ATM 411 DYNAMIC METEOROLOGY II SPRING 2011 CLASS#: 1269

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Time: MON/WED 1:15-2:35

Office hours (Chris): MON 2:35-3:35; or see me after class for an appointment

Office hours (Alicia): MON/WEDS 10:00-11:00

Prerequisites for Course: A ATM410

Grading Scheme: Graded

Aim of Course:

To develop theoretical concepts that can explain and help understand observed midlatitude weather systems and their development. This will build on the work already completed in ATM 410.

Course Assessment:

1. Class exam on Wednesday 7th March	25%
2. Class exam on Wednesday 25th April	25%
3. Problem sets (will be given one week to do these)	10%
4. Final Exam on ?????? May (?????)	40%

Text Books:

I will occasionally refer to Holton when appropriate.

Lecture Plan

1. Introduction

- 1.1 Basic structures
- 1.2 Equations

2. Vorticity and Potential Vorticity Concepts

- 2.1 Introduction
- 2.2 Quasi-geostrophic theory
- 2.3 QG Vorticity and Thermodynamic equations
- 2.4 Vorticity thinking
- 2.5 Potential Vorticity thinking (QG)
- 2.6 Use of Ertel Potential Vorticity
- 2.7 Summary of PV thinking

3. Vertical Motion

- 3.1 Introduction
- 3.2 Omega equation: Vorticity and Thermal advection form
- 3.3 Q-Vector form
- 3.4 Summary of QG theory

4. Baroclinic Wave Life-Cycles

- 4.1 Idealised Baroclinic wave structures
- 4.2 A theoretical model for baroclinic instability: The Eady model
- 4.3 Nonlinear Baroclinic Wave life-cycles
- 4.4 Role of Latent Heat release and Friction on Cyclone Development
- 4.5 Review of Papers/Case Studies