I modified this activity to use in the 2hr activity portion of an upper division Environmental Science course. Students in this course have had courses in general biology, soils, hydrology and some have had pollution science. Few students had taken statistics or had familiarity with R.

The purpose of this modification was to take a data set that the students would be somewhat familiar with the background of the data and introduce a new skillset: running summary statistical analyses and data visualization in R. Students are given the R code for summarizing and visualizing the Total Nitrogen data and then have to modify the code to run the same analyses for the Total Phosphorus data.

Our department has laptop computers with R Studio loaded on them that faculty can check out for classes. In the future I will look into using R Studio Cloud as you can set up a project where you can add all the required libraries and set up the coding. This will make it easier for students who have brought their own laptops but then need to ensure that all the packages and libraries are downloaded.

Implementation: I posted links on the Blackboard course page to the NLCD pdf as well as ‘supplement 4’ and handed out paper copies of the actual lab activity. At the beginning of lab I went through a general overview of R studio – what you find in each of the windows, where to import the data, generalities of the coding environment, etc. (things that I wrote up in the lab activity). After this, I let the students work through things on their own and walked around the classroom to check in on everyone’s progress and to answer any questions. Most students finished in ~1.5 hours.

I had the students predict what they thought the relationship between MMI and Total Nitrogen through graphing. At the end of class we had an open discussion about what their predictions were and drew some graphs on the board. I then showed the them graph of the relationship, which isn’t as nice of a relationship as they predicted, and we talked through some of the potential reasons why it wasn’t a strong relationship.