



Local
Weather

ATOC Weather Network

<http://foehn.colorado.edu/weather>

3 weather stations located near Boulder, with others located in the San Luis valley, Minnesota, Iowa, and New York

Colorado area weather stations

Lafayette located ~10 miles east of CU and 200 feet lower in elevation

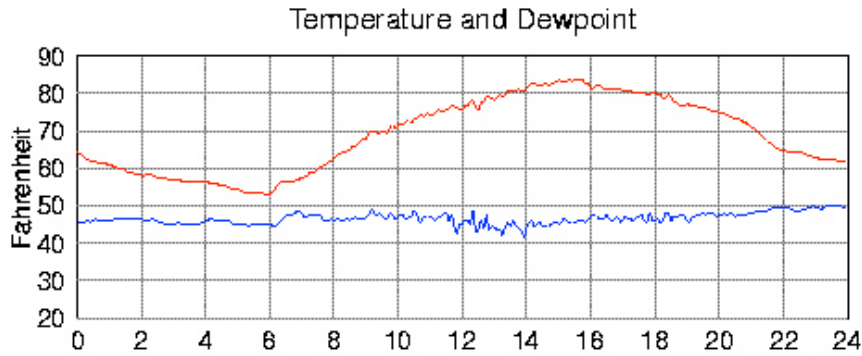
North Boulder weather station – located ~3 miles northeast of CU and ~100 feet lower in elevation

San Luis valley is in southern Colorado at an elevation of 8250 feet

What aspects of the weather can we see in local meteorological observations?

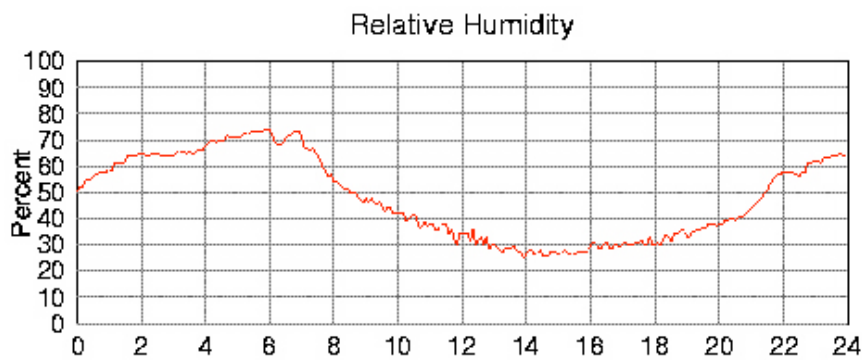
Meteogram – graph that shows how atmospheric properties change with time

The Daily Cycle



How does the temperature change over the course of a day?

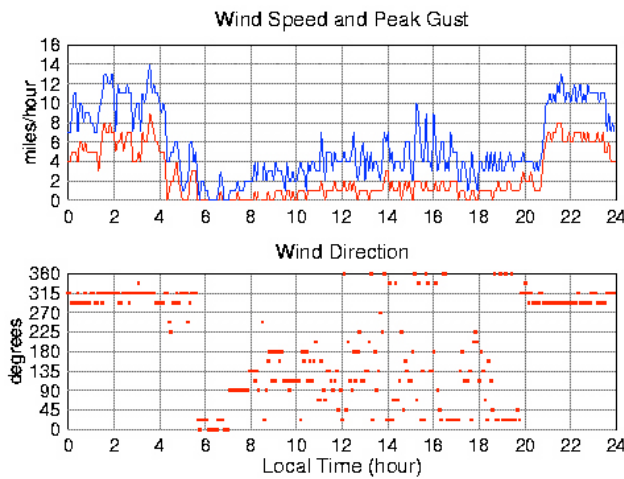
What causes the temperature to change in this way?



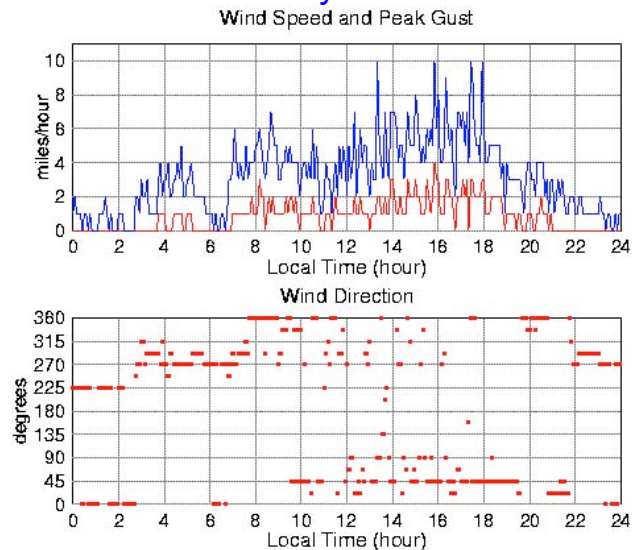
How does the relative humidity change over the course of a day?

What causes the relative humidity to change in this way?

Boulder



Lafayette



How does the wind speed change over the course of a day?

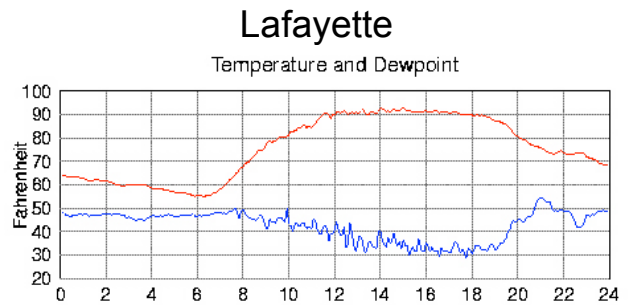
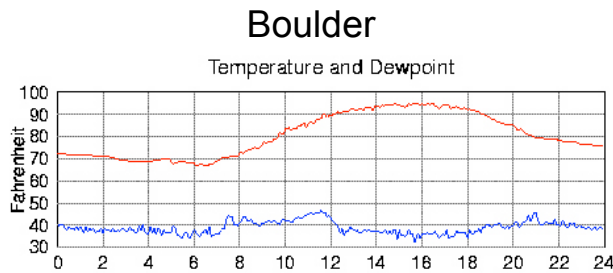
Are the changes the same in Boulder and Lafayette? What causes the difference?

How does the wind direction change over the course of a day?

Why does the wind direction change in this way?

Mountain / valley winds

What are some other differences in the weather between Boulder and Lafayette?

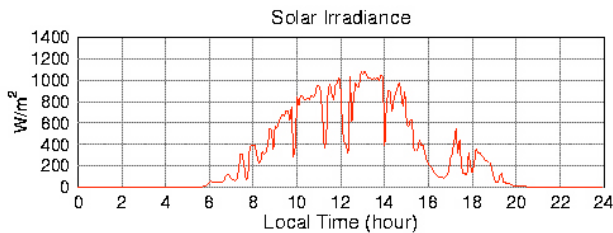


Why does the low temperature differ between Boulder and Lafayette?

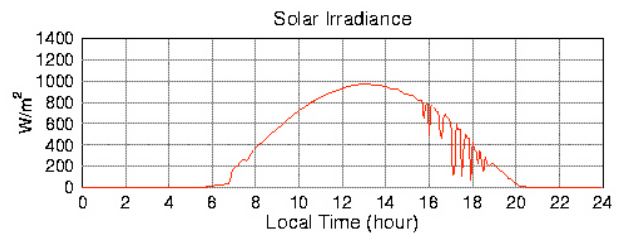
Clouds

What can solar irradiance tell us about clouds?

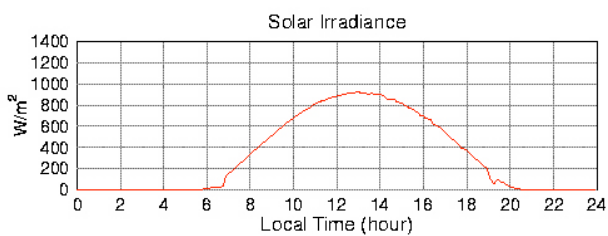
6/25/05



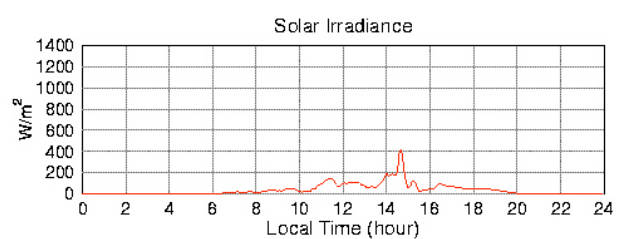
7/4/05



7/12/05



8/4/05



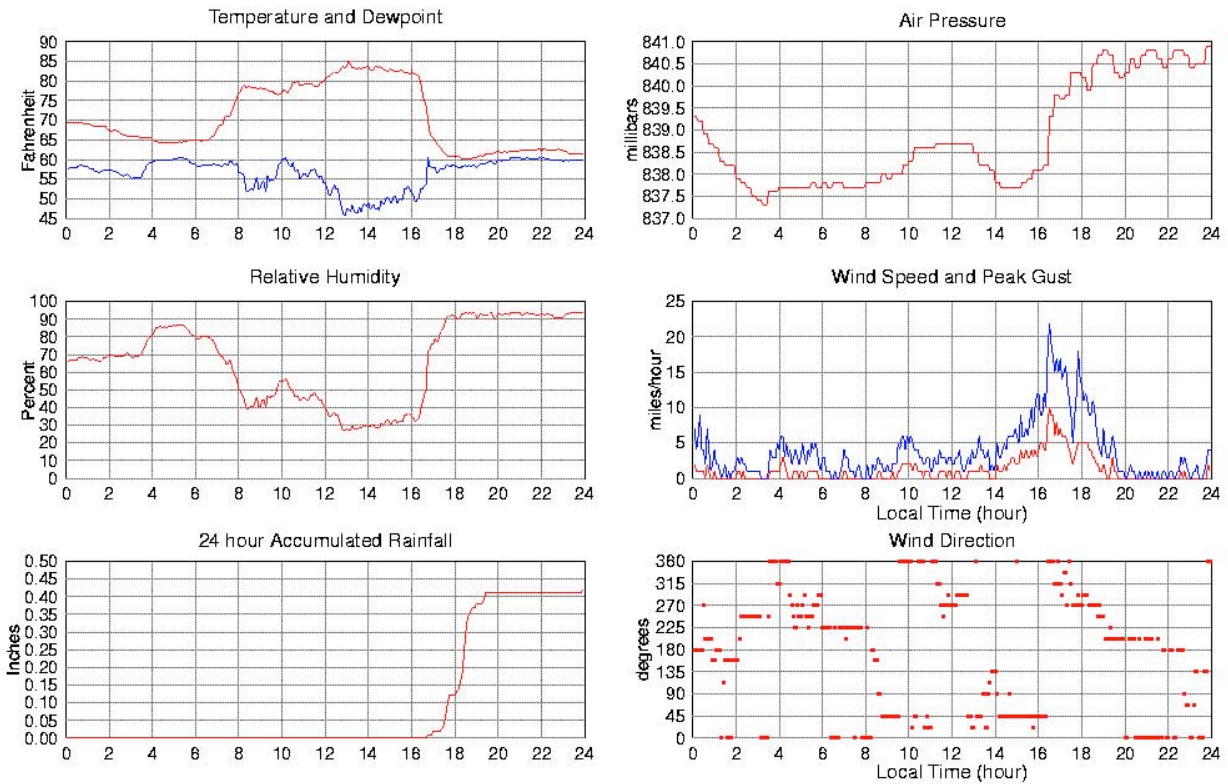
Which day(s) are clear, partly cloudy, and overcast?

Fronts

Cold front – a boundary between cold and warm airmasses when cold air is advancing

Summer cold front

Lafayette Weather Observations: 7/25/05 11:55p



When did the cold front pass over this weather station?

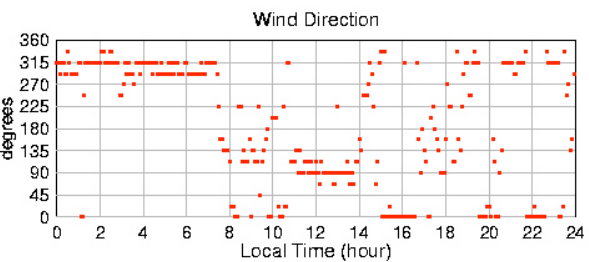
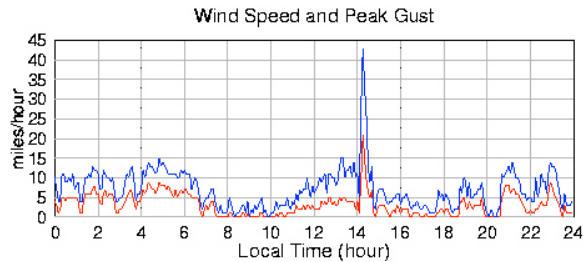
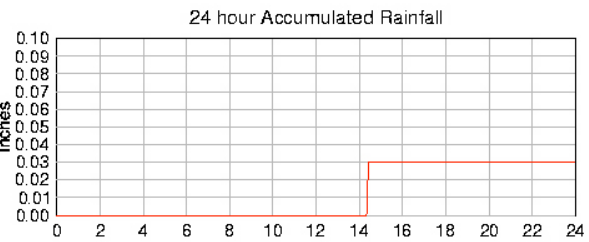
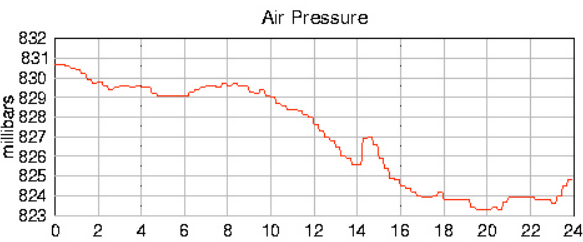
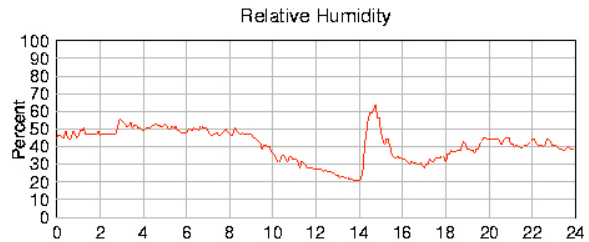
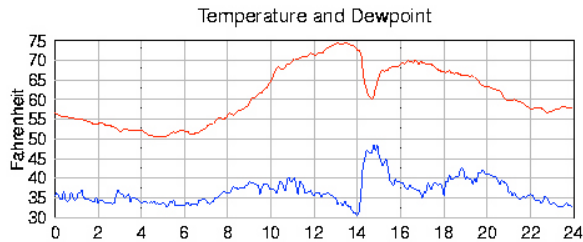
How did the temperature, dewpoint temperature, relative humidity, wind speed, and pressure change?

What caused the relative humidity to increase?

Thunderstorm Gust Front

Gust front – the leading edge of a thunderstorm’s rain cooled air

PAOS Weather Observations: 5/06/05 11:55p



When did the gust front pass over this weather station?

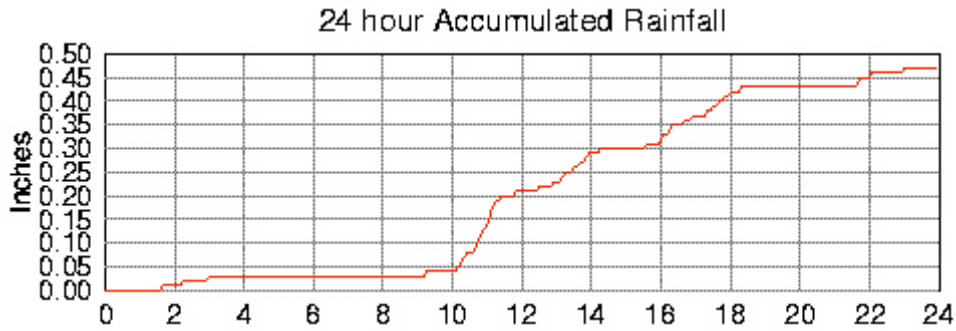
How did the temperature, dewpoint temperature, relative humidity, wind speed, and pressure change?

How do you know that this was a gust front and not a cold front?

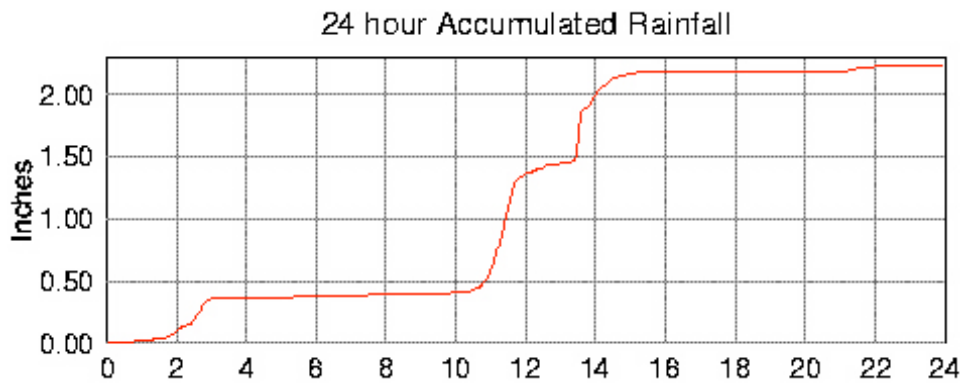
Errors in Observations

How do you know if the weather observations are correct?

Boulder



Lafayette



You should always be skeptical of any weather observations you find on the internet that don't seem to make sense.