

ESCI 344.01 – Tropical Meteorology (CRN 7225)
Fall 2007
T, Th 1:00 – 2:15 p.m., Caputo 400

Professor: Dr. Alex DeCaria
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Class website: <http://www.atmos.millersville.edu/~adecaria>

Office Hours: Monday 4:00 p.m. – 5:00 p.m.
Tuesday 10:00 a.m. – 11:00 a.m.
Wednesday 1:00 p.m. – 3:00 p.m.
Thursday 10:00 a.m. – 11:00 a.m.
Other times by appointment

Required text: None

Readings: Ganser Library maintains an “e-reserve” site for the course. To access the e-reserve material you must log-in to the Ganser Library reserve site via <http://library.millersville.edu/forms>. This site contains additional reading material for the course.

Extra-credit Reading: *Chasing the Monsoon* by Alexander Frater – A travelogue of a journalist traveling with the onset of the southwest monsoon in India. Any student who reads this book cover-to-cover by November 30th, and then discusses it with me such that I am convinced they actually read the book, will receive an additional 4% added to their total grade for the semester.

Final examination: Tuesday, December 11, 12:30– 2:30 p.m.

Grading: There is no curve. The following grade scale will be used:

<u>Grade</u>	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
<u>Minimum Percent</u>	94	90	87	83	80	77	73	70	67	63	60	0

The grading will be determined as follows:

Exams (2 or 3)	45%
Article quizzes	20%
Wx discussions	10%
<u>Final Exam</u>	<u>25%</u>
Total	100%

Exam Policy: Make-up exams and quizzes will be given only if the exam was missed due to illness, emergency, or university-sanctioned activity. Documentation may be required. If you know in advance that you will miss an exam you must make arrangements to take the exam early.

Exams taken after the regularly scheduled examination will consist of a written exam, plus an additional oral examination that will count for 20% of the score.

Article Quizzes: Several journal articles will be assigned for required reading throughout the semester. There will be an in-class quiz associated with each article.

Wx. Discussions: Everyone will give, with a partner, at least one brief (~10 minute) discussion of current tropical weather at the beginning of class. These weather discussions are worth 10% of your grade. The discussions are meant to be low-stress, and full credit will be given unless you are unprepared, late, or miss giving your discussion.

Attendance: The decision to attend class is yours. I do not keep a formal record of attendance. However, I reserve the right to take attendance and class participation into account when determining whether or not to bump a borderline score up to the next higher grade. Late arrival and early departure are disruptive, and if habitual may result in a lowering of the final grade.

Website: The class website (<http://www.atmos.millersville.edu/~adecaria>) will contain lecture notes and other information pertinent to the course.

Course Objectives: At the end of the course the successful student should be able to:

- understand and describe the similarities and differences between atmospheric motion and disturbances in the Tropics versus those of the Mid-latitudes.
- understand and be able to perform streamline analysis of tropical wind fields
- describe the characteristics of the tropical oceans, and name and discuss the major ocean currents
- understand the fundamental importance of air-sea interaction in the tropics on the global atmosphere
- understand the nature and dynamics of monsoon circulations, and their relations with the global circulation
- understand the nature and dynamics of ENSO and its relation with the global circulation
- understand the uses and limitations of the various conceptual models of tropical synoptic-scale circulations
- understand the characteristics and dynamics of tropical cyclones and their motion

Course Philosophy and Content: A primary objective of this course is to convince you that there is far more to tropical meteorology than just hurricanes. This course will be a mixture of a descriptive and a dynamical treatment of tropical meteorology. Many topics will be very descriptive, while others will require the use of dynamical and mathematical concepts from previous courses such as Physical Meteorology, Atmospheric Thermodynamics, and Atmospheric Dynamics. Topics will include most, if not all, of the following:

- Climate and mean monthly wind, pressure and temperature patterns
- Tropical jet streams
- Dynamical differences between the Tropics and Middle Latitudes
- Streamline analysis vs. isobaric analysis
- Tropical ocean characteristics
- Air-sea interactions

- Wave dynamics and characteristics
 - Kelvin waves
 - Rossby waves
- Monsoons
 - Description
 - Dynamics
- ENSO
 - Description
 - Dynamics
- Other oscillations
- Synoptic-scale Tropical Circulations and Conceptual Models
 - Easterly waves
 - Equatorial waves
 - Vortices
 - Linear disturbances
- Tropical Cyclones
 - Characteristics
 - Dynamics
 - Movement
 - Satellite analysis