Teacher Trail Guides

We have created a set of "Trail Guides" for use by you and your students. The first section consists of the trail guides with teacher notes; the second section's Trail Guides omit the teacher notes. You may copy these directly as handouts.

The following highlighted GLCs and GLES are covered in this section:

Energy in the Earth's Systems - How do external and internal sources of energy affect the Earth's systems? KINDERGARTEN			
K.3 — Weather conditions vary daily and seasonally.			
Core Science Curriculum Framework	**Underlying Concepts** *Students should understand that…*	**Grade-Level Expectations** *Students should be able to…*	**Assessment**
K.3.a. Daily and seasonal weather conditions affect what we do, what we wear and how we feel.	1. The sun is the source of heat and light that warms the land, air and water. Variations in the amount of sunlight that reaches the earth cause the weather. 2. Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermometers. 3. Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle). Repeated observations can show patterns that can be used to predict general weather conditions. For example, temperatures are generally cooler at night than during the day and colder in winter than in spring, summer or fall. 4. Weather influences how we dress, how we feel, and what we do outside. 5. Weather affects the land, animals and plants, and bodies of water. 6. When the temperature is below "freezing," water outside freezes to ice and precipitation falls as snow or ice; when the temperature is above freezing, ice and snow melt and precipitation falls as rain. 7. Clouds and fog are made of tiny drops of water. Clouds have different shapes, sizes and colors that can be observed and compared. Some cloud types are associated with precipitation and some with fair weather. 8. Wind is moving air. Sometimes air moves fast and sometimes it hardly moves at all. Wind speed can be estimated by observing the things that it moves, such as flags, tree branches or sailboats. **SCIENTIFIC LITERACY TERMINOLOGY:** weather, season (winter, spring, summer, fall), thermometer, precipitation, freezing, melt	1. Use the senses to observe daily weather conditions and record data systematically using organizers such as tables, charts, picture graphs or calendars. 2. Analyze weather data collected over time (during the day, from day to day, and from season to season) to identify patterns and make comparisons and predictions. 3. Observe, compare and contrast cloud shapes, sizes and colors, and relate the appearance of clouds to fair weather or precipitation. 4. Write, speak or draw ways that weather influences humans, other animals and plants. 5. Make judgments about appropriate clothing and activities based on weather conditions.	**A7**. Describe and record daily weather conditions. **A8**. Relate seasonal weather patterns to appropriate choices of clothing and activities.

Trail Guide *KidSpace*: K.3 Weather

Visit the KidSpace Gallery – Plaza Level

Please note that availability to KidSpace is limited and based on capacity and other audience considerations.

Explore how a ball can be moved by a stream of air. Talk with your partner about what is happening to the ball when you put in into the stream of air.

As you place a ball in the tube, notice how it reacts to a stream of air. Does it bounce against the tube? Roll? Does the air make it move faster? Slower?

What happens to ball as it moves through the tube? How fast does it come back to you?

How would the ball move if it wasn't in the tube?

If we used a different size ball, how would it react to the same stream of air?

What do you observe? What do you wonder?

Teacher notes:
Wind is moving air. Sometimes air moves fast and sometimes it hardly moves at all. Wind speed can be estimated by observing the things that it moves, such as flags, tree branches or sailboats.
Standards K.3 GLC# 8

Trail Guide *KidSpace*: K.3 Weather

Visit the KidSpace Gallery – Plaza Level

Please note that availability to KidSpace is limited and based on capacity and other audience considerations.

There are different types of weather during the day, from day to day, and from season to season. What type of weather have you observed? Have you seen storms? Maybe at home, on a trip, or on television?

Have you ever seen a tornado?

Find an area in KidSpace where you see something that looks like a tornado. What happens when you put a ball into the tornado?

Teacher notes:
A tornado is a violent, dangerous, rotating column of air which is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Students can see how the winds would move within a tornado by watching their ball move through the tornado of water.
Standards K.3 GLC# 3 and #8

Trail Guide *Earth Observatory*: K.3 Weather

Visit the Exploring Space Gallery – 5th Floor North

Earth Observatory

You will be able to discuss with your classmates differences you see in the weather as you observe the Earth.

Choose an Earth event on the touch screen. Watch it play out on the globe.

Discuss what is happening in each of the areas of the globe you are observing:

What is the same? Different?

Which way is the weather moving?

What weather is occurring in the northern part (or top) of the earth versus the southern portion (or bottom)?

What might cause the weather to move from one area to another?

What do you observe? What do you wonder?

Move to different parts of the globe and observe the changes in climate.

Discuss with your classmates the similarities and differences in climate from one part of the globe to another.

Teacher notes:
The focus for K.3 standard should be storms, Tropical Cyclone or Lightning Around the World. For storms you can see they follow similar paths from sea to land and patterns occur in space and time. Climate warms and cools. For Lightning around the World you can bring in the seasons to the discussion. Lightning occurs more frequently during the summer months. Once the students get familiar with looking at the globe you can ask, "Can you see when the seasons change in each hemisphere?"
Standards K.3 GLC# 3 GLE #2

Trail Guide *Weather Instruments*: K.3 Weather

Visit the Planet Earth Gallery – 6th Floor South

Weather Station, Weather Instruments

Weather instruments gather information about current weather conditions. This data can help predict patterns in weather from season to season and year to year. Find the weather information for today at the Instruments Live! area. There are instruments on the rooftop that provide us with information on daily weather conditions.

Is it windy outside today? Notice the wind speed and wind direction from the instruments.

Is it hot or cold today? Look at the temperature.

Is it raining today? Look at the rain gauge.

What should you be wearing for clothing today?

Look at the different storms and weather patterns.
How do these instrument readings change if there is a rainstorm?

A winter storm? Thunderstorm? Sunny summer day?

What should you be wearing on these types of days?

Channel 3 Green Screen

Now write a forecast using your observations about today's weather. Use the screen to write the forecast. Give it a password. Visit the TV studio and read your forecast on camera.

Teacher notes:
Students can compare what is going on outside today with the actual values from these weather instruments. They can extend their forecast from just saying the weather is "sunny" to adding now that is it "70 degrees outside".
Standards K.3 *GLC#* 2, 4 GLE #2, 5

Trail Guide *Different Types of Clouds*: K.3 Weather

Visit the **Planet Earth Gallery – 6th Floor South**

Different Types of Clouds

Turn the dial either direction. View the different types of clouds. Watch clouds form and disappear. What is the same about them?

What looks different?

What weather do you think they'll bring?

Teacher 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 think can hardly see at all).
Standards K.3 *GLC#*7 GLE # 3

Trail Guide *Overlook Balcony*: K.3 Weather

Visit the River of Life Gallery – 6th Floor South

Overlook Balcony

Look out on the Connecticut River.

What do you see?

What is the weather outside?

What do you observe?

Do you see the trees near the highway and the river?
Are they moving?

How high is the water in the river? Is it moving quickly? Slowly?

Is it very sunny outside today or is it raining? What else do you observe?

Teacher notes:
Students will be able to make observations of the weather outside and describe what they see. You can then make connections to what they observe and the weather instruments they have experienced or will be experiencing within the Planet Earth gallery.
Standards K.3 *GLC#* 2, 5; GLE #1