Teaching Notes on the “Is there a trend in hurricane intensity?” Activity
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– This is a new activity developed for the 2008 Workshop - I have not tested this yet in class, though it’s been discussed. I will try to add secrets to success as I encounter them.

– I have provided an excel spreadsheet with the necessary data, culled from the HURDAT database (http://www.aoml.noaa.gov/hrd/hurdat/ - it’s a very long file!)

– This exercise has one part in particular that could be challenging and intimidating to students (and teachers) - Step 4 on calculating confidence intervals.

Confidence intervals are an accepted way of “putting error bars” on the linear regression fit that Excel does. It assumes a form of normal distribution called a Student’s t-distribution, which accounts for having small sample sizes (For large sample sizes, the t-distribution becomes the normal distribution). By using the formula provided, your students will be able to conclude that 95% of the time, the linear regression fit to the sampled variable (i.e. # of storms) will fall in the range they calculated. If this range were to include zero, then your students would not be permitted to conclude that there is a statistically significant trend in the data.

The formula I present already gives the appropriate t-score number off of a standard lookup table given that we are interested in a 95% confidence interval and have more than 30 data points.

If you want more information on this, there are many web resources a google away, and the excellent text by von Storch and Zwiers is very comprehensive (though a bit technical and dense). Feel free to contact me if you have any other questions - ellistd@oneonta.edu