

- climate - the average pattern of weather that occurs in a certain location over many years
- temperature - the average speed of the particles in a substance
- humidity - a measure of the amount of water vapor in the air
- precipitation - water that falls to Earth's surface as rain, snow, sleet, or hail
- weather - the condition of the atmosphere at a given time and place
- air pressure - the weight of air pressing on everything around it
- rain - water that condenses from water vapor in the atmosphere and falls to Earth as separate drops from clouds
- snow - precipitation that falls to Earth in the form of ice crystals
- hail - precipitation in the form of rounded pellets of ice and hard snow that usually falls during thunderstorms
- sleet - precipitation that falls to Earth in the form of frozen or partially frozen rain drops, often when the temperature is close to freezing point (freezing rain)
- barometer - a tool to measure air pressure
- hygrometer - a tool to measure humidity
- rain gauge - a tool to measure rainfall
- anemometer - a tool to measure wind speed
- wind vane - a tool to measure wind direction

Precipitation

Rain, snow, sleet and hail are all different forms of precipitation.

Rain occurs in warm temperatures and is a liquid.

Snow occurs in cold areas and is a frozen form of precipitation. It must be below freezing to have snow.

Sleet is also called "freezing rain". It also occurs where temperatures are below freezing. It is frozen in clouds, melts and then refreezes again.

Hail occurs when ice pellets bounce around in clouds creating large chunks of ice. Hail can be anywhere from the size of a dime to the size of a softball. It occurs in warmer weather.

Areas farther from the equator are more likely to have snow and sleet than areas near the equator.

When warm air passes over cold air condensation will occur and rain is likely.

Factors that affect weather

Air pressure is measurement of how much air is pressing on everything around it. We measure air pressure with a barometer. If air pressure is rising it will mean good weather. If air pressure is falling rain could soon be *falling* from the sky. If air pressure is not changing the weather will probably not change. Air pressure gets lower the higher the altitude.

Humidity is a measurement of the amount of water vapor in the air. It is measured with a hygrometer. A humidity of 100% means the air cannot hold any more air. Areas near water will have more water vapor in the air than areas inland.

Wind speed is how fast the wind is moving. We use an anemometer to measure wind speed. Areas near the coast will have a constant breeze because of the difference in temperature of the water and the land. Near the coast or in the center of the continents the bigger the difference in temperature the stronger the breeze will be.

A wind vane point in the direction the wind is coming from.

Precipitation – certain areas such as rainforests will have greater rainfall than deserts

Clouds

Cumulous clouds are puffy and are in the sky with good weather.

Cumulonimbus clouds are tall and dark – rain clouds

Stratus clouds are low, gray and blanket the sky. They may occur with a light drizzle.

Cirrus clouds are high in the air and made of ice clouds. May be followed by rain or snow.

Environments and Climate Zones

Climate is the overall weather over a period of time.

Different environments have different types of weather. Temperature, humidity and rainfall will vary depending on the environment.

Some environments are: wetlands, mountains, grasslands, swamps, rainforests, arctic, tundra, and deserts.

Arctic/Tundra/Polar is cold and located at the North or South Poles.

Deserts are usually hot during the day, cold at night and dry.

Rainforests are located near the equator in the Tropical Climate Zone.

The distance an area is from the equator helps determine the weather. Areas close to the equator are warmer. Areas at the poles are colder.

Sunlight is more direct at the equator and indirect at the poles.

Climate is affected by: position latitude, elevation or altitude and proximity to water (how close it is to oceans or large lakes).

Water Cycle

Evaporation occurs when warm temperatures cause water to change into a gas.

Condensation occurs when water vapor (gas) changes back into a liquid forming droplets of water.

Precipitation – rain, snow, sleet and hail.

Run-off – water that is located in lakes or rivers and will continue through the water cycle.

Most of Earth's water is evaporated from the oceans.