

Up the St. Johns River *Teacher's Guide*

Students practice for the FCAT while learning about the St. Johns River.

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 selects and uses appropriate formats for writing, including narrative, persuasive, and expository formats, according to the intended audience, purpose, and occasion. (LA.B.2.3.3)
- The student understands and uses exponential and scientific notation. (MA.A.2.3.1)
- The student adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator. (MA.A.3.3.3)
- The student solves problems involving units of measure and converts answers to a larger or smaller unit within either 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 understands and applies the concepts of range and central tendency (mean, median, mode). (MA.E.1.3.2)

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will read a selection introducing them to the flow and geography of the St. Johns River.
- Students will respond to FCAT-type questions or prompts in Reading, Writing, and Math.

DURATION: One instructional period for the Website Exploration, one period for the FCAT-Friendly Activities.

TEACHER BACKGROUND INFORMATION: The St. Johns River is a 310-mile waterway that begins as tiny streams and slow-moving swampy waters in Brevard and Indian River Counties. These waters flow northward and gradually become a single distinct river. As the river meanders further north, its fresh waters mix with salt water flowing in from the ocean. The St. Johns River ends its winding journey in Duval County as its now-brackish waters empty into the Atlantic Ocean. The St. Johns River is very slow-flowing due to the minimal changes in elevation along its path. The volume of water flowing through the St. Johns is measured in cubic feet per second. (One cubic foot = 7.48 gallons.) Prolonged droughts can decrease a river's flow since rainfall affects the amount of water in the river.

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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To find the primary resource for the student article titled "Up the St. Johns River" on the Seminole Water Atlas website at www.Seminole.WaterAtlas.org, click on Educational Tools and scroll down to click on St. Johns River Water Management District. On that website, click Welcome and choose "Tour and History of the St. Johns River."

MATERIALS NEEDED: Internet access with www.Seminole.WaterAtlas.org book-marked, student pages for "Up the St. Johns River"

SAFETY: N/A

VOCABULARY: watershed, drainage basin, upstream, downstream, brackish, tidal, elevation

KEY:

Reading

1. c. LA.A.2.3.1, Bloom's Taxonomy Level One
2. a. LA.A.1.3.2, Bloom's Taxonomy Level One
3. d. LA.A.2.3.1, Bloom's Taxonomy Level Two
4. Use the rubric for Short Response Reading Questions – 2 points
LA.A.2.3.1, Bloom's Taxonomy Level One

Example of a Top-Score Response:

Rainfall and salinity are related to each other because during a drought, there's less fresh rainwater available to dilute the brackish waters of the St. Johns River. This increases salinity. When plenty of rain falls, the brackish waters become more diluted, so salinity decreases.

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.A.3.3.3
2. a. MA.B.2.3.2
3. b. MA.A.2.3.1
4. Use the rubric for Short Response Math Questions – 2 points

Example of a Top-Score Response:

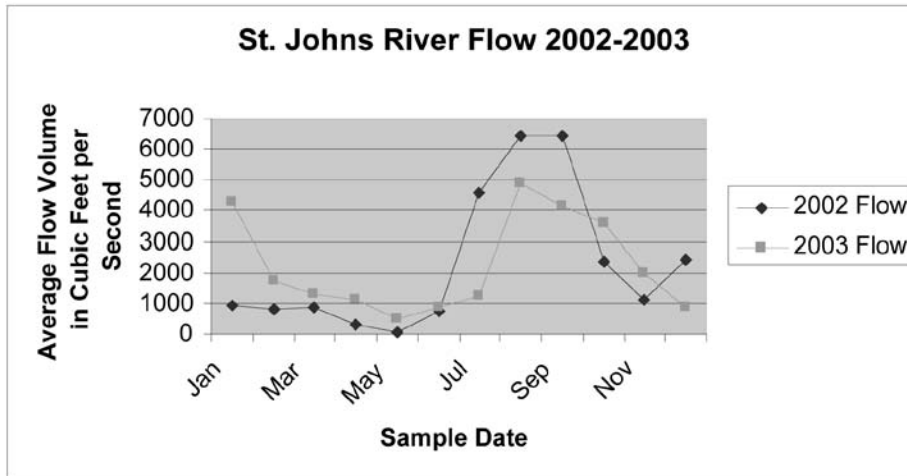
2003 had slightly higher average water levels at 3.67 vs. 3.46 for 2002. Add the 12 monthly values for each year, then divide by 12 to get these answers. MA.E.1.3.2

5. Use the rubric for Extended Response Math Questions – 4 points
MA.D.1.3.1

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Example of a Top-Score Response:



This graph shows that the volume of water flowing through the St. Johns River in Seminole County generally increases during the late summer, peaking in September. If only one year's data were included, the reader might think that the changes during the summer were unusual or special. By including both years, the reader can see that this change is probably a regular annual shift in flow.

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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 a pop-down menu, then look over the General Info page.
 - b. Click on Hydrology > Data Tables and Graphs for both Flow and Water Level. Check out the two-year graph and review the information in "Learn More About" Flow and Water Level.
 - c. To download flow and water level data, start at the bottom of the Hydrology page. Click on Data Download > Next > Hydrology > Next. Choose a sampling station. > Next > For Date Range, choose any 2-year period. With this data, you can compare flow and water level from this time with the data in the FCAT activity below.
 - d. You can also download water quality and rainfall data from this location.
3. Lead your students through the exploration above, or print 2 a-d as a student guide for independent or small group exploration.
4. Using the information learned in the FCAT practice and the Water Atlas, discuss the unique nature of the St. Johns River.
5. Ask students to download rainfall and water level data to answer the question, "Is there a relationship between rainfall and water level?"