**ATM 350**

**Final Project**

Choose any continental U.S. weather event, and using the tools learned in class, diagnose and analyze some aspect(s) of the weather system being studied.  In doing this, you must answer the question "*why?*" --- as in, "*why did the heaviest snow fall over New England?*" or "*why did the nor'easter undergo rapid cyclogenesis?*" or *"why was there such a major tornado outbreak on this day?*"

You must create **six** presentation quality figures (or loops) in your analysis. Two of your figures should be created using gdplot2. The other four should use at least two of the programs in the list below:

• GEMPAK program other than gdplot2 (e.g., gdcross, sfmap, snprof, etc.)

• NSHARP

• NMAP2

Your six plots must include one of each of the following:

• One surface map (sfmap or NMAP2)

• One radar or satellite image/loop (NMAP2 or GEMPAK)

• One observed sounding (snprof or NSHARP)

• At least two plots using gdplot2 for diagnostics (see below for examples)

Some plots that could be made to answer the sample questions above might be:

• *Why did the heaviest snow fall over New England?*

       -850-mb temperatures and winds to illustrate frontogenesis along the axis of heaviest snow.

-North American precipitable water to show moisture flux from tropics to midlatitudes.

• *Why did the nor'easter undergo rapid cyclogenesis?*

-300-mb height and isotachs to show jet entrance/exit regions.  500-mb vorticity to show CVA.  Two different times of SLP analysis to show the rapid pressure falls.

• *Why was there such a major tornado outbreak on this day?*

-NSHARP sounding to show CAPE and speed/directional shear.  Upper-level height and wind to show development of loaded gun sounding atmosphere.  Surface observations to show dryline position.

These figures (plus one “introduction” slide describing the event and what aspect of the event you plan on analyzing) will be presented to the class in a ~7-10 minute presentation on your weather event on April 28 and May 3. Please save all images, scripts, and bundles in a directory named *project* within your own atm350 directory.