

WEATHER

What is the weather like outside? Weather is the condition of the air outside. **Weather** involves many things, such as clouds, temperature, water in the air, and the wind.

There are several different types of clouds. Different clouds cause different kinds of weather.

A meteorologist is a person that studies the weather. **Meteorologists** use many tools to help them predict the weather. One important thing they look at when doing so is the atmosphere, which is the air all around us. The Earth's **atmosphere** has different layers that are made up of gases.



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Lesson Checkpoint: What is a meteorologist?

pressure
decreases



PREVIEW

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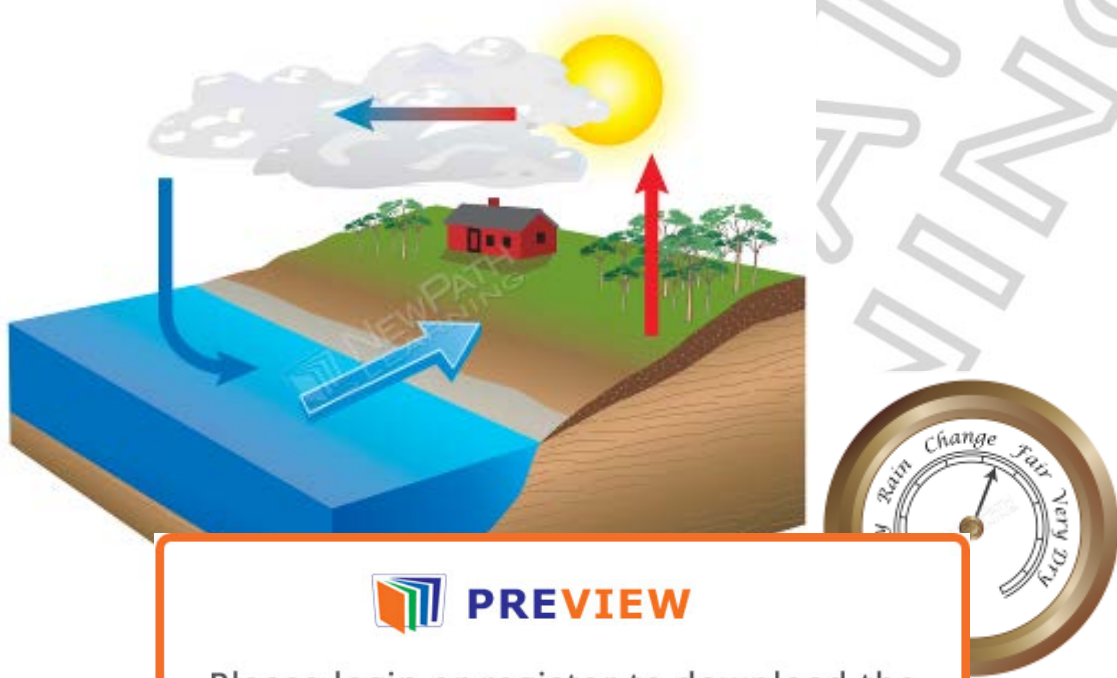
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Air Pressure Affects the Weather

The Earth's **atmosphere** also has weight, which presses down onto the Earth which creates air pressure.

When the air in the atmosphere presses down a lot, it is known as HIGH air pressure. When the air in the atmosphere presses down just a little, that is known as LOW air pressure.

Air pressure affects the weather. **LOW** air pressure causes clouds to form and often rain. **HIGH** air pressure means it will most likely be sunny and the skies will be clear. Air pressure is measured with a barometer.



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HIGH air

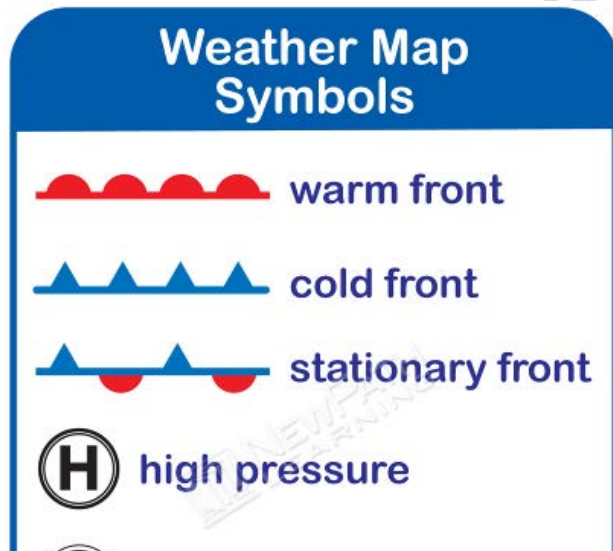
Tools of the Trade

Meteorologists also use tools to predict the weather, such as **wind vanes** to help measure the direction of the wind and they use instruments to measure wind speed.

Meteorologists use a hygrometer to measure the amount of water vapor in the air which tells them how high the humidity will be. When the humidity is low, there is little water vapor in the air. When the humidity is high the air has a lot of water vapor in it.

Meteorologists use a rain gauge to measure the amount of rainfall. Meteorologists use weather maps to show what the weather will be like in large areas of the world.

Weather maps will often show your local temperatures as well as air pressure movements to let you know if you have cloudy or clear skies coming your way.



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Lesson Checkpoint: What tool does a meteorologist use to measure the amount rainfall that has fallen?

Out of This World

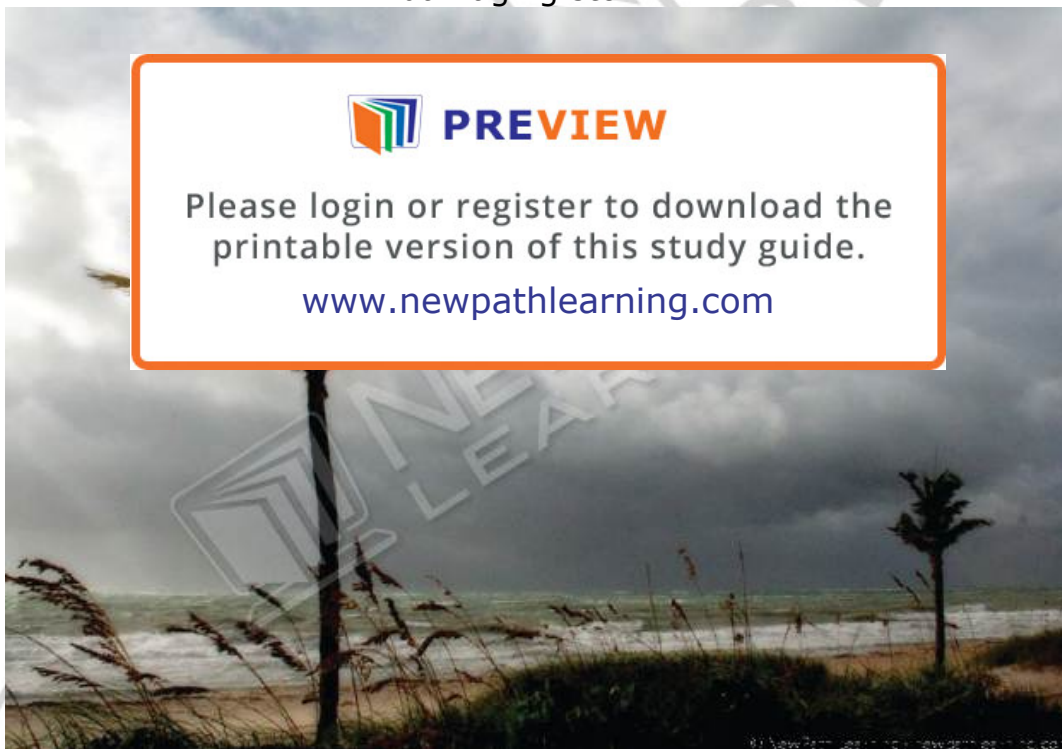
Weather satellites in space gather information from all around the world. These satellites take pictures from high above and send the pictures back to computers so that scientists and meteorologists can predict the upcoming weather in all areas.

The weather can also affect the **pollution** in many areas. A lot of pollution comes from the exhaust of cars which stays in the air causing the pollution to be high in particular areas.

Weather follows certain **patterns**. Depending on where you live, the pattern of your weather may differ from the weather of some place else on Earth. How much rain and snowfall you get (if any) often has to do with where you live. Areas near large bodies of water have different weather patterns than those areas that are very far away from the water. The average temperature will vary depending on where you live too. If you live closer to the equator, in Mexico or northern Africa for example, you will have warmer temperatures for many more days than those who live up far from the equator.

Weather can be extremely dangerous and powerful, causing great damage to places on Earth.

A hurricane is a storm called that forms over oceans that bring winds reaching over 74 miles/119 kilometers per hour. **Hurricanes** can be predicted before they strike land so people have time to prepare for the damaging storm.



A tornado is a funnel shaped column of air that touches the ground destroying anything in its path. It is smaller but has heavier winds than a hurricane. **Tornadoes** form over land under storm clouds without warning, giving people no time to prepare for the damage they can cause.



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between a

A **blizzard** is a winter storm that brings a lot of snowfall, blowing winds, and cold temperatures.

The **National Weather Services** sends out watches and warnings on extreme weather to help keep you safe. A storm **WATCH** means a storm may happen in your area and **WARNING** means a storm is in or near the area in which you live.

Lesson Checkpoint: What is the difference between a weather watch and a warning?