

Seminole County Water Atlas Learning Kit

Modeling Linear Data *Handout*

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

Water Atlas Curriculum Lesson #

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.

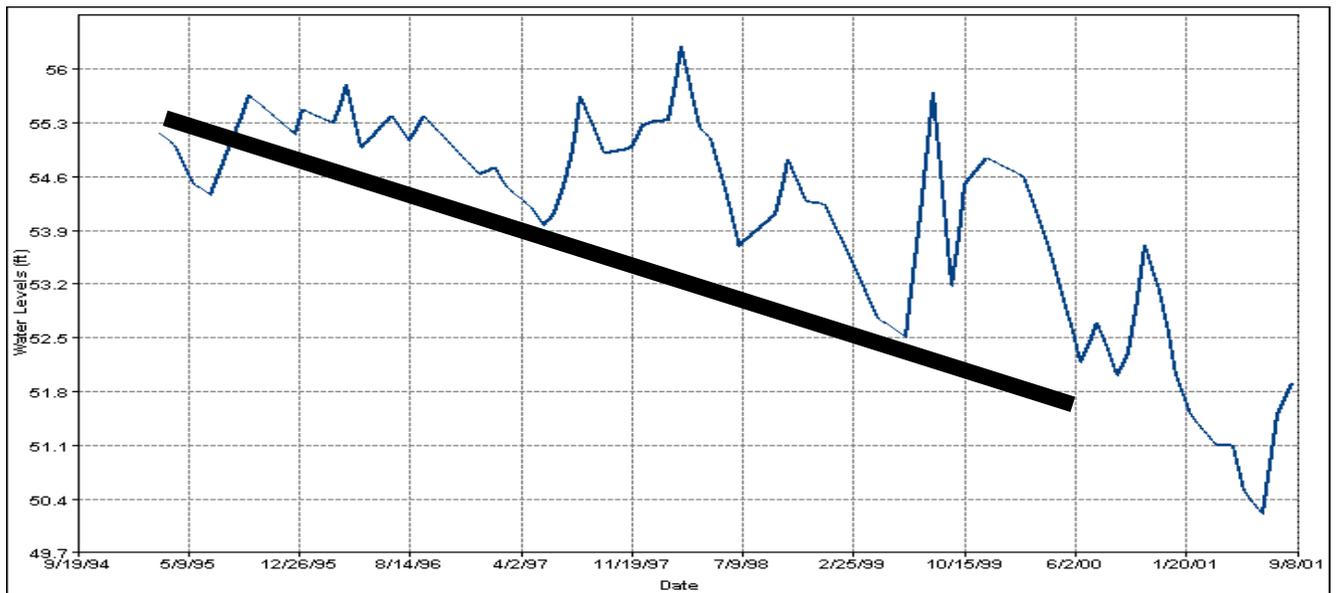
First visit www.Seminole.WaterAtlas.org. Using the Water Resources Search tool, select or type in the name of a lake (Select Lake Jesup to start). Choose the Water Levels & Flows page, and then find and click the "Download this Data" link in the Water Levels box. Use the Data Download & Graphing tool to download data from Station ID 0140650 into a spreadsheet file.

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 week apart. (i.e. May 1, May 8, May 15, 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:



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.)

Name:

Date:



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$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{53.9 \text{ ft.} - 55.3 \text{ ft.}}{925 \text{ days}} = - 0.00151 \text{ ft / day} = - 0.552 \text{ ft / year}$$

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

$$y = - 0.00151x + 55.81$$

The slope of the line is negative, indicating that water levels decreased over time.

Name:

Date: