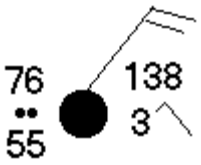
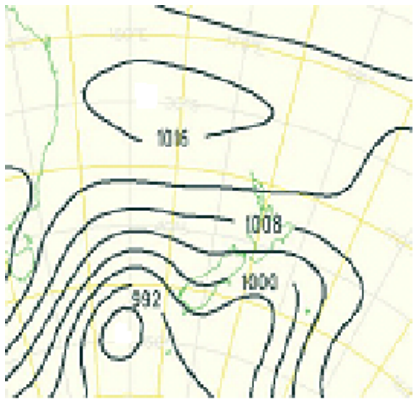
METEOROLOGY

Final Exam Review

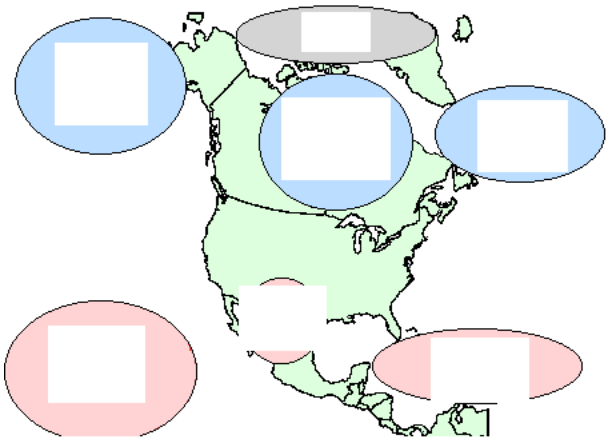
1. Interpret the weather station model below:



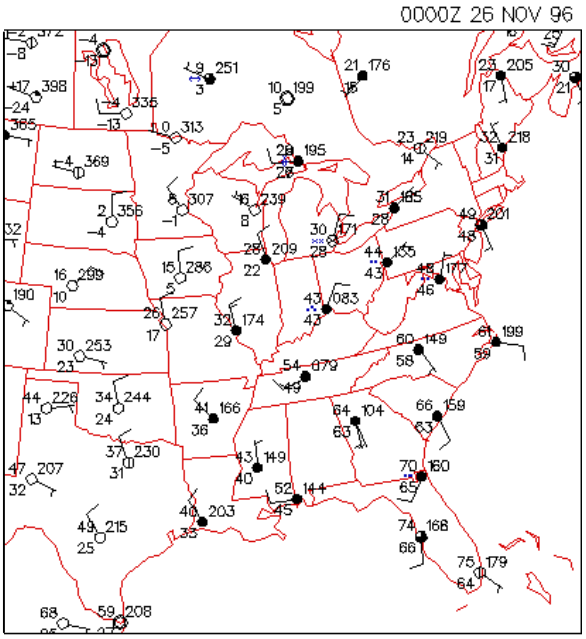
2. Label the location of the high and low pressure systems on the isobar map below.
   Label all isobars.
   Draw the how the winds are likely moving around high and low pressure systems.
   Shade the area that is likely receiving the strongest winds.



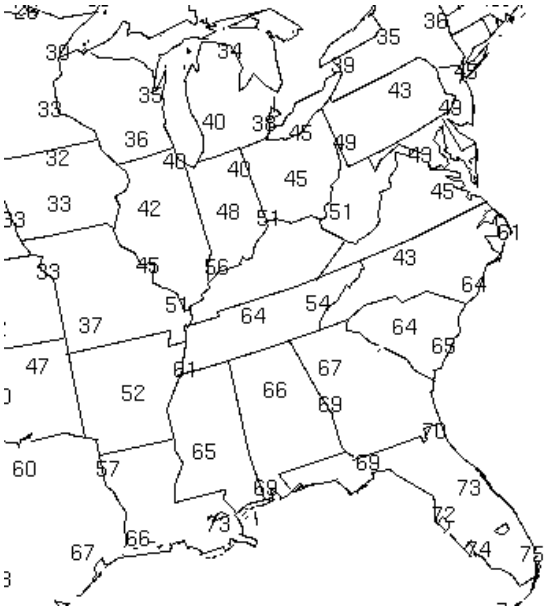
3. Label the source regions for air masses as cT, mT, cP, mP, or cA.



4. Predict the location of the low pressure center and fronts based on surface observations map:



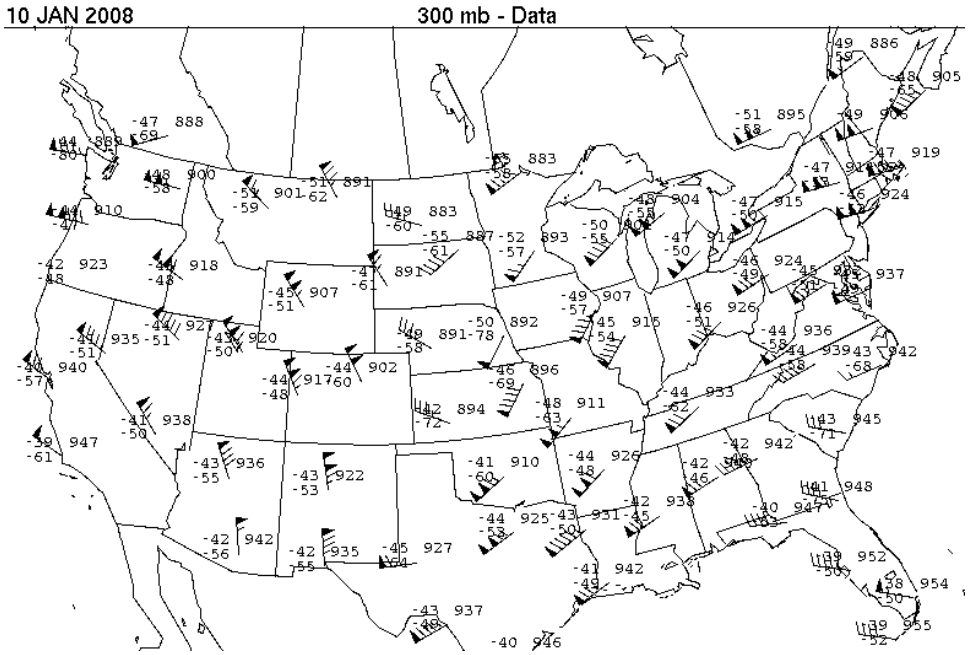
5. Draw the isotherms using an interval of 10 degrees.



6. Describe the temperature changes that occur as rain evaporates as it falls:

7. Describe the why rising air cools faster in dry air than in saturated air:

8. Draw the path of the jet stream on the upper air map below:



9. Explain why rising air cools and sinking air warms.

10. What are the changes that occur to air pressure, temperature, and dew point as altitude increases?

11. What are some ways that technology is used to assist weather forecasting?

12. Describe the differences between of hurricanes and tornadoes.

Hurricane Environment	Tornado Environment
Hurricane Characteristics	**Tornado Characteristics**

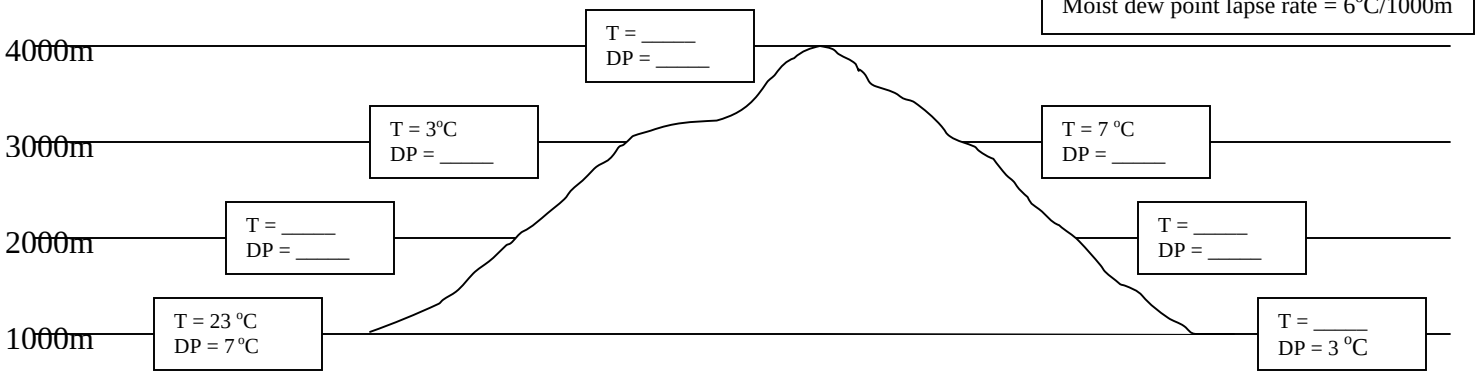
13. What are some of the hazards created by severe weather and precautions that can limit them.

Hurricane Hazards	Hurricane Precautions
Tornado Hazards	Tornado Precautions
Blizzard Hazards	Blizzard Precautions
Thunderstorm Hazards	Thunderstorm Precautions

14. The initial air and dew point temperatures are shown at the base of the mountain.
    a. Fill in each missing air and dew point temperature.
    b. At what elevation will a cloud likely form?_____

Resource Information

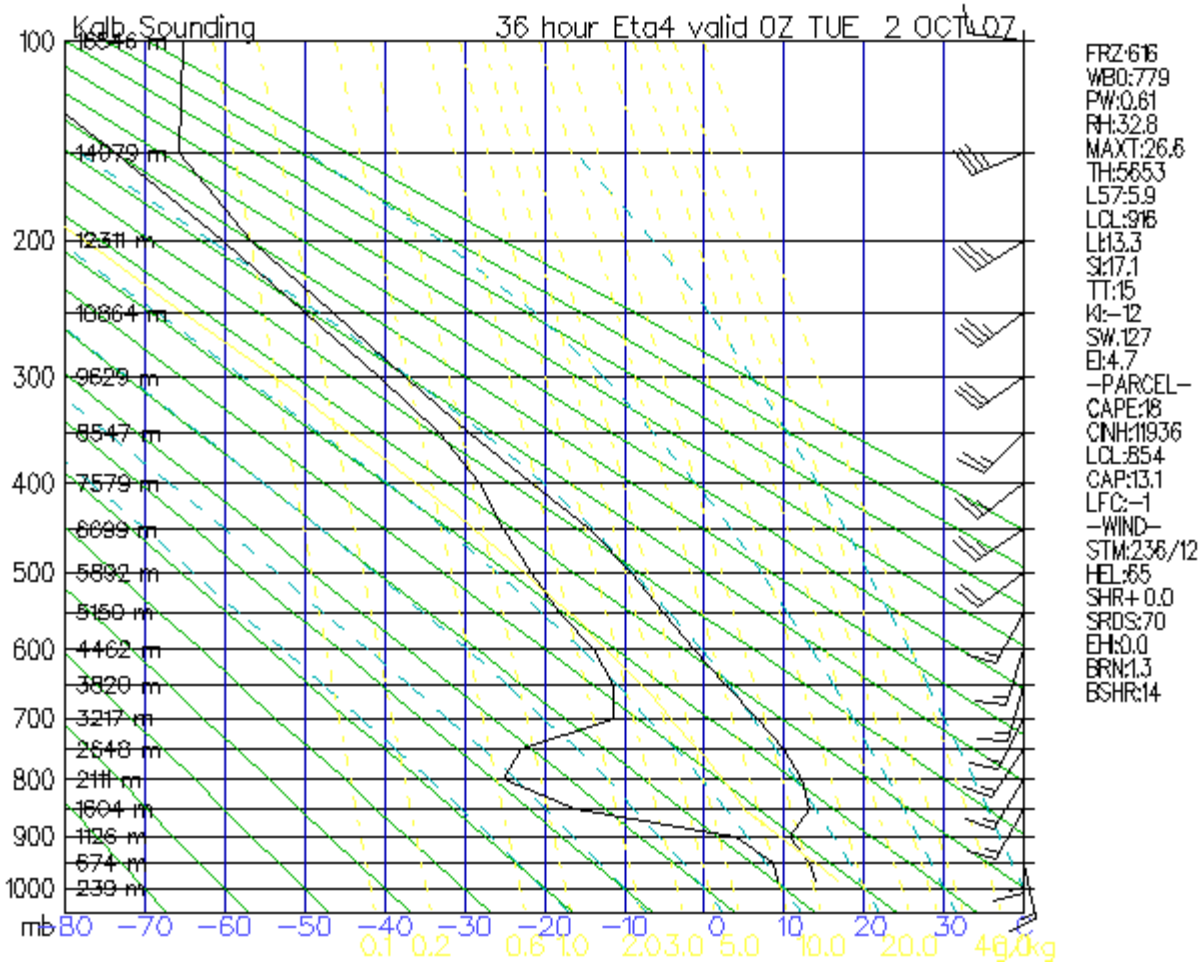
Dry adiabatic lapse rate = 10^{o}C/1000m
Moist adiabatic lapse rate = 6^{o}C/1000m
Dry dew point lapse rate = 2^{o}C/1000m
Moist dew point lapse rate = 6^{o}C/1000m



15. Give examples of both positive and negative effects of increased CO_2 and global warming.

16. Explain the cause of the Greenhouse Effect.

17. Interpret the sounding below:



a. What city is this sounding valid for? _____

b. What is the local time and date that this sounding is valid for?_____

c. At what altitude is the tropopause located? _____

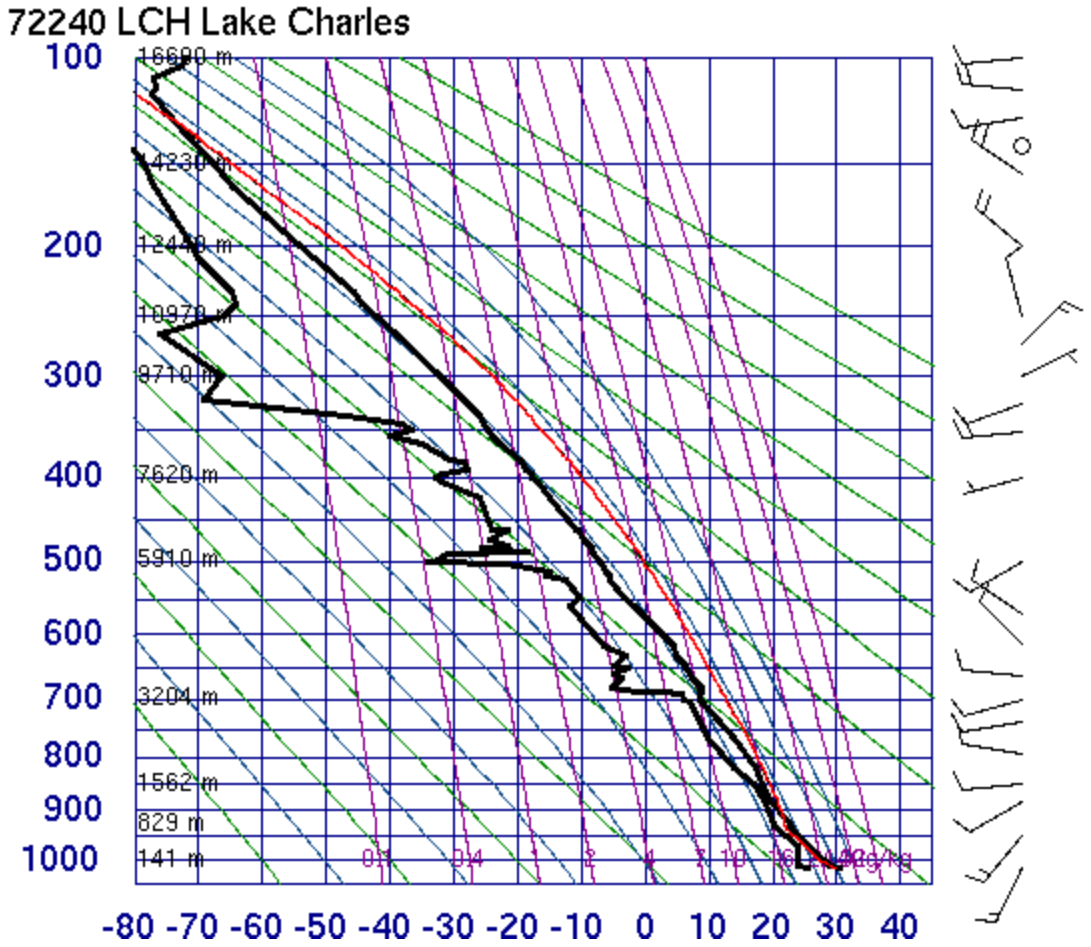
d. Below what altitude is 10% of the atmosphere located? _____

e. At what altitudes are clouds most likely located?_____

f. What is the general wind direction found above this location? _____

g. What is the rate of temperature change (environmental lapse rate) from the surface to the 600mb. level?

18. Answer questions related to stability based on this sounding.



a. Label the following lines on the Stuve diagram: temperature, dew point, adiabatic temperature change.
b. Shade in the region between the temperature and adiabatic line where the air is unstable.
c. At what altitude is the level of free convection?_____
d. What is the highest possible altitude air could rise above the level of free convection? _____
e. What is the approximate Lifted Index?_____

19. Miscellaneous Items
    Plot hurricanes
    Interpret satellite images
    Use Stuve diagrams to determine temperature changes as air rises and sinks.