ATM 411   DYNAMIC METEOROLOGY II   SPRING 2011   CLASS#: 1287

Instructor: Chris Thorncroft   TA: Chris Castellano
Room: ES 226   Room: ES 330
Phone: 518 442 4555
E-mail: chris@atmos.albany.edu   E-mail: cs822114@albany.edu

Time: MON/WED 12:35-1:55

Office hours: MON 2:00-3:00; or see me after class for an appointment

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 9th March	25%
2. Class exam on Wednesday 27th April	25%
3. Problem sets (will be given one week to do these)	10%
4. Final Exam on Friday 6h May (10.30pm-12.30pm)	40%

Text Books:

I will occasionally refer to Holton when appropriate.

<u>Lecture Plan</u>

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