

Lab 3 “Campus microclimates”

Tuesday, March 4, 2008

Due in class Thursday, March 13, 2008

In this lab, you will be working in groups of up to four. The main goal of this lab is to understand temperature and moisture differences on the small scale, and relate them to the near-surface environment.

To do this, you will visit four sites on campus. I would like you to pick:

- one area under some trees,
- one area out in a parking lot with no trees overhead,
- one area that is significantly sheltered (say between two buildings), and
- one other area different from all the others (the wetlands area near the Rec Center?)

Visit all four of these areas consecutively, preferably on a sunny or partly cloudy day- don't do two one day and two the next. For all four sites, obtain the following:

Obtain the **air temperature** and **relative humidity** readings from the Kestrel. When only the thermometer appears, that's air temperature. When only the droplet appears, and the reading is in degrees F, that is the dew point. Be sure, when taking the readings, to let the unit stabilize, and make sure it is in the shade.

Via the infrared thermometer, obtain the **surface temperatures of all types of near objects**, natural (rock, grass, water) and artificial (cars, asphalt, etc.). You can also take temperatures of the sky, clouds, and overhead trees, but don't aim it at the sun! Write all observed values down. Also, be sure to take an average value over around 30 s or so. Be sure the infrared thermometer is pointing at what you think it's pointing at – remember our discussion in Lab 1 about how the farther you are from an object, the wider the circle it takes a reading from.

As a group I would like you to then compile all of your observations into a table. How you present them is up to you, though I would like you to include a column showing how much warmer or cooler each object was compared to the air temperature at your location. Then, along with your observations, write up a summary of around one page describing the variability you've seen in your results. Be sure to include the following:

- Why does the air temperature vary from location to location? How does this relate to the openness of the location as well as nearby objects?
- How do moisture conditions vary from location to location? How does this relate to the temperature variability that you observed?

You have the option of turning in one lab for the whole group, individually, or in any other combination of people within your group.