Name: _____

Date: _____ Period: _____

Weather Earth Science

Lab Activity: Atmospheric Variables

INTRODUCTION:

A meteorologist is an individual with specialized education who uses scientific principles to explain, understand, observe or forecast the earth's atmospheric phenomena and/or how the atmosphere affects the earth and life on the planet.

To make an accurate weather forecast, meteorologists observe and record all different type of weather variable. Some of these variables include temperature, air pressure, wind velocities, wind directions, and precipitation amounts. When these weather variables are mapped together on a synoptic map a picture of past and present conditions emerges.

OBJECTIVE:

To construct field maps to and learn how weather variables help identify a pattern that can help forecast future weather events.

VOCABULARY:

Isotherm -

Isobar -

Low Pressure -

High Pressure -

Gradient -

PROCEDURE A:

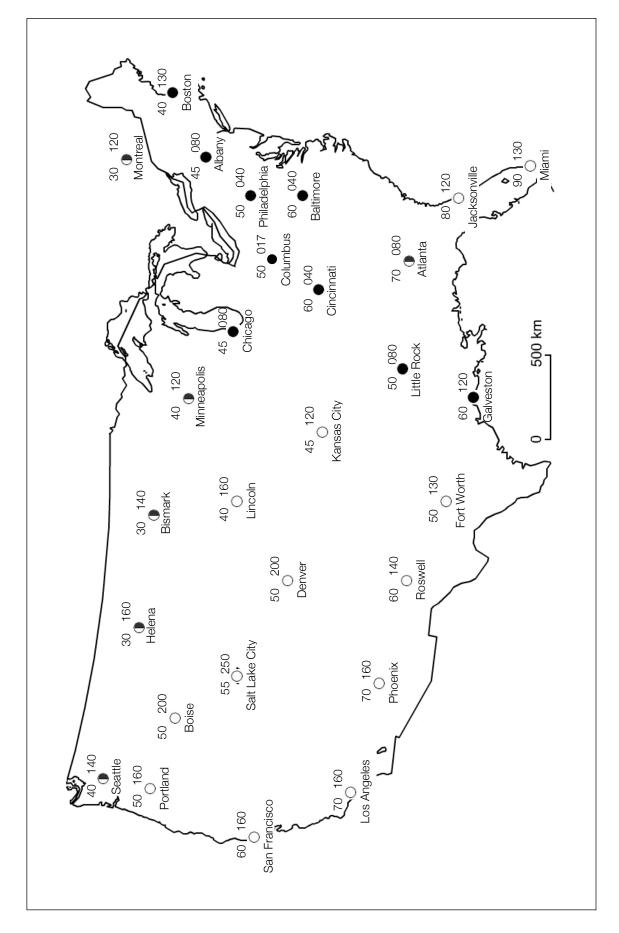
- 1. On Map A: Temperature, use a pencil and lightly draw isotherms at 10-degree intervals.
- 2. Answer the following questions based off of Map A: Temperature.

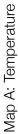
QUESTIONS:

1. How does the temperature change from north to south?

2. Calculate the gradient between Seattle and Los Angeles [be sure to use proper units].

3. Calculate the gradient between Atlanta and Philadelphia [be sure to use proper units].





PROCEDURE B:

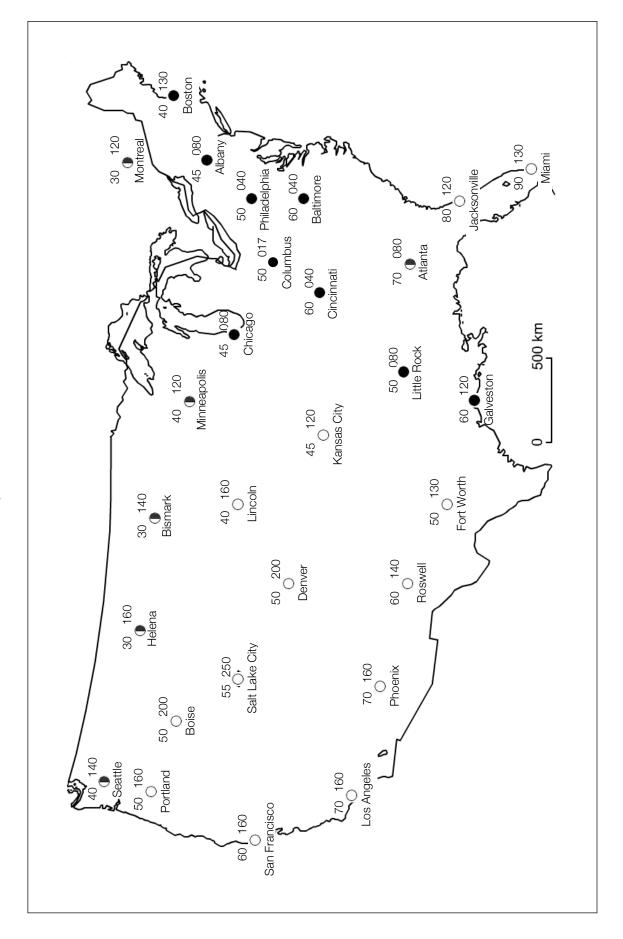
- 1. On Map B: Pressure, use a pencil and lightly draw isobars at 4-millibar intervals.
- 2. Please be reminded that if the air pressure on the station model is 500 or more, place a 9 in front of this number and a decimal point in front of the last number. If it is less then 500, place a 10 in front and a decimal point in front of the last number.
- 3. Label the centers of the high pressure and the low pressure with H and L.

QUESTIONS:

1. Near which city is the low pressure and high pressure located?

2. What is the highest air pressure on the map [be sure to convert the shorthand form]?

3. As you travel from Salt Lake City to Seattle, what change in air pressure would you observe?



Map B: Pressure

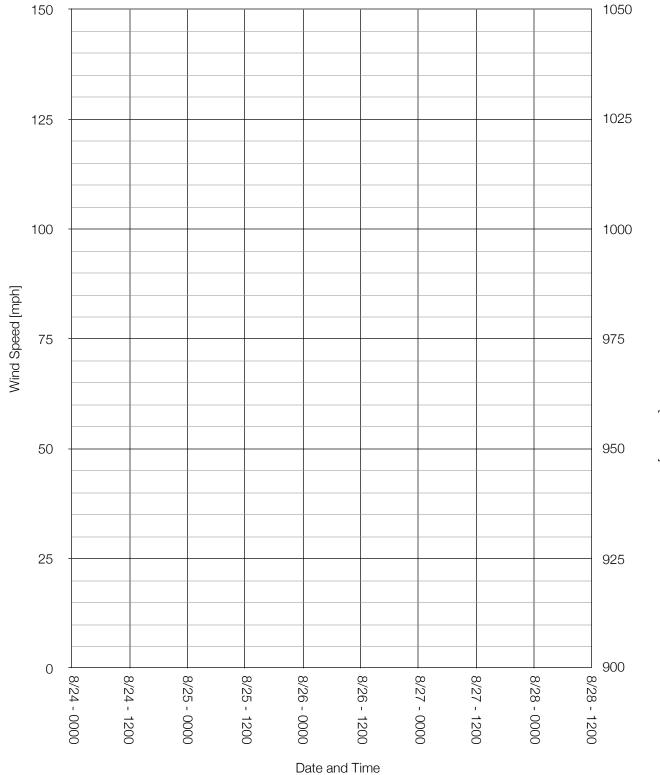
PROCEDURE C:

Using the Hurricane Katrina Data Chart below, plot the air pressure and wind speed on the Hurricane Katrina Graph. Please note that the windspeed in on the left hand x-axis and the pressure is on the right hand side of the x-axis.

Date / Time [2005]	Wind Speed [mph]	Pressure [millibars]
8/24 - 0000	30	1007
8/24 - 1200	35	1006
8/25 - 0000	45	1000
8/25 - 1200	55	994
8/26 - 0000	70	983
8/26 - 1200	75	979
8/27 - 0000	90	959
8/27 - 1200	100	942
8/28 - 0000	100	941
8/28 - 1200	145	909

HURRICANE KATRINA DATA CHART

HURRICANE KATRINA GRAPH



Pressure [millibars]

DISCUSSION QUESTIONS:

- 1. What type of pressure is associated with cloudy skies or bad weather?
- 2. What type of pressure is associated with clear skies and fair weather?
- 3. Is the weather for a region static or dynamic? Explain your answer.
- 4. What type of relationship exists between wind speed and pressure?
- 5. List some variables that meteorologist can use to help forecast weather?

CONCLUSION: How can synoptic weather maps help us forecast weather patterns?