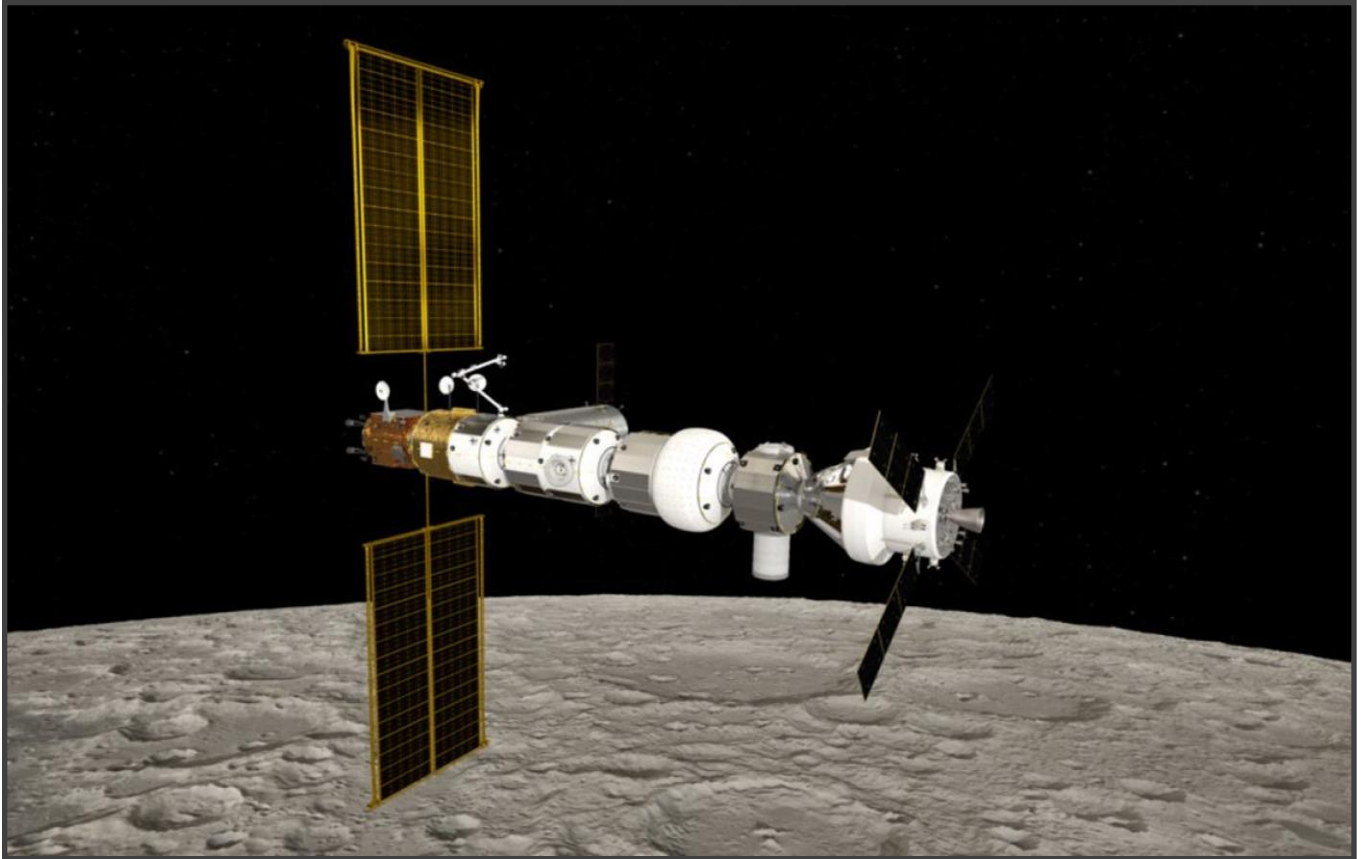


Spacegate Station Season 3

Episode 1 Resources



Resource Content

Weathering the Storm

- Guided Notes
- Weather Activity
- Next Generation Sunshine State Standards (Florida)
- Next Generation Science Standards

This program was designed specifically to be used as part of science subject instruction, science remediation and science enrichment. The determination of the appropriate science standards that correlate to this program was established by a board of Science Specialists and teachers in Duval County Public Schools, Jacksonville, FL.

Spacegate Station Episode 1

Weathering the Storm

Word Bank

Altitude	Atmosphere	Barometric	Calculus	Chemistry	Computer models
Conditions	Cooler	Cools	Earth science	Education	Government
Heating	Humidity	Journalism	Land	Layers	Physics
Radio	Research	Speech	Television	Temperature	TV and radio
Warm	Water	Water vapor	Weather stations		

Guided Notes

Meteorologist

A meteorologist is a specialized scientist who studies Earth's atmosphere to understand or predict the weather. They use mathematical models and their extensive understanding of weather to prepare daily forecasts. Meteorologists work for

- _____ agencies
- _____ services
- _____ and _____ stations
- _____

Weather

Weather as it relates to the planet Earth, takes place in the _____. Nearly all of it in the lower. Weather refers to the _____ at a given time and place. It is what we experience from day to day or minute to minute and it can change rapidly.

Atmosphere

The atmosphere has _____, they are formed by the temperature of the air which changes depending how high the air is or its _____. _____ air is lighter than _____ air, so it rises, the _____ air is heavier and so it sinks down.

Humidity

Humidity is the amount of _____ in the air. High humidity increases the chances of clouds and the formation of rain or precipitation.

Precipitation

Precipitation is _____ that falls from clouds in the sky. Millions of molecules in a cloud must condense to make a single raindrop or snowflake.

Air Pressure

Air pressure, also known as _____ pressure, describes the weight of air molecules pressing down on the earth. At sea level, air pressure 14.7 pounds per square inch. The reason we can still move our bodies freely is because air pressure is all around us and are bodies are used to it. Air pressure can be based on the _____ and _____ of the air.

Wind

Wind is air that flows over Earth's surface because of differences in _____ of the atmosphere and land. During the day, the air above the _____ heats up more quickly than the air over _____. The warm air over the land expands and rises, and the heavier, cooler air rushes in to take its place, creating winds. At night, the winds are reversed because the air _____ more rapidly over land than over water.

Weather Forecast

A weather forecasts begin with observations of the _____ atmosphere by meteorologists using _____. This information is also combined with satellite images showing cloud movement. Meteorologists then input their observations to _____, which are specially designed to forecast the weather.

Becoming a Meteorologist

A meteorologist, a student would need to take advanced math and science courses such as:

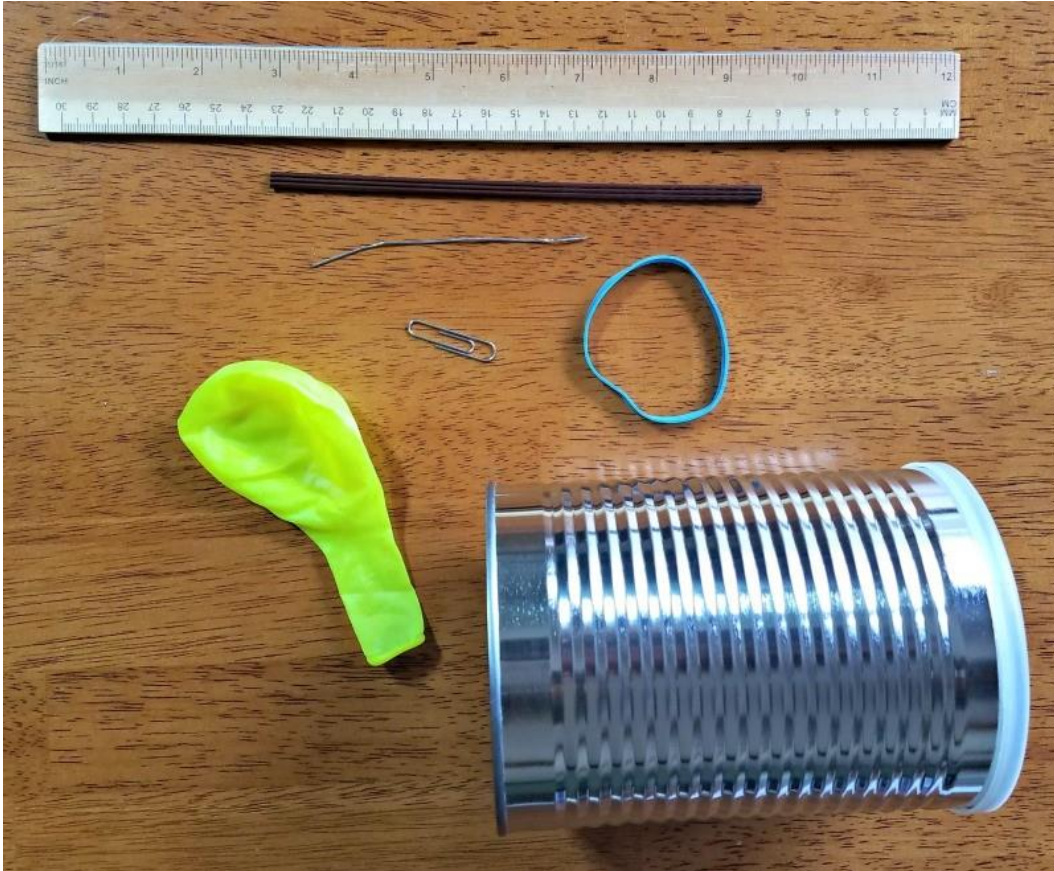
- _____
- _____
- _____
- _____

in high school. Upon graduation from high school, they would need to go to college and take even more advanced classes in science as well as meteorology and computer science. If they wanted to work in media, they would need courses in:

- _____
- _____
- _____ production.

Weather Activity

A barometer is a weather instrument that measures the changes in atmospheric pressure or air pressure or barometric pressure. In this activity students will build their own barometer and take atmospheric measurements.



Barometer supplies

- an empty tin can or suitable rigid container
- balloons (you may need a few)
- one thick rubber band
- a coffee stirrer or thin straw
- a paper clip
- glue
- a ruler with metric measurements

INSTRUCTIONS

Step 1: Cut the balloon about halfway down, if you cut it too low you may have to try again to get the correct sizing.

Step 2: Stretch the cut balloon over the top of the tin can.

Step 3: Secure the balloon using a rubber band so it won't slip off.





Step 4: Straighten the paper clip.

Step 5: Slide the paper clip into the coffee stirrer. It should fit in snugly but if it's loose, be sure to glue it in place.

Step 6: Glue the coffee stirrer to the center of your balloon so the end with the paper clip is hanging over the edge of the can.

Step 7: Stand your ruler next to your barometer so the paper clip is pointing to the metric side of the ruler.



Step 8: Record the date and the metric unit on the Daily Barometer Record Log we've included below!



Step 9: Be sure to put your barometer & ruler in a location where it doesn't have to be moved while you're tracking air pressure. The goal is to see how the air pressure changes (increases or decreases) and record any weather changes that occur each day.



Daily Air Pressure Readings

	Today's Date	Marking on Ruler (metric)	Air Pressure Change: Higher, lower or stayed the same?	Weather Conditions	Local Barometric Pressure
SUNDAY					
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					

Next Generation Sunshine State Standards (Florida)

- SC.2.E.7.1** Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
- SC.2.E.7.2** Investigate by observing and measuring, that the Sun's energy directly and indirectly warms the water, land, and air.
- SC.2.E.7.4** Investigate that air is all around us and that moving air is wind.
- SC.3.E.6.1** Demonstrate that radiant energy from the Sun can heat objects and when the Sun is not present, heat may be lost.
- SC.5.E.7.1** Create a model to explain the parts of the water cycle. Water can be a gas, a liquid, or a solid and can go back and forth from one state to another.
- SC.5.E.7.2** Recognize that the ocean is an integral part of the water cycle and is connected to all of Earth's water reservoirs via evaporation and precipitation processes.
- SC.5.E.7.3** Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.
- SC.5.E.7.4** Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.
- SC.5.E.7.5** Recognize that some of the weather-related differences, such as temperature and humidity, are found among different environments, such as swamps, deserts, and mountains.
- SC.5.E.7.6** Describe characteristics (temperature and precipitation) of different climate zones as they relate to latitude, elevation, and proximity to bodies of water.
- SC.6.E.7.2** Investigate and apply how the cycling of water between the atmosphere and hydrosphere has an effect on weather patterns and climate.
- SC.6.E.7.3** Describe how global patterns such as the jet stream and ocean currents influence local weather in measurable terms such as temperature, air pressure, wind direction and speed, and humidity and precipitation.
- SC.6.E.7.4** Differentiate and show interactions among the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere.
- SC.6.E.7.5** Explain how energy provided by the sun influences global patterns of atmospheric movement and the temperature differences between air, water, and land.
- SC.6.E.7.6** Differentiate between weather and climate.
- SC.912.E.7.3** Differentiate and describe the various interactions among Earth systems, including: atmosphere, hydrosphere, cryosphere, geosphere, and biosphere.
- SC.912.E.7.5** Predict future weather conditions based on present observations and conceptual models and recognize limitations and uncertainties of such predictions.

Next Generation Science Standards

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

MS-ESS2-5 Earth's Systems Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.