EAS B9014: Fundamentals of Atmospheric Sciences

Fall 2009, T & Th, 10:00 – 11:15
Instructor: Prof. Z. Johnny Luo
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Description: This class serves as an introductory course to the Atmospheric Science. Over the last century, atmospheric science has developed into a major field of study. The original motivation was weather forecasts; in recent years, global climate change has emerged as a new driving force that pushes forward the atmospheric research. In this class, we will cover the fundamentals underpinning this field, including atmospheric thermodynamics, radiation, chemistry, cloud physics, and dynamics. Throughout the class, students will be asked, as part of the homework and/or lab work, to explore various global datasets as provided by NASA and NOAA. Matlab is the primary programming language.

Prerequisites: Calculus & College Physics (you can't handle the class without either)

Textbook (required):

Atmospheric Science: An Introductory Survey (2nd edition), by John M. Wallace and Peter V. Hobbs, published by Academic Press

Grading: Homework sets: 40%; midterm: 30%; final: 30%

Office hours: T & Th, 11:30-12:30 at the classroom or by appointment (x8936)

Course Outline:

1. Introduction (atmospheric composition, structure, etc.)
2. Atmospheric thermodynamics
3. Atmospheric radiation
4. Cloud physics
5. Atmospheric chemistry
6. Atmospheric dynamics
7. Weather systems: hurricanes, extratropical cyclones, etc.
8. Climate and climate changes (depending on how much time we have, we may watch and review Al Gore's *An Inconvenient Truth*).