AOSC 610: Dynamics of Atmosphere and Ocean - I

Instructor

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Room and Time (usual)

ATL 2428; 9:00-9:50am (M,W,F)
Extended meeting time (from 8:30am) when make-up lectures needed

Course Objective

AOSC 610 is the first of a two-semester course sequence on Dynamics of the Atmosphere and Oceans. It is a core course of the graduate program, and seeks to introduce the basic dynamical and thermodynamical principles governing geophysical flows. Quantitative analysis and rigor characterize the course, with the development of mathematical analysis skills a sought outcome.

Your coordinates and interests

Please send me an email with your contact information; include "AOSC 610" in the title line. Mention research interests, name of your advisor, degree sought, and a list of other courses being taken this semester. Let me know if you are auditing the course.

Course format

- Homework assignments: Collected but not graded; solutions passed after due date; good practice for the exams — 0%
- 2 Mid-term exams (at approx. 4 week intervals) — 60%
- Final Exam — 40%

Detailed Course Outline

MIDLATITUDE ATMOSPHERIC CIRCULATION & DYNAMICS

1. Introduction

2. Basic Conservation Laws

3. Elementary Applications of the Basic Equations

4. Circulation, Vorticity, and Potential Vorticity

8. The Planetary Boundary Layer (was Chapter 5 in Holton 4th edition)

6. Quasi-geostrophic Analysis (from Holton 4th edition)

MIDLATITUDE OCEAN CIRCULATION & DYNAMICS

2. An Introductory View of the Ocean (from Williams & Follows; descriptive; schematic; observed structure)

4. Physics Fundamentals (from Williams & Follows; nice figures of observed flow)

5. The Ekman Layer (from Benoit Cushman-Roisin)

8. Large-scale Ocean Circulation (from Benoit Cushman-Roisin)