

## Rainfall & Water Level Graphs *Teacher's Guide*

*Students make and analyze graphs to discover relationships between rainfall and water level.*

**GRADE LEVEL:** 6<sup>th</sup> -12<sup>th</sup>

**SUBJECT AREA/COURSE:** Science, Math

**SUNSHINE STATE STANDARDS:**

- The student knows that a change in one or more variables may alter the outcome of an investigation. (SC.H.1.3.5)
- The student knows that all biotic and non biotic factors are related and that if one factor is changed or removed, it impacts the availability of other resources within the system (SC.G.2.3.2)
- The student knows that computers speed up and extend people's ability to collect, sort, and analyze data; (SC.H.3.3.7)
- The student solves problems involving units of measure and converts answers to a larger or smaller unit within either the metric or customary system. (MA.B.2.3.2)
- The student collects, organizes and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations. (MA.E.1.3.3)

**ACADEMIC OUTCOMES/LESSON OBJECTIVES:**

- Students will demonstrate knowledge of the school server by navigating between web sites and student folder.
- Students will create a data table using the website and Excel.
- Students will complete a graph showing data downloaded
- Students will create a word processing document and insert a graph and photo.
- Students will write a hypothesis and draw a conclusion.

**BACKGROUND INFORMATION FOR TEACHER:** Water levels in Florida Lakes are influenced by rainfall.

Storm water may go directly into a lake or river through storm drains or directly from lawns.

Rain water also infiltrates (enters) and percolates (moves through) into the soil. Retention ponds hold storm water, giving it time to seep into the ground. The groundwater seeps into lakes and rivers.

During times of drought, lake levels fall. During times of heavy rainfall, lake levels rise.

The data students find will show water above average, dipping down below average during the droughts, and then back up again. Students can research local news media for reports and personal stories of rainfall and water levels during times of drought and flood.

Name:

Date:

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**TEACHER PREP:** Explore the Hillsborough Watershed Website. Bookmark the site on student computers. Test-run the activity using a nearby lake. Not all lakes have sufficient data for a graph. Some have too much, so you may need to pre-select the source and/or period of record. Different versions of software may have different commands to copy data and create graphs. Adjust the directions as needed. Students can then try other lakes of their choosing.

In this activity, students create a graph with Excel and write formulas to convert data. They create a Microsoft Word document to organize the components. Directions for making a presentation in PowerPoint may be substituted.

In Part One, students will place a graph and a lake photo into a Word document. If students would rather have the lake photo as part of the graph, open the picture that was saved, copy, and paste it into the graph. Resize and position the photo. The picture will be part of the graph when transferred to the Word Document.

**DURATION:** 1-2 class periods, depending on the number of water bodies investigated and student skills in Excel, Word and/or PowerPoint.

**MATERIALS NEEDED:** Computers connected to the internet and [www.Hillsborough.WaterAtlas.org](http://www.Hillsborough.WaterAtlas.org) bookmarked, and student access to printer.

**SAFETY:** N/A

**VOCABULARY:** hydrology, variable, hypothesis, conclusion

**EVALUATION:**

1. The student will demonstrate to the teacher the ability to move from one folder to another on the server.
2. The students will print out a copy of the completed data table, graph, observations and answers to the questions. The printout will also include a photo of the water body. Students will form a hypothesis, print additional graphs using the Watershed Website graphing tool and draw conclusions.
3. The students will define the vocabulary words and use each correctly in a paragraph written about the activity.

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Name:

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