What to expect as a graduate student or postdoc in the SFU Glaciology Group

PREAMBLE

Graduate school and postdoctoral work are personally and professionally formative experiences. Working together with my graduate students and postdocs is one of the most enjoyable and rewarding aspects of my job. The purpose of this document is to help us align our expectations in order to promote productivity and satisfaction in our working relationship. If you are reading this document, you have chosen to invest your time, energy and part of your future in working with me and the Glaciology Group at SFU; you have perhaps given something up to be here. I have chosen to invest in you as a student or postdoc because of your promise as a researcher; if you are a student, I have likely chosen you over other good candidates. We both have expectations of what the other will bring to the experience, and what we ourselves can and hope to offer. I invite you to discuss any aspect of this document with me at any point in your program.

What is expected of all of us:

- scientific curiosity and an interest in research
- integrity in our work and ethical conduct
- creation and maintenance of a respectful working environment
- engagement with the research group, the department, our colleagues and the scientific community
- commitment to meeting deadlines and fulfilling our mutual obligations

What more you should expect in general:

- reasonable support in completing your graduate program or postdoc
- timely and constructive feedback on your research
- regular evaluation of your progress
- opportunity for professional development

What more is expected of you in general:

- initiative in undertaking all aspects of your work
- diligence in pursuing all aspects of your work
- commitment to achieving mutually agreed upon research and professional goals
- responsiveness to guidance and criticism

For some of the most relevant information about life in the Glaciology Group, feel free to contact current and former members: http://www.sfu.ca/~gflowers/people.shtml .

1. ORIENTATION FOR NEW STUDENTS AND POSTDOCS

Upon arrival at SFU you will be given office space, a desk and chair, access to SFU's facilities and resources (e.g. library, computing ID, WestGrid access), a computer workstation with all necessarily peripherals and software licenses. In some cases you may be involved in selecting, setting up and configuring a workstation, and acquiring and installing new software.

You will most likely be working in the Glaciology Lab (TASC1 7412), common space that is shared with other students and postdocs, and that houses some research equipment. All group members are expected to contribute to creating a positive, respectful, collaborative and productive work environment that minimizes bias and discrimination (https://www.sfu.ca/edi/resources.html). We have no tolerance for disrespectful language or behaviour, nor any form of bullying or harassment (https://www.sfu.ca/srs/work-research-safety/general-safety/bullying-and-harassment.html). Group members should feel free to raise any concerns associated with the work environment.

It is imperative that all lab occupants respect security protocols by keeping track of their keys, never leaving the lab unlocked and unattended, and closing the windows and blinds each night. Please be courteous of your colleagues and office-mates when it comes to noise, conversations, food preparation/consumption and where to put those smelly running shoes and wet cycling gear. The janitors empty garbage and recycling, but that's about it, so please contribute to keeping the lab tidy.

You will be introduced to members of the research group (http://www.sfu.ca/~gflowers/people.shtml) and departmental staff (http://www.sfu.ca/earth-sciences/people/staff.html), and should meet other students and faculty as opportunities arise. New students will be required to take the one-day orientation course EASC 600 (Introduction to Graduate Studies) (https://www.sfu.ca/students/calendar/2019/fall/courses/easc/600.html) and all new group members are required to take SFU's New and Young Worker Safety Orientation (https://www.sfu.ca/srs/ehs/training-orientation.html).

Throughout the course of your first semester, we will go over this document as an orientation to working in the Glaciology Group at SFU and, for students, review SFU's student–supervisor expectations documents. You should familiarize yourself with the SFU Glaciology Group Resource pages on canvas (https://canvas.sfu.ca/), the Earth Sciences Graduate Student Handbook (https://www.sfu.ca/earth-sciences/graduate/handbook.html) and SFU's Graduate General Regulations (http://www.sfu.ca/students/calendar/2020/fall/fees-and-regulations/grad-regulation.html).

Many SFU students and employees live far from campus, but our work life is centred nevertheless on Burnaby Mountain. Under normal circumstances, at the beginning of each semester, we discuss our schedules as a group to coordinate the maximum overlap between group members. As a student, you should typically plan to work on campus at least 3–4 days a week unless other arrangements have been made with me. You should be able to remotely access your workstation on days you work off campus. All group members contribute to the intellectual and research life of the group, so physical presence and critical mass are important. Part of the reason you've been selected to be here is because of your anticipated contribution to the group. The global pandemic has upended these practices of working together on campus. We will revisit these practices when the pandemic is over.

In addition to the informal group interactions, we have weekly or biweekly group meetings in which group members rotate responsibility for leading. One person coordinates the schedule and room bookings each semester, but everyone is expected to contribute by attending, regularly leading or presenting, asking questions and giving feedback. Postdocs and senior students, as leaders, have an enhanced responsibility to

engage and contribute. All group members should engage with the department by attending the seminar series. Many students from the Glaciology Group have been involved in governance as representatives of the TSSU, GSS or CONG. Consider getting involved or taking initiative if you see an opportunity to start something worthwhile (e.g. informal grad-student lunchtime talks, an annual poster day, a professional development seminar series).

As a glaciologist, you should become a member of the International Glaciological Society (https://www.igsoc.org/). The IGS is our professional society and serves an important role in the scientific community. The IGS has two international open-access peer-reviewed journals (https://www.cambridge.org/core/journals/journal-of-glaciology, https://www.cambridge.org/core/journals/annals-of-glaciology), organizes thematic symposia, provides financial support for activities like graduate summer schools, has an early-career group (IGS-EGG), recognizes achievements with awards and generally advocates for cryospheric sciences. You might also consider joining other professional societies such as the AGU, EGU, CGU, GSA, APECS, etc. Next, you should sign up for Cryolist (http://cryolist.org/), the international email distribution list for all things glaciology. Follow the literature. Sign up for journal contents (see canvas group pages) or set up Google alerts, follow the publishers and professional societies on Twitter, etc. Forward relevant links or articles to other group members, or bring them up at coffee.

2. FUNDING

The offer or invitation letter that you signed stipulated the amount and duration of financial support you can expect to receive during your tenure at SFU. (Most postdoctoral fellows are independently funded, and therefore receive no direct salary support through SFU.) This support is intended to allow you to engage in your graduate or postdoctoral studies on a full-time basis.

The Department of Earth Sciences recommends a minimum level of graduate student funding that increases by 2% per year (https://www.sfu.ca/earth-sciences/graduate/financial.html) to be sourced from a combination of scholarships, fellowships, research assistantships (RAs), teaching assistantships (TAs) and possibly industry support. I currently offer all students $25,550 per year, as much as is sustainable given our group's current levels of research funding. Of this, $50 is intended to cover an annual student membership in the International Glaciological Society, which students must purchase themselves. From this amount, students must pay tuition (~$6000 per year), fees (~$1000 per year) and health insurance costs (~$1000 per year) totaling ~$8000 (http://www.sfu.ca/dean-gradstudies/future/tuition-and-fees.html). After two years (6 semesters) in the MSc program or 2.7 years (8 semesters) in the PhD program, tuition amounts drop by half. Canadian and international students pay the same tuition amount, but tuition and fees have been rising in recent years.

If you win a major scholarship (i.e. > $15k) such as NSERC CGS, I will do my best to provide an RA top-up so that you do not have to TA. If you hold a scholarship of value greater than the amount in your offer letter, that is good news for both of us and it's of course yours to keep. If you do not hold a major scholarship, you will generally be required to apply for and accept, if offered, TA positions in the fall and spring semesters. Depending on your academic training, you may be asked to apply for TA-ships outside of Earth Sciences (e.g. in physics, math or geography). Because TA-ships form part of the overall funding package, and serve to offset RA-ships, students should not expect to make more money in semesters when they TA. Consider that a typical NSERC Discovery Grant (e.g. $30k per year) to your supervisor is not much more than a single student stipend

(e.g. $25k per year) and that grant funds must cover all costs of research (see EASC 600 slides for an example of a hypothetical research group's budget).

Note that you must renew your appointment as a funded graduate student every semester (three times per year) in order to be paid, unless you are fully funded through external scholarships (e.g. NSERC). Be alert to Tarja Väisänen's emails to this effect. This is in addition to enrolling every semester which is required even if you are not taking courses. Your funding that is routed through SFU can be tracked on a semesterly basis through the Academic Progress report (APR) (https://www.sfu.ca/dean-gradstudies/current/apr.html) and the annual Graduate Progress Report (GPR). Please let me know if something seems amiss with your funding, or if you find yourself experiencing financial hardship. I will almost certainly not be aware of your personal financial situation if I don't hear about it from you.

As is common in many graduate programs and research groups across Canada, I expect you to actively seek out additional sources of external funding (e.g. NSTP, YGS, Garfield Weston/ACUNS), to carefully track internal funding opportunities (e.g. SFU Graduate Fellowships), to consult with me about whether you should be applying for particular scholarships/fellowships/grants and to meet application deadlines with a respectable amount of time allocated for feedback/revisions and referee letter-writing. All group members share responsibility for pursuing funding that allows us to do our research. See the group pages on canvas for more information on funding sources.

In practice, students rarely complete their programs within the 2 (MSc) and 4 (PhD) years for which funding has been committed. In the Glaciology Group, MSc students have completed their programs in 7-8 semesters (2 years and 4-8 months); I am aiming to have future MSc students complete in no more than 7 semesters. PhD students have been taking ~6 years, but I would like to get this down to 5 or less. I make every effort to fund students to completion, provided they meet their program obligations and are making good progress.

Ordinarily, student and postdoc scholarships and fellowships will not come with separate research funds. Students can expect the costs of their research to be covered by other grants awarded to me and our collaborators. Research funds for postdoctoral projects should be discussed individually. You may be asked to supply your own personal clothing and some personal gear required for field work.

3. EQUIPMENT AND FACILITIES

The SFU Glaciology Group owns an array of field research equipment, including geophysical survey instrumentation, hydrometeorological sensors, data logging equipment, thermal and mechanical drills, snow and ice sampling equipment, and a comprehensive portable field camp. Much of this equipment is currently stored at a research station in Yukon (see inventory in field files). Some of it is stored locally in the lab at SFU. In addition to field equipment, we also have numerous computer workstations and related equipment (e.g. monitors, keyboards, hard drives) in the office. Much of the field equipment was purchased on grants from the Canada Foundation for Innovation, the BC Knowledge Development Fund, SFU start-up funds and NSERC. Raising funds to purchase equipment is time consuming and very competitive.

The equipment is intended to serve our basic research needs, and students ought to familiarize themselves with its use and maintenance. Former group members have produced a series of "how-to" documents that are a good complement to manufacturer manuals. Learning to use the variety of equipment we have is part of graduate student training and will help students cultivate transferable skills. All group members are expected

to contribute to the proper treatment and maintenance of our equipment, and may be asked to participate in maintenance, calibration, upgrade or replacement of equipment that may or may not be directly related to their research. This participation is essential for long-term maintenance of our equipment in the absence of a dedicated laboratory technician.

4. COURSEWORK and GRADES

Course requirements can be found in the SFU calendar (see links here: https://www.sfu.ca/earth-sciences/graduate/grad-programs.html). Courses should be chosen in consultation with me, with the aim of fulfilling program course requirements no later than the fourth semester. Except in unusual circumstances, all students should take EASC 605 (Advanced Glaciology). You will likely end up taking some courses outside of the department (e.g. in Statistics, Math, Physics, Engineering Science or Geography) and university (e.g. at UBC under the Western Deans' Agreement) and/or Directed Readings (EASC 700). Taking courses beyond the requirements should generally be avoided as it slows program progress, unless deemed necessary by the supervisor or committee.

Get good grades in your courses. Your GPA, however superficial a metric of academic merit/performance, is important until you secure a postdoc or a job. Until then, it will be an important determinant of scholarship funding. Note that you are generally expected to earn A's in graduate courses (A+'s ok too!). The occasional A- is ok, B+ is eyebrow-raising and C is the graduate equivalent of failing. International students should note that 80-100% is the typical range for an A in the Canadian grading system. Consider that a B+ average in one semester (perhaps based only on a single course) will render you ineligible for Graduate Fellowships, forfeiting $7000 in funding that could otherwise have supported, for example, a summer undergraduate research assistant, field work or conference travel.

5. TA-ing

Serving as a teaching assistant (TA) is part of most students' graduate programs (see also FUNDING). TA-ing is a great experience, but best in moderation. TA-ing will give you an authentic taste of teaching, provide an opportunity to improve your instructional skills, allow you to interact with other faculty members and undergraduate students, likely lead to your learning something new whether you're TA-ing a course that you've taken or not, provide an opportunity to practice your presentation skills if you're running a lab, and add structure to your week and semester. As an instructor, I really enjoy working with my TAs as partners in delivering courses.

Much of what you need to know as a TA can be learned through the Teaching and Support Staff Student Union (TSSU): http://www.tssu.ca/ . TA-ing is a job for which you are being paid, in most cases as a contribution to your student stipend. Accordingly, you should be responsible in fulfilling your duties, including ensuring you are present and available for the full duration of the course (including exams) unless otherwise indicated by the course instructor. Contact the instructor well before the course starts to discuss scheduling and expectations. Keep track of your hours, and know your rights and responsibilities as dictated by the TSSU. At the end of your TA appointment, you will be evaluated in writing by the students and by the instructor.

6. DEFINING A RESEARCH PROJECT

One of your primary pursuits at SFU will be the formulation and execution of a substantial, original and independent research project. The scope and scale of this research will vary between MSc, PhD and postdoc projects, as will the relative roles of the supervisor and students/postdocs. The Earth Sciences Department has established guidelines for what comprises MSc/PhD-level thesis research (See "EASC Guidelines" under https://www.sfu.ca/earth-sciences/graduate/forms.html). In principle, all students should be involved to variable extents in developing their research projects. I will only accept students, in general, whose research interests align with my research expertise, interests and agenda. Though funding may be flexible, there will likely be specific projects underway that constrain the range of research topics available to students at any given time. Logistics place severe constraints on projects where original field data collection is required and should be discussed well in advance. Prior to accepting SFU's offer, students can expect the research possibilities and limitations to be articulated. Prospective students should become familiar with the scope, content and style of past research carried out by the group by consulting our research page (http://www.sfu.ca/~gflowers/research.shtml) and publications page (http://www.sfu.ca/~gflowers/publications.shtml), and can find links to completed student theses on the people page (http://www.sfu.ca/~gflowers/people.shtml).

In practice, MSc students tend to undertake projects that I have previously formulated in a research funding proposal. PhD students often start this way and then progress into research they themselves have designed. Students who receive substantial independent scholarship funding will have more research freedom and independence than those paid through my research grants. In some cases where we receive contract funding (e.g. from industry or government), the research project will be strictly defined. Such a situation may relieve a student from TA-ing, but comes with the burden of strict timelines and deliverables. Student and postdoctoral research in the Glaciology Group must be of a standard that is publishable in the international peer-reviewed scientific literature (see PUBLISHING for detail). MSc students to date have written traditional theses along with their publication(s), while PhD students typically write paper-based theses with introduction and conclusions chapters and numerous appendices. A thesis demonstrates the student's mastery of the subject but also serves as a detailed record of what was done and a resource for those who will continue the work.

Most postdocs who join the group will have written their own successful research proposals to win their fellowship funding, and may therefore be undertaking research entirely of their own design. This situation gives them substantial freedom to pursue the research of their choosing. Postdocs who are funded through SFU, specifically those funded by grants awarded to me, will more likely be undertaking research with objectives and deliverables that have been determined prior to the postdoc recruitment. Whether paid by my research grants or not, postdocs still require an investment of time, energy and research/travel funding, so should not consider themselves entirely free agents. The level of freedom and autonomy in a postdoctoral research project should be discussed and defined prior to acceptance of the offer.

7. THESIS PROPOSAL AND CANDIDACY

The Master's Thesis Proposal (EASC 810) and PhD Candidacy Exam (EASC 910) are formalized and required means of establishing students' preparedness to undertake graduate-level thesis research (see links under https://www.sfu.ca/earth-sciences/graduate/grad-programs.html). They are also good practice for professional life in being able to develop a research proposal with good research questions and appropriate methods, to present, explain and defend one's research ideas, to demonstrate competence in your areas of

expertise and to be receptive to suggestions and criticism. These requirements should be taken seriously, but the time spent in preparation should be carefully managed.

MSc and PhD students should complete their literature reviews in their first semester (usually fall). MSc students should complete the full proposal in their second semester and EASC 810 prior to any field work, usually toward the end of second semester (spring). PhD students should complete their proposals by the end of their first year (usually summer) and EASC 910 in their fourth semester (fall). Developing, writing and revising a proposal will take longer than you think. There must be time to iterate with me several times and with the committee members at least once prior to EASC 810/910. Consider that review and revisions can add 6 weeks or more to the process.

Prepare effectively for EASC 810/910 so that you deliver a clear and polished presentation; this is the part you have complete control over and a good start will make a difference to the rest of the event. Practice your talk to yourself and in our group meeting at a minimum. PhD students should spend additional time preparing for candidacy examination questions in their focus areas.

8. SUPERVISION, GUIDANCE and MENTORING

The supervision, guidance and mentoring that students and postdocs receive is often dictated by the style and personality of the supervisor, rather than being tailored to the student. This is one reason prospective students should always speak to former students of their intended supervisor before accepting any offer. My style is on the active side, though I try to tailor my role to the student's or postdoc's needs.

I like to have regular research meetings with my students, for their benefit and for mine. Our group's research is the highlight of my job and I want to know what you're working on. These meetings are often weekly, especially for MSc students and for PhD students in the earlier phases of their programs. You can expect my undivided attention for at least an hour per week in fall and spring semesters when you are engaged in some component of your research. We will schedule summer meetings as field and travel schedules permit. If I am away for an extended period of time (e.g. on sabbatical), we will continue these meetings remotely. This one hour per week is my minimum commitment to you, not the only time I will spend thinking about your work. Sometimes research meetings are significantly longer, especially if meeting are less frequent or we're working toward a deadline. Please feel free to stop by my office and talk to me anytime about your research. I will let you know if I'm too busy. I prefer to give you feedback in person, rather than by email, but we also make extensive use of Slack as an on-line collaborative tool. I am also happy to establish regular meetings with postdocs, depending on what we together decide is the best approach.

I expect students to come prepared for research meetings with items and content to discuss. Bring an agenda and bring or send me figures, text, tables, equations, code, or whatever will help us work through the week's issues. For me it is difficult, bordering on a waste of time, to attempt content-driven research discussions without anything to look at. Think about answering the following to make the most of our time: (1) What were the major points from the last meeting (e.g. state of affairs, action items, etc.), (2) What have you accomplished since the last meeting and how does that compare to your targets? (3) What challenges or setbacks have you encountered? (4) What is your forward plan? Come prepared to take notes.

In addition to research, we will also be discussing (at various times) course selection, committee compositions, program milestones and deadlines, scholarships and funding, field work, conferences and professional development, workload and general progress, career goals and opportunities, and other issues as they arise. I

aim to carve out time, periodically, devoted to some of these other issues, but feel free to raise them with me yourself.

You can expect to be doing a lot of writing throughout your program and to be assembling your thesis along the way rather than saving the writing to the end. Putting things down in writing is a great way to get feedback, and avoids the situation of having to write things up when they are no longer fresh in your mind. Inevitably, writing becomes part of the research process, rather than the termination of it, as writing will help you discover what additional work must be done or revisions must be made. I will give you detailed, constructive and timely feedback on your written work, usually within a week unless you hear otherwise from me (see also PUBLICATION).

As per program regulations, you should arrange at least annual meetings with your thesis advisory committee that ideally precede the filing of the Graduate Progress Report (GPR) (https://www.sfu.ca/gradstudies/graduate-students/managing-your-program/grading-academic-progress.html). Your committee will have been selected by me, in consultation with you, and may include members from outside SFU or even academia. Your committee members have signed on to support you, so they should also be sources of guidance and mentorship. Feel free to consult them outside of your annual committee meetings; it's part of their job and they may end up benefitting in tangible or intangible ways, for example, as co-authors on a paper. Please be alert to the Graduate Secretary's emails regarding the GPR and respect the deadlines. The GPR is an opportunity for you to reflect on your progress, so take the time to write a meaningful self-assessment and plan. The committee and I will formally assess your progress in the GPR, but I will also give you informal periodic progress assessments and may ask you to assess your own progress (see also WORKING HOURS, HOLIDAYS AND TIME MANAGEMENT).

9. COMMUNICATION AND CONFLICT RESOLUTION

Over the course of our work together, we will likely communicate in person, by email, through on-line collaboration tools (e.g. Slack), over the phone and through platforms like Zoom, Skype and Canvas. I do not expect to interact with you over social media (unless part of our group professional activities), e.g., I will not ask you to be Facebook friends or intrude unnecessarily into your personal lives. Please do not use your SFU account for personal email; if you need a testimonial about the importance of separating personal and professional email accounts, I can give you one. Please read your SFU email and pay particular attention to emails from me. Please acknowledge my emails if there is a request or action item. I will prioritize emails from you and will make a point of acknowledging them. Except under special circumstances and in emergencies, no one is obligated to respond to email on weekends, evenings and holidays. That said, I do not object to receiving email communication from you outside of business hours. I will usually ask for your phone number and communicate with you by text in cases where we are organizing off-campus activities (e.g. safety training, field work, flights, rides, etc.).

I can tell you straight up that I tend to be a conflict-avoider. Over the course of a degree, I think it is normal that supervisors and students would experience some frustration or disappointment with one another. Experts advise resolving conflicts at the lowest level possible and earliest opportunity. That means first talking to me if there is a problem. There are also other resources: you may seek guidance from your committee members, from the EASC Graduate Program Chair or members of the Graduate Program Committee, or from the Department Chair. In more serious cases, the Office of the Dean of Graduate Studies and Postdoctoral Fellows can provide support to both supervisors and students in matters of conflict.

In practice, I tend to like my students a lot even though disagreements periodically arise. We have common professional and often personal interests, and I recruit students with whom I anticipate being able to have a productive and enjoyable professional relationship in the office and in the field.

10. WORKING HOURS, HOLIDAYS and TIME MANAGEMENT

Graduate school is not just an advanced version of undergrad, nor is it a job (at least in North America). It is some difficult-to-define hybrid between school and work. It will seem more like "school" initially while you are taking courses, and then become more like "work" later when you are primarily occupied by your research. This ambiguity is reflected in your funding situation, where you may consider yourself lucky to be paid for going to school and obtaining credentials, or you may consider your stipend outrageously low for the work that you perform. It is therefore difficult to define working hours. Moreover, people work at different paces, have different research challenges and have different levels of physical and psychological tolerance for going hard. MSc and PhD thesis projects require a certain standard of achievement but are also time-limited by funding and other factors. Graduate degrees have rarely been obtained by working a 37.5h week for two of four years. You can expect to have to work more than this, sometimes evenings and weekends.

Official holiday time is stipulated for all of us (but based on a regular work week), and amounts to three weeks per year plus the Christmas week for graduate students (see Graduate Student Handbook: https://www.sfu.ca/content/dam/sfu/gradstudies/GraduateStudents/StudentResponsibilities/SFU-gradhandbook.pdf). This is in addition to statutory holidays. Assuming that we are all working more than full time, I think four weeks (plus Christmas week and statutory holidays) is reasonable. If you hold a major scholarship (e.g. NSERC), official holiday time may be dictated by the funder. It may be possible to take additional (unpaid) time, if the schedule is agreed upon in advance. Please consult with me before planning any holidays or trips, and do not plan to be away while you have duties such as TA-ing or preparation for field work. Research continues even when coursework and exams end, so holiday/trip planning is different than in undergrad. Please put your away-days on the group calendar (SFU webmail or canvas), so no one spends time trying to get a hold of you. I'll do the same so that you know when I'm out of town. Do take holidays and spend time unplugged. Few people can sustain the intensity of graduate and postdoctoral work without some real down time.

Together we should be setting milestones at least once a semester, and our regular meetings will be an opportunity to evaluate short-term progress. You should keep track of your own progress in working toward and meeting your program and research objectives. Two and four years roll by pretty quickly, so it's important to maintain some intensity in working toward these objectives. Fall and spring semesters have a different feel than summer, with coursework, TA-ing, regular group meetings, departmental seminars, etc. Summer is a research-intensive semester in which you will be doing most of your field work, but generally not TA-ing or taking courses.

Most people do best with some structure in their work schedule. I'd recommend against a completely free-form schedule or drifting into the "night shift". I'd also discourage setting unrealistic goals to work while visiting friends and family, as this can lead to a cloud of guilt that does not usually increase productivity. Progress in graduate work can be highly non-linear, but I will let you know if progress seems slower than it should be. In that case, we'll need to identify the causes and come up with solutions.

11. CONFERENCES and WORKSHOPS

Participation in scientific conferences and workshops is an essential part of professional life and serves multiple purposes: to showcase the work our group is doing and solicit input, to keep apprised of research in the community, to be inspired by the work of others', and to personally connect with new and established colleagues and potential collaborators. Conferences and workshops require time, money and GHG emissions, including time invested to prepare for them. Too much travel takes critical time away from real work.

As a student or postdoc, you can generally expect to be supported to attend conferences when you have something new and substantial to present. Exceptions include the Annual Meeting of the Northwest Glaciologists (one Friday and Saturday every October), where all students are expected to attend every year and give talks after their first year, and the occasional local/regional meeting.

MSc students making steady research progress should generally attend one important conference in their final year (e.g. AGU Fall Meeting in San Francisco). PhD students should generally attend one important conference per year (e.g. AGU, EGU, an IGS symposium) once substantial research progress has been made. See Group Resources on canvas for links to meetings. Please be alert to other conference and workshop opportunities that interest you. They may not be on my radar, but I am happy to consider your proposals to attend conferences outside of our normal rotation.

12. PUBLISHING

Dissemination of our research results in the scientific literature is our obligation to the scientific community and forms part of our contribution to the public, who ultimately funds our research. Publishing our work is critical to the sustainability of our group, as our publication record is a significant determinant of research funding and therefore our ability to undertake future projects and recruit research personnel. As a research supervisor, I am therefore generally only interested in engaging and investing in research that is publishable in the international peer-reviewed scientific literature. An exception is research that forms a pilot- or exploratory study. Accordingly, I ask students to commit to seeing publications through to completion, whether the students intend to pursue research careers or not. This commitment usually requires time after graduation, for which I will make every effort to compensate you.

Writing is a critical skill in science and life, and learning to write well should be part of your graduate training. I will do my part to contribute to your development as a technical writer by providing regular and detailed feedback on your written work, but I cannot be your only source of input. I ask that students and postdocs make use of peer-review within the lab, and take advantage of other relevant resources (e.g. see SFU library writing help, technical writing documents on canvas). If English is not your first language, we may need to seek out additional resources to improve your writing.

With guidance, students are expected to take primary responsibility for the manuscripts they lead-author including writing the complete first draft. You can expect that I will give you feedback in the timeliest manner possible, and we will iterate on the manuscript until it is ready to be seen by any coauthors or collaborators. These iterations can be numerous, and will take more time than you expect. Learning to write publishable papers can be painful and takes practice. We can discuss the methodologies most appropriate to help you become a skilled and independent technical writer. Unless stated otherwise, our group uses LaTeX (https://www.latex-project.org/) for all theses and publications, with increasing use of Overleaf (https://www.overleaf.com/) as a collaborative writing tool.

Co-authorship on manuscripts from our group generally requires a significant or critical intellectual contribution (see canvas resources on authorship), though these standards may be adapted over time or with the circumstances. You may have the opportunity to coauthor work with your colleagues in the lab, but this will require effort above and beyond performing our collective field duties. All contributions to the research will be acknowledged, but we set a particular standard for authorship in order to preserve its integrity.

I expect MSc students to lead-author at least one significant manuscript from their thesis work, though students have often produced two. The primary manuscript should be submitted to a peer-reviewed scientific journal prior to the thesis defense. PhD students should lead-author at least three significant manuscripts from their thesis work. At least two should be accepted or published before the thesis defense, with a third submitted or close to submission.

Submitting a paper is a big achievement that we celebrate. Students will receive a $1000 bonus for each independent manuscript submitted to an international peer-reviewed scientific journal. I commit to paying page charges/article processing charges (APCs) (often $2500-$3500 per published paper) for our work done together at SFU, even if it is published after the lead author has moved on. SFU has a limited fund to offset APCs for publications in open-access journals: https://www.lib.sfu.ca/help/publish/scholarly-publishing/funding/sfu-open-access-fund.

13. DATA/OUTPUT BACKUP, ARCHIVAL, PROTECTION AND DISSEMINATION

All research personnel are responsible for making regular backups of their work with the infrastructure provided. Each person should have a workstation and an external hard drive, as well as access to the Network-Attached Storage (NAS) device in the Glaciology Lab. Familiarize yourself with the NAS and its contents, and consider yourself a co-curator of the archive. Use your external hard drive for regular back-ups of work in progress, as well as the NAS where you will receive dedicated space for regular backups. At the end of your program, you will be asked to organize, document and post all files relevant to your work on the NAS with a copy delivered to me.

All data and research output will be considered our collective property, unless otherwise stated (see INTELLECTUAL PROPERTY). Field books and notes are considered property of the project, not personal. Everything stored on your work devices should be professional. Caution is advised in personal use of any of these devices or related SFU resources according to SFU policy: https://www.sfu.ca/policies/gazette/general/gp24.html . I strongly advise using your own personal device(s) (e.g. laptop, tablet, phone) for all purposes outside of your SFU work, and avoiding the storage of passwords used for personal purposes in your browser or on your computer at work. In cleaning up computers after students have left, I have found myself with access to many personal accounts and passwords. These computers are group resources and are sometimes used by undergraduate research assistants and visiting scholars.

Take some time to familiar yourself with public repositories for data and code such as figshare (https://figshare.com/), github (https://github.com/), NSIDC (https://nsidc.org/), the Polar Data Catalogue (www.polardata.ca/) and other professionally-endorsed repositories (e.g. https://repositoryfinder.datacite.org/). Funders and publishers are requiring increased accountability and transparency in research, leading to stricter requirements for delivery of data and code to public repositories. See, for example, AGU policy: https://publications.agu.org/author-resource-center/publication-policies/data-policy/ .

Philosophically, I aim to disseminate our data and research results as widely and generously as is reasonable. However, I ask that you consult me before disseminating any unpublished materials, or materials not posted to public repositories, related to our research even after you have left SFU. This is especially important if multiple people have been involved in the development of the materials. Good intentions can sometimes have unintended consequences.

14. INTELLECTUAL PROPERTY

Formal controversies over IP are expected to be exceedingly rare, but could occur if something we develop is commercializable. SFU's full IP policy provides useful guidance in that case: http://www.sfu.ca/policies/gazette/research/r30-03.html . In most cases, however, the university considers IP to belong to the "discoverers" (that's us): https://www.sfu.ca/gradstudies/graduate-students/your-role/student-responsibilities.html#ip . Exceptions occur when funded through certain research contracts and grants that stipulate IP belongs to the sponsoring organization.

Conflicts may arise because SFU does not define the degree of ownership between supervisors, students, postdocs, etc. As part of your research at SFU, you may produce and curate a dataset, or develop computer code. These outputs will feel like yours and may form the springboard for future research, perhaps as a postdoc at another institution or with your own students. At the same time, these outputs are a product of my research program and may be useful or even essential to current or future projects within the group. It is rare that ownership will be clearly and entirely attributable to a single person, so communication on the issue of ownership and its implications is key.

I will make every effort not to put myself in competition with former students and postdocs, and to err on the side of generosity in assessing ownership. In return I ask that research group members confer with me when they wish to use the output from SFU research for purposes outside our group. No agreement or collaboration involving SFU research should be entered into without my knowledge and approval. In practice, co-ownership of our research output has worked out well in terms of ongoing collaboration and opportunities for co-authorship of research beyond the original project.

15. PROFESSIONAL DEVELOPMENT AND CAREER PREPARATION

Part of your graduate or postdoctoral experience will involve professional development and career preparation, including opportunities to develop skills outside of those used in your day-to-day research including those related to oral and written communication, teaching and mentorship and project planning and management. Within the research group, you will have the opportunity to present your work and lead group meetings, and give and receive critical constructive feedback on research and research presentations. You may have the opportunity to co-supervise undergraduate researchers or mentor more junior graduate students. I support students, as appropriate, to attend conferences (see above), summer schools and workshops (e.g. https://glaciers.gi.alaska.edu/courses/summerschool) and skills development training such as Elmer/Ice courses (http://elmerice.elmerfem.org/courses-tutorials) or local offerings of Software Carpentry (https://software-carpentry.org/). Keep an eye out for professional development opportunities offered through SFU (http://www.sfu.ca/dean-gradstudies/professional-development.html), and let me know if you find relevant opportunities elsewhere.

16. ETHICS

Ethics and proper conduct are paramount in maintaining a professional and reputable work environment. SFU has numerous resources that define for us what is expected, including:

- Academic Integrity: https://www.sfu.ca/students/academicintegrity.html
- Code of Academic Integrity and Good Conduct: https://www.sfu.ca/policies/gazette/student/s10-01.html
- Code of Faculty Ethics and Responsibility: http://www.sfu.ca/policies/gazette/academic/a30-01.html
- Research Ethics: https://www.sfu.ca/research/resources/research-ethics
- Integrity in Research and Misconduct in Research: http://www.sfu.ca/policies/gazette/research/r60-01.html
- SFU Library Copyright, Plagiarism, Publishing and other helpful links: https://www.lib.sfu.ca/help

Sources of guidance on more subtle or research-specific issues can be found from professional societies, e.g. the American Geophysical Union: https://ethics.agu.org/ . The World Economic Forum Young Scientists community has drawn up a broad Code of Ethics for researchers: http://widgets.weforum.org/coe/ . Good people can unwittingly commit ethical violations; unintentional plagiarism is one ready example. I encourage students and postdocs to discuss ethical questions with me and within the group.

17. OTHER RESOURCES

Resources specific to the SFU Glaciology Group are posted on canvas: https://canvas.sfu.ca/ . All current group members are also members of this group and are able to edit the group pages. Other resources relevant to SFU graduate students and postdocs are:

- SFU's Graduate General Regulations: http://www.sfu.ca/students/calendar/2019/fall/fees-and-regulations/grad-regulation.html
- SFU EASC Graduate Student Handbook: https://www.sfu.ca/earth-sciences/graduate/handbook.html
- CAGS Guiding Principles for Graduate Student Supervision: http://www.cags.ca/documents/publications/working/Guiding%20Principles%20for%20Graduate%20Student%20Supervision%20in%20Canada%20-%20rvsn7.pdf
- Supervisory Expectations grid (SFU Biological Sciences): http://www.sfu.ca/biology2/grad_caucus/Business/Graduate_Student_and_Supervisor_Expectations.pdf
- SFU Postdoctoral Fellows: https://www.sfu.ca/dean-gradstudies/postdocs.html
- SFU Postdoctoral Fellows Association: http://www.sfu.ca/postdocs.html

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APPENDICES

A. SFU Supervisory Expectations Grid

B. SFU Supervisory Expectations Quiz