McGill | Faculty of Science

Barbados Field Study Semester

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ATOC 341 – Caribbean Climate and Weather

Fall 2026

Welcome to ATOC 341, the second course of the Barbados Field Study Semester, in which you will learn about climate and weather in the Caribbean.

I wish to thank our host country, Barbados and its people, as well as our invited speakers for welcoming and helping us discover their land, rich history, and culture.

General Information

Dates: September 21, 2026–October 2, 2026

Location: We will be based at the Bellairs Research Institute, located in Holetown, on the West coast of the island of Barbados. https://www.mcgill.ca/bellairs/

Course duration and format ATOC 341 is intensive and runs over two continuous weeks of lectures, seminars, and field trips, for a total of 48 contact hours.

Restrictions: The course is open to students registered in the Barbados Field Study Semester (MBFSS). Open to U2 and U3 students from all faculties with a minimum CGPA of 3.0.

Course co-requisite(s): GEOG 340, BIOL 343, FSCI 444.

Number of credits: 3 credits.

Readings: There is no required textbook or course pack. Readings accompanying lectures, materials and readings used for case studies, if any, will be available through *myCourses*, email or in print.

Instructors and Program Support

Course Coordinators: Dr. Virginie Millien, virginie.milllien@mcgill.ca

Program Assistant: Brianna Lane, brianna.lane@mail.mcgill.ca

Bellairs Research Institute Operations Manager: Kim King (front office of the BRI)

Office hours: Monday to Thursday, upon request and depending on availability.

Course Overview

This course will introduce the subjects of the climate system and ongoing global change, global radiation balance, ocean and atmosphere circulation and future trends in the tropics. We will also examine the local climate and weather patterns including the extreme weather events (e.g., hurricanes) in the Caribbean.

Learning outcomes

Upon course completion, you will be able to:

- Know about the general principles of global climate
- Understand the basics of the relations between the oceanic and atmospheric circulation
- Explain the specificity of the weather dynamics and variability in the Caribbean
- Know about the impacts of climate change, with a focus on the Caribbean
- Summarize findings from the primary literature and government reports
- Present and discuss case studies specific to the Caribbean
- Collect relevant data and complete a field report

Instructional Methods

ATOC 341 involves lectures and seminars supported by tutorials and field trips. Lectures: Traditional lectures will be given in class. Seminars: Students will attend research seminars that will be followed by a question-and-answer session and discussion. Field Trip: Students will be taken to field sites and write a report. Case study: Working in group, you are required to read, summarize, and present a case study.

Important. Our schedule is very tight, and I will not wait for those we arrive late to start activities in class, nor will I delay departures for field trips. I expect each of you to be on time, and lack of punctuality, failure to attend classes and field trips, or lack of participation may result in a final mark deduction. Please, do reach out if you are experiencing difficulties with the scheduling.

Detailed Schedule

Note that the schedule may be subject to changes to accommodate for our guest speakers or due to unforeseen circumstances.

Monday 21 September		
9:00	Field trip: Harisson Cave	V. Millien
13:30	Intro talk: Water drainage in Barbados	V. Millien
Tuesday 22 September		
9:00	Field Trip: Water Sampling (beach)	V. Millien
13:30	In class: water quality analysis	V. Millien
Wednesday 23 September		
9:00	Field trip: Water Sampling (offshore)	R. Bourne (UWI)
13:30	Lecture: Global climate	J. Yearwood (UWI)
Thursday 24 September		
10:30	Environmental laboratory at Cave Hill	E. Smith (UWI)
Friday 25 September		
10:00	Seminar: Caribbean climate	I. Gouirand (UWI)
13:00	Lecture: Thunderstorms and hurricanes	J. Yearwood (UWI)
14:30	Field trip: Tour of the Folkestone MPA	C. Gykes (NCC)
Monday 28 September		
9:30	Visit to CIMH weather station	K-A Caesar (CIMH)
11:00	CIHM seminar on tropical weather and climate research	K-A Caesar (CIMH)
Tuesday 29 September		
10:00	Lecture: Solar and wind power	J. Yearwood (UWI)
13:30	Field trip: Solar Farm	J. Yearwood (UWI)
Wednesday 30 September		
10:00	In class: El Nino data analysis (introduction)	V. Millien
13:30	In class: El Nino data analysis	V. Millien
Thursday 1 October		
9:00	Field trip: Bridgetown Port	J. Yearwood (UWI)
14:00	Seminar: Environmental Law and Climate Action	A. Lancaster (UWI)
15:00	Oral Presentations (choice of topic)	V. Millien
Friday 2 October		
9:30	AGAGE site visit	Y. Dickon (AGAGE)
14:00	In class: atmospheric data analysis	V. Millien

Acronyms: UWI: University of the West Indies; NCC: National Conservation Commission, Barbados Government; CIMH: Caribbean Institute for Meteorology and Hydrology, AGAGE: Advanced Global Atmospheric Gases Experiment. **About our Guest lecturers and Seminar speakers** (in order of appearance): **Jevon Yearwood** is a PhD candidate in Meteorology at UWI Cave Hill. **Emma Smith** is a lecturer in Environmental Sciences at UWI Cave Hill. **Isabelle Gouirand** is a senior lecturer in Atmospheric Sciences at UWI Cave Hill. **Carlos Gykes** is an officer of the Barbados Government at the NCC and the manager of the Folkestone Marine Park. **Kathy-Ann Caesar** is the Chief Meteorologist and senior lecturer at the CIMH. **Dickon Young** is a research scientist in atmospheric chemistry at the AGAGE station of Ragged Point in Barbados. **Alana Lancaster** is a lecturer in law at UWI Cave Hill.

Meeting times for field trips (in front of Bellairs / alternate locations, when possible):

Monday **21 Sept.: 8:45 am** (or 9:30 am at Harrison's cave)
Thursday **24 Sept.: 9:15 am** (or 10:30 am at Cave Hill)
Monday **28 Sept.: 7:50 am** (or 9:30 am at the CIMH)
Tuesday **29 Sept.: 7:50 am** (or 9:30 am at Williams Solar)
Thursday **1 Oct.: 8:45 am** (*no alternate location*)
Friday **2 Oct.: 7:50 am** (or 9:30 am at Ragged Point)

Evaluation

There is no final exam and evaluations will be performed throughout the duration of the course. Our daily meetings comprise lectures, seminars, group discussions, working sessions on a case study, and field trips. Active participation is expected in all sessions for you to pass this course. Grading and assessment are broken down as described below. Due to the intensive nature of ATOC 341, **there will be no make-up sessions** for any of the activities detailed in the course schedule. Late assignments receive a 10% penalty per day.

Digital Presentation – Visual storytelling: "The fate of the rainwater that fell on Mount Hillaby 6 months ago and its impacts on the environment and the population"	*due Sept 27th midnight*	10 %
Report – Water quality nearshore	*due Sept 27th midnight*	15 %
Report – Sea surface temperature and water chemistry	*due Sept 27th midnight*	15%
Case Study – Risk mitigation against extreme weather events in the Barbados Port	*due Oct 4th midnight*	10 %
Field trip notes – CIMH	*due Oct 4th midnight*	10%
Field trip Report - AGAGE	*due Oct 4th midnight*	15%
Presentation (choice of topic)	*In class, Oct. 1st*	5 %
Report – El Nino data Analysis	*due Oct 4th midnight*	15 %
Video – what I learnt in the MBFSS (Part 2)	*due Oct 4th midnight*	5 %

Policy Statements

EDI – The MBFSS strives to be an inclusive community, learning from the many perspectives that come from having differing backgrounds and beliefs. As a community, we aim to be respectful to all. We reject all forms of prejudice and discrimination, including but not limited to those based on age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, and sexual orientation. We are expected to commit to creating an environment that facilitates inquiry and self-expression, while also demonstrating diligence in understanding how others' viewpoints may be different from their own. The University is committed to maintaining teaching and learning spaces that are respectful and inclusive for all. To this end, offensive, violent, or harmful language arising in course contexts may be cause for disciplinary action.

Academic Integrity – McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (See McGill's guide to academic honesty for more information).

Assessment – The purpose of the Policy on Assessment of Student Learning (PASL) is to provide a set of common principles to guide the assessment of students' learning. Per PASL, assessment should be equitable and consistent, and promote effective learning experiences, a healthy learning environment, and academic integrity. Learn more on the For Students page of the PASL website.

Language of submission – In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Copyright – © Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that copyright infringements can be subject to follow-up by the University under the Code of Student Conduct and Disciplinary Procedures.

Extraordinary circumstances – In the event of extraordinary circumstances beyond the University's control, and given the nature of intensive field courses, the content and/or evaluation scheme in this course is subject to change. However, these changes will be communicated to students in a timely manner.