



Understanding Earth's Climate
<http://beyondweather.ehe.osu.edu>

All About Earth's Climate

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Look out the window. Is it sunny? Or maybe it's raining or snowing. What you're noticing is the **weather**. Weather is what the atmosphere is like at a certain time and place.

Weather changes from place to place. Someone who lives far away from you might have different weather.

Weather also changes often. One day it might be warm and sunny. The next day, it might be cooler and rainy.

Scientists don't just talk about weather. They also talk about something called **climate**. Climate is the average of the weather conditions through all seasons over a period of time. So weather tells us what the atmosphere is like over a short period of time, and climate tells us what is like over long periods of time.

Let's imagine that you are going on a trip to a place you've never been before. When you're packing your suitcase, knowing about the climate can help you decide what types of clothes to bring. If you're traveling to a place with a warm climate, you might pack shorts and t-shirts. But if you were traveling to a place with a cold climate, you'd probably pack long pants and a jacket instead. Once you arrive at your destination, the weather will help you decide what to wear each day.

Understanding Earth's Climate

Earth's climate is complicated. The Sun and Earth's air, land, and water all **interact** to create Earth's climate.

Earth's climate begins with the Sun. The Sun's light shines on Earth. Light is a form of energy. That energy makes our air, water, and land warm.

Flesch-Kincaid RL = 4.8



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Gases in the air (like carbon dioxide) trap some of the Sun's energy. These gases are called **greenhouse gases**. Greenhouse gases make Earth's atmosphere warm. They make life on Earth possible. Without them, it would be too cold to survive.

Some of the Sun's energy reaches Earth's land and water. All the different parts of Earth are warmed by the Sun's light, but some parts get warmer than others. It depends on how well something absorbs energy. Ice, like the ice sheets found at the North and South Poles, don't absorb a lot of energy. Earth's land absorbs some energy, depending on the color of the soil and if it's covered by trees or buildings. Water can absorb a lot of energy. It takes water a while to warm up, but then it holds onto its heat energy for a while.

The oceans are a good example. The enormous oceans absorb a lot of the Sun's energy. The warm water is moved around the world by ocean currents.

Warming air also creates air currents. Currents in the atmosphere move masses of air all over the Earth. And of course, moving air and water affects the weather, too.

So when you think of weather or climate, remember that there's a lot more to it than just looking out the window.

Glossary

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

greenhouse gas – the name given to a gas that traps the heat of the Sun in Earth's atmosphere

interact – to act together; to have an effect on each other

weather – what it is like outdoors at a certain time

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