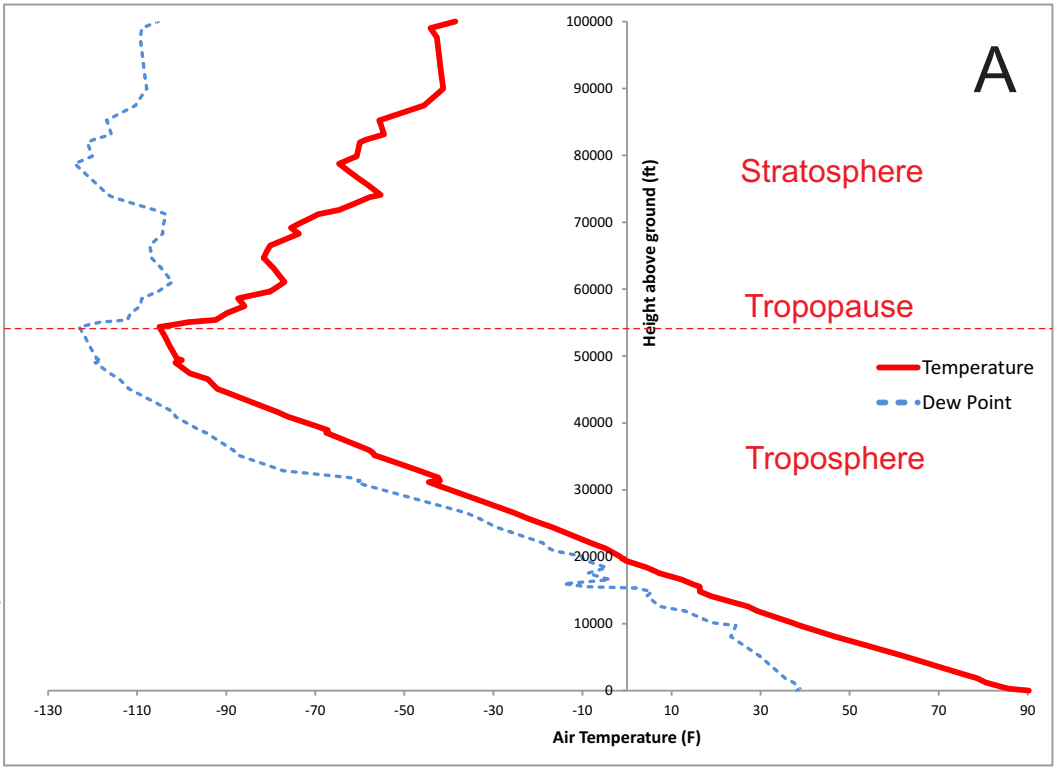
Soundings

Name: _____

In these soundings, the temperature is the solid line, and the dew point is the dashed line.

** All of these soundings were taken from weather balloons launched from Albuquerque **



For Sounding A:

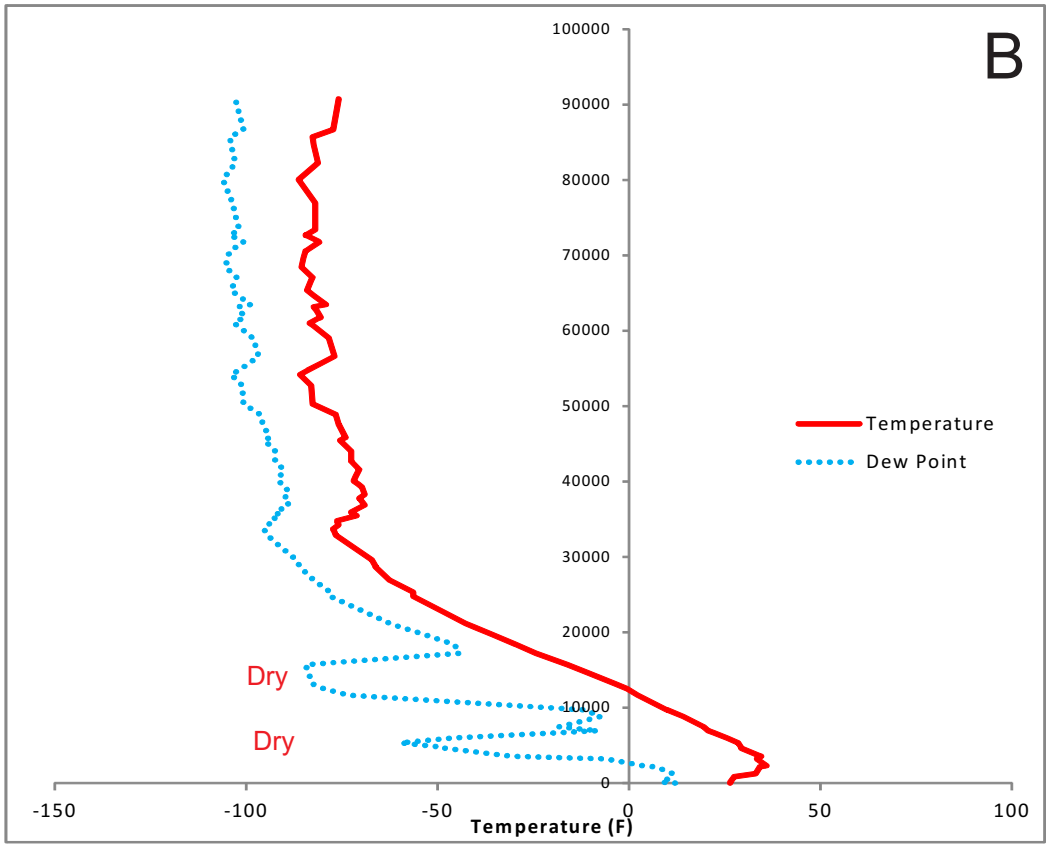
1. At what season was this sounding probably taken? Summer

2. Label the Stratosphere, the Tropopause, and the Troposphere.

3. Based on this graph, is the relative humidity at the surface higher or lower than the relative humidity near 20000 feet? RH is lower at the surface

4. Where in the atmosphere does the highest concentration of water molecules occur? At the surface

5. According to this plot, did the weather balloon pass through any clouds on July 4th? No



Sounding 'B' is shown to the right.

1. At what season was this sounding probably taken? Winter? It was 25F at the surface

2. Does the air near the surface have more or less water vapor than Sounding A? Less vapor than A

3A. What is unique about the environmental lapse rate directly above the surface? The temperature increases with height

4. There are two layers of significantly dry air in the troposphere. Label them on the plot. I should have specified lower atmosphere, as all of the air above 30,000 ft is drier than these two layers.

5. Would smoke from a chimney rise up into the atmosphere on this day, or would it tend to hang low next to the ground? It would hang low next to the ground

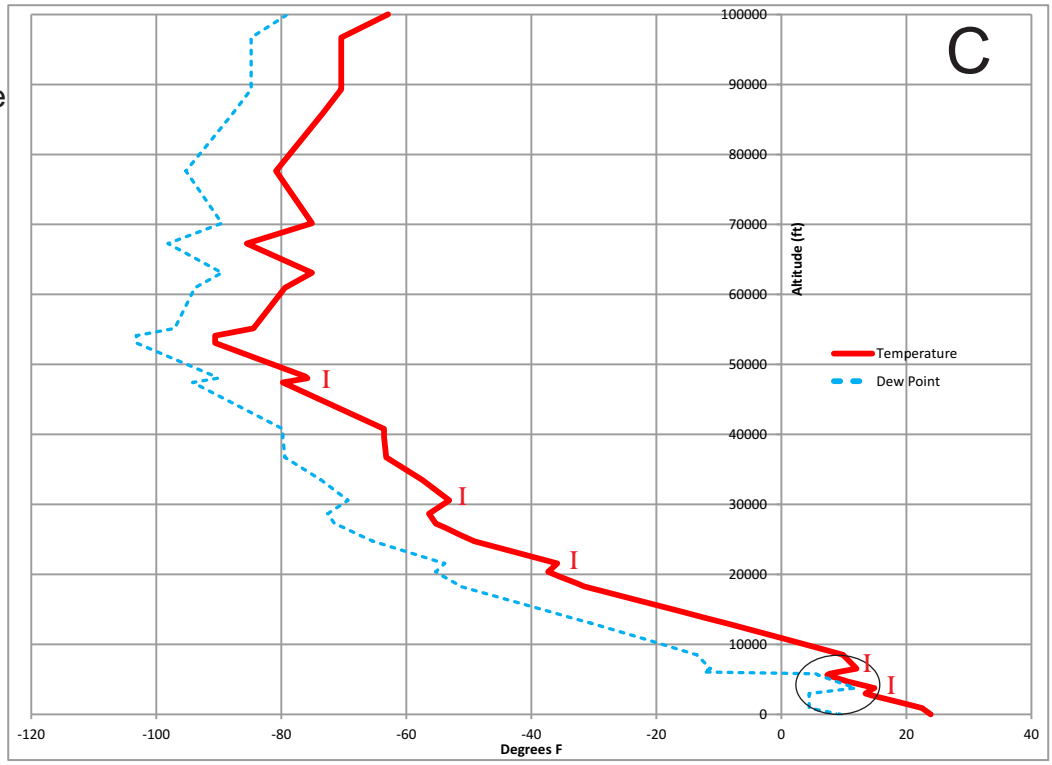
Sounding C:

1. Is the relative humidity near the surface greater than or less than the relative humidity at 500 feet?
RH less at the surface

2. Circle an area on the sounding that has reached 100% relative humidity.

3. Any air above the ground that reaches 100% relative humidity will result in the formation of a cloud. What is your best guess for the type of cloud that this weather balloon passed through?
Probably a cumulus

4. Label all of the temperature inversions in the **troposphere only** with "I" letters on the graph.

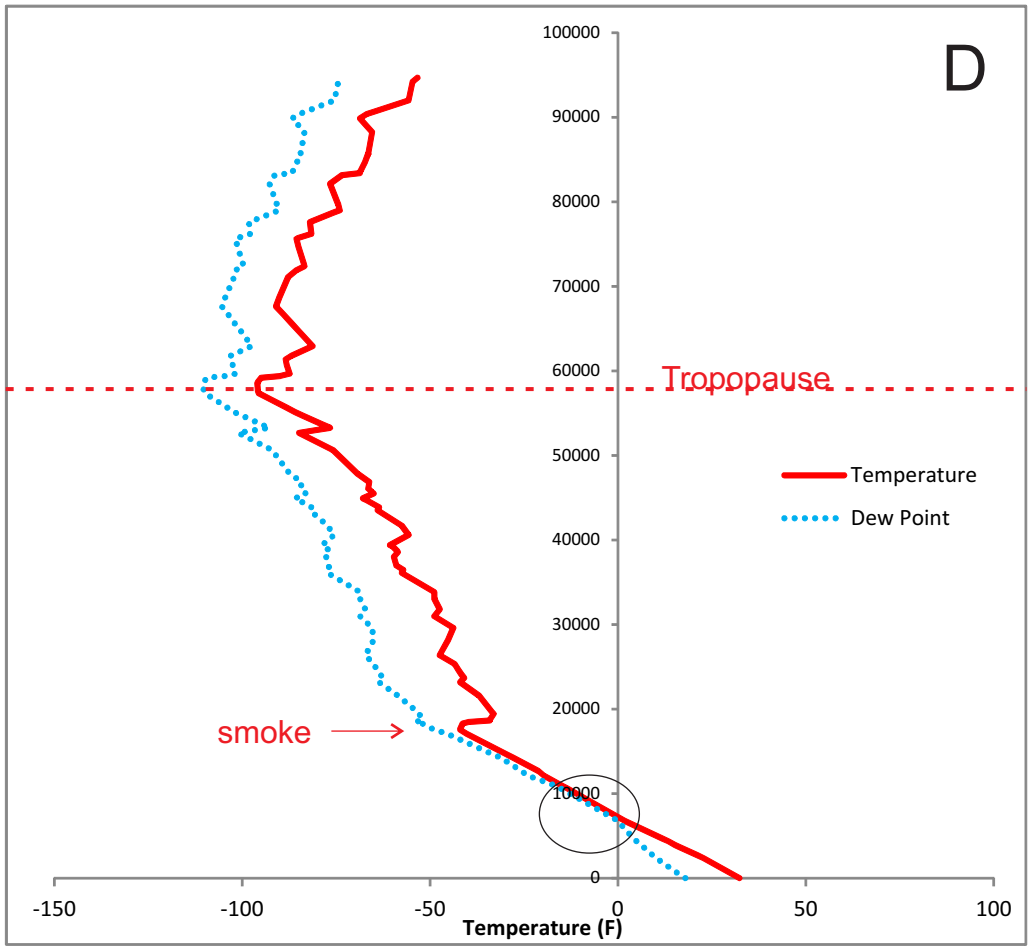


Sounding D:

1. Draw in the tropopause.

2. Circle any location where the weather balloon went through a cloud.

3. If there was a large fire, where would the smoke accumulate in the sky? Label this location with "smoke."



For the soundings taken on days E and F:

1. Which day would there be worse air pollution near the surface? E

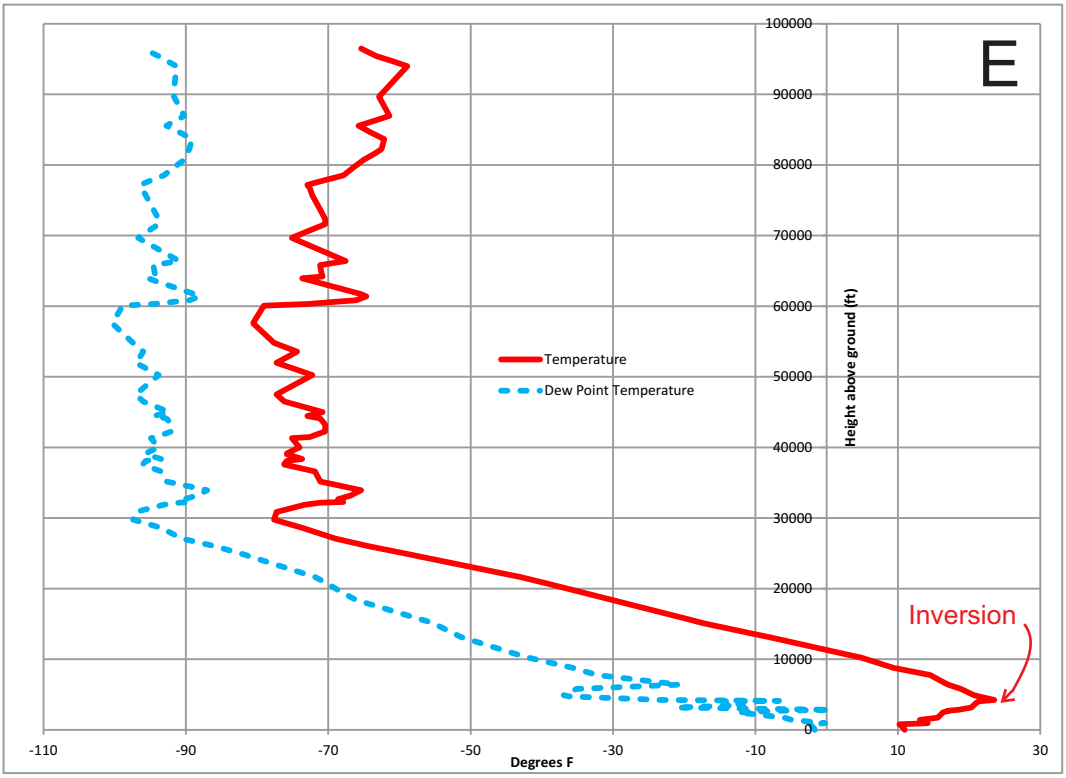
2. Label the major inversion present in the lower atmosphere on day E.

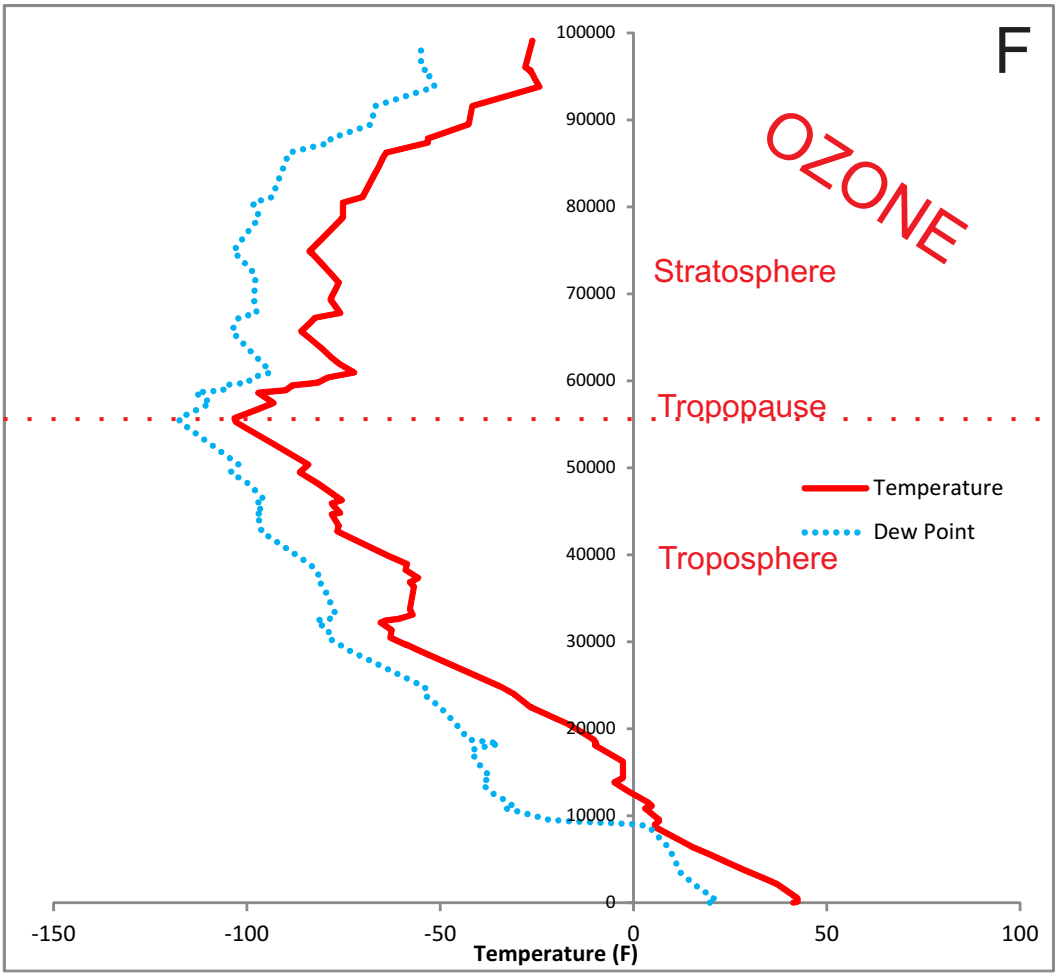
3. Which day was probably sunnier? E

4. Which day is drier at the surface? (less water molecules at the surface) E

5. Label the Troposphere, Tropopause, and Stratosphere on sounding F.

6. Where would the ozone layer be on F?





1. Suppose that on day G a cumulonimbus starts to grow in the lower part of the atmosphere. Where would the anvil likely form? Label this location on the sounding.

2. Draw the tropopause on each sounding.

3. If you compare ALL of the soundings (A,B,C,D,E,F,G,H), which day do you think had the driest troposphere overall? G

4. If you compare ALL of the soundings (A,B,C,D,E,F,G,H), which day do you think had the strongest inversion near the ground? E

5. If you compare ALL of the soundings (A,B,C,D,E,F,G,H), which day do you think had the worst pollution near the ground? E

6. If you compare ALL of the soundings (A,B,C,D,E,F,G,H), which day do you think had the thickest clouds? D