AOS 452 – Individual Case Study
Due: Tuesday, December 13
15% of Final Grade

The Individual Case Study is the capstone of AOS 452 and represents an opportunity to synthesize all of the dynamical tools we've discussed throughout the course of the semester in the analysis of a sensible weather event of your choice

Written Component (85%)

In a free-flowing, grammatically-sound, spell-checked narrative, **8-12 pages in length (double-spaced, 12 pt font)**, describe the results of your analysis of the structure and evolution of your chosen sensible weather event. Your analysis **does not** need to address or apply every diagnostic we've discussed this semester. Upon careful examination of your case, you will identify and focus on the most interesting dynamical features and structures and evaluate them using the most appropriate set of diagnostics.

As part of your case study you will be allowed **no more than 1 figure per page of text** (they can be multi-panel plots). The figures themselves should be **presentation quality**. This means that they are neat (e.g. with adequate cints, fints, color schemes, line thicknesses, etc.) and not over cluttered with information. Make sure you **annotate your figures when necessary** (i.e. draw on the location of fronts, identify where cross sections are taken, etc). Be sure to develop figures that show, in a single figure at a given time, the distribution of multiple basic variables (e.g. near surface wind, mean sea-level pressure, near surface (potential) temperature. Such figures will allow you to more effectively tell your story. You will also be required to include **figure captions** for each of your figures that describe what variables are plotted, when they are plotted, and how they are plotted. For examples on how to write an effective figure caption, please reference any of the scientific papers on the AOS 452 website. Your case study should contain an appropriate **title** that captures adequately the topic and focus of your particular case study and a brief statement at the beginning of your paper on the significance/impacts of your chosen case.

Central to any research paper is the inclusion of an **abstract** that summarizes the key aspects of the evolution of your event and briefly describes the results obtained from your diagnosis. As part of your case study you are required to include an abstract that is **no longer than 250 words.** In order to make sure that you are on track to successfully complete this assignment, and so that we can give you feedback on your topic, you will submit a rough draft of your abstract at the end of class on **Thursday, 17 November**. Prof. Martin and I will then work quickly to give you immediate feedback before the Thanksgiving holiday.

Suggestions for Evaluating/Writing your Case Study:

1) Take the time to explore the data within your particular case – including the surface and upper-tropospheric observations. Do not rely solely on gridded analyses to complete your study or go into your case expecting to apply certain diagnostics. Rather, investigate your case from multiple perspectives and then hone in on what the most significant features are within your case.

Once you've done that, identify which diagnostics (applied at which levels) best illustrate your case.

2) Once you've identified your focus and the appropriate diagnostics, create the necessary figures. Using those, create an outline for your case study that characterizes the most effective progression for the story you want to tell. Think of it as creating a storyboard for a movie. Using that outline, re-order your figures so that the order they are presented in the text matches the numbering of your figures (i.e. Figure 1 should come before Figure 2, etc).

3) Begin writing your case study. Make sure that your introduction includes a discussion of the impacts associated with your particular weather event, **contains a map of surface observations during the "height" of the storm (other observational-based plots are encouraged throughout the rest of the case study)**, and includes a thesis statement that motivates your study and articulates what you plan to investigate. (**Tip:** This thesis statement should not contain a laundry list of the diagnostics you plan to apply)

4) At the end of your case study, make sure that your conclusion summarizes and synthesizes the results of your case study. Think about what the takeaway messages should be for your case and make sure that these points are clearly identified and discussed to conclude the analysis.

Individual Presentation Component (15%)

During class on **13 December, or 15 December** you will give a **9-minute presentation** (with 3 minutes for questions) that focuses on an interesting aspect of your particular case. Do not try to cover every aspect of the event! Instead focus on the times and structures that you feel are most interesting to present to the class and create your presentation around those.

Presentations should be prepared in Powerpoint and all graphics should be **presentation quality** (**Tip**: Do not include multi-panel plots in your presentations, as they will be difficult to see on the projector). You will be evaluated based on how successful you are at addressing the following criteria:

1. Provide a clear statement of features you want to focus on.
2. Describe the synoptic interval you are considering (synoptic overview).
3. Use appropriate language to describe diagnostics/structures.
4. Display competence in applying diagnostics (with clean explanation for their use and interpretation).
5. Maintain an appearance of organization and planning within the presentation.
6. Figures used in the presentation are easily readable from the back of the classroom and line widths and color choices are appropriate.
7. Stick within the time limit.
8. Provide a concise summary of points presented.

Accessing Data

Data for your case can be found in the directory specified in an e-mail sent out during the second week of November. Within that directory you will find data for your case in the following folders:

hds – gridded model datasets
vis5d – vis5d file for your particular case made from GFS analyses
surface – surface observational data
upperair – upper-air observational data