# AOS 217. Mesoclimates. Spring 2006, Tues/Thurs, 1:30-2:45PM.

The focus of this course in spring 2006 is **mesoscale climate dynamics**. The purpose is to familiarize you with past work on dynamics responsible for climate structures at scales most relevant for humans and ecosystems, as well as stimulate ideas and discussion about current pressing research questions. It is also an excellent opportunity to learn how our thinking about regional climate is evolving, and perhaps even to shape it. As some of you may know, regional climate is becoming a major research thrust of the department, involving several faculty members, researchers, and students. The course is divided into five topic areas, listed below along with sub-topics corresponding to each class session. Each topic area will be covered through lectures consisting of material I've synthesized from my survey of the literature or of work done here at UCLA. Discussion sessions are also associated with each topic area, and will be based on one or two articles. Grading will be based on class participation, and a final presentation based on a topic of your choice, ideally at a junction between your own interests and mesoscale climate dynamics.

## Schedule:

4/6/2006 Lecture: Curtis Deutsch on Climate Change Impacts on the Terrestrial Biosphere 4/11/2006 Lecture: Course Overview and Introduction

### I. Regional scale climate perturbations

4/13/2006 Lecture: Modes of variability in Southern California4/18/2006 Discussion: Mesoscale ENSO impacts.4/20/2006 Lecture: Mesoscale impacts of global climate change

#### II. Influence of topography on radiation fields

4/25/2006 Lecture: Concepts
4/27/2006 Lecture: Interaction of solar radiation with topography
5/2/2006 Discussion: Effects of spatial variations in radiation fields on climate and ecosystems
5/4/2006 Discussion: Effect of topography on cloud and sunshine: Case study of June Gloom

## III. Imprint of surface heterogeneity on diurnal cycles

5/9/2006 Lecture: Circulation systems5/11/2006 Discussion: Clouds and convection5/16/2006 Lecture: Surface temperature: A case study of Southern California

#### IV. Orographic Precipitation

5/18/2006 Lecture: Overview of orographic effects on precipitation5/23/2006 Discussion: Theories of orographic precipitation5/25/2006 Lecture: The precipitation distribution in Southern California

#### V. Air-sea interaction

5/30/2006 Lecture: The role of coastal topography in oceanic upwelling 6/1/2006 Discussion: Cloud-SST interactions in stratus regions

6/6/2006 Student Presentations 6/8/2006 Student Presentations