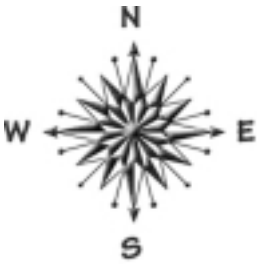

Title: Weather Definition, Instruments, and Data Collection

(Meteorology)

Grade Level(s): 6-8

Introduction: Meteorology is the science that deals with the atmosphere and related phenomena. Research areas include weather, weather forecasting, and atmospheric composition. Weather is defined as the state of the atmosphere at a given time and place, with respect to variables such as temperature, moisture, wind velocity, and barometric pressure. There is a wide variety of technological instruments and observing systems that measure weather. These include anemometers for measuring pressure, barometers for measuring relative humidity, scintillometers which measure temperature gradients, thermometers which measure temperature, and rain gauges which measure precipitation.

Learner Objectives:

- The student will be able to develop a definition for weather.
- The student will be able use and identify some instruments which are used for recording weather.
- The student will be able to use weather instruments to keep a daily record of the minimum/ maximum temperature, relative humidity, wind speed and direction, barometric pressure, precipitation, and cloud cover.

Sunshine State Standards: Science: SC.H.1.3.5. Math: MA.E.1.3.1. MA.B.4.3.1.

Competency-Based Curriculum: Science: Sci.M/J1 I-3-A ; Math: M/J1 V-2-A, M/J3 II-16-D

Materials:

Overhead projector
Instruments for measuring weather (thermometer, barometer, sling psychrometer, rain gauge, wind meter, and a compass).
Weather Data Log

Activity Procedures:

1. Have the students share one fact that they know about weather.
2. Teacher lists these facts on chalkboard. Students should make reference to temperature and the sun, precipitation (snow and rain), humidity, wind, and clouds.
3. From the brainstorm activity, the teacher should guide the students toward a definition of weather that describes change with time and location, and several things that are changing such as temperature, precipitation, air pressure, and wind.
4. Students should also describe where weather takes place.
5. The teacher should reinforce the definition by asking several questions:
   A. From day to night from winter to summer, how does weather change with time and what type(s) of change takes place?
   B. From Florida to Alaska to the deserts in Arizona, how does weather change with location and what type(s) of change(s) takes place?
6. Have the students write down a definition of weather in their notebook. Have them provide several examples.
7. After a definition is established, the teacher should discuss the instruments used to measure weather. These include a min./max. thermometer, sling psychrometer, wind meter, something for measuring wind direction, barometer, and rain gauge. The teacher should show the students how to use these instruments and how to report the data. Data should be collected during passing periods or during lunchtime. Data should be listed on the "Weather Data Log'.
8. Students should take turns working in groups of two or three to collect weather data. Groups can be decided at the end of the class each day.

Student Assessment:

Allow students to construct a graphic organizer (concept map) of weather terms and add any new terms that a student did not include.

Activity Extensions:

1. Help students appreciate the role computers play in weather forecasting by explaining how weather data are gathered and analyzed. (Technology Integration)

Home Learning Activity:

1. Let students discover how meteorologists predict the weather by having them use a newspaper weather report to compare predicted weather with the actual weather of Miami.

Vocabulary: meteorology, weather, weather forecasting, atmospheric composition, barometric pressure, anemometer, barometer, scintillometer, thermometer, rain gauges

References/Related Links:

http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/fcst/home.rxml
http://www.aanderaa.no/OceanDataCollect.htm
http://www.meteo-technology.com/humidity.htm
http://www.noaa.gov/

Weather Definition

Reading Passage

Weather, is the state of the atmosphere at a particular time and place. The elements of weather include temperature, humidity, cloudiness, precipitation, wind, and pressure. These elements are organized into various weather systems, such as monsoons, areas of high and low pressure, thunderstorms, and tornadoes. All weather systems have well defined cycles and structural features, and are governed by the laws of heat and motion. These conditions are studied in meteorology, the science of weather and weather forecasting.

Weather differs from climate, which is the weather that a particular region experiences over a long period of time.Climate includes the averages and variations of all weather elements. Meteorologists have developed several sophisticated instruments that measure multiple physical characteristics of the air simultaneously and at more than one location. The most important of these are Doppler radar, and weather satellites.

Weather forecasts provide critical information regarding the weather. It is important that weather forecasts be as accurate as possible because many people depend upon them.Besides forecasting, data collection is particularly crucial for oceanographers.

Weather Definition

FCAT Questions

Directions: Read the passage, then answer the questions. Answer multiple choice questions by circling the letter of the answer that you select. Write your answer to the "Read, Think, and Explain" question on the lines provided.

1. Elements of weather do not include which of the following:

   A. Precipitation
   B. Humidity
   C. Wind
   D. Solar energy

Answer: D

2. Thermometers measure

   A. The amount of moisture in the atmosphere
   B. The amount of heat in the atmosphere
   C. The amount of wind in the atmosphere
   D. The amount of pressure in the atmosphere

Answer: B

3. Weather instruments include all of the following except ?

   A. Doppler radar
   B. Hydrometer
   C. Spirometer
   D. Sphygmomanometer

Answer: A

4. Explain the difference between weather and climate.