

Lesson 1: Weather and Climate

☐ Getting Started

People have been studying weather since the time of the ancient Greeks. The weather affects our lives in many ways. It determines what we should wear and what types of activities we can do on a given day. It may become dangerous and cause us to seek shelter, and it impacts the plants and animals in our environment. The weather you experience depends a lot on where you live on the planet. Are you close to the equator? Far from the equator? Are you near the ocean? Are you in the mountains or in the desert?

Today, you will learn about the difference between weather and climate. You will also explore weather forecasts and how meteorologists predict the weather.

☐ Reading and Questions

Read pages iv and v and pages 1-5 of *Weather and Climate* by Kathleen M. Reilly. Then answer these questions.

As you read, you may want to start filling in the definitions for your "Weather Words" booklet. (See Activity 2 for details.)

1. How do you know what to wear when you wake up in the morning?

2. What is the difference between weather and climate?

3. What is a weather pattern?

4. What do you call a scientist who studies weather and climate?

Stuff You Need

- "Weather Words" booklet (kit)
- *Weather and Climate* by Kathleen M. Reilly
- newspaper* (Activity 1 - optional)

Ideas to Think About

- How can the climate help scientists predict the weather in the environment?
- What cycles in the environment impact the weather?

Things to Know

- See the "Weather Words" booklet for definitions of the following words: weather, climate, weather pattern, meteorologist, air mass, air pressure, predict, forecast, humidity, barometer, anemometer.

Activities

☐ Activity 1: Forecasts and Purposes

Local news channels provide weather forecasts on television and on their websites. A **forecast** is a prediction about what will happen in the weather based on the current conditions. Local print and online newspapers often include weather forecasts. The websites for AccuWeather and the National Weather Service are great resources that provide detailed weather and climate information for anywhere in the United States (links to these websites are included).

This activity has several parts. Follow these steps:

1. With a parent, find one or two sources for weather data that you like. You will use these sources for several activities in this unit.
2. Next, watch the local forecast for your area on television or online. People usually have a reason for wanting to know what the weather will be like, and forecasters will often try to mention conditions they think people in their area want to know about. Did the meteorologist give any information about specific events, like if it's dangerously hot beach weather, perfect weather for skiing, or bad weather for a sporting event?

3. Brainstorm a list of five purposes or specific audiences that would want a more specific forecast and write them down on a piece of paper. For example, a sailboat club would need information on wind speed and direction, or a farmer might want to know the next chance for rain.
4. Choose one audience and purpose and rewrite the forecast that was given for your area so it is most useful to that audience. You can either write it on a piece of paper, or improvise and do a live forecast in front of your family.

If you have time when you are finished, explore the AccuWeather and National Weather Service websites.

**AccuWeather**

www.beyondthepage.com/link/13222/

Type your zip code into the Search Location box to view current conditions and forecast information for your area.

**National Weather Service**

www.beyondthepage.com/link/13223/

To get the forecast and current conditions for your town, type your zip code into the search box on the upper left of the Home page (use the general search box, not the "Customize Your Weather" box).

From the Home page, you can click on the interactive map to view weather alerts for anywhere in the country. You can also click on the Forecast Maps link to see a variety of weather maps.

☐ Activity 2: Weather Words

Weather patterns are very complex, so weather can only be predicted probabilistically. This means that scientists cannot be one hundred percent accurate in their predictions of what the weather will be like tomorrow, in an hour, or next week. However, by using advanced instruments, following climate patterns, and analyzing the environmental factors that influence the weather, they are able to make fairly accurate predictions.

To understand more about the factors that influence the weather, you will need to understand some basic vocabulary.

Find your "Weather Words" booklet and turn to the first page, where you will find vocabulary words covered in today's reading. For each word, neatly copy the definition in the space provided.

As you complete the lessons in this unit, you will add additional definitions to the "Weather Words" pages.

Wrapping Up

Remember that weather is the variety of atmospheric conditions that you experience day to day, and climate is the long-term weather patterns of your area. Living near mountains, an ocean, or plains affects the kinds of events and activities you do. It also affects the weather that you have to plan for and the climate in your region.

Have weather forecasters in your area ever been wrong? Weather forecasting is not an exact science, but it has improved significantly since it was first considered possible about a hundred years ago. Weather forecasts allow us to plan our lives in ways that people in the past could not. Imagine what your life would be like if you had no idea what the weather would be like in the next few days. How would it be different than your life today?

Lesson 1: Weather and Climate

Getting Started

Reading and Questions

1. How do you know what to wear when you wake up in the morning?

Answers will vary.

2. What is the difference between weather and climate?

Weather describes what it is like outside (temperature, wind, rain, etc.) at a particular time. Climate is the average weather of a place over a long period of time.

3. What is a weather pattern?

A weather pattern is weather that repeats day after day or week after week (or longer).

4. What do you call a scientist who studies weather and climate?

a meteorologist

? Ideas to Think About

- How can the climate help scientists predict the weather in the environment?
- What cycles in the environment impact the weather?



Things to Know

- See the "Weather Words" booklet for definitions of the following words: weather, climate, weather pattern, meteorologist, air mass, air pressure, predict, forecast, humidity, barometer, anemometer.

• Skills

- Know that weather conditions are variable and can be predicted within probabilistic ranges. (S)

Introducing the Lesson

Today, your child will begin exploring weather and climate, learning the difference between them and how meteorologists predict the weather. As he reads, he may want to start filling in this lesson's definitions for the "Weather Words" booklet. (See Activity 2 for details.) He will also analyze weather forecasts, understand their purpose, and practice creating one for a specific audience. This lesson introduces key vocabulary and lays the foundation for understanding how weather patterns impact daily life. Through hands-on activities, he will develop skills in observation, prediction, and scientific reasoning.

NOTE: Be sure your child keeps all of the projects and activity pages in this unit. He will need them to study for the unit test and to complete the final project.

Activities

Activity 1: Forecasts and Purposes

In this activity, your child is introduced to weather forecasts. Help him find reliable sources of local weather data (two suggested web links are provided). Your child will then choose a specific reason for a

forecast and write one tailored to that audience. For example, a sailboat club would need information on wind speed and direction, or a farmer might want to know the next chance for rain. Read or watch your child's forecast and discuss if he covered the main weather factors of interest.

Activity 2: Weather Words

Your child will fill in the definitions for the vocabulary words for Lesson 1 found in his "Weather Words" booklet. These words were defined in today's reading. Your child's definitions should be close to the following (you can also refer to the book's glossary for any words you're not sure about):

- weather: the specific conditions in the environment such as the temperature, cloudiness, precipitation, etc.
- climate: the average weather in an area over a long period of time
- meteorologists: scientists who study the weather
- weather pattern: weather conditions that repeat for several days, weeks, or months
- air mass: a large body of air that is a different temperature and humidity than the air around it
- air pressure: the weight of the air in the atmosphere pushing down toward the ground
- predict: to state what you think will happen in the future
- forecast: a prediction about what will happen in the weather or to predict what the weather will be like in the future
- humidity: the amount of water vapor in the air
- barometer: an instrument that measures the amount of air pressure
- anemometer: an instrument that measures how fast the wind is blowing

Wrapping Up

Questions to Discuss

- If you look at a thermometer, are you gathering information about weather or climate? (Weather, although climate would also be correct since climate is partly identified by collecting temperature information for a long time.)
- What questions do you have about weather and climate?

Things to Review

Review the difference between weather and climate, the job of a meteorologist, and the vocabulary from today's lesson.