

Weaving Weather Maps with the World Wide Web

by Maryelisa Blundell

Introduction:

Everyone today is familiar with a weather map. They are published in the daily papers and aired on television shows around the clock. Everybody wants to know what the day's weather will be like.

How are these weather maps generated? How does the meteorologist find the High and Low? What is done to predict the weather for the following afternoon? The next day? The next week?

In the following exercise you will have the opportunity to work with real time data. You can choose to follow the format for only one day, a week, or longer.

Purpose:

1. To be able to read barometric pressures from a weather map.
2. To be able to determine a suitable interval to draw isobars from the data given on a weather map.
3. To be able to identify the areas of High and Low pressure.
4. To be able to use wind direction patterns from the weather map to identify the locations of fronts.

Materials:

Access to the World Wide Web! The materials needed for these exercises are all available here.

Directions:

[Go to "Data Streme" web page.](#) This is the Home page for the American Meteorological Society. On the menu bar click, Surface. Print a copy of the following maps for the current day: Surface pressure, wind direction., temperature, precipitation and cloud cover (Doppler radar).

1. Using the surface pressure map, find the location of the highest and lowest points of barometric pressure. Using a suitable interval, (generally 4mb) draw lines of constant pressure (isobars). **REMEMBER-Isobars cannot touch, cross and must be numbered consecutively.** Remember that drawing contour lines like isobars is not like connecting the dots in a coloring book. Lines will often pass between points of known pressure.
2. The isobars should ring the areas of highest and lowest pressure. Try to make smooth lines (they should not look like spaghetti or zig-zags).
3. Using the surface temperature map, draw isotherms using a suitable interval. Label the High and Low pressure centers.
4. Using the surface winds map, label the high and low pressure centers. You will use this map to find the fronts. Look for a shift in wind direction that is approximately 90°. REMEMBER that the fronts extend from the low pressure center. Confirm the front locations by looking for a high temperature gradient where the wind directions are shifting.

OPTIONAL. Continue this lab for three or more consecutive days.

Analysis:

Predict the path of a low pressure area through the United States. Try to be as specific as you can, identify cities, states and approximate arrival times.

Once fronts have been identified on your map, the location of air masses can be determined. What was the most probable origin of these air masses. The Pacific Ocean? The Gulf of Mexico? The Canadian arctic?

Explain the occurrence of heavy cloud cover and precipitation. Why is it occurring at those locations?



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