

A ATM 306 CLIMATE VARIABILITY AND CHANGE

FALL 2010 CLASS #: 16978

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| Instructor: | Chris Thorncroft | TA: | Alan Bramner |
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| Lecture Times: | Mon-Wed | 12.35-1.55 |
| Office hours: | Mon | 2.00-3.30 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).

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:

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| 1. Two Class exams | Oct 6 th (15%) Nov 17 th (25%) | 40% |
| 3. Problem sets | Given one week to do them | 20% |
| 4. Final Exam | 14 th December 10.30-12.30 | 40% |

Text Books:

There is no recommended textbook for this course.

I will refer to the latest IPCC report available at the following website:

<http://www.ipcc.ch/ipccreports/index.htm>

Basic Course Outline

1. Introduction to the Climate System
2. Natural Climate Variability
3. Climate Change
4. Future Perspectives

Lecture Plan

1. Introduction to the Climate System

- 1.1 Introduction
- 1.2 Overview of Midlatitude Climate
- 1.3 Overview of Tropical Climate

2. Natural Climate Variability

- 2.1 Introduction
- 2.2 Interannual Variability
- 2.3 Decadal Variability
- 2.4 Climate Prediction
- 2.5 Variability of High impact weather

3. Climate Change

- 3.1 Theory of climate change
- 3.2 Observations
- 3.3 Climate Change Prediction
- 3.4 The IPCC Process

4. Future Perspectives

The course will finish with some discussion about the future including the role of politics and how science and society are interacting.