risk Management that was launched in September 2018. A new BSc in Climate and Environmental Change is in final approval stages at the university and we hope it will be launched in 2022.

The department also partners with a number of other academic units in the delivery of undergraduate and graduate plans. The Department makes a significant contribution to the program in Masters of Economic Development and Innovation, based in the School of Environment, Enterprise, and Development. We also contribute strongly to the University’s Collaborative Water Program which is delivered by multiple departments through the Water Institute and also the Faculty if Science’s Water Science Specialization. Through our partnership with the Department of Geography and Environmental Studies at Wilfred Laurier University, the Waterloo-Laurier Joint Graduate Program in Geography continues to thrive.

Faculty and Staff
GEM is home to 34 faculty including three Canada Research Chairs (Tier 2): Sarah Burch (SSHRC), Maria Strack (NSERC) and Christine Dow (NSERC). It is also home to three University Research Chairs (Daniel Scott, Claude Duguay and Susan Elliott).
We have had a stable year on the staff front. The department is very fortunate to have a highly skilled complement of staff who are essential in maintaining the high quality and level of service to students and faculty alike. Susie Castela continues as the Department Administrator while Alan Anthony and Teresa Wilson continue as Graduate Program Administrators. Miljana Kovacevic is the Undergraduate Program Advisor for Geography with Jesse MacLeod undergraduate advisor for Geomatics, Aviation and international undergraduate programs.

Research
Research continues to be a high priority activity, with GEM faculty securing research funding totalling $5.8 million (46% of the total Faculty research funding) and the highest per capita funding of units in the Faculty. Major new and ongoing funding sources include:
- Tri-council SSHRC and NSERC. This includes Partnership, Insight, Discovery, New Frontiers in Research grants.
- Provincial sources of funding include the Ontario Centres of Excellence, Alberta Innovates, Ontario Ministry of Agriculture, Food and Rural Affairs
- The Department is also a very active player in the Global Water Futures (a federally funded CFREF project) with substantial funding to team leaders Merrin Macrae and Claude Duguay.
- Private sector research partners include International Olympic Committee, World Bank, Caribbean Development Bank, Suncor Energy, and Climate Change Emissions Management Corporation. Our international research partnerships also continue to grow.
Faculty researchers also participated in funded research collaborations (e.g. SSHRC Partnership, Networks of Centres of Excellence [AllerGen and Meopar], CFI, NSERC CRF, PICS) with other universities. Furthermore, private sector research partnerships continue to be important, as funding is received both directly and through NSERC and OCE collaborations.

Awards
During the year colleagues received significant recognition for their scholarship and discipline-specific contributions.
- Sarah Burch was awarded a Clean50 Individual award for sustainability.
- Susan Elliott received the 2020 Melinda S. Meade Distinguished Scholarship Award in Health and Medical Geography.
- Suzanne Kearns was awarded the University’s Distinguished Teacher Award (2021).
- Jonathan Li was awarded the prestigious ISPRS Samuel Gamble Award for contributions to photogrammetry and remote sensing.
- Derek Robinson was awarded the Biennial Medal for Exceptional research contributions to environmental modelling and software and for promoting the aims of the International Environmental Modelling and Software Society.
- Maria Strack was inducted into the Royal Society of Canada, College of New Scholars, Artists and Scientists

These are all significant accomplishments recognizing the major contributions colleagues have made in their fields.

Academic Programs
The Department’s delivery of high quality teaching and learning is dependent on our faculty and sessional instructors. However, it is also underpinned by the Associate chairs and advising staff whose work is vital to the success of our educational program.
**Graduate** – Chris Fletcher continued as Associate Chair, Graduate Studies this year. Alan Anthony continued as the Graduate Program Administrator for MES, MSc, MA and PhD programs while Teresa Wilson continued as Graduate Program Administrator for the Masters of Climate Change and the Graduate Diploma in Climate Risk Management. Our graduate programs continue to be in demand. This year, 12 new PhD students and 66 Masters students (25 in GEM, 41 MCC/GDip) entered the grad program. In total, the total current enrollment consists of 135 Masters and 76 PhD students in our graduate program for a total of 211 students (full time and part time). Success by geography graduate students in receiving external awards is very high with students winning 1 Vanier Scholarship, 3 SSHRC, 6 NSERC doctoral, 3 NSERC masters, and 3 OGS PhD.; this represents 15% of our graduate students. During the 2020 calendar year, 27 students received their Master’s Degree in Geography and 14 students received a PhD. Additionally, the total number of MCC students receiving their degree was 18 with a further 3 receiving their Graduate Diploma.

As part of our ongoing efforts to improve the graduate program, we have conducted a complete curriculum overhaul with an emphasis on professional development. In addition, our administrative systems have been enhanced to increase student support through the strategic and democratic use of departmental scholarship awards, improvements to the TA experience (e.g. training and evaluation) and the instigation of regular social activities to build cohort and maintain safe connections through the pandemic.

**Undergraduate** – Ian McKenzie continued to serve as Director for Aviation, and Associate Chair, Undergraduate for international plans (2 + 2 and 1 + 2 + 1) and Brent Doberstein served as Associate Chair, Undergraduate studies for GEM and Geomatics plans. Jesse MacLeod supported GEM in the Department office and to work with Miljana Kovacevic serving as Undergraduate Program Advisors, handling Geomatics/Aviation and GEM plans respectively. A total of 184 new students entered Geography plans in the 2020-21 academic year (51 Geography, 60 Geomatics, and 73 Geography and Aviation). These first year admits were supplemented by 12 new 2+2/1+2+1 international students, along with 8 internal transfer students to our programs, bringing the overall total number of new students to 204. In total, across all years and plans, there are 769 students enrolled in GEM representing a 4% increase over the previous year.

At Convocation ceremonies in Spring and Fall of 2020 a total of 111 students received a BES Degrees in Geography, Aviation, or Geomatics with 12 students receiving a minor in Geography. A grand total of 123 students (majors and minors) graduated in 2020.

**Outreach and Awareness and curriculum development** The Department’s Committee on Undergraduate Recruitment continues to conduct significant outreach to well over 750 high schools in Ontario and 1500 teachers. In addition, an ongoing review of the graduate curriculum has resulted in the re-alignment of core graduate level courses. Along with our regular in-person undergraduate curriculum offerings, a new course, “How Pandemics Change the World”, will be a fully online course in 2021-22. We now have six CEL online courses available to students on and off campus; in 2020-21 1600 students were enrolled in these courses.

Finally, the department provides an important environmental educational service teaching role for the Faculty and University with students from across the faculty and University attracted to courses that are offered in our degree plans and delivered by our instructors. In 2020-21, GEM taught more than 35% of all students that take courses in the Faculty of Environment (including students registered in programs within the faculty and from other faculties) and it teaches 57% of
all students from outside the Faculty who take courses in the Faculty. GEM remains committed to the delivery of high quality educational programming in geography, geomatics and aviation. 2021-2022 will continue to be a challenging year for delivery of our programs but GEM will continue to work with our Faculty colleagues and has carried out scenario and contingency planning in order to prepare for and rise to the challenges that we face.

**Administration**
Contributions in the past year to University and Faculty level administration include: Jean Andrey continued as the Dean of the Faculty and Johanna Wandel was appointed to the Associate Dean for Strategic Initiatives. Peter Deadman remained the acting Associate Dean for Graduate Studies and Dan Scott continued as the Director of the Interdisciplinary Centre on Climate Change and the Director of the Masters in Climate Change. Sanjay Nepal is currently the Director of UW/WLU Graduate Program in Geography. The department also makes a substantial contribution to the university governance through substantive representation in the Faculty Association of the University of Waterloo (FAUW) Faculty Relations Committee, University Awards Committee and Senate.