Below the Ice
by Dr. Allyson Brady

“It must have been really cold” has been the typical response from family and friends upon learning that I was in the Antarctic for nearly two months in fall 2014. I was there as part of a small, international research team to study Lake Untersee a perennially ice-covered lake that hosts non-lithified (that is, soft rather than hard mineralized) stromatolites. Our team spent ~ 5 weeks camping at the lake sampling everything from water and sediments to taking ice-cores from the surrounding glaciers in order to understand the history of the lake, how the ice cover changes with time, how these stromatolites form and what types of microbes are present and active in a lake that is never directly exposed to the atmosphere.

Lake Untersee is located in East Antarctica, in Dronning Maud Land. It is on the opposite side of the continent from McMurdo, the US led research station. The largest freshwater lake in the Antarctic interior, Lake Untersee is ~ 6.5 km long with a maximum depth of 160 m. The ice cover ranges from 2-6 m and never melts. The only water input is from the Anuchin glacier located at one end of the lake. There is no outlet. While most of the lake is saturated with oxygen, there is a small anaerobic basin that contains very high amounts of methane, up to 21.8 mmol/L at the deepest depths (~ 95 m), among the highest concentrations reported for natural systems. For comparison, at standard atmospheric temperature and pressure methane solubility is only 1.4 mmol/L. Not only is Untersee unique with respect to the high concentrations of methane, but the laminated stromatolites that grow up to 0.5 m in height are analogues of similar structures found in the fossil record of early Earth. As the mechanism of stromatolite growth is presently unclear, and methane source and microbes involved in cycling are likewise not well constrained, Lake Untersee presents the opportunity to address fundamental research questions related to microbial ecology and activity in cold environments.

I have had the pleasure of working with the PI of the project, Dale Andersen of the SETI Institute for many years at other analogue sites. Despite some trepidation about staying in a tent in the Antarctic for nearly two months, I jumped at the chance to see the Ice when he asked if I wanted to join the team. After many trips to MEC to stock up on additional winter clothing it was soon Oct 28 2014; time to say good-bye until Christmas and set off for Africa.

Continued on page 10
This past year has been a challenging year for the School, as we adjust to a new faculty complement following the retirement of several faculty members over the past year, including Bill Morris, Pavlos Kanaroglou, Walt Peace and John Eyles. Their loss, along with a tough faculty-wide budget environment and limited opportunities to fill their positions, has meant that we are looking carefully at our program and course offerings.

While changes will occur, our commitment to the delivery of our programs and excellence in teaching remain! We are also excited about the upcoming academic year, which sees the launch of a new Co-op program for our BSc students. Working with the Science Career and Co-operative Education (SCCE) office, the Co-op program will offer opportunities for our students to engage in projects in the environmental sector by working directly with employers. The Co-op stream will add a fifth year to the degree, and offer two eight-month field placements, with opportunities in a variety of different sectors and with different employers. Initial response has been impressive, with over two dozen students applying to the program! For our Alumni, if you have any opportunities for our Co-op students, please be sure to get in touch! The SCCE office will be more than happy to assist. On a related note, our BA students can participate in various Experiential Education opportunities both on- and off-campus.

Our faculty continue to have success in research, teaching, and outreach. Exciting, new research grants such as Paulin Coulibaly’s FloodNet grant, awards for research and writing such as Richard Harris’ book award, and the ‘Start the Cycle’ program, facilitated through the Geographers Without Borders group (http://www.geographerswithoutborders.com), highlight the diversity of interests amongst our faculty, staff, and students. Further details on these and other current developments in SGES can be found in the following pages. You can always stay up-to-date with SGES news through our Facebook or Twitter accounts. Be sure to ‘follow’ and ‘like’ us!

Dr. Paulin Coulibaly’s project, FloodNet has been recognized by NSERC, granting McMaster $5 million over five years. Floods are the largest natural hazard to life, property, and environment in Canada. FloodNet will enhance flood forecasting in Canada and aims to reduce as well as better prepare Canada for flood risk. Read more about FloodNet on Page 7.

In August 2014, a new Cox Sediment Core Scanner funded through the Canadian Foundation of Innovation was delivered and installed on the 4th floor of GSB. The new facility will allow new capabilities for sediment core analysis at McMaster. The core scanner provides trace element analyses (XRF), x-ray radiography and imaging at high resolution (200 microns) allowing detailed records of climate change to be recorded from lakes and oceans. The new core scanner can be found in Dr. Ed Reinhardt’s lab.

Congratulations to all of the undergraduate students that recently graduated during spring convocation in June, 2015!

Congratulations to all of the graduate students who recently completed their Master’s or PhDs!
McMaster Virtual Geology Museum
by Dr. Maureen Padden

A new geological museum is opening at McMaster in September 2015, but there won’t be any ribbon to cut. Displays at the new McMaster Virtual Geology Museum can be found online at: www.macgeo.org. The virtual museum is a showcase for our departmental geological samples. It was designed by Lisa Leoni and funded by the Imperial Oil Outreach Initiative.

The site gives our junior Earth Science students, high school classes and the general public a complete overview of common rock-forming minerals, common invertebrate fossils and the three rock groups. Lisa carefully selected the samples from our collection and edited photos to show off their properties. Novice Earth Scientists often find it difficult to really “see” the samples and properties such as lustre, cleavage and fracture. The photos help this process; captions contain a summary of features without too much technical detail. The Museum also contains identification tutorials for all three rock types and minerals.

The samples in the virtual museum are collected into rock groups to help high school students in grade 12 Earth and Planetary Science courses narrow their focus to the most commonly occurring rocks and minerals. This makes it more likely that these high school students will find samples they recognize when they go on hikes or field trips and keeps the memory-work to a minimum. We’re hoping the virtual museum will inspire some students to continue to learn about rocks, minerals and fossils in their future studies.

Students in our courses can use the website to review for tests or to prepare for more senior courses. Samples are “tagged” with our junior rock course codes. So visitors can click on Earth Sc/Envir Sc 1G03 to see the rocks and minerals learned in that course.

We’ve also included special sections such as an introduction to the rocks of the Niagara Escarpment, the Fleming Mineral Collection and the Christianson Collection. These beautiful collections would inspire anyone to linger in our newest Museum.

Top Left: Brachiopod fossil from the Invertebrate Fossil collection; Top Right: Shale sample from the Sedimentary Rock collection; Bottom Left: Conichalcite from the Christianson Collection; Bottom Right: Pyrite sample from the Mineral collection (Photos by Lisa Leoni).
Richard Harris is a professor at McMaster University whose research interests include housing, suburban development, and urban geography. He came to Mac and joined SGES in 1988, which was known as the Department of Geography at the time. Richard teaches a suite of geography classes within the SGES including third-year courses in urban social geography, urban historical geography, and cities in the developing world and a fourth-year course on urban housing. We asked Richard a series of questions related to his background and current research:

Q. Where did you grow up?
Sutton Coldfield, a suburb of Birmingham, England.

Q. What was your first job?
I worked shifts for six months as a hospital porter. It taught me to look busy (even on quiet nights) and that I never wanted another job working shifts!

Q. What is your educational background?
I went to school in England, and then applied to grad school (MA) in the United States because I wanted to see America. Having decided that I actually enjoyed grad school, but that I didn’t want to stay in the United States, or go back to England, I applied to doctoral programs in Canada, and so ended up doing doctoral work at Queen’s.

Q. What brought you to McMaster?
There weren’t a lot of options!

But I was very happy to come to Mac, and for several reasons. The Geography department had an excellent reputation; I was going to be able to teach to my expertise; Hamilton was a lot more affordable than Toronto (where I was living at the time); and my wife was delighted to be coming home. (She grew up in Ancaster.) All in all, a pretty compelling set of reasons.

Q. What is your research focus?
I’m interested in many aspects of cities, but especially their social geography: who lives where, why, and with what consequences. Those sorts of questions have informed my historical research on suburbs, neighbourhoods, and housing markets in North America, but also in recent years in many other places too: India, Kenya, the Caribbean.

Q. What is your research going?
I’m wrapping up projects on suburban development, worldwide; on the social geography of Bombay and Calcutta (as they were then) in 1900; on the history of neighbourhoods in Canada. Together with a group of excellent grads and undergrads, I’m currently engaged in a study of the housing market and social geography of Hamilton since 1970.

Q. What is the biggest challenge that your research faces?
The obvious answer is funding, and that is part of the answer. But the truth is that, at this stage in my career, what I need more than anything is time to write up the material that I have already collected.

Q. What do you enjoy most about teaching?
Helping students see the connections between what I teach in class and what is happening, right now, in the real world. In the process, getting them to see that a geographical perspective matters.

Q. What inspires you to teach?
Students, when they ‘get it!’ Feeling that I have communicated and, maybe, inspired.

Q. What keeps you enthused about your career?
Discovering stuff. I love the process of research, but perhaps especially of writing – the way it helps you to think through complex issues, to discover things, and sometimes to change your mind.

Q. How do you manage stress?
At a time when we are hearing more about mental health issues, and when many students and junior academics are worried about jobs and careers, that’s an important question. I try to remind myself that I am lucky, privileged. That my problems are ‘First World problems’. And that whatever it is that is causing the stress will pass. Also, a glass of wine at bedtime doesn’t do any harm. (I said a glass, not a bottle!)

Q. Besides work, what are your passions?
Walking, reading fiction, watching the tide come in (unfortunately, this doesn’t work in Ontario). I really enjoy cycling to work and playing squash, but I’m not sure I’d call them ‘passions’!

Q. What is the best advice you’ve been given?
Keep your eye on the ball.
Research Spotlight: Dr. Lesley Warren

Lesley Warren is a professor at McMaster University’s School of Geography and Earth Sciences. Her research interests include aqueous geochemistry and molecular microbiology’s effects on water quality. Lesley teaches both undergraduate and graduate courses spanning topics such as environmental geochemistry and geomicrobiology. Her educational background includes a BSc and a PhD from the University of Toronto. Outside of her work, Lesley enjoys travel, water based activities, and painting. She has been at McMaster since 1999.

Q. Where did you grow up?

Around the world, my father was in the Royal Navy

Q. What brought you to McMaster?

I interviewed as a candidate for an NSERC UFA (University Faculty Award) supported position within the newly formed SGES. I was impressed by the interdisciplinary theme at McMaster

Q. What is your research focus?

My group focuses on characterizing the multidisciplinary processes that impact water quality. We work in natural lakes as well as resource sector contexts (base metal mining and the oil sands). We combine aqueous geochemistry with molecular microbiology to tease out how naturally occurring bacteria are affecting water quality. Our approach combines field work with laboratory analyses and experimentation.

Q. Where is your research going?

My group is heavily focused on advancing biogeochemical understanding of water quality and waste stability in mining contexts. The findings of our multidisciplinary program are leading to the development of more sustainable waste management and reclamation strategies as well as the development of novel, biologically based monitoring tools and management strategies to improve mine water stewardship.

Q. What is the biggest challenge that your research faces?

Characterizing complex, dynamic, mine wastewater and reclamation contexts fast enough to provide our industrial partners with the information they need to improve their current practices and develop biologically informed strategies for their waste streams.

Q. What do you enjoy most about teaching?

Seeing the enthusiasm of my students when presented with the opportunity to do hands-on lab and field work. Most of our students in SGES have strong links to the outdoors, when given an opportunity to study real world processes they really connect with the material.

Q. What inspires you to teach?

The opportunity to inspire future geoscientists through demonstration of how the fundamentals they are learning in class are directly relevant to real world problems as well as expose them to the possibilities in geochemical research at both the UG and Grad levels.

Q. What keeps you enthused about your career?

The opportunities to: engage and collaborate with my students; do world class research that will directly benefit our industry partners and help steward our freshwater supplies; and demonstrate the importance of science in meeting the grand environmental challenges the world is currently facing.

Q. Who or what inspires you?

As an immigrant to Canada, the incredible opportunities this country offers to be whatever you want and the social fabric of this country that is built on kindness, giving back and helping others.

Q. How do you manage stress?

Probably like most busy people by building in time for exercise into my daily schedule and spending time with friends and family whenever I can.

Q. What is your leadership style?

I would say Interactive and quality driven. I try to lead by example and inspire my students to bring their A game to everything they do.

Q. What is the best advice you’ve been given?

Two pieces of advice have stuck with me: 1, it’s better to ask for forgiveness than for permission and 2, “keep your powder dry” when under pressure (i.e. don’t get stressed, keep focused and just ‘get ‘er done!”
Taking to the Field

by Lisa Leoni

Our first year Earth and Environmental Science teaching team hit it out of the park with the introduction of two new field based labs this year.

In EarthSc/EnvirSc 1G03 students explored McMaster’s McMarsh wetland. Equipped with hip-waders, stream gauges, multimeters, and water-level meters, students characterized the stream discharge and chemistry of Coldwater Creek. This field lab was a huge success, and would not have been possible without the amazing team of Teaching Assistants (pictured right) that guided the students and worked out the inevitable kinks of running a field lab for the first time.

EnvirSc 1B03 also introduced its first field-based lab on campus which, despite the freezing temperatures and rainy days of unpredictable March weather, also turned out to be a great success! In this lab, students used winter tree ID keys to identify five tree species on campus and took measurements to determine the amount of carbon sequestered in each.

Field labs have always been one of the favourite components of our courses for both the teaching teams and students. For this reason, we are hoping to introduce another field-based lab in the new EnvirSc 1C03 course this year. Along with the tree ID lab, the teaching team plans to implement an outdoor soils lab where students will characterize the physical and chemical properties of soils on campus.

Despite the logistical challenges of running field labs in large classes (~400-600 students) we will continue to look for every opportunity to take our students outdoors. Besides, what better way is there to learn about the earth and environment than taking to the field?

Top: EarthSc 1G03 Teaching Team – (from left) Alex Hodson, Lauren Madronich, Harrison Martin, Brandon Mackinnon, Winnie May Chan, Robert Hendricks, Lisa Leoni, Caitlin McEwan, Heather Bonn, Gabriel Arcuri

Middle: EarthSc 1G03 students using a stream gauge to measure water velocity (left) and a water level meter to measure the depth of the water table (right)

Bottom: EnvirSc 1B03 students measuring tree circumference (left) and identifying the tree species (right)
Introduction to the NSERC Canadian FloodNet

by Dr. Kurt Kornelsen

On November 28, 2014, Member of Parliament David Sweet came to McMaster to officially announce the federal government and NSERC’s funding of the NSERC Canadian FloodNet which is hosted in the School of Geography and Earth Science at McMaster. FloodNet was conceived by its Scientific Director, Prof. Paulin Coulibaly of SGES and the Dept. of Civil Engineering, as a vehicle to prepare Canada to better face the reality of flooding. In recent years, the costs of flooding in Canada have been on the rise with 2011 flooding in Manitoba costing around $1.2 billion and costs associated with the 2013 Calgary flood estimated to be around $6 billion. Several reviews following these floods determined that Canada lacked the capacity to provide accurate and reliable flood forecasts. These problems are expected to compound in the future as increasing human development combined with the impacts of climate change will result in Canada being increasingly exposed to risks related to flooding. Risks that, we as a nation, are not currently prepared to deal with.

FloodNet is a multi-disciplinary research network born out of this reality. The Network is a collaborative effort between academic experts from 13 universities and partners from over 30 organizations including, government, private sector, and NGOs. FloodNet will also create the next generation of leaders within this field by training nearly 70 graduate students and post-docs. The active involvement of end-users is a key strength of FloodNet as it will allow the techniques and technologies that are developed to be relevant to end-users responsible for flood preparedness and forecasting. This aspect is important so that the findings in the academic realm can be translated to real benefits for Canadians.

The FloodNet scientific program was designed to meet three primary objectives. The first is to ‘Advance Knowledge on Flood Regimes (Past and Future) and Provide Guidelines for Infrastructure Design’. Research towards this objective will focus on the space-time dynamics of flooding. It will consider effects such as climate change and recommend formal methods to predict how often a flood of a particular magnitude will occur in the future. This information is vital for engineers who design water infrastructure such as levees and storm water drainage as well as urban planners responsible for zoning in floodplains. The second objective is to ‘Advance Knowledge on Flood Forecasting Systems and Enhance Flood Forecasting in Canada’. Research in this area will focus on creating flood forecasts that are more accurate and have a longer lead time, thus allowing better information for decision makers. This will be accomplished using state of the art information from satellites and ground based monitoring to update forecast models in real time. The final objective is to ‘Assess the Impacts of Floods on People, Society and the Environment’. Currently, flood risk and costs are estimated from a purely physical standpoint. Research in this area will seek to better understand the socio-economic aspects of flooding and determine the positive and negative consequences of flooding on the natural environment. Flooding is inevitable, but a sound understanding of the socio-economic and environmental impacts of floods when they do occur will allow decision makers to adopt practices that will minimize those impacts and increase the speed of recovery.

The School of Geography and Earth Science and McMaster University have contributed a number of leading experts to the FloodNet initiative. The Scientific Director of the Network is Dr. Paulin Coulibaly who will be leading the development of the state of the art Canadian Adaptive Flood Forecasting and Early Warning System (CAFFEWS) to increase the flood forecasting capacity in Canada. Dr. Altaf Arain is leading a project to describe the spatial variability of observed and simulated extreme precipitation under current and future climate scenarios. Dr. John Eyles will be leading a project to assess and plan for the socio-economic effects of floods and will be working with Dr. Nikolaos Yiannakoulias. Also, Dr. Yiping Guo of McMaster’s Department of Civil Engineering will contribute research related to flood infrastructure design. Each of these researchers will contribute to various other projects throughout FloodNet lending their expertise for the benefit of Canadians.

For detailed information about FloodNet or to contact us please visit www.nsercfloodnet.ca or follow us on Twitter @NSERCFloodNet.
SGES Alumni Visits

Last academic year SGES hosted visits by four distinguished alumni. Our first visitors, Glenn (BSc ’75 & MSc ’79) and Cathy McMaster (BSc ’76) were in Hamilton in October. Glenn is a Senior Geologic Fellow at ConocoPhillips Houston and used a trip to Hamilton to reconnect with McMaster. Glenn gave a stimulating and well-attended presentation on unconventional oil and gas in North America, including his homemade frac gel, using ingredients from the local Home Depot, and mixed at his mom’s house. This was followed by a trip to the new Phoenix where he had a chance to socialize with our AAPG Student Chapter. Our next visitor was Susan Cunningham (BSc’80), Executive Vice President at Noble Energy, who has already provided a tremendous boost to SGES through her endowment of her named Research Chair in Geology. In addition to addressing the newly formed Academic Women’s Success and Mentorship (AWSM) group on her leadership strategies and experiences and insights as a woman in the oil industry, Susan also spent time with SGES students and faculty engaging in rather more informal discussions about the future of the oil and gas industry and the opportunities for our students.

In the new year, AAPG President-elect, John Hogg (BSc’81), President of Skybattle Resources, spent a couple of days at SGES giving a standing-room-only talk on his exploration and drilling efforts in the Canadian Arctic, with a focus on environmental concerns and challenges working in such a sensitive area. Our last visitor was D. Keith MacDonald (BSc ’80), Director of Venturion Oil Limited and president and founder of the D. Keith MacDonald Foundation. Keith gave a retrospective talk on his insights on his own career in oil and gas. John and Keith also took the opportunity to meet with the McMaster AAPG Imperial Barrell Award team as well as enjoying more informal visits with our AAPG Student Chapter and faculty. Keith and John’s visits were particularly timely, as they coincided with Professor Janok Bhattacharya’s new course in Basin Analysis and Petroleum Systems (Erth Sci 4J03), and it was a marvelous opportunity for our students not only to learn about exploration of oil and gas in the lectures but then to be able hear the real-life examples of exploration successes (and challenges) from our own alumni.

The current group of SGES students also organized their own inaugural and well-attended student-alumni networking evening March 12th at the Faculty Club. Dr. Bhattacharya also hosted a McMaster reception at the Annual CSPG Geoconvention in May and enjoyed catching up with a number of alumni during his visits to Calgary, letting them know about the exciting things happening in SGES. The McMaster alumni-association also hosted a July 4th reunion for the Geology classes of 1984-86, organized by Mark Braganca (BSc’85), CEO of Performance SQA. Dr. Bhattacharya led the group on a tour of the new SGES classrooms, labs, and lounge areas, and this was followed with pizza and refreshments at Alumni House. We all enjoyed the evening slide show, which of course emphasized the camaraderie that stems from the many field trips, with marvelous photos of the Grand Canyon trip, Whitefish Falls Field camp, and lots of fieldwork in the snow!

SGES will be looking forward to additional alumni events in 2015-2016.
McMaster Mementos

by Walter Peace

It is a time-honoured tradition at universities around the world that graduating classes donate a lasting memento to their alma mater. These tangible legacies take a variety of forms including plaques, architectural features on buildings, and statues, to name but a few. McMaster has benefited from many such contributions over the years, each of which provides meaning to and enhances the character of the campus. Possibly the earliest such legacy was a gift from the graduating students in the Faculty of Arts in 1928, before McMaster opened its doors in Hamilton in 1930. On the south side of Hamilton Hall there is an oriel (an oriel is a projecting window) adorned with a sundial. At the base of the oriel an inscription reads Presented by Arts ‘28. Another sundial, this one donated by the Faculty of Science, Class of 2005 can be found in front of Burke Science Building at the west end of the garden between the flagpoles. At Faculty Hollow on the north side of Hamilton Hall, the Class of 1954 celebrated its 50th reunion with the Oasis Garden, dedicated in 2004. The most recent addition to the list of class legacies is found under the sycamore tree at the southwest corner of University Hall. Here the Class of ‘64 celebrated its 50th anniversary in 2014 with the dedication of the Founders Garden. In this garden we find a life-sized bronze statue of the institution’s benefactor and namesake, Senator William McMaster. The statue, created by Edmonton artist and sculptor Zazo Hajdu, was commissioned by the McMaster Alumni Association “In honour of the University’s 125th anniversary”. Founders Garden and the statue of McMaster were unveiled in September, 2014. This feature has quickly become a popular site for photographs. In my GEOG 1HA3 course, I use a photo of the statue with the caption “Hello, my name is William McMaster. And now for Dr. Peace’s ‘Map of the Day’”. (See image top right.) In April, 2015, the students in GEOG 4UD3 posed with Senator McMaster and me for a class photo (See image bottom right).

As you walk around the campus, be ready to be pleasantly surprised by when you come upon these and other generous contributions from graduating classes.
Below the Ice

Continued from page 1

Cape Town, South Africa is the closest access point to East Antarctica and it was here that our 6 person research group gathered to await our flight to Novolazarevskaya Station. Novo is a Russian research station opened in 1961 that would be our home for a short time prior to heading to Untersee. We spent time here organizing the supplies (freeze-dried food, my first apple back never tasted so good!) needed for us to be self-sufficient and safe during our time at the field site. Although only ~70 km from Novo, reaching it required an almost 10 hour drive on a track vehicle over snow and ice covered crevasse fields.

Finally we arrived at Lake Untersee. The stark beauty of the area is hard to describe. Soaring peaks and the vast expanse of ice was stunning and serene. Despite few overt signs of life in the area (snow petrels were fairly common), it was amazing to think of the vast microbial ecosystem that existed below the ice. Once we were dropped off, we were on our own although we did maintain daily radio contact with Novo. After a couple of days of setting up camp (water and shelter were top priorities), we were able to start our work. My main area of interest at Untersee is in understanding the creation and preservation of organic and isotopic biomarkers. While there are no fish or bugs in Untersee there are microbes. These microbes live in the water column and also form pink-coloured mats of different morphologies on the surface of the sediment and on the stromatolites. Of course, to sample these stromatolites and mats we needed someone to head under the ice to collect them. Fortunately, Dale has over 20 years of experience diving in the Antarctic and collected both samples and images of the underwater environment. Members of the team from Russia and Japan focused on identifying the microbes present in the lake using molecular techniques and their photosynthetic potential and associated pigments. For myself, I am interested in what kind of biomarkers, lipids in particular, are formed by these communities and how long these organic molecules might survive in such a cold environment after the bacteria are dead and gone. In addition to a variety of mat samples, I also collected water from different depths in the lake for geochemical and organic analysis. Collecting enough biomass for organic extractions required a lot of water, and a lot of filtering. I spent many of my days in a tent (very) slowly filtering water and then carefully wrapping up each filter in clean, organic free foil for transport back to McMaster. While sample processing is on-going, my analyses will provide information about the active microbial community, carbon sources, and biomarker creation and preservation in an effort to understand how life copes with these types of environmental constraints. The better we understand these modern extreme environments, the better prepared we are to investigate early Earth or other planetary systems.

So was it cold? Honestly, it wasn’t bad. Fortunately we were there during the Antarctic summer. Temperatures were generally quite pleasant during the day with many days above 0°C. Ironically we were having trouble maintaining frozen samples towards the end of our time at the lake. Who’d have thought freezing samples would be a problem in Antarctica? Nights were cold especially in the first week, frozen water bottles in the tent do make brushing your teeth a challenge, but as the sun never set the tents quickly warmed up (almost unbearably) at around 3 am when the full sun was on them. Nothing -40°C sleeping bags and a sleep mask couldn’t help. However, wind so loud that it sounded like a roaring train and the odd feeling of your tent lifting ever so slightly while you tried to sleep was another story...mid-night checks of the tent pegs and guylines were not uncommon. While I think I will avoid freeze-dried food for some time, the trip was a remarkable experience; Lake Untersee is a fascinating system and I feel very privileged to have been among the few who have visited Antarctica.
Start The Cycle

by Justin Hall

One of the hottest research topics in transportation planning is *active transportation*. A quick Google Scholar search will produce 2.25 million results in under a 10th of a second. Unfortunately, many of the findings, conclusions, and recommendations made by those research papers are doomed to be relegated to the depths of Google’s search.

Start The Cycle was founded by two graduate students, Charles Burke and Justin Hall, in an effort to bring active transportation research to a form of utilitarian transportation – the bicycle. Start the Cycle is a free bike share program, which provides bikes for under-serviced populations through local libraries. The program aims to make borrowing a bike as easy as borrowing a book. For many it may seem inconceivable that a child would not have access to a bike, or that parents would allow a child to ride a bike on their own through Hamilton’s streets. Although having access to a bike is a great tool for youth to develop independence and fitness; purchasing a bike is a financial expense that often sits low on the priority list for some Hamilton families.

The success of the SoBi Bike Share program in the city, which has produced over 26,000 trips since March 20th, 2015, is evidence that there is a latent demand for adults to access bicycles. Unlike seagulls, the next generation of cyclists do not simply appear, they have to be developed. Start The Cycle, in partnership with the Hamilton Public Library, SoBi Hamilton, and Canadian Tire Jump Start are trying to develop that next generation of SoBi cyclists by focusing on youth aged 10 and up. Currently, there are two pilot libraries, Barton Street Library and the Red Hill Valley Library, with a total 16 bikes being checked in and out regularly.

As the concept evolved off campus, our team recognized the same conditions, lack of access, and need for transportation within our nation’s college and university campuses. When students travel to McMaster campus from far and wide in September, a bike typically does not fit in their suitcase. Free access to a bike for transportation and recreation provides another option aside from buses, taxis, or walking. Start The Cycle’s first foray into bike sharing started at Mills Library. Using donated bikes from our own sheds and locks from Pieriks Cycle in Westdale, staff and students were the first to experience bike sharing through libraries. With help from funding from Forward With Integrity, we are looking for a bigger and better system on campus in September. Many of the lessons learned in the living laboratory on campus have been applied to expanding the program through Hamilton Public Libraries and Mohawk College.

In just over a year, since the founding of the organization, Start The Cycle has built a growing network for underserviced populations. Our primary goal is to expand the program for youth across Hamilton, and beyond to other municipalities and secondly, to partner with post-secondary institutions to offer the same utilitarian access to bikes through libraries.

*If you would like to get involved or learn more about Start The Cycle check out [www.startthecycle.ca](http://www.startthecycle.ca) or contact us at burkecm@mcmaster.ca or Justin.hall@mcmaster.ca.*

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**TRAINING OPPORTUNITIES IN GENDER, HEALTH AND CAREGIVER-FRIENDLY WORKPLACE RESEARCH**

All workplaces will be affected by caregiving demands given the changing and dynamic nature of families together with the changing nature of caregiving. It is incumbent upon workplaces to examine caregiver friendly workplace practices to appropriately accommodate care-giver employees.

Applications are invited in the School of Geography and Earth Sciences at McMaster University for an opportunity to be engaged in research with a strong focus on caregiving and employment, and to gain experience in all aspects of policy-relevant research.

Any questions can be directed to Allison Williams at awill@mcmaster.ca, or at 905-525-9140, ext. 24334.
AAPG Student Chapter
by Stephanie Kimmerle

The fall semester of 2014 saw the emergence of a new academic club at SGES; the McMaster University AAPG Student Chapter. This club was created for all undergraduates, graduate students, and faculty who are interested in developing their understanding of petroleum geoscience and the oil and gas industry in Canada. AAPG stands for the American Association of Petroleum Geologists and closed the school year with 27 registered student members and strong attendance at all events. Many of the events hosted by the chapter aim to connect students in SGES with McMaster Geology alumni who have had interesting and successful careers with major oil and gas companies or as independent explorationists. SGES together with the AAPG student chapter has hosted several of these alumni for special seminar talks, namely John Hogg, President-elect of AAPG, whose talk was entitled “Hydrocarbon Exploration in the Canadian Arctic; Past, Present, and Future”, where special attention was drawn to the unique environmental and social issues associated with exploring in the far north. Vice President of Noble Energy and McMaster alumni Susan Cunningham, gave a seminar to the McMaster community on women in leadership and joined the AAPG students for a meet and greet where students were encouraged to ask questions about her experiences in the energy industry. Keith MacDonald, also a Mac Geology alumni met with the student group for a talk on “Insights from a Career in Oil and Gas” where he shared the keys to his success and advice for students and young professionals looking to become established in a growing and changing industry.

The AAPG Student Chapter owes much of its success to Dr. Janok Bhattacharya, an SGES professor and researcher with the Quantitative Sedimentology Lab. As a McMaster Geology alumni himself, he made many of the industry connections and alumni visits possible. Janok has been an engaged member of the student chapter, the official faculty advisor, and speaker to the group on numerous occasions. The 2015-2016 AAPG Student Chapter season is sure to be filled with many more events, including a field trip to the Niagara Gorge to visit our local Paleozoic strata. The chapter has had a very successful inaugural year, and we look forward to opportunities to introduce students in SGES to petroleum geoscience and create new avenues for students to learn about all aspects of the oil and gas industry in Canada.

For more information contact AAPG Student Chapter President Logan Jung-Ritchie at mcmasteraapg@gmail.com.