

## CT Science Standard 6.3- Meteorology

*Variations in the amount of the sun's energy hitting the Earth's surface affect daily and seasonal weather patterns.*

### Teacher Trail Guides

#### Trail Guide Earth Observatory: 6.3 Meteorology

#### Visit the Planet Earth Gallery

#### Go to the Earth Observatory

1. The weather events that occur in one geographic area may not have originated in that same area. Choose an Earth event on the touch screen. Watch it play out on the globe. Record:

- a. 3 observations

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- b. 2 facts that you find interesting,

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- c. 1 thing that you would like to know more about.

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#### Teacher Notes:

Allow for a variety of responses. You can observe various events including storms which should be a focus for this standard. For storms you can follow similar paths from sea to land, see patterns occur in space and time, climate warm and cools. You can discuss with students how the views from satellites help us watch and predict earth's story. The choices include Tropical Cyclone (where you can compare spin directions in the Northern and Southern Hemispheres), Tsunami (earthquake), Mount Pinatubo Eruption (2<sup>nd</sup> largest volcanic eruption) , Lightning Around the World (discuss seasons and how lightning occurs more frequently during the summer months- they can see when the season change in each hemisphere), and Thinning Arctic Ice (they can see predictions in sea ice thickness at North Pole in Arctic 1944-2055) Ask the students if they can find the cause of each of these events they are observing. For example, with the Thinning Arctic Ice; what has happened to ice from 1955 to today? What do the images say about the coming years?

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### Trail Guide Weather Tools: 6.3 Meteorology

**Visit the Planet Earth Gallery**  
**Go to the Weather Station**  
**View Weather Tools**

Imagine that you have just been transformed into a meteorologist. You are LIVE on the air in just a few minutes. Do you have what you need to deliver the weather forecast? Visit Instruments Live! and record the information that you find.

- a. What type of clouds are currently in our region: \_\_\_\_\_
- b. Measure the wind speed from the anemometer: \_\_\_\_\_
- c. How sunny is it? Record from the solar radiation tool: \_\_\_\_\_
- d. Locate the correct instrument and measure the relative humidity:  
\_\_\_\_\_
- e. Record the amount of rainfall: \_\_\_\_\_
- f. Is the weather about to change? Record the pressure: \_\_\_\_\_
- g. Measure the temperature from the thermometer: \_\_\_\_\_

What other information can you find from the instrument station?

Look at the storms and weather patterns. How do the instruments readings change if there is rainstorm, winter storm, thunderstorm or it is a sunny summer day?

Teacher Notes:

Information provided is updated from rooftop instruments. We have an anemometer, wind vane, thermometer, hygrometer, rain gauge, and barometer.

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### **Trail Guide Weather Studio: 6.3 Meteorology**

#### **Visit the Planet Earth Gallery Go to the Weather Studio**

Write a forecast. What is the weather today? What type of weather will we have tomorrow? You can create your forecast based on your information you recorded from the rooftop instruments (if you have experienced the Weather Tools Trail Guide).

Use the screen at Station 1 to write a forecast and give it a password.

Visit the tv studio and read your forecast on camera in front of the green screen.

What other information do you wish to provide to the audience?

Did you share your predictions about tomorrow's weather?

Discuss your predictions with your class tomorrow and decide if your forecast today was accurate.

Teacher Notes: It would be helpful to experience the Weather Tools Trail Guide before this Trail Guide so students could create a more extensive forecast.

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### **Trail Guide Different Types of Clouds: 6.3 Meteorology**

**Visit the Planet Earth Gallery**  
**Go to the Weather Station**  
**View Different Types of Clouds**

Turn the dial either direction. Watch clouds form and disappear.

What type of weather is associated with each type of cloud?

How are they created?

Teacher's notes: Cirrus (fair weather), Nimbostratus (produce rain or snow), cumulus (puffy-fair weather), cumulus congestus (towering cumulus- reaches higher in the sky), stratus (grey sheet-may produce drizzle-at ground level "fog"), stratocumulus (low-lying cloud formation), altostratus ( made from ice crystals-form ahead of storm clouds), altocirrus (made of ice crystals-mid level atmosphere), and cirrostratus (made of ice crystals-"whitish veils", very thin, can hardly see at all).

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**Trail Guide Climate Change Theater: 6.3 Meteorology**

**Climate Change Theater**

Enter the Climate Change Theatre, view the movie and respond to the following prompts.

- a. List 3 examples that describe how the earth is impacted by climate change.

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- b. List 2 ways that climate change impacts you.

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- c. What is one action, which you can take to lessen the effect of climate change?

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**Teachers Notes:**

Make sure the students understand that even slight changes in the weather can affect the balance of an ecosystem. Students should come away from this exhibit with an understanding that an individual can make a difference. Students can go to Smart Energy right outside the theater in the corner of the gallery to determine their carbon footprint.

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### **Trail Guide Witness A Year's Worth of Weather: 6.3 Meteorology**

#### **Visit the Exploring Space Gallery**

#### **Go to Witness A Year's Worth of Weather**

Seeing Earth from space has allowed us to see cloud patterns and global weather systems that we can't see here.

Turn the knob to see weather for the last year.

Do you remember any time of the year there were very bad storms or weather in a certain place in the United States?

What about other countries?

You can rotate the earth to see the whole globe. Move the knob until you arrive at date over the past year you think there was a major weather event.

Can you observe that event?

You can choose as an option to view two different weather events- the path of Hurricane Katrina or Twin Typhoons.

What happens as the Hurricane moves toward land?

When, where and why does it change from a Category 1 to Category 5 hurricane?

When, where and why does it change back from a Category 5 to a lower level.

**Teacher Notes:** This exhibit provides a great opportunity for you to observe any date over the past year and show the weather of the day to your class. It allows you to see weather changes over time and make connections to major world events.

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**Trail Guide Moon Projection Globe: 6.3 Meteorology**

**Visit the Exploring Space Gallery  
Go to the Moon Projection Globe**

Experience the moon projection globe.

Think about this statement: The moon does not experience weather.

Based on what you know, how would you explain why the moon does not have weather?

**Teacher's Note:**

The moon does not have an atmosphere, since weather is a condition of the atmosphere; the moon has no weather.