

ATM 311
Sounding Review

Name: _____

On the course website, you have been given four soundings from various locations around North America:

Sounding #1: Davenport, Iowa, 22 June 2009, 0000 UTC

Sounding #2: Midland, Texas, 15 May 2020, 0000 UTC

Sounding #3: Baker Lake, Nunavut, Canada, 13 January 2014, 1200 UTC

Sounding #4: Belize City, Belize, 26 July 2009, 1200 UTC

****Note:** The thick grey line on each sounding is the surface-based parcel path.**

Answer the following questions about each sounding. *Be sure to be thorough in your answers.*

Sounding #1:

Give an overall analysis of the sounding. Be sure to discuss each aspect of the sounding, such as the wind profile (backing/veering and its implications), cloud layers, inversion levels, dry layers, mixed layers, and instability based on a lifted surface parcel.

What is the pressure level of the LCL, EL, and the tropopause?

Is there a cap (cinh)? If so, how strong is it? What does this say about the strength of the lifting mechanism needed to generate deep convection?

Sounding #2:

As you did for sounding #1, give an overall analysis of this sounding.

Is there warm or cold advection through the lower half of the troposphere at Midland at the time of this sounding? How do you know?

A dryline was in close proximity to Midland during the time of this sounding. Is Midland ahead of the dryline, or has the dryline already passed? How do you know?

Do you think this sounding is conducive for thunderstorm development? Why/why not?

Sounding #3:

As you did for the past two soundings, give an overall analysis of this sounding.

How do you think the impressive temperature inversion at/near the surface developed? Consider the location of the sounding, and the time of year.

At approximately what pressure level is the tropopause?

What is the approximate surface temperature and dew point (in Celsius)?

Sounding #4:

Again, give an overall analysis of this sounding.

From what direction are the winds from throughout most of the troposphere?
Considering that Belize is located in the tropics, what are these winds called? You may need to look this up!

What line on the Skew-T does the temperature (and dew point, to some extent) appear to closely follow, especially from 800 mb and up? Explain what atmospheric processes might have occurred in order to make the sounding look this way. *Hint: Think about what characteristics a lifted parcel of air would have in order to produce a similar temperature profile).*