

Watersheds & Weather *Teacher's Guide*

Students practice for the FCAT while learning about watersheds, water level and rainfall.

GRADE LEVEL: Middle School

SUBJECT AREA/COURSE: Reading, Writing (Language Arts) and Math

SUNSHINE STATE STANDARDS:

- The student uses a variety of strategies to analyze words and text, draw conclusions, use context and word structure clues, and recognize organizational patterns. (LA.A.1.3.2)
- The student determines the main idea or essential message in a text and identifies relevant details and facts and patterns of organization. (LA.A.2.3.1)
- The student recognizes logical, ethical, and emotional appeals in texts. (LA.A.2.3.3)
- 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 describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities. (MA.D.1.3.1)
- The student analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers. (MA.E.1.3.3)

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection accessible from the Seminole Watershed Atlas.
- Students will respond to FCAT-type questions or prompts in Reading, Writing, and Math.

DURATION: One instructional period for the FCAT Practice, one instructional period for the website work

TEACHER BACKGROUND INFORMATION: A watershed includes all of the lands and waters that drain into a particular location. Small areas drain into streams. These streams drain into rivers. Rivers drain into oceans. In this way, all water bodies are linked together. High levels of rainfall increase the volume of water in the watershed, increasing the overall water level. Since water level is impacted by rainfall, this means that weather systems, including prolonged drought, can affect the volume of water flowing through a watershed. On the Seminole County Water Atlas Website, water level and flow volume are collected at specific points along rivers. Rainfall data is not collected for each lake or river section. Instead, an average is reported for rainfall data from several rain gauges within the watershed.

In 2003 and 2004, the Seminole County Stormwater Division installed Real-Time Weather Stations at selected sites. Every 15 minutes rainfall data is sent via computer from the weather station to the main data base, and appears on the website usually within 15 minutes.

Directions to this data are found in the Procedures Section (after the Key), 2 a-e.

TEACHER WEBSITE RESOURCES:

- Sunshine State Standards can be found at <http://firn.edu/doe/menu/sss.htm>
- Information about FCAT can be found at <http://www.firn.edu/doe/sas/fcat/pdf/fcatfact.pdf>
- Rubric for grading FCAT writing prompts <http://www.firn.edu/doe/sas/fw/fwaprubr.htm>
- Rubric for grading FCAT reading questions <http://www.firn.edu/doe/sas/fcat/pdf/rubrcrdn.pdf>
- Rubric for grading FCAT math questions <http://www.firn.edu/doe/sas/fcat/pdf/rubrcmat.pdf>
- More FCAT-Friendly Activities, visit <http://pelotes.jea.com>

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MATERIALS NEEDED: Internet access with www.Seminole.WaterAtlas.org bookmarked, student pages for "Watershed Whereabouts"

SAFETY: N/A

VOCABULARY: watershed, gravity, drainage basin, hydrologist, channel, river basin, conservationist

KEY:

Reading

1. b. LA.E.1.3.3, Bloom's Taxonomy Level One
2. c. LA.A.1.3.2, Bloom's Taxonomy Level Two
3. b. LA.A.2.3.1, Bloom's Taxonomy Level One
4. a. LA.A.2.3.2, Bloom's Taxonomy Level Two

Writing

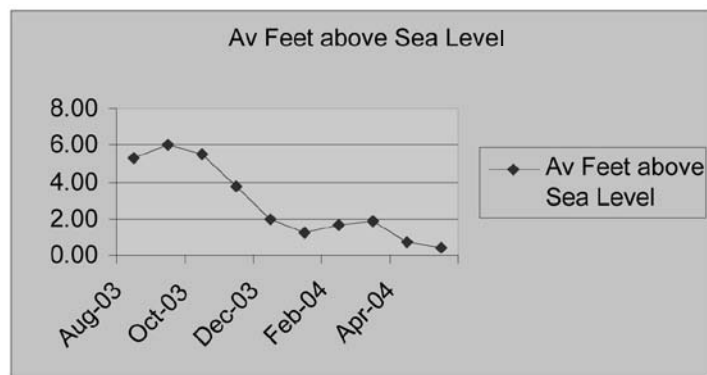
For All – Use the rubric for Florida Writes! – 6 points

1. LA.B.2.3.3
2. LA.B.2.3.3
3. LA.B.2.3.3
4. LA.B.2.3.3

Math

1. b. MA.B.2.3.2
2. d. MA.E.1.3.3
3. c. MA.D.1.3.1
4. Use the rubric for Extended Response Math Questions – 4 points
MA.D.1.3.1

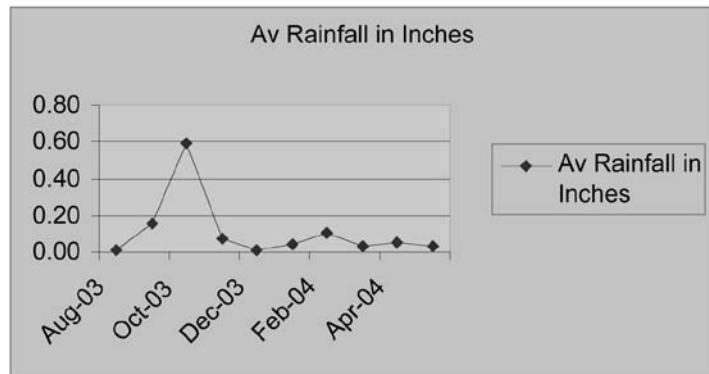
Example of a Top-Score Response:



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It is not an exact correlation, but in general, when rainfall is lower, water level is also lower. When rainfall is higher, water level is higher too. However, the August data does not match this pattern. More data is needed to confirm a correlation.



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PROCEDURE:

1. Preview this FCAT-Friendly activity. Print copies for your students.
2. Preview the Seminole Water Atlas:
 - a. Go to www.Seminole.WaterAtlas.org > The Atlas > Choose St. Johns River from the drop-down menu. Look over the General Info page.
 - b. Then click on Hydrology > "Data Table and Graphs" for Water Level. Choose a station and check out the two-year graph. On the Hydrology page, click on "Learn More about Water Levels" and glance over the page for more information.
 - c. Find your school's watershed: On the page's menu click Atlas > Interactive Map. On the right of the map, under Search For, click on Address and click in the text box. Type your school's address (no city). The map that comes up will show the address location and the watershed. (If you want to see more of the map, click on the Zoom Out tool.) Enter the name of the watershed in the "Search" text box at the top right.
 - d. On the watershed page, click on and read "Learn more about watersheds." Look over the information available on the page.
 - e. Click on Real-Time Weather. (If no Real-Time Weather station is in your watershed, click on Real-Time Weather and then on the red star on the map closest to your location.) You can view and print 24 hours worth of rainfall data entered every 15 minutes (the two-day graph icon). Compare graphs of different watersheds to see scattered showers!
3. Lead your students on a virtual tour of your watershed via the Seminole Water Atlas Website (outlined in 2 a-e above) after they have completed the FCAT Practice Activity. Or, print number 2 above as a student sheet for independent or small group exploration.
4. Using the information learned in the FCAT Practice and the Water Atlas, discuss the watershed in which your school is located.
5. Note: There are links to other EPA Middle School Readings and related student activities on the web page to which students are directed in the Watersheds and Weather Handout.