

# Modeling Linear Data *Handout*

*Make tables and graphs in order to interpret data and speculate about future events.*

## INTRODUCTION:

Data can be used both interpretively and speculatively. In this exercise the data given in graphical and tabular form will be used to produce a Line of Best Fit that will be used to speculate about future data. This speculation can be used to direct future experiments and inquiries to best suit the needs of the researchers.

First visit [www.Hillsborough.WaterAtlas.org](http://www.Hillsborough.WaterAtlas.org) > The Atlas > Lake Name (Select Lake Thonotosassa to start). From the General Info page for the lake select the Hydrology Tab > Scroll down and click on Data Download. Your lake name is in the text box. Select > Next, then select Hydrology. You will see a selection of data sets gathered at different sites on the lake by different agencies. Select All Stations > Next > select the 2 year button > Excel File > follow the online prompts to download an Excel file of hydrology data for the past 2 years. (Mac: press Control Click for download options.)

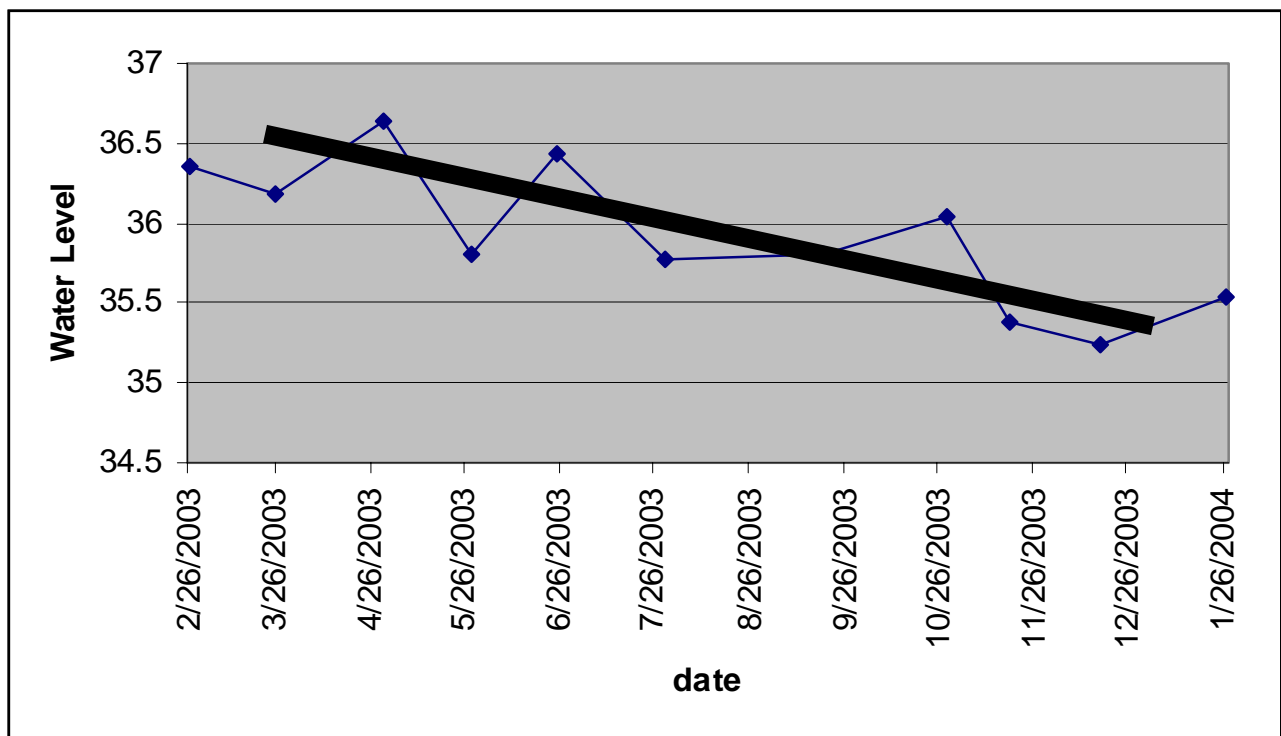
You have downloaded a LOT of data! Make a second table and enter the first date and reading.

Continue making your data table with the data one month apart. (i.e., February 26, March, 26, etc.) Use the graphing tool in your spreadsheet program to make a graph.

## THE TASK:

Select a time period that shows a linear correlation and draw a line of best fit. Determine the water level based on your line for the following year. Repeat the process for five more lakes using the same time interval from your first graph. Calculate and compare the slope for the five lines. Do the lakes show similar trends? If so, why? If not, why not?

## EXAMPLE:



Name:

Date:

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In the example above, a line of best fit is drawn. Two points can be selected and a slope determined. With the points and a slope an equation may be written. (See below)

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{35.4-36.7}{334} = -0.00389\text{ft/day} = -.389 \text{ ft/year}$$

Dates are converted into days and the equation of the line can be written.

$$Y = -0.00389x + 55.81$$

Name:

Date: