AT 780: Atmosphere's Response to Climate Change
Course Syllabus

Class: 9:00AM - 10:15AM TTh, ATS 101
http://barnes.atmos.colostate.edu/COURSES/AT780_F14/index.html

atmospheric circulation; climate change; large-scale dynamics; IPCC AR5; CMIP5

1 Instructor

Dr. Elizabeth A. Barnes

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Office Hours:	by appointment

2 Course Focus

In this course, we will explore the "state of the art" knowledge about how the circulation may respond to future climate change by objectively evaluating results published in the recent literature. The main content focus will be the large-scale atmospheric response in the very recent literature, however, we will also use the IPCC 5th Assessment Report as a starting point to provide context and additional references. Substantial time will also be spent on how to objectively assess scientific findings in the field.

3 Course Expectations

The following list presents the minimum requirements for passing this course:

- show-up to class with the assigned reading completed,
- participate in all class discussions,
- prepare and present a lecture to the class on the assigned paper(s).

4 Course Prerequisites

There are no prerequisites for this course.

5 Course Web Page

The course web site will be used for posting the assigned reading. The course web site is available through the instructors webpage: http://barnes.atmos.colostate.edu/COURSES/AT780_F14/index.html.

6 Grading

6.1 Grading Break-down

The overall course grade will be made up of two different components each of which will be given equal weight: in-class participation in the discussions (to be detailed the first day of class) and a class presentation where each student (or group of students) will lead the discussion of that week's assigned reading.

6.2 Quizzes, Midterms & Final Exams

There will be no quizzes, midterms or final exams in this course.

7 Text Books & Resources

There is no required textbook for this course. Links to the relevant papers will be posted to the course website.

Throughout the course, we will also read subsections of the IPCC 5th Assessment Report (a.k.a. AR5) and we may touch on the IPCC 2012 Special Report titled "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" (a.k.a. SREX). Links to both of these free reports are available on the course webpage. I recommend you do not print the reports in their entirety (= 2146 pages), but rather, save them to your computer and reference them in a pdf reader. This not only saves paper, but allows for the use of the 'search bar', which is incredibly useful when you are looking for a particular topic or reference. You may, however, find it worthwhile to print the few pages that are assigned reading in order to bring them to class.

If you are interested, you can purchase the AR5 report on Amazon for your own use ($\approx$ \$90), however, the pdf version is all that is needed for this course.

8 Rescheduled Classes

At the present time, lectures will be held every Tuesday and Thursday through September 25th with no additional lectures following. However, it is very possible that the last few lectures will need to be rescheduled for a later date in the semester (to be discussed the first day of class).

9 CSU Honor Pledge

This course will adhere to the CSU Academic Integrity Policy as found in the General Catalog (`http://www.catalog.colostate.edu/FrontPDF/1.6POLICIES1112f.pdf`) and the Student Conduct Code (`http://www.conflictresolution.colostate.edu/conduct-code`). At a minimum, violations will result in a grading penalty in this course and a report to the Office of Conflict Resolution and Student Conduct Services.

10 Tentative schedule

- Lecture 1 (Aug. 26): IPCC 5th Assessment Report
- Lecture 2 (Aug. 28): Internal atmospheric variability
- Lecture 3 (Sept. 2): Modes of variability
- Lecture 4 (Sept. 4): Storm tracks and jet-streams, part I
- Lecture 5 (Sept. 9): Storm tracks and jet-streams, part II
- Lecture 6 (Sept. 11): Stratospheric ozone recovery v.s. climate change
- Lecture 7 (Sept. 16): Hadley circulation and precipitation
- Lecture 8 (Sept. 18): Stratospheric circulation
- Lecture 9 (Sept. 23): Model circulation biases with ties to dynamics
- Lecture 10 (Sept. 25): Additional topic (e.g. weather extremes, Arctic amplification, clouds)