

ATMO 459 : Tropical Meteorology

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This course is an introduction to tropical weather phenomena, and the role they appear to play in the general circulation of the atmosphere. During the course, students will be asked to work on a series of assignments that will be given almost weekly, assignments that may involve solving problems or writing short (1 page) summaries of material. Students will also be asked to choose a topic upon which to do a term paper. Consistent with this course being designated as "writing intensive," part of the grade given on any written assignment will be based on such basic writing elements as grammar, spelling, organization, and clear exposition.

The lectures will be grouped into three sections.

- Tropical Climatology (9 Lectures, Aug 28-Sept 25): Survey of the climatology of the climatology of the tropics, viewed in the context of the general circulation of the atmosphere; review of basic dynamic and thermodynamic relations; properties of the tropical boundary layer; cumulus dynamics and organization.
- Tropical Cyclones (9 Lectures, Oct 2-Oct 30): Tropical cyclones – observations, dynamics, and forecasting; the Madden-Julian Oscillation; monsoon circulations.
- Large Scale Oscillations (7 Lectures, Nov 6-Nov 29): Equatorial waves; the Gill model of large-scale forced convection; El Nino and the Southern Oscillation; the Quasi-Biennial Oscillation and Pacific Decadal Oscillation.

Important dates:

- Exam 1: Thursday, Sept 27.
- Term paper topic chosen: Thursday Oct18.
- Exam 2: Thursday Nov 1.
- Term paper outline, bibliography due: Thursday Nov 8.
- Term paper due: Tuesday, Nov 27
- Final exam (in class): Tuesday, Dec 4.

Grading Scheme:

Mid term exams (2)	20% each
Term paper	20%
Quasi-weekly assignments	20 %
Final exam	20%

References: A number of handouts will be made during the course. It is assumed that you have the first three books listed below. Background for some of the lectures may be found (among other places) in the other books; copies of such material, as well as journal articles, that are discussed at any length will be made available.

Hurricane! Coping with Disaster, 2003, Simpson et. al., American Geophysical Union. This is the text required for the course: it will be used in the lectures on tropical cyclones.

Physical Climatology, 1994, D. Hartmann, Academic Press.

Introduction to Dynamical Meteorology, (any edition), J. Holton, Academic Press

Physics of Climate, 1992, J. Peixoto & A. Oort., American Institute of Physics.

Observations of Surface to Atmosphere Interactions in the Tropics, 1999, M. Garstang and D. Fitzgerald, Oxford University Press.

Atmospheric Science: An Introductory Survey, (any edition), Wallace and Hobbs, Academic Press.

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