

METR 6413, Sec. 1  
Advanced Mesoscale Meteorology  
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Fall 2013

Class meeting: Tuesdays and Thursdays at 10 – 11:15 AM in NWC 5720. Make-up classes (when needed), tentatively set for 9:15 AM in NWC 5720.

Office hours: Mondays at 4 - 5 PM and Thursdays at 1:30 – 2:30 PM

Prerequisites: METR 4123 (senior-level synoptic meteorology) or equivalent, METR 5113 (graduate –level dynamics) or the equivalent, and METR 5413 (graduate-level synoptic meteorology) or the equivalent. Ability to access, plot, and make computations of weather data at OU would also be helpful.

Required text: *Synoptic-Dynamic Meteorology in Midlatitudes, Vol. II: Observations and Theory of Weather Systems* by H. Bluestein, 1993, Oxford Univ. Press.

Supplemental material: *Synoptic-Dynamic Meteorology in Midlatitudes, Vol. I: Principles of Kinematics and Dynamics* by H. Bluestein, 1992, Oxford Univ. Press.; *Mesoscale Meteorology in Midlatitudes* by P. Markowski and Y. Richardson, 2010, Wiley, and journal articles, notes, and/or other similar material.

Major topics:

1. Brief review of symmetric instability; conditional symmetric instability
2. Topographic/orographic interactions
  - a. Kelvin waves
  - b. trapped density currents and the barrier jet; bores
  - c. mesoscale eddies - the Catalina eddy, the Denver convergence - vorticity zone
  - d. mountain waves and downslope windstorms; wave clouds
3. Gravity waves in the absence of orographic forcing; Kelvin-Helmholtz waves
4. Precipitation and orography
5. Horizontal convective rolls
6. Sea-breeze front, mountain-valley winds, dryline circulation

Grades: 1/3 Mid-term exam

1/3 Final exam (not comprehensive) on next-to-last day of this class

1/3 Term paper (due last day of class); brief oral presentation on last day of class

Course-related information (e.g., problem sets, solutions, supplementary material) to be disseminated at the class site <http://weather.ou.edu/~hblue/metr6413>.

*The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health*

*Center, Suite 166, phone 405/325-3852 or fax only 405/325-4173.*

All students are expected to be familiar with and abide by the OU Academic Misconduct Code. Information on this code and other student policies is located at <http://studentconduct.ou.edu>.