ATMOSPHERIC AND OCEANIC SCIENCES

About Atmospheric and Oceanic Sciences

The Department of Atmospheric and Oceanic Sciences offers courses and research opportunities in atmospheric sciences and physical oceanography leading to the **M.Sc.** and **Ph.D.** degrees. Research programs borrow from fundamental fields such as mathematics, statistics, physics, chemistry, and computing to address a broad range of topics relating to weather and climate. Examples include:

- atmospheric chemistry;
- climate dynamics;
- cloud and precipitation physics;
- dynamical oceanography and meteorology;
- geophysical turbulence;
- numerical modelling;
- numerical weather prediction;
- ocean carbon budgets;
- sea ice dynamics;
- synoptic and mesoscale meteorology; and
- remote sensing of weather and climate.

Some faculty members have close ties with other departments, schools, and centres, including the Chemistry, and the Mathematics and Statistics departments; the Bieler School of Environment; ArcticNet; and Quebec Ocean. Facilities include the McGill Atmospheric Profiling Observatory, as well as state-of-the-art field and laboratory equipment for atmospheric chemistry. Graduate students have access to computers, ranging from desktop PCs to the high-performance computing clusters available through the Digital Research Alliance of Canada. In some cases, M.Sc. and Ph.D. research may include a field component. Most students also participate in national and international conferences.

Financial assistance in the form of research stipends is available for all qualified graduate students. Additional financial support is provided in the form of teaching assistantships, subject to availability and eligibility constraints.

Admission Requirements and Application Procedures

Admission Requirements

Applicants to the M.Sc. program must meet the general requirements of Graduate and Postdoctoral Studies and hold a bachelor's degree with high standing in atmospheric science, oceanic science, physics, mathematics, engineering, chemistry, or a similar field.

Applicants to the Ph.D. program would normally have a strong background in meteorology, physical oceanography, or related disciplines such as mathematics, physics, chemistry, and engineering. Many students will have an M.Sc. degree in one of these fields, although this is not a formal requirement. All Ph.D. students are required to take at least two graduate-level courses in atmospheric and oceanic sciences. Students entering without a master's degree or without a sufficient background in atmospheric and/or oceanic sciences are admitted at the Ph.D. 1 level and are required to take an additional five graduate-level courses in atmospheric and oceanic sciences, these usually being completed in the first two semesters.

Applicants to the Environment Option of our Ph.D. program (currently not offered in the 2025-2026 academic year) would normally apply for admission to both Atmospheric and Oceanic Sciences and the Bieler School of Environment and must meet the entrance requirements of both programs (refer to the Bieler School of Environment site for more information). Acceptability into the Environment option will be based on academic experience and performance, availability of a supervisor or co-supervisor, the proposed research, and plans for funding as articulated by the supervisor(s). This option is not available to students entering at the PhD 1 level but can be chosen in subsequent years.

Inquiries should be addressed directly to the Student Affairs Coordinator (graduateinfo.aos@mcgill.ca) of the Department of Atmospheric and Oceanic Sciences; see the department website for more information.

English Language Proficiency

For graduate applicants whose mother tongue is not English, and who have not completed an undergraduate or graduate degree from a recognized Canadian or American (English or French) institution or from a recognized foreign institution where English is the language of instruction, documented proof of English proficiency is required prior to admission.

Application Procedures

McGill's online application form for graduate program candidates is available at mcgill.ca/gradapplicants/how-apply .

See University Regulations & Resources > Graduate > Graduate Admissions and Application Procedures > Application Procedures for detailed application procedures.

Additional Requirements

The item below is an additional requirement set by this department:

- Acceptance by a research supervisor – required for the Ph.D. program

Application Dates and Deadlines

Application opening dates are set by Enrolment Services in consultation with Graduate and Postdoctoral Studies (GPS), while application deadlines are set by the Department of Atmospheric and Oceanic Sciences. Applicants are responsible for verifying all deadlines and documentation requirements well in advance on the appropriate McGill departmental website; please consult the list at mcgill.ca/gps/contact/graduate-program.

Please note that application deadlines may exceptionally be revised during the application cycle. For current deadline information, please visit the above-mentioned departmental website.

Information on application deadlines is available at mcgill.ca/gradapplicants/how-apply/application-steps/application-deadlines.

Admission to graduate studies is competitive; accordingly, late and/or incomplete applications are considered only as time and space permit.

Note: Applications for Summer term admission will not be considered.

Available Programs

- Atmospheric and Oceanic Sciences (Ph.D.)
- Atmospheric and Oceanic Sciences (Thesis) (M.Sc.) (45 credits)
- Atmospheric and Oceanic Sciences: Environment (Ph.D.)

Program Overview

Our program applies mathematics, physics, computing, and sometimes chemistry to study the atmosphere and/or oceans. The ideal student would therefore have a strong quantitative background in one or more of these fields. Although some of our students have undergraduate knowledge of meteorology or physical oceanography, this background is not necessary to succeed in the program.

McGill offers the only program in Canada that includes both atmospheric and oceanic sciences. Students benefit from a high professor-to-student ratio and access to state-of-the-art computing, remote sensing, and atmospheric chemistry laboratory equipment. The Department also has close ties with Environment and Climate Change Canada's numerical weather prediction centre in Dorval, Quebec.

Our program allows considerable flexibility as to the choice of research topics, and gives students both a strong classroom knowledge of the subject as well as the opportunity to choose from a variety of thesis research projects. Students who do not choose to continue in academia find employment in a variety of areas and places; for example, working with Environment and Climate Change Canada as research associates or weather forecasters.

The **Ph.D. in Atmospheric and Oceanic Sciences: Environment** (**This program is currently not offered**) is a research program offered in collaboration with the Bieler School of Environment. As a complement to the unit's expertise, the program considers how various dimensions (scientific, social, legal, ethical) interact to define environment and sustainability issues. The Environment option builds on the same program and a similar undergraduate background as described under Doctor of Philosophy (Ph.D.) Atmospheric and Oceanic Sciences. In addition, the Environment option includes required courses from Atmospheric and Oceanic Sciences and from Environment, as well as complementary courses in Atmospheric and Oceanic Sciences and in Environment.

Prospective Environment Option students must apply for admission to both Atmospheric and Oceanic Sciences and the School of Environment and must meet the entrance requirements of both. Acceptability into the Environment option will be based on academic experience and performance, availability of a supervisor or co-supervisor, the proposed research, and plans for funding as articulated by the supervisor(s). This option is not available to students entering at the Ph.D. 1 level, but can be chosen in subsequent years.

Location

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