

# A ATM 306 CLIMATE VARIABILITY AND CLIMATE CHANGE

## FALL 2013 CLASS #: 8157

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Lecture Times:              Mon and Wed              11.00pm-12.20pm  
Office Hours:                Mon                              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	October 16 <sup>th</sup> (20%), November 25 <sup>th</sup> (20%)	40%
2. Problem sets	Given one week to do them	20%
3. Final exam	Thursday December 19 <sup>th</sup> 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 Decadal Variability and Prediction
- 2.3 Interannual 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.