

METEOROLOGIST APPRENTICE

The purpose of this exercise is to give you some idea of how to analyze a weather map and make a simple temperature forecast. You have a map of temperatures at the earth's surface in degrees Fahrenheit on a regular grid (2.5 degree latitude/longitude distance) over the Northeastern part of the USA during September the 29th, 2006.

1. First, locate Long Island on the map and mark it with an "X". (for kids a good meteorologist should know how to locate his position)
2. Three lines joining places having the same temperature (called isotherms : iso=same and therm=temperature -- as easy as that) have already been drawn to help you. It's your turn now to draw the other isotherms in between those lines. The 63 degree isotherm is used (arbitrarily) to divide the "warm" from the "cold" areas of the map. You are asked to draw more isotherms to indicate the pattern of the warm and cold air on the map. NOW here is the fun :
 - a. Using your red pencil, draw isotherms over warm areas of the map. First draw the 67-degree isotherm, then 71, 75, and 79, in steps of 4 degrees. You will sometimes need to interpolate, or estimate where the isotherm should go. For example, if you are drawing the 75-degree isotherm, but do not see any "75"s on the map, what do you do? If you see a "74" and a "77", you know that the 75-degree isotherm should be drawn between them, and should be closer to the "74" than to the "77". Once you have drawn the warm isotherms, draw a big "H" (for Hot) at the hottest place in your map (i.e., temperature greater than 79 degrees Fahrenheit).
 - b. Now use your blue pencil and draw isotherms over cold places. First start with the 59-degree isotherm then decrease by a step of 4 degrees (59, 55, ... 39). Put a big "C" (for Cold) on the coldest area of the map (i.e., temperature below 47 degrees Fahrenheit)
3. Now we want to know whether it is more likely to get colder or warmer in Manhattan in the next few hours. For that you must know the wind field, which is the conveyor of the temperature (by advection). Use the wind map drawn for you on the transparency and overlay it on your temperature map. Try to forecast (not to guess) what kind of air (warm/cold) is flowing toward Manhattan.



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