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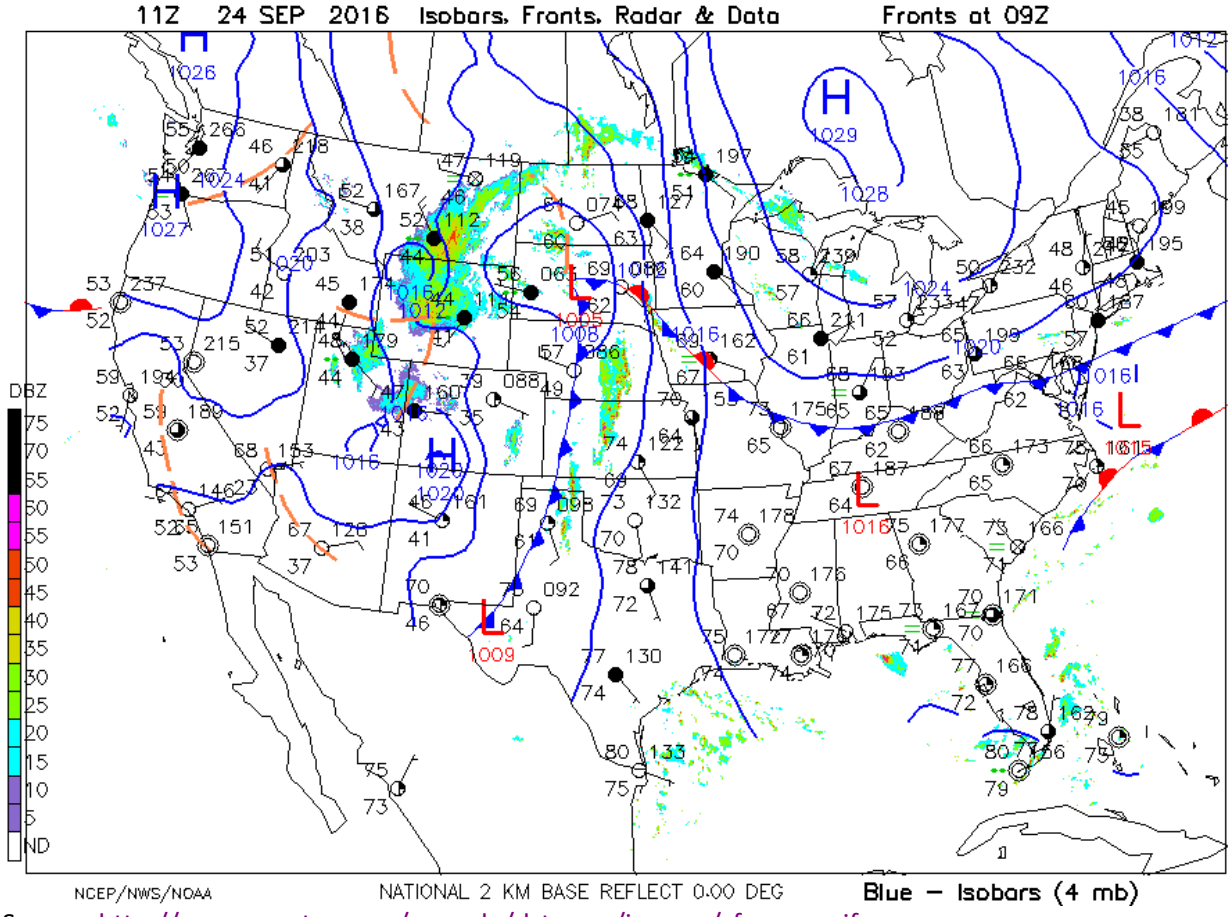
Using Weather Maps and Other Representations of the Atmosphere

Introduction

Weather variables, such as temperature, pressure, and wind, are invisible, but meteorologists invented a system of symbols to represent conditions at a given place and time—the "station model." As understanding of larger scale weather factors—fronts, pressure systems, and air masses—symbolic representation of these were developed to produce **weather maps**. A typical map looks like this:



Source: http://www.ametsoc.org/amsedu/dstreme/images/sfc_map.gif

This map comes from the American Meteorological Society's DataStreme Atmosphere "RealTime Weather Portal" that you can access and use to create exciting lessons with actual, current data. It is available at http://www.ametsoc.org/amsedu/dstreme/. Your students and you should learn how to read maps and other representations of atmospheric conditions to become "Weatherwise." Maps on Regents exams are simpler, but have many of the same basic elements and symbols.

Using Weather Maps

Look again at the map on p. 1. Over an outline of the contiguous States, you can see:

- Station models representing observations at NWS observation stations
- Isobars (curvy blue lines) representing the pressure pattern
- Fronts represented by lines with triangles and half-circles

  Learn more about these symbols at http://www.wpc.ncep.noaa.gov/html/fntcodes2.shtml
- Centers of anticyclones ("H") and cyclone ("L")

Activity 1:

Bring up the current map at http://www.ametsoc.org/amsedu/dstreme/images/sfc_map.gif. Discuss it with others and make note of significant features.

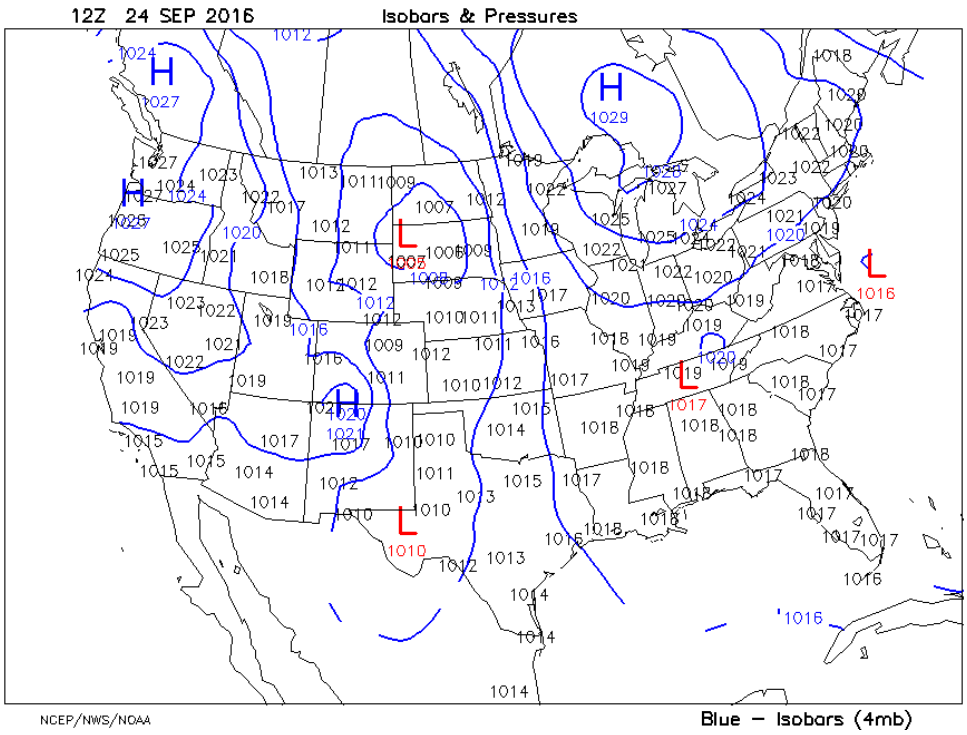
How might you use this in your classroom?

Activity 2:

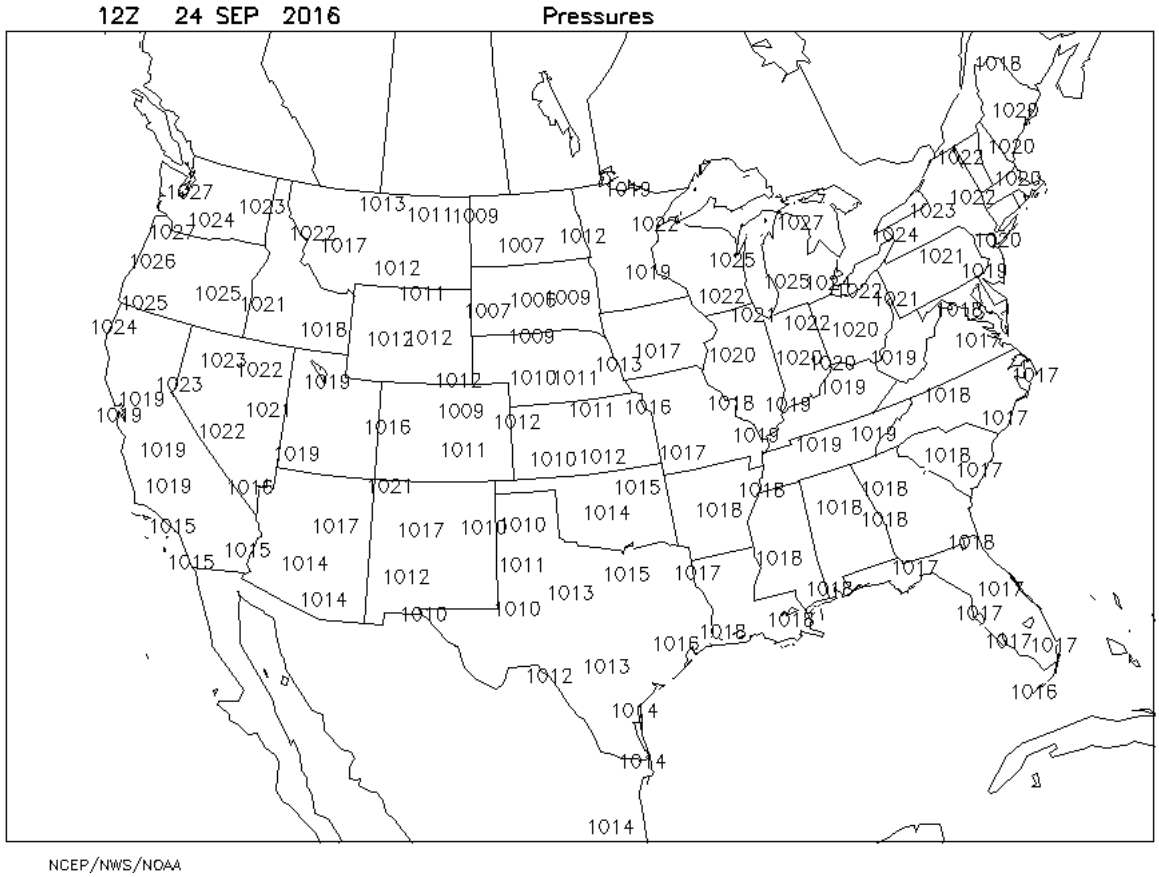
Compare the RealTime Weather Portal map with the current map featured on the NWS home page at http://www.weather.gov/.

Discuss similarities and differences in what is shown and the purposes of the maps.

The RealTime Weather Portal allows you and your students access to variety of map layers. For example, you can view only pressure data and isobars:



If you want to create a lesson to give practice drawing isobars, you can use this version:

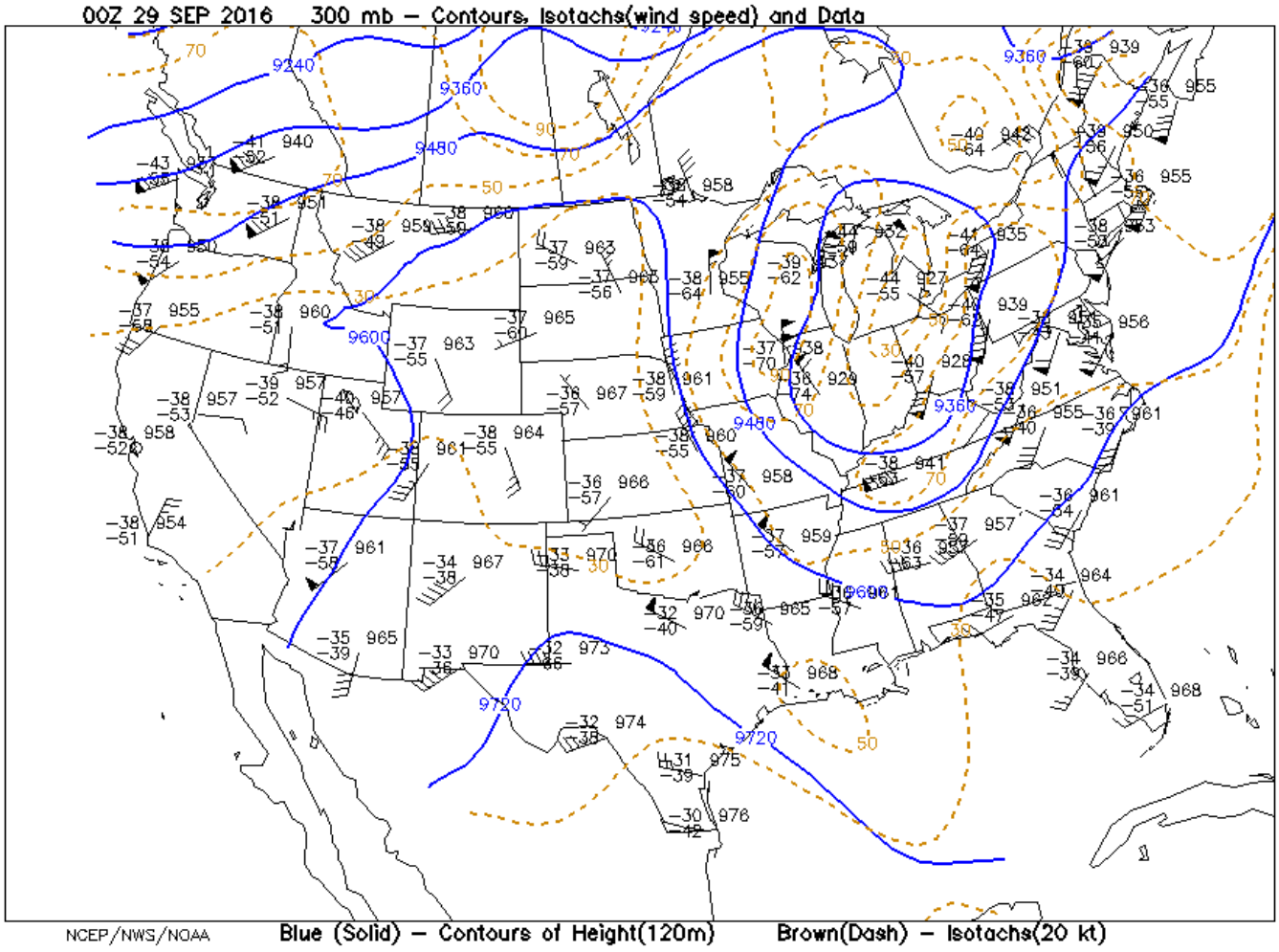


You can also create activities focused on temperature values and isotherms.

Activity 3:

Discuss strategies for using these maps with your students.

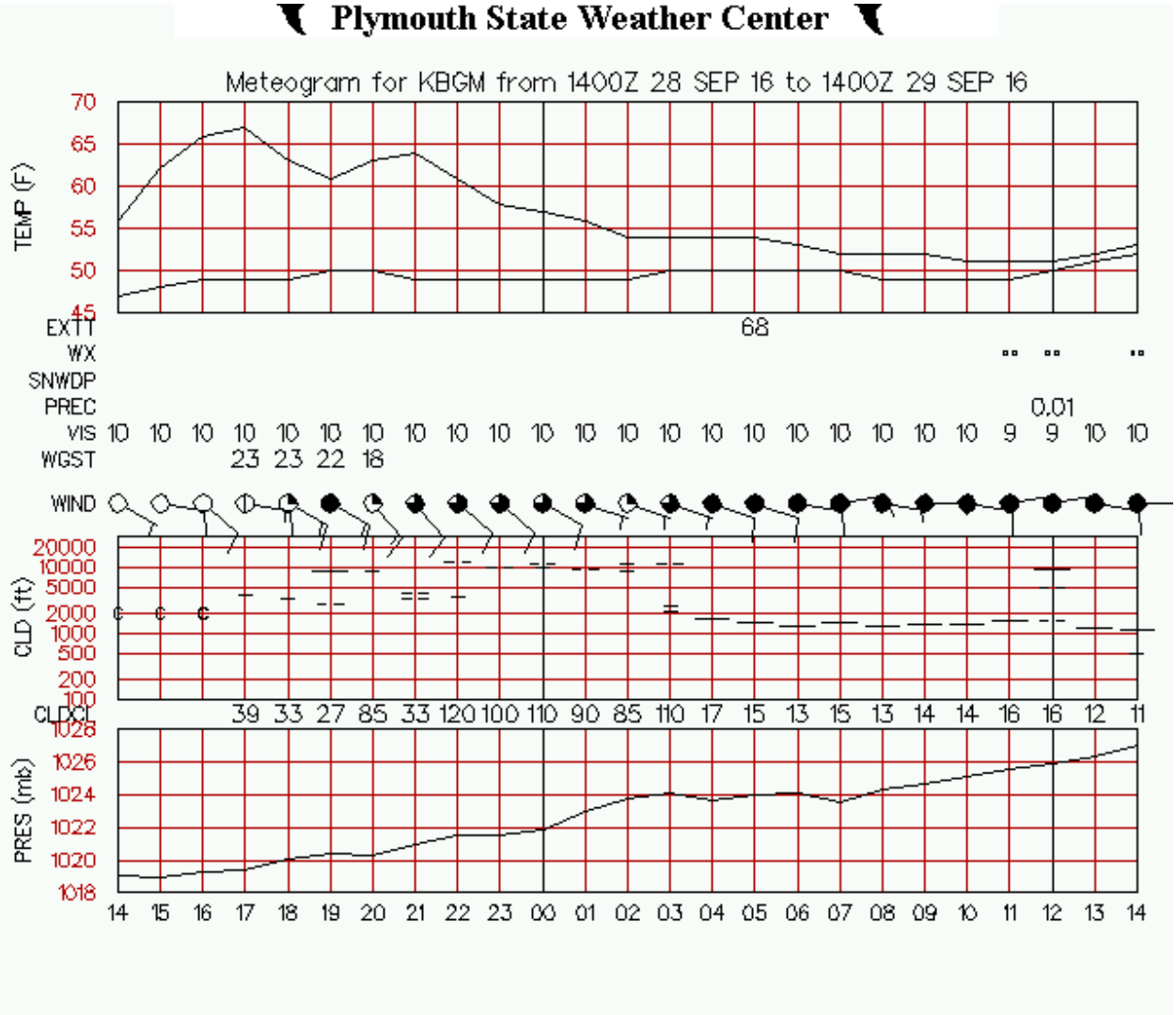
Data from radiosondes carried aloft by weather balloons allow meteorologists to construct maps representing upper-atmospheric conditions. Several are provided through the RealTime Weather Portals. Of special interest is the 300-mb chart, which shows **isotachs** (wind speeds). These provide an indication of the jet streams.



Activity 4:

Examine this chart and discuss its features. How might you use this with your students?

Weather maps are only one way in which meteorologists can represent atmospheric conditions. Another method uses “meteograms.” Selected stations are available through the RealTime Weather Portal, but you can access others from the links provided. Here is a recent meteogram for Binghamton (KBGM).



Activity 5:

Examine the information and discuss how weather variables are represented here. Note strategies to use a meteogram with your students.

Activity 6:

What other representations of atmospheric conditions might you use to teach about weather?