CONVECTIVE CLOUDS AND STORMS
METR 6223
Fall 2007

Tues., Thurs. 10-11:15 AM NWC 5930
(make-up classes to be scheduled)

Instructor: Dr. Howie "Cb" Bluestein
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Office hours: Mon., Wed., 1:30 - 2:30 PM (tentative)
Office hours may be cancelled if there is a severe-thunderstorm outbreak (or a threat of the aforementioned).
Other times by appointment please!

Text (recommended): *Atmospheric Convection* by K. A. Emanuel, Oxford Univ. Press

Texts (supplemental): *Cloud Dynamics* by R. A. Houze, Jr., Academic Press, *Synoptic-Dynamic Meteorology in Midlatitudes* (Vol. II) by H. Bluestein, Oxford Univ. Press, *Tornado Alley: Monster Storms of the Great Plains* by H. Bluestein, Oxford Univ. Press

Selected recent journal articles (supplemental; some to be provided on the web)
Download "Bluestein07.pdf" at http://weather.ou.edu/~hblue/public

Prerequisites: METR 5113 (Advanced Atmospheric Dynamics I or equivalent).

Course outline:

1. Basic dynamics
   a. Buoyancy
   b. Boussinesq approximation
   c. Anelastic approximation
2. Local convection
   a. Similarity theory
   b. Plumes
   c. Thermals
3. "Global" convection
   a. Rayleigh convection
   b. Rotational effects
   c. Effects of linear shear
   d. Nonlinear effects
4. Precipitating convection: Observation and theory
   a. Ordinary cells
   b. Supercells

c. Mesoscale convective systems (including squall lines and bow echoes)

5. Tornadoes
    a. Observations
    b. Dynamics

Grades: 2 quizzes (30% each) and term project (40%)

There will be problem sets designed to help you learn the material. These problem sets will be graded qualitatively and used to determine borderline grades.

Note: Any student in this course who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact the instructor personally as soon as possible so the instructor can discuss accommodations necessary to ensure full participation and facilitate the student's educational opportunity.