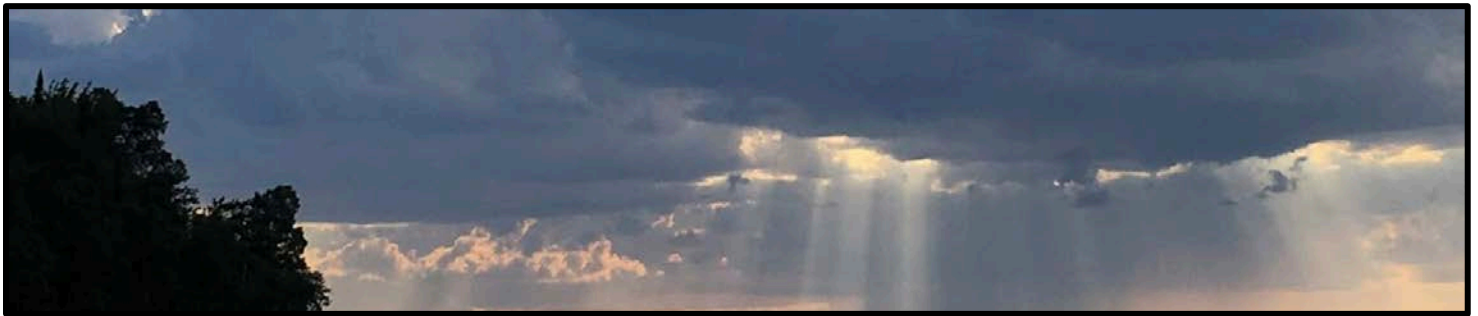


WEATHER vs. CLIMATE



ENGAGE

If you go outside in nature and look around, what do you see? You'll likely observe some plants, animals, dirt, and other elements. Every ecosystem is made up of living and non-living things.

EXPLORE

Weather is the conditions of the **atmosphere** in a particular place over a short period of time. **Climate**, on the other hand, refers to the **weather pattern** of a location over relatively long periods of time.



A blizzard is one type of weather

EXPLANATION

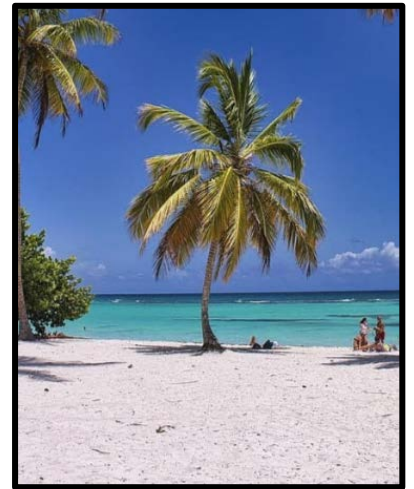
Weather describes the short-term conditions of an area's atmosphere. Weather can change in an area from day to day and even hour-by-hour and minute-by-minute. There are a variety of factors that are involved in weather, including temperature, precipitation, humidity, cloudiness, visibility, wind, and atmospheric pressure. The weather can include rain, sunshine, blizzards, hail, heat waves, cloud cover, wind, sleet, thunderstorms, and freezing rain. The five main components of weather are temperature, wind, precipitation, air pressure, and humidity. Daily weather results from large global patterns in the atmosphere. Weather patterns start with air masses, which are large bodies of air—thousands of feet thick—with consistent temperatures and air pressure. The location where two air masses meet is called a front. A cold front occurs when a cold air mass is replacing a warm air mass, and a warm front occurs when warm air replaces cold air. Both warm and cold fronts create a weather pattern change with a shift in the temperature, and they often bring precipitation as well.



The Arctic has a polar climate

The difference between climate and weather is just a matter of time. Climate is the long-term pattern of weather in a particular area. Climate is typically based on averages of weather recordings of 30 years or more. A basic definition of climate is the average pattern of weather for a particular region. Climate involves averages of temperature, precipitation, wind velocity, sunshine, humidity, precipitation, and other measures of weather phenomena over a long period of time. Statistical data is used to monitor climate and identify any shifts in the long-term atmospheric conditions. The Koppen classification system is a widely used climate classification system. It divides the climate into five main groups: tropical, dry, temperate,

continental, and polar. There are also subcategories. For example, a tropical climate has hot temperatures all year-round and abundant rainfall, whereas a polar climate has dark, cold winters and cool summers.



Islands in the Caribbean typically have tropical climates

Climatology is the study of climate change. The study of climate is important because climate change can have major effects on humans and animals. The climate of a region takes hundreds or even thousands of years to change. These changes can be caused by small variations in the path of Earth's orbit around the sun. Changes in



Climate change can have a major effect on farming

population and an increase in greenhouse gases like carbon dioxide in the atmosphere also

cause climate change. Some of the long-term effects of climate change include heat waves, wildfires, oceans rising due to melting sea ice, more intense storms, and animal populations being threatened with extinction. The World Health Organization has stated that climate change is the greatest threat to global health in the 21st century.

EXTEND

Weather is something that people can prepare for day by day. You can adapt to the weather by wearing a coat or carrying an umbrella, for example. Climate change is more difficult to adapt to. Without drastic measures, climate change may cause many cities to be submerged in water in the future. Other places will be too dry for crops to grow, creating food insecurity. What are some ways that people, businesses, and countries can combat climate change?



Weather vs. Climate

Complete the sections below with information from the article.

VOCABULARY

Write the definition of each concept.

	Definition
Weather	
Climate	

	Definition
Atmosphere	
Weather Pattern	

APPLICATION

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Weather vs. Climate

Answer the following questions in complete sentences.

READING COMPREHENSION

- 1) What is the main difference between weather and climate?

- 2) What is one major cause of a weather pattern change?

- 3) What are the five main components of weather?

- 4) How do scientists measure climate?

HIGHER ORDER

- 5) How does the Koppen classification system help scientists?

- 6) What are some long-term effects of climate change mentioned in the text, and how might they impact human life?



Weather vs. Climate

Answer the following questions using the passage.

READING COMPREHENSION

- 1) What is the main difference between weather and climate?
 - A. Climate includes wind, and weather does not
 - B. Weather is what happens in the atmosphere, while climate only involves the sun
 - C. Weather happens over short periods of time, while climate happens over long periods of time

- 2) What is one major cause of a weather pattern change?
 - A. The growth of new plants
 - B. The interaction of two air masses at a front
 - C. The Earth's core cooling down

- 3) What are the five main components of weather?
 - A. Rain, sleet, snow, clouds, and storms
 - B. Clouds, fog, visibility, lightning, and tornadoes
 - C. Temperature, wind, precipitation, air pressure, and humidity

- 4) How do scientists measure climate?
 - A. By collecting and averaging weather data over many years
 - B. By watching clouds every day
 - C. By measuring how strong the wind is each hour

HIGHER ORDER

- 5) How does the Koppen classification system help scientists?
 - A. It tells them what animals live in each climate
 - B. It organizes the Earth's climates into groups based on temperature and precipitation
 - C. It predicts the weather each day for every location

- 6) What are some long-term effects of climate change mentioned in the text, and how might they impact human life?
 - A. Wildfires, rising oceans, and food insecurity could destroy homes and reduce access to basic needs like shelter and food
 - B. There will be more lightning and better fishing conditions
 - C. Snow will stop falling completely, and deserts will become forests

Weather vs. Climate

Answer the following questions using the passage.

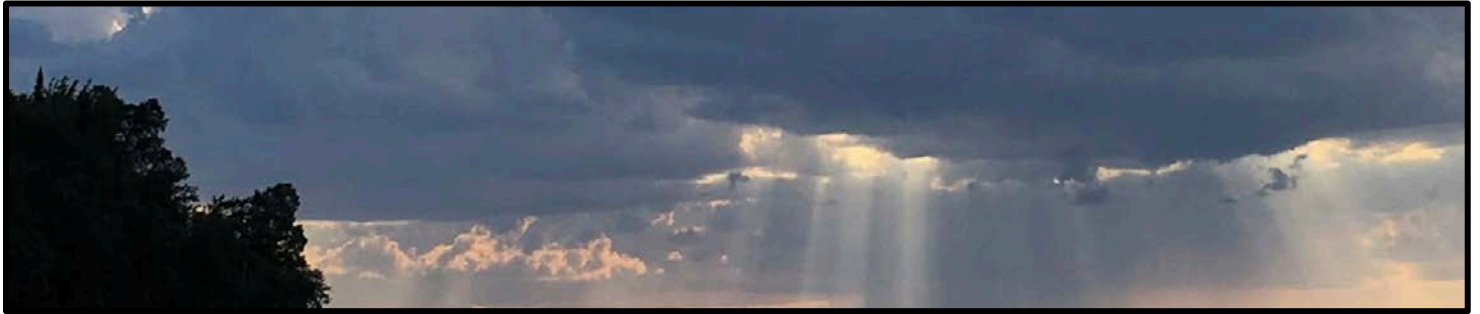
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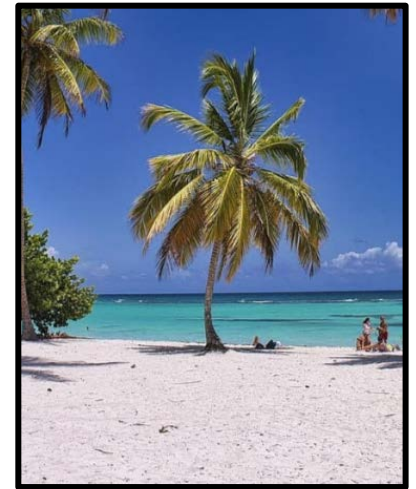
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Weather vs. Climate

Answer the following questions in complete sentences.

- 1) What does weather describe?

- 2) How often can weather change?

- 3) What are the five main components of weather?

- 4) What is a front?

- 5) What is the difference between weather and climate?

- 6) Why is it helpful to study climate?

Weather vs. Climate

Answer the following questions using the passage.

READING COMPREHENSION

- 1) What does weather describe?
 - A. The number of clouds in the sky
 - B. The short-term conditions of the atmosphere
 - C. The average temperature over 30 years
 - D. The number of storms each year
- 2) How often can weather change?
 - A. Only once a year
 - B. Every few months
 - C. Every day and even every hour
 - D. It never changes
- 3) What are the five main components of weather?
 - A. Clouds, snow, ice, fog, and dust
 - B. Rain, hail, sleet, snow, and fog
 - C. Temperature, wind, precipitation, air pressure, and humidity
 - D. Sunshine, temperature, snow, rain, and clouds
- 4) What is a front?
 - A. A type of storm
 - B. The top of a cloud
 - C. Where two air masses meet
 - D. A weather tool

HIGHER ORDER

- 5) What is the difference between weather and climate?
 - A. Weather is about rain, and climate is about sunshine
 - B. Weather is daily, and climate is long-term
 - C. Climate changes every hour, but weather stays the same
 - D. There is no difference
- 6) Why is it helpful to study climate?
 - A. So we know when to fly airplanes
 - B. So we can see how many birds are in the sky
 - C. So we can understand patterns in weather over time
 - D. So we can guess tomorrow's temperature exactly

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