

Weather & Climate



Department of
Environmental
Conservation

Topics: Climate, climate change, weather, erosion

GRADE LEVEL: K-2

Big Ideas:

- Weather is short term conditions of the atmosphere.
- Climate is the average daily weather for an extended period of time.
- Weather can change all the time.
- Weather and climate are related but different.
- Wind and water can change the landscape.
- Our climate is changing.

Learning Objectives: *students will be able to...*

- Identify the differences between weather and climate.
- Identify and describe the various types of weather.
- Compare the different types of weather.
- Identify similarities and differences of different types of weather.
- Collect and organize data on various types of weather.

New York State Science Learning Standards:

K-ESS3-3. Communicate solutions that will reduce the impact of humans on living organisms and nonliving things in the local environment.

K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.

K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

K-PS3-1. Make observations to determine the effect of sunlight on Earth's surface.

1-ESS1-2: Make observations at different times of year to relate the amount of daylight to the time of year.

2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

Key Understandings:

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time.
- People measure these conditions to describe and record the weather and to notice patterns over time.
- Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.
- Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.
- Weather is different depending on the region you live in.
- Sunlight warms Earth's surface.
- Wind and water can change the shape of the land.

Essential Questions:

- What is the difference between weather and climate?
- How are climate and weather related?
- How can wind change the shape of the land?
- How does weather change over time?
- How do weather and climate affect our lives?

Students will know...

- Meteorologists forecast severe weather, so communities can prepare for and respond to these events.
- Weather changes over time.
- The difference between weather and climate.
- How to measure and record weather data.
- Scientists use a variety of methods and materials to study our weather and climate.
- When making observations and collecting data, scientists look for (repeated) patterns.
- Key vocabulary terms.

Vocabulary:

- Climate: the average weather for a given area.
- Climate Change: the result of changes in Earth's atmosphere (the layer of gas that surrounds Earth).
- Erosion: the process by which the surface of the earth gets worn down by forces such as water, wind, or ice.
- Weather: the set of current atmospheric conditions, including temperature, rainfall, wind, and humidity at any given place.

Learning Plan: We recommend doing these lessons in sequential order; however, they can be done as individual lessons. Lessons have multiple links (videos, songs, diagrams, activities) that can be used at the teacher's discretion depending on class time.

Pre-assess: How are weather and climate different? Use K-W-L to assess students' prior knowledge, have students write or draw in response to the essential questions.

Progress Monitoring: Formative assessment and teacher feedback should be ongoing throughout the lessons. Teachers should develop assessments based on their individual class needs. Think-pair share, exit tickets, interactive discussions, questions and listening, informal observations, quizzes and student work samples can all be used.

Lesson 1: Weather vs. Climate- Students watch a video, then observe the weather over a period of time, create a rain gauge, and study conditions on an interactive website.

- Video: [What is the difference between weather and climate?](#)
- Weather Observation [Student Activity](#)
- Story Time Video: [What will the Weather be like Today?](#)
- Song Video: [Check out the Weather](#)
- [Distinguishing between Weather and Climate Game](#) & [Presentation Slides](#)

Lesson 2: Change in the Seasons- Students watch a video, then use their senses to investigate changes in the seasons.

- Video: [Learn Seasons for Kids](#)
- I Can See and Feel the Change in the Seasons [Activity](#)
- Weather on the Water [Four Seasons Demonstration](#)

Lesson 3: The Warmth of the Sun- Students will take a closer look at the sun and begin to recognize its function in heating and warming the air, land, and water that sustains our lives.

- Warmth of the [Sun Teacher Section](#) & [Student Activity](#)

Lesson 4: How Can Wind Change the Shape of the Land? - Wind is a powerful force! It can change the land in many ways. Students experience wind erosion in a hands-on investigation.

- How Can Wind Change the Shape of the Land [Activity](#)
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Teachers: Would you like to visit us at Norrie Point environmental education center, or have an educator visit your classroom in-person or virtually? Contact us to schedule a program: hrteach@dec.ny.gov

Resources:

Children's books:

- [Heroes of the Environment](#) by Harriet Rohmer
- [All about Weather](#) by Huda Harajli, MA
- [Explore My World: Weather](#) by Lisa Gerry
- [Climate Change, The Choice is Ours: The Facts, the Future, and Whay There's Hope](#) by David Miles
- [Goodbye Winter, Hello Spring](#) by Kenard Pak
- [Worm Weather](#) by Jean Taft
- [Puddles](#) by Jonathan London
- [Mindy the Mindful Butterfly](#)

Websites:

- [Climate Kids \(NASA\)](#)
- [Brooklyn Bridge Park](#)
- [Shaping Our Future Climate Change Classroom Resources \(WWF\)](#)
- [Young Voices for the Planet](#)
- [Celebrating Youth Climate Activists \(Scenic Hudson\)](#)
- [Youth Climate Program \(The WILD Center\)](#)
- [Teaching about Climate and Energy \(CLEAN\)](#)
- [Alliance for Climate Education](#)
- [National Science Teaching Association Climate Change](#)
- [Climate Change Education Module \(NYCEP\)](#)
- [NYC-DEP-Education Curriculum Guide](#)