

GEOGRAPHY 1900
Extreme Weather and Climate
Autumn Semester 2020

Instructor:

Alvaro Montenegro
Office: 1152 Derby Hall (DB)
Phone: 614-688-5451
Email: montenegro.8@osu.edu - preferred
Office Hours

Online: Mondays, Tuesday, Wednesdays and Thursdays from 11:00 to 12:00; OR by appointment.

In person: By appointment

Teaching Assistants:

Emilio Mateo
Office: DB 1155
Email: mateo.9@buckeyemail.osu.edu
Office Hours Wednesday and Fridays from 10:00 to 11:00 AM OR by appointment

John Temmen
Office: DB 1155
Email: temmen.2@buckeyemail.osu.edu
Office Hours: Tuesdays and Thursdays from 9:00 to 10:00 AM OR by appointment

Josh Steiner
Office: DB 1145
Email: steiner.273@buckeyemail.osu.edu
Office Hours: Tuesdays and Thursdays from 11:00 AM to 12:00 PM OR by appointment

Course Details

Lecture: Videos available on BuckeyeBox.

<https://osu.box.com/s/8xnp1zz36li3m9b80k2vud0a7eyxpbk7>

Labs: Lab work will be based on recorded experiment demonstrations available online.

The schedule below refers to recitations interested students can but are NOT required to attend. Recitations will be conducted by teaching assistants. The main goal of the recitations is to deal with lab-related questions and clarifications. If time is still available after lab questions, TA's will address eventual doubts regarding lecture content. Given class size limitations, any

particular student will be able to attend recitations every other week, meaning each lab session will be divided in two groups. Each TA will make the composition of each group available to their lab sessions.

Monday, 11:10 AM– 12:30 PM in Derby Hall (DB) 0070 – Emilio

Monday, 2:20– 3:40 PM in Derby Hall (DB) 0070 – Emilio

Wednesday, 11:10 AM– 12:30 PM in Derby Hall (DB) 0070 – Josh

Wednesday 12:45– 2:05 PM in Derby Hall (DB) 0070 - Josh

Friday 11:10 AM– 12:30 PM in Derby Hall (DB) 0070 – John

Friday 2:20– 3:40 PM in Derby Hall (DB) 0070 – John

Course Materials

Text: Aguado, E. and J. E. Burt, 2012. *Understanding Weather and Climate*, 7th edition.

Pearson Education, Inc. Upper Saddle River, NJ. (ISBN: 9780321769633) **(Suggested)**

Lab Manual: Made available online as labs progress.

Website: The Carmen course management system <http://carmen.osu.edu>

Course Description

This course will serve as an introduction to the study of the atmosphere. The primary objective is to provide students with a comprehensive understanding of the atmosphere and the processes that govern its behavior. In this course students will be exposed to various aspects of meteorology, including the structure and behavior of the atmosphere, global energy balance and transfer, atmospheric circulation, precipitation processes, weather systems and severe weather. This course will emphasize the inter-relationship existing between the atmosphere, hydrosphere, biosphere and lithosphere and will illustrate how the movement of matter and energy between these spheres is responsible for the weather, climate and environments we experience on Earth.

Science GEC Course

Natural Science coursework fosters students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the

contemporary world. Below are the four general Natural Science GE outcomes and how each will be addressed by the course.

1. Students understand the basic facts, principles, theories and methods of modern science.
 - a. Lectures, textbook and exams for basic facts, principles and theories
 - b. Labs will demonstrate and give hands on experience with basic methods, and reinforce understanding of principles with experiments.
2. Students learn key events in the history of science.
 - a. Progressive understanding of atmospheric dynamics will be explained using key examples like mid-latitude cyclones.
 - b. Basic history of meteorology and history of our understanding of anthropogenic climate change is explicitly covered by lectures.
3. Students provide examples of the inter-dependence of scientific and technological developments.
 - a. Lab exercises will reinforce how technology infuses understanding, and how instrumentation to measure atmospheric phenomena has changed over time.
 - b. Measurements of the atmosphere, its qualities and motions are key to atmospheric science, and lectures and readings will highlight specific examples of how technology has enhanced theoretical understanding, and vice versa.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.
 - a. In lectures and readings about climate change, ozone destruction, and atmospheric pollution students will engage with the social implications of science discoveries and how these both mold and are molded by worldviews and political perspectives.

Lectures

All lecture material is available on this BuckeyeBox link:

<https://osu.box.com/s/8xnp1zz36li3m9b80k2vud0a7eyxpbk7>

Content is broken down into “Lectures”. Each lecture covers a fairly large amount of content and is comprised of several video files or “Modules”. Modules tend to be somewhere between 5-15 minutes long and will be uploaded to BuckeyBox as the semester progresses. In attempt to help students navigate through the many Module files, the following file name convention is used:

Lec#_Mod#_ShortDescriptionOfContent.m4v

For example:

Lec1_Mod2_Atmosphere.m4v

Is the file containing the first lecture’s second module dealing with the structure of the atmosphere.

A second category of video files will deal with what I call “housekeeping” issues. These contain information about administrative issues, not content. I will use these files to introduce myself to the class, send out reminders about exams, clarify eventual doubts about dates and procedures, etc...Housekeeping files will be also available on the same BuckeyBox where lecture videos are kept and follow the naming convention:

Hk#_ShortDescriptionOfTheme.m4v

For example:

Hk1_Introduction.m4v

Contains an introduction to the course, including much of the information found on this syllabus.

Student Evaluation

Participation (12% of final grade, or 12 grade points):

Meet the instructor online. Earn 2 participation points by meeting the lecture instructor (Alvaro Montenegro) via Zoom at least once. The meeting can take place during any regularly scheduled office hour or by appointment. Remember that Alvaro is available for office hours from Monday through Thursday between 11:00-12:00 AM. During the meeting students must, in addition to introducing themselves, ask a question or require further explanation on themes related to the course content. At the time of the meeting the instructor will let the student know if the interaction merited the 2 participation points. There will be no partial points for this. Meetings will either result in 2 points being earned or in the need for a second meeting.

PackBack. 10 of the total 12 participation points will be based your activity in Packback. You will have to purchase a subscription to this service for US\$ 25.00. This can be done online or at

the University Bookstore. Participation will be measured weekly. For full grade on this aspect of participation you will be required to send in one question and answer two questions per week on the platform. Submitted questions and answer will be gauged and those deemed of sufficient quality will count for full grade. This will be determined by the sum of the “curiosity points” generated by your submission. Each question/answer can generate a maximum of 100 points. For full credit a minimum of 125/300 “curiosity points” is required per week. Activity starts on the first full week of classes. This means there should be a submission on or before Sep 6, but no submissions are due on Aug 30. The last submissions will cover the week prior to Thanksgiving, with the last submission due on Sunday Nov 29. Submissions are accepted until Sunday 11:59 PM.

My goal with Packback is to have students think about and interact with the course content in other ways than preparation for exams. I hope the effort to elaborate questions and respond to classmates’ doubts lead students to think critically about what is being discussed in class. I also hope the activity results in opportunities for students to link class material to other information pertinent to their personal interests and/or other courses.

How to Register on Packback:

An email invitation will be sent to you from help@packback.co prompting you to finish registration. If you don’t receive an email (be sure to check your spam), you may register by following the instructions below:

1. Create an account by navigating to <https://questions.packback.co> and clicking “Sign up for an Account”
Note: If you already have an account on Packback you can log in with your credentials.
2. Then enter our class community’s lookup key into the “Looking to join a community you don't see here?” section in Packback at the bottom of the homepage.
Community Lookup Key: **971a8a62-a15b-456f-a37c-8070358ec6ac**
3. Follow the instructions on your screen to finish your registration.

Packback requires a paid subscription of \$ 25.00 per semester. Refer to www.packback.co/product/pricing for more information.

How to Get Help from the Packback Team:

If you have any questions or concerns about Packback throughout the semester, please read their FAQ at help.packback.co. If you need more help, contact their customer support team directly at help@packback.co.

For a brief introduction to Packback Questions and why we are using it in class, watch this video: vimeo.com/packback/Welcome-to-Packback-Questions

Labs:

- Labs
 - Laboratory exercises will be based on recorded demonstrations (and sometimes also data) available online.
 - Lab demonstrations (and occasional data sets) will be available online by Sunday evening a particular week with lab reports due on 11:59 PM on Friday of that week. For example, demonstrations posted online by Sunday, Sep 14 would be due on 11:59 PM of Friday, Sep 18.
 - It is the responsibility of each student to turn in the required laboratory exercise at specified due date and time. All lab exercises must be completed **INDIVIDUALLY**, although working in groups is encouraged.
 - Teaching Assistants are the ones responsible for the Labs. While the instructor will be happy to help with particular lab questions, different TA's might grade things differently and it is always safer to settle lab doubts with TAs.
 - Students should also approach the TA's when it comes to arrangements on late or missed labs

- Recitations:
 - Students will have the option to attend in person recitations conducted by TAs.
 - Students are not required to attend recitations.
 - Recitations follow the same schedule as regular labs, BUT class occupancy restrictions related to the Covid pandemic result in students only being able to attend once recitation every two weeks. Students from each lab session will be divided into two groups. Only one group will be allowed to attend a particular's week recitation. Each TA will make the composition of each group available to their lab sessions.

Exams:

Weekly Online Quizzes. 28% of the final grade will be based 14 weekly, open-book online quizzes related to lecture material.

- Unless otherwise noted, online quizzes will be due on Fridays at 11:59 PM. Quizzes will be available on Carmen for a period of at least 48 hours prior to their due time.
- While quizzes are open book, there will be a strict time limit for their completion. Expect an available time of about 75 seconds per question.
- The preamble will provide information on duration and material covered by each quiz. Students should use this information to prepare for the quiz prior to starting it.
- Once students start taking a quiz they cannot stop to return to it later.
- Students will only have one chance to take each quiz.
- All quizzes have the same weight (2% of final grade).
- The first quiz will be due on Friday, September 4 and the last quiz will be due on the last day of classes, Friday, December 4.

Midterm and Final. Both will have identical length and format and are also worth the same. The final is mostly non-cumulative but questions about some important themes/concepts will be present in both exams. These themes/concepts will be clearly communicated to the class by a study guide prior to exams. Both exams will be online and open book.

Missed quizzes and exams

Make-up exams and quizzes are only allowed in the case of university sanctioned absences, a documented emergency or through **PRIOR** consent of the instructor.

Final Grade Break Up

Part. – Meet the Instructor	2%	
Part. - Packback	10%	
Labs	30%	
Weekly Quizzes	28%	
Midterm Exam	15%	10/12
Final Exam	15%	12/11

Extra Credit

Students will have the opportunity of earning up to 4 extra points on their final course grade.

Citizen science cloud observations: In this individual effort, up to 4 extra credit points on the final course grade will be awarded to students who act as observers for the “Student Cloud Observations Online (S’COOL)” project. This is a NASA led citizen science initiative aimed at collecting cloud cover data in order to improve satellite-based observations. The amount of extra credit received will be determined by the total number of reports handed in. Each report is worth 0.08 points. These are accumulated until 4 extra credit points are obtained (50 reports). Students are encouraged to perform more than 50 observations, but those who do will still receive the maximum 4 extra credit points. To be valid, reports must be based on observations performed between Aug 26 and Dec 1. For full credit reports must be submitted to Carmen by December 2. More details on how to perform observations and complete reports are found on the Extra Credit section in Carmen.

Special Statement Regarding Absences

Based on the Office of the Provost recommendations on the current flu situation, students that feel ill are encouraged to stay home and isolate themselves from others. In addition, the “Explanatory Statement for Absence from Class” self-reporting form available online (<https://shs.osu.edu/posts/documents/absence-excuse-form2.pdf>) from the Wilce Student Health Center will be accepted as documentation of medical absence and reasonable efforts will be made to provide for make-up work opportunities. All make-ups from documented absences must be **completed within one week** of the original scheduled date.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the

committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct webpage (http://studentaffairs.osu.edu/resource_csc.asp).

Disability Services

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. You are also welcome to register with Student Life Disability Services to establish reasonable accommodations. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Health and Safety Requirements

All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.”

Lecture Schedule*

Lecture**	Chapter	Theme
1	1	Atmosphere Composition
2	1/2	Comp. of the Atm./Radiation
3	2	Radiation in the Atmosphere
4	2/3	Seasons/Energy Balance
5	3	Temperature
6	4	Pressure and Wind
7	4/5	Pressure and Wind /Moisture
8	5/6	Moisture / Cloud Formation
9	7	Precipitation Processes
10	8	Atmospheric Circulation
11	8/9	Air Masses and Fronts
12	10	Mid Latitude Cyclones
13	11	Tornadoes
14	12	Tropical Cyclones
15	15/16	Climate and Climate Change
16	15/16	Climate and Climate Change
17	14	Atmospheric Pollution

*This is a tentative schedule, content and order or presentation might change during the semester.

**Lecture means a cohesive presentation covering a whole theme and is composed of multiple Modules.