Contouring Data

Purpose:

        Develop the ability to contour two dimensional data and use the resulting information to locate a cold front.

Equipment:

Station Thermometer	Min./Max. Thermometer
Anemometer	Barometer
Psychrometer	Rain Gauge
Psychometric Tables	Barometric Correction Tables

I.   **Surface observation.**

Begin the first 1/2 hour of lab performing a surface observation. Make sure you include pressure (station, sea level, and altimeter setting), temperature, dew point temperature, wind (direction, speed, and characteristics), precipitation, and sky conditions (cloud cover, cloud height, & visibility). From your observation generate a METAR and a station model.

A.   Generate a METAR for today's observation

B.   Generate a station model for today's observation.   ◯

II.   **Analysis of surface maps**

        During this part of lab we will begin to analyze the surface data for 00Z April 17, 1998. We will begin our analysis by contouring regularly gridded data. Next we will contour actual surface temperature data, which is not regularly spaced. One practice grid as well as two weather data maps are included with this project. The first includes all of the information provided by the Purdue Weather Processor Surface Map (Map #0) with the radar and frontal analysis removed. The second map includes only the surface temperature.

A.   **Practice contour grid.**
   The practice grid consists of artifical data ranging from 10 to 60 meters in height. You must draw contours (lines of constant height) on this map at 10 m intervals. Here are some general rules you must follow when drawing contours.
   1.   Contours are simple curved lines or closed curves. They must originate and terminate on any edge of the chart or must close around on itself to form a closed curve.
   2.   Contours never cross themselves or other contours.
   3.   Contours will never have three lines originating from a point.
   4.   Contours are smooth and will not have any sharp edges or corners

B.   **Temperature map.**
   The temperature map (Map #1) consist of temperatures across the United States. You must draw isotherms (lines of constant temperature) on this map at 5 °F intervals. Use the same rules for drawing isotherms as you did for contours.

   Isotherms will be tightly spaced in the vicinity of fronts. In a different colored pen or pencil indicate where you would expect a front to be, using only the temperature data.

C.   **Questions**

   1)   You identified a location for the cold front on your temperature isotherm map. Comparing this with the full set of data from the Purdue Weather processor, what other atmospheric properties change in the vicinity of the cold front ?

   2)   Summarize below the tricks or tips you use to more effectively contour the data. Don't answer this until you have completed the project. You will develop you own style as you practice contouring.