How Do We Study Climate?

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Imagine you are going on a trip to Antarctica. What kind of clothes would you pack?

Now imagine that you are going on a trip to Hawaii. What kind of clothes would you pack for this trip? Would they be different from the clothes you'd take to Antarctica?

You probably said that you'd take a coat and long pants to Antarctica and shorts and T-shirts to Hawaii. How do you know what kinds of clothes to pack? It's because you know about the climate of those places.

Climate is the average of the weather conditions over all four seasons. Some places, like Antarctica, have cold climates. Other places (like Hawaii) have warm climates.

Understanding climate takes more than just knowing which clothes to wear. Scientists study climate in the same way that they study weather. They make observations. They collect data. Then they use the data to draw conclusions and make predictions.

Where does the data come from? All over Earth! Scientists collect data with tools such as climate stations, weather balloons, satellites, and buoys.

A **climate station** is just like a weather station. Have you ever seen a weather station? Maybe you have one at school. It is a set of tools for collecting weather data. There are 114 climate stations across the United States. They measure the temperature and the amount of sunlight. They also measure the amount of rain or snow and the wind speed.

Flesch-Kincaid RL = 4.7

Climate stations help us collect data on land. But what about the Earth's air and water? These places are important in Earth's climate, so we need to collect data from them, too. Scientists do this by using balloons, satellites, and buoys.

Weather balloons help scientists collect data from Earth's air. Almost 1,800 balloons are launched every day around the world! These huge balloons carry tools high into the air. Some can travel as far as 20 miles above the Earth! The balloons eventually burst when they are so high in the air. A parachute then helps the tools fall slowly back to the ground.

Weather balloons can travel pretty high into the air. But what if scientists want data from higher above the Earth? Then they need to use satellites.

Weather satellites are launched into space. They orbit the Earth and collect data. Cloud cover is one thing that satellites measure. Some satellites circle the Earth from north to south. They pass over the North Pole and the South Pole. Others stay above the equator.

Weather balloons and weather satellites collect data from Earth's atmosphere. But what about the oceans? Satellites collect some data. Expeditions on ships collect data, too. Other data comes from thousands of **buoys** that float in the oceans. The buoys measure the temperature of the water. They also track ocean currents and sea level.

Whether it is on land, in the air, or in the water, scientists have ways to learn about Earth's climate. How can you learn about the climate where you live?

Glossary

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Buoy – a tool that floats in the ocean and collects data about the water

Climate – the average of the weather conditions over all seasons over a period of time

Climate station – a set of tools that collects data for studying climate

Weather balloon – a balloon that carries tools into the atmosphere

Weather satellite – a tool that orbits the Earth and collects data

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