



# Weather Teacher's Guide

Welcome to the weather issue of *WaterWeb*! As part of the Splash! Water Resources Education program, the Southwest Florida Water Management District (SWFWMD) offers the *WaterWeb* newsletter for middle and high school students. The newsletter is correlated to grades 6–8 and 9–12 of the Sunshine State Standards and provides an interesting way for students to increase their awareness and respect for Florida's precious water resources.

This issue of *WaterWeb* focuses on weather. It includes information about the SWFWMD's hydrologic conditions, an introduction to classifying clouds, a description of the tools used in modern weather forecasting, information about droughts, weather proverbs and signs, instructions for making a barometer, a crossword puzzle and word scramble, and suggestions for surfing the Internet. All information and activities are designed to teach students about weather and how it affects us. In addition, we have included *WaterWeb* Challenge, which contains items similar to those students could expect to find on the Florida Comprehensive Assessment Test (FCAT). Let *WaterWeb* make a splash in your classroom today!

Many other free materials are available from the SWFWMD and can be ordered online at [WaterMatters.org/publications/](http://WaterMatters.org/publications/). We also offer water resources workshops for teachers. Please contact us if you have any questions or suggestions about our water resources education programs.

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## Introduction Page 1

Weather plays an important role in our lives and affects us in many ways. Ask students to list a few of their activities in the past month that were affected by weather. Make sure students understand how weather contributes to the hydrologic (or water) cycle. Ask students to explain the difference between the terms *weather* and *climate*.

### Sunshine State Standards

*Science (6–8):* The Nature of Matter, SC.A.1.3; Energy, SC.B.2.3; Processes that Shape the Earth, SC.D.1.3.

*Science (9–12):* The Nature of Matter, SC.A.1.4; Energy, SC.B.2.4; Processes that Shape the Earth, SC.D.1.4.

## WaterWeb Query Page 1

Have students read the Question and Answer. Then ask students to identify sources, such as TV news, computer, radio, newspaper, etc., in which dew point has been included in a weather report.

### Sunshine State Standards

*Science (6–8):* The Nature of Matter, SC.A.1.3, SC.A.2.3.

*Science (9–12):* The Nature of Matter, SC.A.1.4, SC.A.2.4.

## Rainfall Page 2

Read the article together as a class and complete the exercises. Answers:  
1-Almost 20 percent is from surface water and over 80 percent from groundwater.  
2-MLM levels are the minimum low management levels, or annual low levels for lakes.  
3-Answers may include conservation, reclaimed water use, development of alternative water sources. 4-Restrictions will remain in effect at least until water levels return to their normal ranges.

### Sunshine State Standards

*Science (6–8):* Processes that Shape the Earth, SC.D.1.3, SC.D.2.3; How Living Things Interact with Their Environment, SC.G.2.3.

*Science (9–12):* Processes that Shape the Earth, SC.D.1.4, SC.D.2.4; How Living Things Interact with Their Environment, SC.G.2.4.

## Weather Basics Page 3

Read the article and facts about clouds. Try the extended activities with your students.

### Sunshine State Standards

*Science (6–8):* The Nature of Matter, SC.A.1.3; Energy, SC.B.2.3; Processes that Shape the Earth, SC.D.1.3.

*Science (9–12):* The Nature of Matter, SC.A.1.4; Energy, SC.B.2.4; Processes that Shape the Earth, SC.D.1.4.

## Living in a High-Tech Environment Page 4

Prior to reading the article, ask students how technology has changed our lives. Examples may include the use of computers, surfing the Internet, household appliances, cell phones, etc. Emphasize that technology also plays an important role in providing us with an alternative water source.

### Sunshine State Standards

*Science (6–8):* Processes that Shape the Earth, SC.A.1.3; The Nature of Science, SC.H.1.3, SC.H.2.3, SC.H.3.3.

*Science (9–12):* Processes that Shape the Earth, SC.A.1.4; The Nature of Science, SC.H.1.4, SC.H.2.4, SC.H.3.4.

Read the article and facts about droughts. Ask students to list effective ways to cope with drought conditions.

**Sunshine State Standards**

*Science (6–8):* The Nature of Matter, SC.A.2.3; Processes that Shape the Earth, SC.D.1.3, SC.D.2.3; The Nature of Science, SC.H.2.3.  
*Science (9–12):* The Nature of Matter, SC.A.2.4; Processes that Shape the Earth, SC.D.1.4, SC.D.2.4; The Nature of Science, SC.H.2.4.

**Weather Proverbs and Signs**

People have always been interested in the weather and it's fun to share proverbs and signs about weather. Ask students to think of other proverbs or make up a few of their own.

**Sunshine State Standards**

*Language Arts (6–8):* Reading, LA.A.2.3.  
*Language Arts (9–12):* Reading, LA.A.2.4.

**Classroom Activity**

**Making a Barometer**

Before beginning this activity, make sure your students understand the concept of air pressure. Proceed with the activity and use the discussion questions to enhance their understanding of barometric pressure.

**Sunshine State Standards**

*Science (6–8):* The Nature of Matter, SC.A.1.3; Processes that Shape the Earth, SC.D.1.3; The Nature of Science, SC.H.1.3. *Mathematics (6–8):* Measurement, MA.B.1.3.  
*Science (9–12):* The Nature of Matter, SC.A.1.4; Processes that Shape the Earth, SC.D.1.4; The Nature of Science, SC.H.1.4. *Mathematics (9–12):* Measurement, MA.B.1.4.

**Activities**

Although these activities are meant to be fun, they are designed to reinforce important vocabulary and concepts associated with understanding weather.

Crossword Puzzle answers

**Across:**

- 6. precipitation
- 8. radar
- 10. hot
- 11. climate
- 12. air
- 13. drought

**Down:**

- 1. dew point
- 2. satellite
- 3. doppler
- 4. rain
- 5. condensation
- 7. weather
- 9. cloud

**Word Scramble Answers:**

weather, instruments, technology, complex

**Paragraph:**

Modern **weather** forecasting is a **complex** process that requires state-of-the-art **technology** and a variety of **instruments** that help provide us with accurate and up-to-date information about our weather conditions.

**Sunshine State Standards**

*Language Arts (6–8):* Reading, LA.A.1.3, LA.A.2.3.  
*Language Arts (9–12):* Reading, LA.A.1.4, LA.A.2.4.



A lot of information is available about weather. Have students visit the sites listed in this section. Ask them to identify several new facts they learned about weather while surfing the sites. Be sure to have them visit the SWFWMD web site at [WaterMatters.org](http://WaterMatters.org).

**Sunshine State Standards**

*Science (6–8):* The Nature of Science, SC.H.2.3, SC.H.3.3.  
*Language Arts (6–8):* Reading, LA.A.2.3.  
*Science (9–12):* The Nature of Science, SC.H.2.4, SC.H.3.4.  
*Language Arts (9–12):* Reading, LA.A.2.4.

**WaterWeb Challenge**

**WaterWeb Challenge**

Items included in the Challenge are similar to those presented on the Florida Comprehensive Assessment Test (FCAT). Make copies of the Challenge and explain to students that this provides good practice for preparing for FCAT. Students should be allowed to use the *WaterWeb* issue as they complete the Challenge.

**Answers to multiple-choice items:**

1-d, 2-a, 3-c, 4-b, 5-a, 6-b, 7-d, 8-a, 9-c, 10-b

**Answers to extended-response items:**

**Question 1.** Responses will vary. Student should be able to list the equipment and supplies needed to set up a weather station and describe how they will be used to monitor weather conditions.

**Score 2 points if . . .** The response indicates the student has a basic understanding of a weather station and the equipment and supplies needed to monitor weather conditions. The student has provided a response that is accurate and complete.

**Score 1 point if . . .** The response indicates the student has a partial understanding of a weather station and the equipment and supplies needed to monitor weather conditions. The student has provided a response that includes information that is essentially correct, but the information is too general or too simplistic.

**Score 0 points if . . .** The response is inaccurate, confused or irrelevant.

**Question 2.** Responses will vary. Student should be able to describe how a drought can affect the water cycle and explain the importance of water conservation, especially during a drought.

**Score 2 points if . . .** The response indicates the student has a basic understanding of how a drought can affect the water cycle and the importance of water conservation, especially during a drought. The student has provided a response that is accurate and complete.

**Score 1 point if . . .** The response indicates the student has a partial understanding of how a drought can affect the water cycle and the importance of water conservation, especially during a drought. The student has provided a response that includes information that is essentially correct, but the information is too general or too simplistic.

**Score 0 points if . . .** The response is inaccurate, confused or irrelevant.

**Sunshine State Standards**

*Science (6–8):* The Nature of Matter, SC.A.1.3; Energy, SC.B.2.3; Processes that Shape the Earth, SC.D.1.3.  
*Language Arts (6–8):* Reading, LA.A.2.3; Writing, LA.B.2.3.  
*Science (9–12):* The Nature of Matter, SC.A.1.4; Energy, SC.B.2.4; Processes that Shape the Earth, SC.D.1.4.  
*Language Arts (9–12):* Reading, LA.A.2.4; Writing, LA.B.2.4.



**Directions:** *This is your opportunity to demonstrate what you have learned about weather. It is also an opportunity for you to practice answering questions similar to those found on the FCAT.*

*Do your best and meet the challenge!*

For each multiple-choice item, select the best answer.

1. In this issue of *WaterWeb*, you have learned a lot about weather. Where does our weather occur?
  - a. within 100 feet of the earth's surface
  - b. under the earth's surface
  - c. in high-level clouds
  - d. in the troposphere
2. How is climate related to weather?
  - a. Climate describes the weather patterns over a long period of time.
  - b. Climate describes the weather patterns over a short period of time.
  - c. Climate and weather mean exactly the same thing.
  - d. Climate describes cloud conditions in the sky.
3. Which term is used to describe a measurement that tells how saturated the air is with water?
  - a. wind speed
  - b. Doppler radar
  - c. dew point
  - d. amount of rainfall
4. Over 80 percent of the fresh water used in the SWFWMD is groundwater. What is groundwater?
  - a. water found only on the earth's surface
  - b. water that has seeped into the ground and is held in soil and rock
  - c. water pumped from surface rivers and lakes
  - d. water found in the Gulf of Mexico
5. Which one is NOT a factor in long-term recovery of the water resource?
  - a. increased evaporation
  - b. droughtproof alternative water sources
  - c. water conservation
  - d. reclaimed water use
6. Luke Howard devised a system to help classify clouds. Which of the following features are used for classifying them into categories?
  - a. the Latin name associated with the cloud type
  - b. the base height and appearance of the cloud type
  - c. the age of the cloud type
  - d. the popularity of the cloud type
7. What can be said about modern weather forecasting?
  - a. Weather forecasting is a complex process.
  - b. Weather forecasts are more accurate today than they were 15 years ago.
  - c. Doppler radars are used to detect even the slightest weather system.
  - d. all of the above
8. Sometimes people find it difficult to believe that Florida can experience drought conditions. What exactly is a drought?
  - a. It is a period of time during which precipitation is much lower than normal for that time and place.
  - b. It is a period of time during which precipitation is much higher than normal for that time and place.
  - c. It is a time when there is little precipitation in an area.
  - d. It is a time when there is excessive precipitation in an area.
9. Why do you suppose proverbs and signs about weather were developed?
  - a. because animals are the best predictors of weather
  - b. because changes in plants determine changes in weather
  - c. because people have always been interested in predicting weather
  - d. because proverbs and signs about weather are always accurate
10. Based on the activity for making a barometer, what can a change in air pressure tell you about the weather?
  - a. It can only be used to predict an approaching storm.
  - b. It can be used to predict a change in weather.
  - c. It can be used to indicate the temperature of the air.
  - d. It can be used to indicate the speed and direction of the wind.

