ATMO 352
Severe Weather and Mesoscale Forecasting
Spring 2007

Laboratory #8

Storm Prediction Center and its Forecasting Products

Section 502, Friday
3-09-07

Due: by the beginning of the next lab session (after break, 3-23-07)

Internet resources:

1. SPC: http://www.spc.noaa.gov/
2. A description of SPC and its products: http://www.spc.noaa.gov/misc/about.html

Introduction:

The Storm Prediction Center (SPC) at Norman, Oklahoma is a part of the National Oceanic Atmospheric Administration (NOAA) National Weather Service (NWS) charged with monitoring and forecasting severe weather over the 48 continental United States. It is a division of the National Centers for Environmental Prediction (NCEP). Within SPC, the Operational Branch prepares several forecasting products each day that assist individual NWS forecast offices (FOs), emergency management personnel, storm spotters (SKYWARN), the media, private industry, and the public prepare for hazardous and severe convective weather.

The purpose of this section is to

1) familiarize you with SPC's products and general procedures.
2) increase our understanding of the scientific and forecasting content of these products
3) begin to develop our own ability to forecast mesoscale and severe weather in a fashion analogous to the SPC.

We will continue to work on objectives 2) and 3) during the remaining labs throughout the rest of the semester!

Exercises (35 points):

We will dissect aspects of the DAY-1 SPC convective outlooks at 1300 and 1630 UTC on March 1, 2007, focusing on the synoptic conditions, CAPE/instability, and deep (0-6 km) shear associated with the deadly severe weather (tornado) outbreak over the Mid-Mississippi Valley to Gulf Coast States in the southeast - http://www.spc.noaa.gov/climo/reports/070301_rpts.html

Internet Resources for #1: Use the "Retrieving Previous Outlooks" for "20070301" at the bottom of the SPC Convective Outlooks Internet page: http://www.spc.noaa.gov/products/outlook/

1. (10 points) After carefully reading the morning (1300 UTC) and updated (1630 UTC) SPC DAY 1 convective outlook on March 1st 2007, **describe, in your own words**, the *role of synoptic forcing*, *CAPE/instability*, and *deep (i.e., 0-6 km) shear* in the SPC DAY 1 discussion and forecast for this severe weather outbreak. In your answer, be sure to address the "**HIGH**" risk area over the southeastern United States.

Internet Resources for #2: There are several sources of archived weather maps and data at SPC –

- SPC Archived Sector Maps: http://www.spc.noaa.gov/exper/ma_archive/
  - Note: You will need to enter the proper date, end time, and period of interest. You can use any data up to and including 12 UTC on March 2, 2007.
- SPC Severe Event Database with weather maps and skew-T diagram for March 1, 2007: http://www.spc.noaa.gov/exper/archive/events/070301/index.html
  - Note: Use can use any data on this page.

2. (25 points) Using archived data and weather maps from March 1-2, 2007 that are available at SPC,
   a. *(10 points) provide* observational and/or model imagery/data to support the role of synoptic forcing, CAPE/instability, and deep shear in the SPC DAY-1 severe weather forecast that you highlighted in 1). Hand in plots of your weather maps and other data plots.
   b. *(10 points) Explain* how each piece of imagery/data supports your argument in 1). [Be *specific and quantitative* when possible. In other words, don't just say the CAPE was "high" over southern Alabama. Instead, give a specific range of numbers based on your maps. Be sure to provide the source of each data (map type and date/time), the variable name, and the units in your answer.].
   c. *(5 points) Demonstrate* that the geographic union of favorable synoptic forcing, CAPE/instability, and deep shear generally agrees with the "**HIGH**" risk area highlighted by SPC's probabilistic forecast at 1630 UTC for severe convective weather.