

Exploring Charlotte's Air Quality- Virtual Lab

Objectives:

- To characterize our city's air quality using the AQI
- To identify and describe major air pollutants

Procedure

Part A: How is the air quality in Charlotte right now?

1. Go to <http://airnow.gov>.
2. Enter the school's zip code (29209)
3. Find and record the AQI reading today and the forecast for tomorrow's AQI.
4. Which variables does the AQI on this site appear to be based on?
5. Check out the visibility camera. Click on it. Compare the current to good conditions.

Part B: What does the ALA think of our Air Quality?

The American Lung Association (ALA) gives cities a report card based on their air quality.

1. Go to <http://www.stateoftheair.org/>
2. Enter school's zip code
3. What is our "grade?"
4. What factors does this "grade" appear to be based on?
5. What factors appear to have led to this grade?

Part C: How does Charlotte compare to other cities?

Go to <http://www.epa.gov/airdata/>

1. Choose Reports → Air quality index
2. When asked, choose 1) 2011 (2012 data set is incomplete), 2) Charlotte-Gastonia-Concord, NC-SC, and 3) City
3. Record the data in a chart form.
4. What pollutants appear to be responsible for decreased air quality in our city?
5. Calculate the percentage of days with Good air quality.
6. Repeat the procedure above to compare Charlotte to *Los Angeles, California* and *Honolulu, Hawaii*
7. Calculate the percentage of days with Good air quality for the other cities.
8. Which city has the best air quality.

Part D: Is there a seasonal trend in ozone for Charlotte?

1. Go to <http://www.epa.gov/airdata/>
2. Choose Visualize data → Concentration Plot. (Choose Ozone, 2011, Charlotte-Gastonia-Concord, all monitoring sites)
3. Inspect the reports for each station. Describe any seasonal trends you observe in the data.

Part E: Where is AQI measured in Charlotte?

1. Go to <http://www.epa.gov/airdata/>
2. Go to Interactive Map- School area code...
3. What is the name of the local site where ozone is measured? You may need to zoom out until you find an active station.

Analysis:

Write a 1 page response paper (typed, double-spaced, Times New Roman, 2pt) to the following prompt. Your response should include at least two sources, which need to be fully documented using a consistent citation style (both in the text and at the end of the paper).

How does Charlotte's air quality compare internationally? Is the EPA's AQI used in other countries? Is there a way to quantitatively compare our air quality to other cities around the world? If so, what measurements are used to do this? How do we match up? How does this change your opinion of Charlotte's air quality?