

Final Project: Case Study of the 10-11 April 2008 Cyclone
Due Friday May 9, 2008 In Class
(No late assignments accepted / No exceptions!)

For the final project, you will perform a case study of a midlatitude cyclone that affected the United States in early spring of 2008. You will be using much of the knowledge learned throughout the semester including contouring, satellite and radar analysis along with information learned about midlatitude cyclones from discussion *and* lecture. Maps as part of Homework 10 have been passed out, but additional data (satellite and radar) is available at www.aos.wisc.edu/~dhartung/aos101.html, this website *must* be accessed to complete the assignment.

You will investigate the structure of the cyclone at three times: 1200 UTC (6 AM CST) 10 April, 0000 UTC (6 PM CST) 11 April, and 1200 UTC (6 AM CST) 11 April. The final report should be around 3-4 pages, 1.5 line spacing, 1" margins and should contain the following information:

1. An Introduction: What made this storm unique? What societal impacts resulted from this storm? Which locations received the most rain, snow, ice, strongest winds and damage? Some resources can be found on the webpage; however you are encouraged to find your own sources.

2. A surface diagnosis: Describe the progression of the cyclone and fronts across the country. How does the cyclone move? Does it strengthen/weaken (i.e. how does the minimum surface pressure change over time)? Where are regions of strong winds and sharp temperature gradients? Where is there temperature advection, convergence, etc. ?

3. An upper-air diagnosis: Describe the progression of the 500 hPa trough. How does it move? How does its strength change? How does it relate to the position of the surface cyclone? Does its arrangement with the surface cyclone promote strengthening or weakening of the surface cyclone? What are the locations of the strongest 500 hPa winds? Where is the vorticity advection, convergence, etc?

4. Cloud/precipitation analysis: Using the satellite and radar images (and weather symbols from surface station models), describe the evolution of clouds and precipitation in the cyclone. How do the distribution of clouds and precipitation relate to the surface low and upper-level trough? Where is snow, freezing rain, showers or thunderstorms occurring? How does the relative strength of the precipitation vary according to what type of front it is occurring along? How do the clouds/precipitation vary as the storm gets stronger?

5. Conclusions: Summarize the main points of the paper. How similar is this storm to the conceptual model and life cycle of the ideal midlatitude cyclone? How is it different?

For maximum grade, your paper should address most of the questions asked here, however if there is something that goes beyond these questions and, in your view, is pertinent to the cyclone's development, you are encouraged to include it in your report. Feel free to send me an email or stop by my office hours if you have any questions. This project should not be left until the last minute!