Your Name:_____

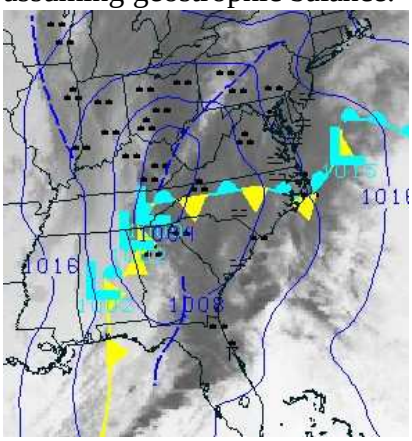
GEO101IN
Introduction to Weather and Climate
Classwork 9: Review
April 2, 2005
For completion in class

1. Sea level atmospheric pressure is about 1000mb. Due to the hydrostatic law, pressure decreases by about half for every 17,000 ft of altitude. At what altitude is atmospheric pressure reduced to about 3.1% of the surface pressure?

2. I have a large quantity of pure Helium gas at room temperature. Suppose I put it into a steel cylinder at a pressure of 150 times atmospheric pressure. According to the First Law of Thermodynamics, what should happen to the temperature of the gas as I compress it into the tank?

3. According to the Second Law of Thermodynamics, could I have used 100% of the energy content of the peanut butter and jelly sandwich I had for lunch to follow my baby daughter around the house? What happened to the energy I couldn't use for this "work"?

4. Draw arrows to show the direction of the Coriolis force, pressure gradient force, and wind blowing around the low pressure system centered over eastern Kentucky pictured below, assuming geostrophic balance.



5. Suppose you were planning a picnic for tomorrow afternoon near Sells and your cousin asked you to predict the weather conditions. What information would you want to have? How would you use it?

6. Why do cold, dry conditions tend to follow the passage of a winter storm system? (Hint: consider the storm system pictured in Question 4).

7. Why is the beginning of the monsoon season in southern Arizona defined as when the daily average dewpoint is 54 degrees or greater for three consecutive days?

8. What's your best prediction for the temperature observed at Tucson International Airport next July 15, 12pm? Why don't you expect this to be a very accurate or precise prediction?