

TRAINING

WHAT YOU SEE IS NOT NECESSARILY WHAT YOU GET

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Imagine for a moment that you are a forecaster stationed somewhere in the central United States. One of your routine shift tasks is to analyze (reanalyze) the 500mb map. In this case, we'll concentrate on the 500mb map for 00Z on September 23, 1988 (Fig 1). This is the map that represents the data used for NMC's Limited-area Fine Mesh (LFM) model run. Here are some questions you might want to ask yourself before beginning:

- What steps will you follow in accomplishing this assignment?
- What problems might you have to overcome?
- What resources do you have to help resolve these?

Before answering these questions, examine the 500mb data plot in Figure 1.

ANSWERS

Before you draw a single line on the chart, you should quickly scan the plotted upper air data and satellite imagery

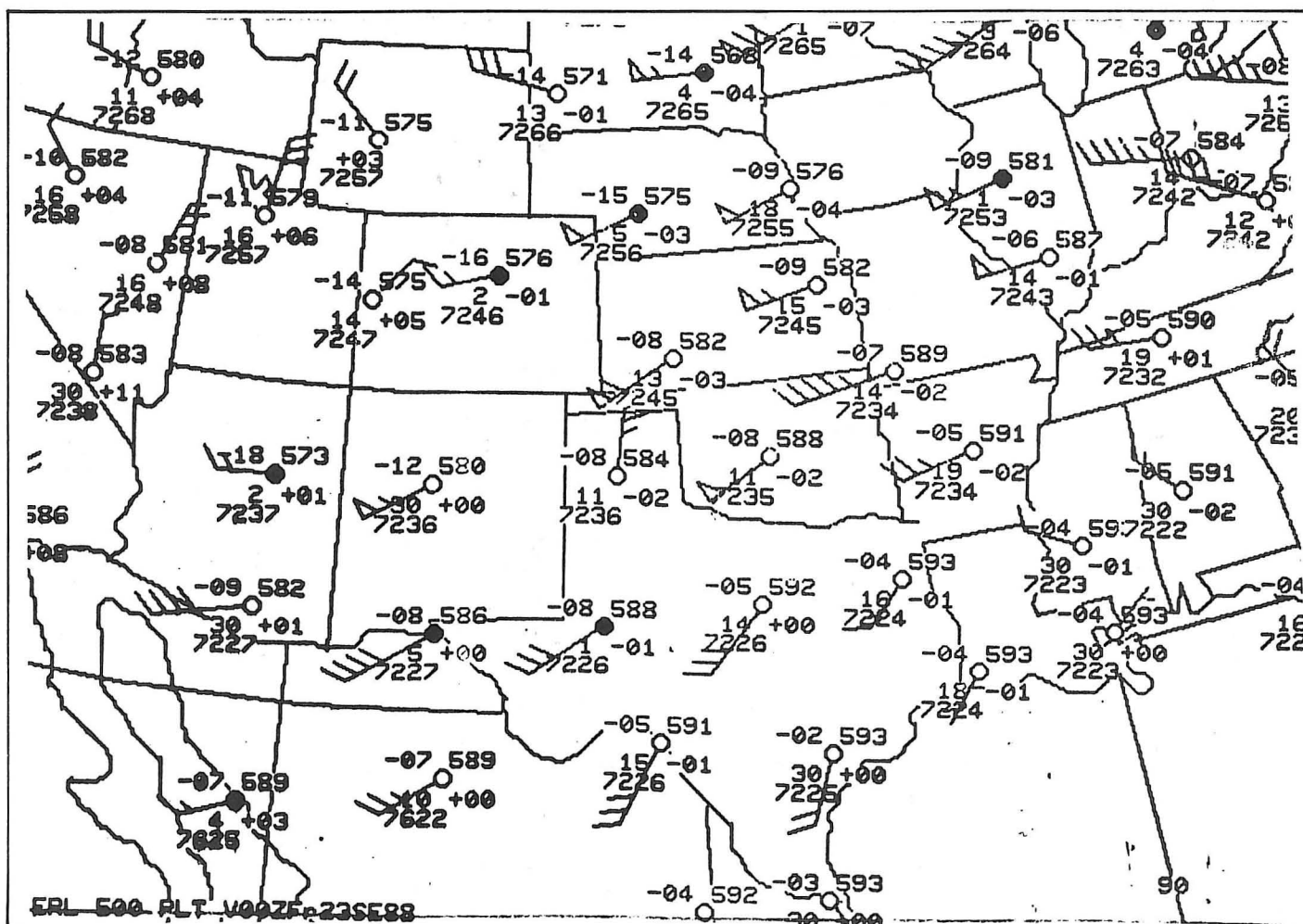


Fig. 1. 500 mb map (LFM model run), 0000 GMT, September 23, 1988.

to get a rough idea of where significant short- and long-wave weather features are. It should become apparent immediately that the Amarillo (AMA) wind observation looks "suspicious." All other data for AMA appear to fit.

In diagnosing the problem, one of your first steps might be to plot the AMA sounding for the same time (Fig. 2) and compare data for different levels. This helps you establish vertical consistency. Here, the sounding appears okay. Yet all sounding winds are from the southwest. The temperature agrees with the 500 mb map plot, but the dew point depression does not. Given these inconsistent data sets, you might ask yourself where the data sets came from and whether the entire observation (or just a part of it) is in error.

State forecast discussions from nearby NWS offices might have offered a clue, since these frequently include forecast reasoning, comments about data reliability and other information. In this case, there was no mention of the problem.

Status messages from the National Meteorological Center (NMC) are usually very helpful in detecting erroneous data or other problems with data going into the computer models. A check of the discussion on this event, found that the plotted winds for AMA were deleted from the LFM run; the LFM

height was manually corrected to 584; and a 586 height was applied to the Nested Grid Model (NGM) run. None of these were indicated directly on the 500-mb chart (Fig. 1).

Although you still don't know where the data for the 500-mb plot came from, you should probably be ready to ignore the ENTIRE observation based on your analysis/reanalysis procedure.

In this case, AMA inadvertently transmitted TWO 00Z mandatory upper air messages. The first was part of a test of communications software. The second, and the actual sounding, (Fig. 2) was received at NMC after both model runs. The result was an attempt to "correct" erroneous data.

In summary, you should always examine the data (including soundings) around and upstream from your area and check for data validity. When in doubt, (or even when not) examine forecast discussions from nearby offices and NMC. You can also phone these sites. Discussions with other forecasters may also flag questionable information.

Remember that one bad sounding can make a mess even of the best computer models. It can also make analyzing and understanding the weather situation very difficult.

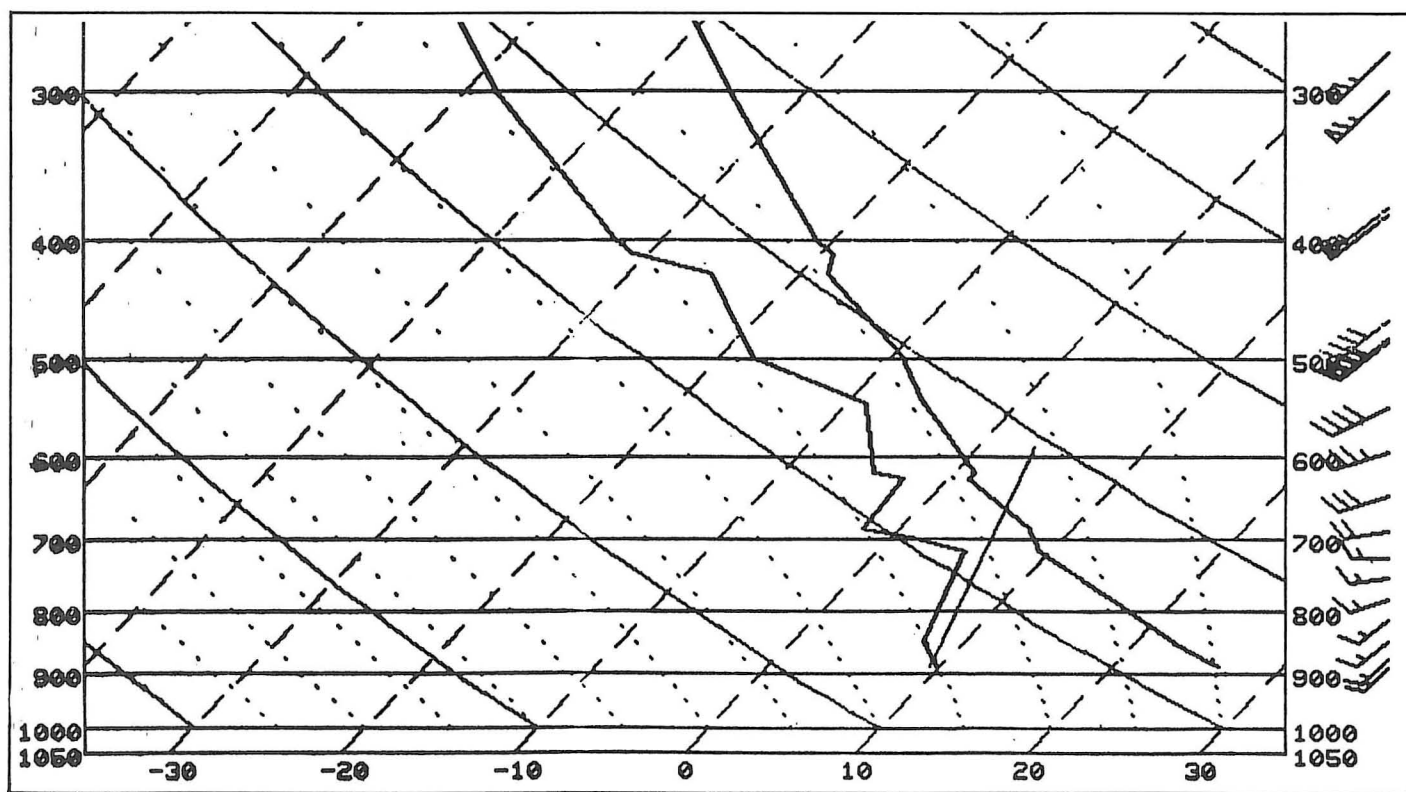


Fig. 2. Amarillo (AMA) sounding for 0000 GMT, September 23, 1988.