DeKalb County School District

Fernbank Science Center

Title: Water: Earth's Heat Regulator (4602)
Level: 6th Grade
Location: Local School
Type: Outreach
Length: 50 minutes
Limit: One Class per session

Program Description

In a hands-on lab, students will discover the differing roles of soil and water when it comes to heat absorption. Principles discovered through the lab exercise and additional classroom demonstrations will lead to further discussion of the many important roles water plays in creating different climate zones and extreme weather, such as thunderstorms and hurricanes.

Standards

S6E3. Students will recognize the significant role of water in earth processes.

b. Relate various atmospheric conditions to stages of the water cycle.

S6E4. Students will understand how the distribution of land and oceans affects climate and weather.

a. Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns.

b. Relate unequal heating of land and water surfaces to form large global wind systems and weather events such as tornados and thunderstorms.

c. Relate how moisture evaporating from the oceans affects the weather patterns and weather events such as hurricanes.

S6CS4. Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.

S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.

Vocabulary

evaporation	condensation	precipitation	cold front	tornado
warm front	wind shear	low pressure	hurricane	climate
heat capacity	anemometer	water vapor	thunderstorm	weather

Pre-Visit Activities

Introduce the class to the vocabulary words listed above.

Post-Visit Activity

- Have students graph data they recorded during the lab (temperature vs. time).
- Knowing that air masses and weather patterns generally move from west to east across the U. S., have students explain why on the west coast San Francisco's average temperature range is 7°C (12°F) over the course of a year, while at the same latitude but in the middle of the U. S., St. Louis's average temperature range is 27°C (48°F).
- Create a sea breeze lab: (scroll about 1/3 down the page to Experiment 2)
  http://www.hometrainingtools.com/a/weather-experiments-project

Additional Resources

Thunderstorms: http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.htm
Hurricanes: http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/home.rxml

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