

Week in Review and Forecast Discussion Guidelines

All students in ATOC 6700 are expected to actively participate in the week in review and forecast discussions. All students will be called on each week to lead the discussion on specific portions of the in-class discussion. The following describes the broad topics that will be the focus of each week's discussion.

Forecast Discussion

During the weekly forecast discussion we will identify the key weather elements that will impact our forecast cities over the next two days. The following are the weather elements I typically consider but there are certainly other factors that you may wish to consider. You can use the following as a starting point for your own forecasts and as a basis for your written forecast discussions.

Upper Level Features

- Location and movement of troughs and ridges (usually at 500 mb)
- Location and movement of the jet stream (usually at 300 mb)

Where are these features relative to the forecast cities?

What is the timing of when these features (or positions relative to these features) pass each forecast city?

What impact will these features have on forcing divergence or convergence, rising or sinking motion, and changes in surface pressure?

Air Mass Characteristics

- Temperature (1000-500 mb thickness, 850 and 700 mb temperature)
- Moisture availability (relative humidity at multiple constant pressure levels)

How does the temperature and/or thickness change at each forecast city?

Is there warm or cold air advection occurring?

Is the temperature changing at the surface and/or aloft? How deep are the changes?

How much moisture is available, at what levels is it located, and where is it coming from?

Surface Features

- Location and movement of surface low and high pressure centers
- Location and movement of fronts (both at the surface and aloft)

Where are the low and high pressure centers located relative to the forecast cities? How does this change over the forecast period? What do these positions indicate about the wind direction and strength and how it will change during the forecast period?

What fronts are present at the start of the forecast period and how do these move over the forecast period?

What is the timing of frontal passage(s) at each forecast city?

What type of weather (clouds, precipitation, wind shift, air mass changes, etc.) would be expected with these fronts?

Local Effects

- How will the large-scale weather elements interact with local topography or geography?
- Do you expect any local (mesoscale) weather features, like downslope windstorms or lake effect snowstorms, to be important? Will there be any local forcing for the formation or dissipation of clouds?
- Is the atmosphere susceptible to the development of convective storms?
- How will previous weather (rain, snow) impact the forecast?
- Will the forecast winds impact the high or low temperature?

- Do you expect the high and low temperatures to occur at their typical times?

Synthesis

- How will all of the above impact the sensible weather at the forecast cities?
 - What cloud cover is expected?
 - What wind speed and direction is expected?
 - When will frontal passage(s) occur?
 - Is there cold or warm air advection occurring?
 - Will daily low and high temperatures occur at their usual times?
 - How much precipitation is expected and when will it fall?

Week in Review

The goal with this portion of the weekly discussion is to assess the previous week's forecast and identify aspects of the forecast that were or were not well forecast. Some specific items to consider for the week in review:

- Did the large-scale weather features (troughs and ridges, jet stream, fronts, surface low and high pressure centers) move as expected?
- Was the timing of the key weather elements (passage of trough and ridge axes, position relative to the jet stream, frontal passage, etc.) accurately forecast? If not, how did this impact the local weather forecast?
- Did the air mass temperature and moisture evolve as forecast? If not, can you identify why the forecast was incorrect?
- What local factors were important for the forecast? Did any local effects occur that were unexpected? Did some local effects that you thought would occur wind up not occurring?
- Was the timing of high and low temperatures and precipitation consistent with your forecast?

For the written forecast discussions you do not need to discuss the previous week's forecast. The written forecast discussion only focuses on the upcoming forecast and the topics discussed in the previous section.