

Lecture 1. Aerosols and Precipitation: course logistic

What this course is about?

This is a graduate seminar course that focuses on the outstanding problems in clouds, aerosols, precipitation and climate science. Selected discussion topics will cover some emerging problems in understanding the complex nature of the interactions between various processes involving aerosols and precipitation, challenges in modeling these processes at a range of space and time scales (including parameterizations of these processes in NWP and GCMs), and capabilities of and limitations in existing observing ground-based and satellite systems.

Format: Reading and discussion of the literature. Some background materials on each discussed topic will be provided. All materials will be posted on the course website:

http://irina.eas.gatech.edu/EAS_Spring2008.htm

The course evaluation will be based on:

- 1) Participation in discussion (each student will be responsible for leading at least one discussion topic)
- 2) Reports on course readings and class presentations

Discussions will be organized along the following major themes:

- How can aerosols affect precipitation in different climate zones (Tropics, mid-latitude, and Arctic)?
- How different types of aerosols affect precipitation (specifics of urban pollution, dust, biomass burning, sulfates (water soluble) and Arctic aerosols)
- What are the main effects of aerosols on precipitation? What are the main mechanisms (radiative vs. thermodynamic)?
- What is the empirical evidence for aerosol impacts on precipitation?
- What are the modeling and observations capabilities for studying the aerosol impacts of precipitation?