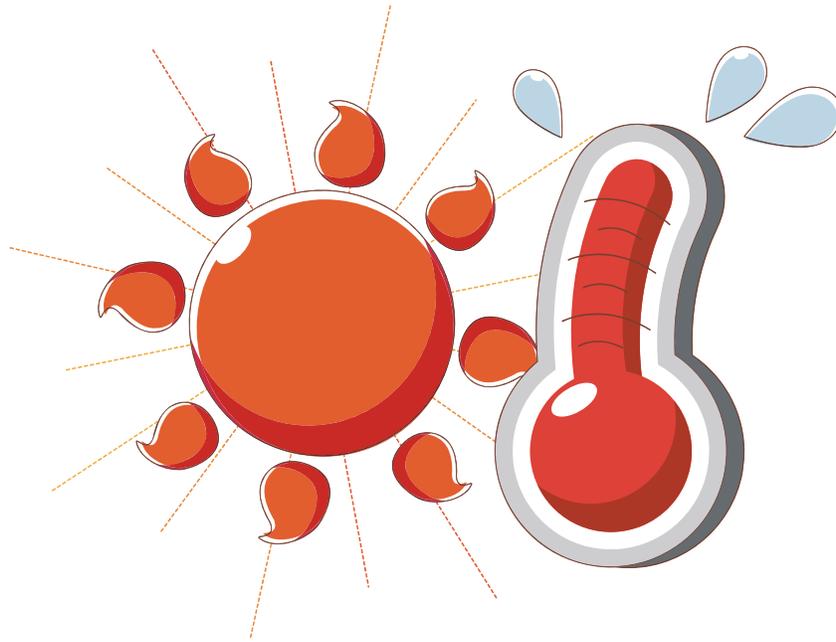


Teacher Idea Kit



STACEY STORMTRACKER

**A Space Science Program for
Grades 1 – 4**

Presented by

ABBITT
PLANETARIUM



Funded in part by:



Stacey Stormtracker

Suggested for Grades 1 – 4

Objectives

After visiting the planetarium for Stacey Stormtracker, the student should be able to:

1. Describe the weather conditions on at least one planet.
2. Explain the water cycle and its importance to weather on Earth.
3. Explain why keeping records about weather is important.

State Standards of Learning Objectives

This planetarium presentation meets the following Virginia State SOL's:

Science: 1.6, 1.7, 2.6, 2.7, 3.8, 3.9, 3.11, 4.6, 4.7

Vocabulary

Program vocabulary should be reviewed before coming to the planetarium, as it is assumed that the children will already be familiar with these concepts.

atmosphere:	The envelope of gases surrounding a planet.
condensation:	The process by which a gas cools into a liquid.
drought:	A severe lack of rainfall.
dwarf planets:	Small, round bodies which orbit the Sun in non-unique orbits.
evaporation:	The process by which a liquid is turned into a gas.
flood:	A condition where rivers and lakes overrun their banks, often caused by excessive rainfall.
hurricane:	A severe weather phenomenon which occurs over water involving high winds and violent thunderstorms. The Atlantic hurricane season runs from June to November.
orbit:	The path a planet takes around the Sun.
planets:	Large, round, non-luminous bodies that orbit the Sun in a unique orbit.
precipitation:	The process by which rain or snow falls on the Earth.
rotation:	The motion of a planet turning on its axis. The time for one rotation is the length of the planet's day.
storm:	A severe weather phenomenon often involving rain, wind, snow, thunder, or lightning.
tornado:	A severe weather phenomenon involving high winds, seen most frequently in the midsection of the United States.
water cycle:	A cycle of evaporation, condensation, and precipitation responsible for most of the weather on the Earth.
water vapor:	Water in its gaseous form.
weather:	The state of the atmosphere of a planet with respect to temperature, humidity, precipitation, etc.
wind:	The movement of air in the atmosphere of a planet.
year:	The time for a planet to make one trip around the Sun.

Background Material for Stacey Stormtracker

Since our earliest days, people's lives and livelihoods have been dependent on the weather. Without proper amounts of rainfall and sunshine, food could not be grown to sustain a community. Observations were made to determine exactly when major rivers would flood each season, bringing the benefit of fresh water to croplands or the danger of high water to human populations. Early people monitored their weather very carefully.

Today, we still monitor our weather, but most of the time we simply watch a cheerful morning weatherman to see if it's going to rain today. Weather prediction no longer holds the life or death importance it once did in our daily lives. Still, children are aware that phenomena like hurricanes, El Niño, and tornadoes can bring about devastating effects. And what child has not been dismayed to awaken on the morning of a promised outing, only to find rain pouring down? Children may be confused by the seemingly random changes in the weather and wonder why the skies act as they do.

In this program, the student will learn about the weather on the eight planets, and how the rotation of a planet and the heat from the Sun cause various weather phenomena. The water cycle will be discussed, as well as tornadoes, hurricanes and windstorms. The show also addresses the reasons why observing weather and recording data about it is important to us. This delightful program is appropriate for second through third graders, and engages the imagination of the students from the beginning. The students will pretend to be cadets about to begin their tour of duty in the Solar System Weather Service, an organization that monitors the weather on all eight planets. Time is spent on each planet, with many exciting slides and video clips illustrating weather phenomena. A question and answer period is included to address specific questions from the students.

Concepts Covered During the Planetarium Visit

1. Each planet in the solar system experiences different weather patterns. Planets with no atmosphere merely experience changing temperatures, but planets with atmospheres may have storms, hurricanes, tornadoes, or windstorms.
2. The Earth's weather patterns are caused by three things: the rotation of the Earth, the water cycle, and heating from the Sun. The water cycle involves evaporation of water into the air, condensation of the water into clouds, and then precipitation of the water back to the surface of the Earth as rain or snow.
3. Studying weather can give us important information about our planet. It can help us predict when and where dangerous storms may occur, and helps us to understand how people may be affecting Earth's climate system. Studying weather on other planets helps us to understand weather on the Earth, since some planets experience similar weather.

Pre-Visit Activities

We recommend that you conduct at least one of these activities with the class before your visit to the planetarium theater. Be sure to raise questions that can be left unanswered until the discussion period in the program.

1. The concept of rotation can be explored by using tops, balls, coins, wheels, or a merry-go-round.
2. Discuss the weather with your students. How many different kinds of weather can you name? Watch a weather forecast that predicts the weather at least 5 days ahead. Write down the prediction for each of the 5 days. Does the actual weather for that day match the prediction?
3. Discuss with your students the members of our solar system. What kind of conditions would you expect to find at these places given their distance from the Sun?

Earth:	The third planet from the Sun. We live on the Earth.
Sun:	The star at the center of the solar system.
Mercury:	The first planet out from the Sun.
Venus:	The second planet from the Sun.
Mars:	The fourth planet from the Sun.
Jupiter:	The fifth planet from the Sun.
Saturn:	The sixth planet from the Sun.
Uranus:	The seventh planet from the Sun.
Neptune:	The eighth planet from the Sun.
Pluto:	One of five dwarf planets orbiting the Sun.

Post-Visit Activities

We recommend that you conduct at least one of these activities with your class following their visit to the planetarium theater.

1. Have them draw pictures of different kinds of weather, either here on the Earth or on another planet!
2. Visit the library to find stories about the weather.
3. Have the students watch a TV weather forecast on the same channel every night. Does the weather prediction for a given day stay the same every night? How often is the weather forecaster correct? Do different TV stations make the same predictions for the same day? Why do you think they might make different predictions? You may wish to break the students up into groups to watch a given channel, or possibly assign some students morning versus evening forecasts.

4. You can make a hurricane in a bottle! You'll need two 2-liter soda bottles, and a plastic connector for the bottles that you can buy at any hobby or craft store. Fill one of the two bottles with water before joining them together with the connector. You may wish to add some glitter so you can really see the swirling patterns in your hurricane. As you turn the bottles over to put the water-filled bottle on top, move the whole thing around in a circle. You'll see a hurricane start to form in the top bottle. Does it work if you don't move the bottles around in a circle?

Suggested Web Sites

Jet Propulsion Laboratory Homepage: <http://www.jpl.nasa.gov>

VLM Planetarium: <http://www.thevlm.org>

ESA Kids:Useful Space: www.esa.int/esaKIDSen/SEMUKXJD1E_UsefulSpace_0.html

