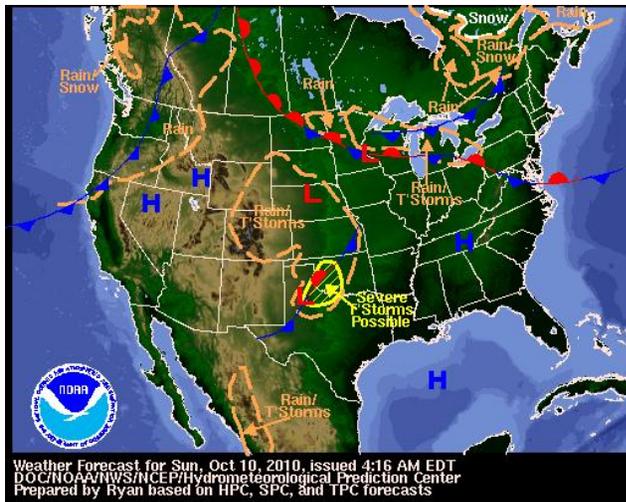


Weather and Climate

Definition of Weather

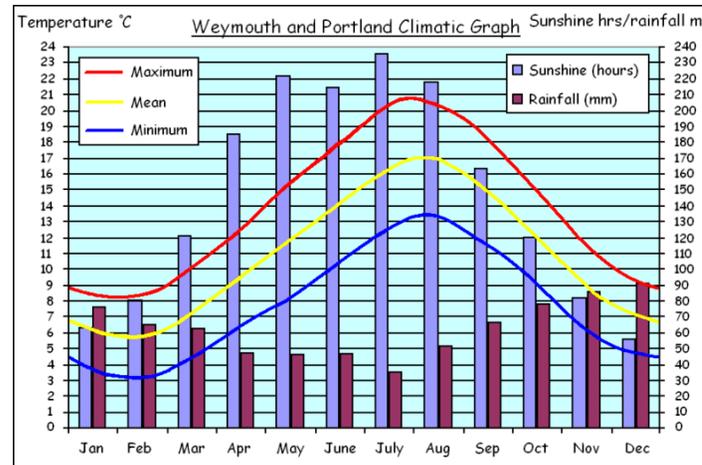
Weather refers to atmospheric conditions, including temperature, precipitation, clouds, and winds in a local area, on time scales of hours to weeks.



The weather can change quickly – it can change several times in a day! It can also vary between locations that are close together, such as one side or the other of a mountain, or on the leading or trailing edge of a cold or warm front.

Definition of Climate

Climate also refers to atmospheric conditions, but averaged over a much longer time period than weather, on time scales of decades to millions of years averaged over a region.



Climate usually takes a very long time to change. Major changes typically take thousands of years. Now, scientists are discovering that it is changing quicker than we thought, with measurable alterations in decades. If it changes too quickly, it can be difficult for our planet.

Examples of Severe Weather

Listening to the nightly news, we hear discussions of sun, rain, clouds and daily temperature expectations. Those are all weather. Here are some additional examples of severe weather.



THUNDERSTORMS

Thunderstorms produce heavy rains and lighting. Severe storms can produce strong winds, tornados, and flooding.



FLOODS

Heavy rains or slow-moving thunderstorms can create flooding. A flood can develop quickly within minutes or gradually over many hours.



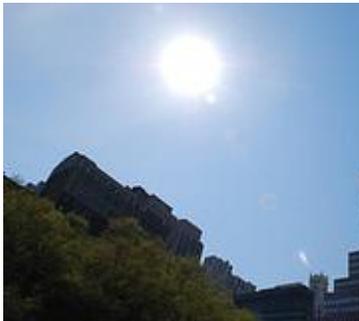
TORNADOES

A tornado is a violently spinning column of air that descends from thunderstorm clouds down to the ground.



LIGHTING STRIKES

Most often, lighting is seen in thunderstorms. It sometimes occurs during snowstorms. Lighting is a humongous spark of static electricity.



EXTREME HEAT

Extreme heat occurs when temperatures are averaging 10 degrees hotter than normal for weeks. It often includes high temperatures and high humidity.



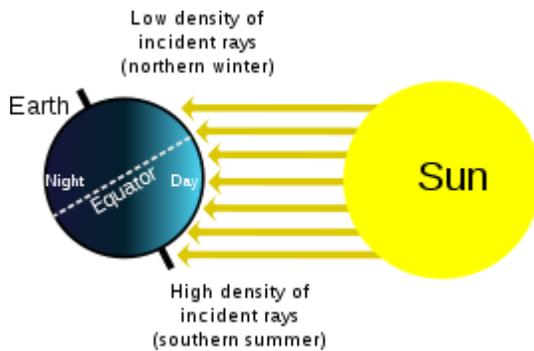
EXTREME COLD

Extremely cold temperatures and heavy snowfall can completely shut down a region. Winter storms commonly cause closed roads and downed power lines. They can also create flooding.

What Factors Affect Weather?

A region's climate is explained by the weather patterns that have been occurring there over many, many years. There are several factors that impact the climate in a given region.

Latitude



The latitude of a region affects what weather it has. Polar regions get less sun, so the weather is colder there. Regions near the equator get more sun; therefore, they have warmer weather.

Proximity to Water



When a region is located near a large body of water, such as an ocean, the weather is mostly warm, moist and breezy. Water evaporates from the water surface causing high humidity near the water. Generally speaking, the farther a region is from water, the less humidity there is in the air.

Mountain Ranges



Mountains block moving air masses. The air needs to rise up and over the mountain. The air cools as it goes to higher altitudes. Water in the air condenses and precipitation occurs. If a region is located on the windier side of a mountain range, the climate is wetter. On the less windy side of the mountain, the climate is drier.

Climate or Weather?

Weather changes in the short-term and it's how we describe what's going on now. It changes every day just by the rising and setting of the sun. It also changes seasonally with summer and winter. Climate takes many, many years to change. Global average climate changes very little compared to weather conditions that change on daily time scales. Here are some comparisons that show the differences in how we talk about weather versus climate change.

Talking about Weather

"I think it's supposed to snow a lot today."



"It feels so dry today."



"It's warm today – it seems like spring!"



Talking about Climate Change

"I can remember 50 years ago when every winter meant getting a lot of snow. Now, we only get one or two big snowfalls a season."

"I've been growing crops here for 40 years, and we now have to use irrigation because there is less rain than there used to be."

"It seems like springtime is coming earlier these days than it did 50 years ago."