

Air & Water Temperatures *Teacher's Guide*

GRADE LEVEL: 6th - 8th

SUBJECT AREA/COURSE: Science

ACADEMIC OUTCOMES/LESSON OBJECTIVES:

- Students will determine what sensors measure and what they look like.
- Students will discover where sensors can be located.
- Students will obtain and analyze real-time data.
- Students will interpret graphs and draw conclusions.

TEACHER INFORMATION: This teacher's guide is to be used for the following student handouts: Introduction to Air & Water Temps, Air & Water Temps Graph Analysis, Air & Water Temps Math Portion, and Air & Water Temps advanced student. The advanced student version is a cumulative lesson from the 3 previous listed student handouts. Time measured on the Coastal Ocean Monitoring and Prediction System (COMPS) sites is recorded in UTC units. UTC stands for Universal Time Coordinated. Scientists all over the world use this unit to measure time because it is internationally recognized. Understand that the UTC time shown can be converted to EST (Eastern Standard Time) our local time by subtracting either 4 when we are in daylight savings time or subtracting 5 when we are not in daylight savings time. Daylight savings time is from 2a.m. on the 2nd Sunday in March to 2a.m. on the 2nd Sunday in November. DST is not observed in Puerto Rico, Hawaii, or Arizona, with the exception of the Navajo Nation, which does observe DST, even in Arizona. This explains why it is easier for scientists around the world to use UTC instead of manipulating time stamps on a regular basis.

Preview the student activity paying close attention to the times recorded on the graphs.

NOTE: As data is real time and sensors require maintenance, potential discrepancies may exist.

MATERIALS NEEDED: Internet access with www.Pinellas.WaterAtlas.org bookmarked, copies of student handouts

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TEACHER WEBSITE RESOURCES:

- Sunshine State Standards can be found at <http://www.fldoe.org/bii/curriculum/sss/>
- Information about FCAT can be found at <http://fcats.fldoe.org/>
- FCAT rubric information can be found at <http://fcats.fldoe.org/rubrcpag.asp>
- More FCAT-Friendly Activities, visit <http://pelotes.jea.com>

SUNSHINE STATE STANDARDS:

SCIENCE-
6th Grade:

SC.6.N.1.1	Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.6.E.7.5	Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

Name:

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SUNSHINE STATE STANDARDS:

SCIENCE continued-

7th Grade:

SC.7.N.1.1	Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>

8th Grade:

SC.8.N.1.1	Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
SC.8.N.1.6	Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence. <i>Cognitive Complexity/Depth of Knowledge Rating: Moderate</i>

MATH-

6th Grade:

MA.6.A.3.4	Solve problems given a formula. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
MA.6.A.3.6	Construct and analyze tables, graphs and equations to describe linear functions and other simple relations using both common language and algebraic notation. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>

7th Grade:

MA.7.A.3.2	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>
MA.7.G.4.4	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems. <i>Cognitive Complexity/Depth of Knowledge Rating: Low</i>

8th Grade:

MA.8.A.1.1	Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range and the difference between discrete and continuous data. <i>Cognitive Complexity/Depth of Knowledge Rating: High</i>
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Date: