

## **LAB ASSIGNMENT #2**

**(due Tuesday, September 19)**  
**10 points**

### **Learning Objectives:**

Upon completion of this lab, you will be able to:

- assimilate upper-air observations to contour temperature and geopotential heights.
- investigate the relationship between surface and mid-tropospheric atmospheric structures

### **Description:**

In order to obtain a comprehensive understanding of the state of the atmosphere at one particular time, it is not enough to just study surface observations. One must also understand the circulation pattern at upper-levels in the atmosphere and how it relates to the observations at the surface.

This lab introduces you to upper-air analysis via a continued investigation of the strong mid-latitude cyclone we began studying on Tuesday.

### **Analysis Guidelines:**

- 1) Take two separate sheets of tracing paper and attach them to the upper-air observations.
- 2) Contour geopotential height every 30 m on one sheet of tracing paper.  
**TIPS:** Flow at 700 hPa is largely above mountain height, so geostrophic balance begins to become a fairly accurate assumption. Consequently, the wind direction should be approximately parallel to your height lines.
- 3) Contour temperature every 2°C on the other sheet of tracing paper.
- 4) Remember to label and smooth your contours and make sure your contours agree with the data.

**Your analysis will be graded on its consistency with the above guidelines.**