

A ATM 306 CLIMATE VARIABILITY AND CLIMATE CHANGE

FALL 2014 CLASS #: 7547

Instructor: Chris Thorncroft TA: Chao-Yuan Yang
Room: ES 226 Room: ES 346
Phone: 518 442 4555
E-mail: cthorncroft@albany.edu E-mail: cyang4@albany.edu

Lecture Times: Mon and Wed 11.00pm-12.20pm
Office Hours: Mon and Wed 12.30pm-1.30pm or by arrangement
Credits: 3

Prerequisites for Course: A Mat 113 or 118 and A ATM 210 or 210Z

Grading Scheme: Graded

Aims of Course:

To provide students with understanding of how the climate system works including the fundamental physics of the coupled atmosphere-land-ocean system and our ability to predict it.

To provide students with a knowledge of the nature and causes of natural climate variability including, in particular, that associated with the El Nino Southern Oscillation (ENSO) at interannual timescales and the Atlantic Multidecadal Oscillation at decadal timescales.

To provide students an objective assessment of observed trends in the past century and the anthropogenic contribution to these.

To discuss the physics of anthropogenic climate change including climate change predictions for the next 100 years and the "IPCC process".

Course Assessment:

1. Two Class exams	Oct 15 th (20%), Nov 24 th (20%)	40%
2. Problem sets	Given one week to do them	20%
3. Final exam	December 17 th 10.30-12.30	40%

Basic Course Outline

1. Introduction to the Climate System

- 1.1 Introduction
- 1.2 Midlatitude Climate
- 1.3 Tropical Climate
- 1.4 Summary

2. Natural Climate Variability

- 2.1 Introduction
- 2.2 Interannual Variability and Prediction
- 2.3 Decadal Variability and Prediction
- 2.4 Summary

3. Climate Change

- 3.1 Introduction
- 3.2 The IPCC Process
- 3.3 Theory of Climate Change
- 3.4 Observations
- 3.5 Climate Change Prediction
- 3.6 Summary

4. Future Perspectives

The course will conclude with some discussion about the future including how politics, science and society are interacting on the issue of climate change.