

MEA 714: Atmospheric Convection

Fall Semester 2008

Professors: Dr. Matthew Parker Dr. Sandra Yuter
Jordan Hall 5149 Jordan Hall 5145
mdparker@ncsu.edu seyuter@ncsu.edu

Class meetings: Tues., Thurs., 3:00–4:15 PM

Pre or co-requisites: Undergraduate cloud physics (e.g. MEA412)
Undergraduate mesoscale meteorology (e.g. MEA444)
Graduate level dynamics (e.g. MEA705)
or instructor approval

Recommended texts: *Severe Convective Storms*, AMS Monograph ed., by C. Doswell
Cloud Dynamics, by R. Houze

Class website: <http://www.meas.ncsu.edu/mdparker/courses/mea714/index.html>
links to handouts, images from class, etc.

Student learning outcomes: By the completion of this course, you should be able to:

- 1) recognize and define the major terms that apply to atmospheric convection
- 2) recognize, evaluate, and explain the elements (e.g., key figures and conclusions) of fundamental articles across the content area of atmospheric convection
- 3) explain the governing dynamics and microphysics of convective clouds and convective precipitation
- 4) efficiently read and distill key information from scientific papers
- 5) think critically about and intelligently critique papers and presentations across the content area of atmospheric convection, including observations, numerical simulations, and theory.

Course philosophy: This is an elective, graduate course. The level of difficulty will be set to maximize the benefit to the strongest students. If you have serious doubts about your ability to complete the assignments, please consult with us. The workload in this course will be high, but there will be no formal exams.

Basic structure for course meetings: For the first several weeks, the course will consist of a series of introductory and review lectures by the instructors. The remainder of the course will involve close reading and discussion of primary articles from the literature. Normally, there will be two assigned readings for each class meeting. Class meetings will then be organized as follows: a) 15–20 minutes for focused discussion of the assigned readings in small groups; b) 20-minute student presentation of first reading; c) 20-minute student presentation of second reading; d) 15–20 minutes of open discussion on the readings, with student questions as the starting point. In preparation for these classroom discussions, each student will be responsible for completing the two assigned readings and preparing a one–page outline for each. We will distribute a separate handout that explains the expectations for student outlines and presentations to the class.

Assessments: As stated above, there will be no exams. Your grade will be determined by your performance on the following: a semester project centering on an active debate in the convection literature (*please note: as a part of this project you will have to spend \$20–30 in order to print a poster*); three or four presentations (\approx 20 minutes) of assigned articles to the class; one–page outlines for all articles; and, in–class participation

in discussions about articles. Note: the instructors may resort to other assessments (e.g. quizzes) if students are not attaining the expected learning outcomes for the course.

Grading criteria: 30% from the class project; 30% from your presentations of articles to the class; 20% from your participation during class (this includes both participation in your small groups and participation in the open, at-large discussions); and, 20% from your outlines of the assigned articles. Your final letter grade will follow the familiar scale: $\geq 93\%$ A, 90–92 A-, 87–89% B+, 83–86% B, 80–82% B-, etc. We may adjust this at the end if the grade distribution looks too low. University regulations concerning withdrawals and incompletes will be strictly enforced.

Academic integrity: It is expected that students are versed in the Code of Student Conduct Policy, and will abide by it. Repeated here are the provisions relating to academic dishonesty.

1. Academic dishonesty is the giving, taking, or presenting of information or material by a student that unethically or fraudulently aids oneself or another on any work which is to be considered in the determination of a grade or the completion of academic requirements or the enhancement of that student's record or academic career.

2. A student is guilty of a violation of academic integrity if he or she:

- represents the work of others as his or her own;
- obtains assistance in any academic work from another individual in a situation in which the student is expected to perform independently;
- gives assistance to another individual in a situation in which that individual is expected to perform independently;
- offers false data in support of laboratory or field work.

You have committed academic dishonesty if you give, receive, or tolerate others' use of unauthorized aid. Violations of academic integrity will result in automatic failure of the class and referral to the proper university officials. The work that you submit must be your own and you must have completed it specifically for the particular assignment in this class. Make no assumptions: please contact us if you are unsure about whether we have authorized a source of aid.

Special accommodations: You have the right to appropriate, confidential accommodations of a disability. "Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.1)"