



GEO 387H Physical Climatology

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Instructor: Dr. Zong-Liang Yang

Objectives: This course investigates the nature of Earth's climate and examines the processes that maintain our climate system based on physical principles. The class is concerned primarily with the global climate and its geographic variation on scales of hundreds to thousands of kilometers.

Topics include the energy balance, the hydrologic cycle, general circulation of the atmosphere, general circulation of the oceans, how they all interact and vary at various spatial and temporal scales, and regional to global scale climate modeling. The hydrologic cycle topic covers processes and modeling of surface hydrology or land surface-atmosphere interactions. Human-induced modifications to the climate system, such as urbanization, anthropogenic global warming, desertification, and tropical deforestation, are discussed. Descriptive, analytical, programming, and modeling skills will be taught as well.

Prerequisites: A working knowledge of calculus (e.g., [M408D](#)) and physical sciences (e.g., [PHY 303K](#)) will be assumed, as well as computer skills in computation and graphics. It will be assumed that students will at least be acquainted with some of the basic physical principles of atmospheric science through courses such as [GRG 301K](#) (Weather and Climate), or consent of instructor.

This course is for any graduate students (GEO 387H) or upper-division undergraduate students (GEO 377P).

- [Homework](#)
- [Inquiry-Based Climate Models](#)
- Land Surface Model: [Community Land Model Diagnostics](#)
- Numerical Weather Forecasting Model: [Weather Research and Forecasting \(WRF\)](#)
- General Circulation Model: [Community Climate System Model \(CCSM\)](#)
- Observed Datasets: [Global Change Master Directory](#)
- [The IPCC Data Distribution Center \(AR4 GCM data\)](#)
- [September 21, 2007 The Challenge of Global Warming & the Austin Climate Protection Plan City of Austin Mayor Will Wynn](#)

[Current Weather in Austin](#)

| [Climate Outlooks](#)

Any questions/comments please contact [Zong-Liang Yang](#)