

WEATHER AND CLIMATE

The Earth's Atmosphere

The Earth is surrounded by **layers of air** which make up the Earth's atmosphere.



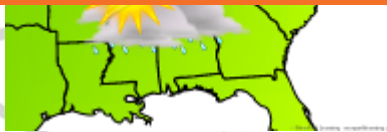
What is Weather?

Weather is the outside conditions at any time. Many factors affect the weather such as temperature, humidity, and air pressure.



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Lesson Checkpoint: What is weather?

Words you may hear when listening to a weather report:

Humidity is the amount of water vapor in the air.

Air pressure: As air gets close to the Earth's surface and **warms up**, the particles in the air move farther apart. The **warm air** then pushes down with less pressure, and then rises forming an area of low pressure.


Low air pressure results in a cloudy day. As air gets close to the Earth's surface and **cools**, the particles in the air move extremely close together, and this thick, cooler air sinks, forming an area of high pressure.

High air pressure results in clear skies. When air moves from an area of **high pressure** to a place with **low pressure**, WIND is created.

Air Mass: A **huge body of air** that has practically the same temperature and humidity. The movement and interaction of **air masses** cause most weather conditions.



Fronts: A front forms when a warm air mass is moving at a slower speed than a **Warm front:** A cold front moving fast, pushing the warm air mass out of the way.

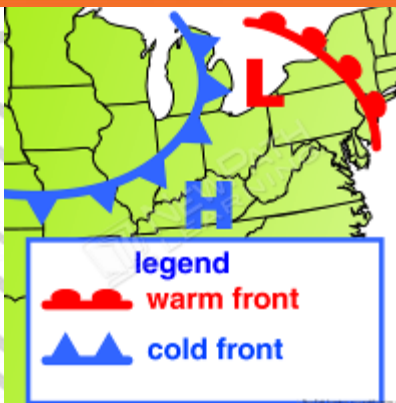


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front forms moving or is
mass that is



Climate: The word **climate** refers to the typical weather throughout the year in the same area.

Lesson Checkpoint:
What is an air mass?

The **greenhouse effect** is the rise in temperature that the Earth experiences because certain gases in the atmosphere trap energy from the Sun. The Sun's energy and heat would escape back into space if the Earth did **not** have certain gases to trap it and it would be MUCH colder here on Earth, too cold to live.

Tools of the Weather Trade

Meteorologists use many tools to help them predict and record the weather each day.

A **thermometer** is used to measure temperature.

A **hygrometer** measures humidity.



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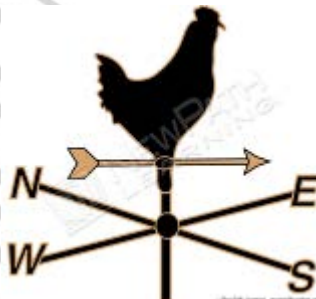
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A **barometer**

An **anemometer**



A **weather vane** measures wind direction.



A **rain gauge** is used to measure the amount of rainfall.



Meteorologists use weather maps and charts to record measurements and information about the weather happening in **many areas**.


Lesson Checkpoint:
What does an anemometer measure?

Severe Weather Conditions

Sometimes w
surface.

A **hurricane**
miles/119 kilo

A **tornado** is
destroying an
hurricane.

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A **drought** is a long period of dry weather.

A **flood** is a large overflowing of water onto land that is normally dry.

Lesson Checkpoint:
What is the difference between a flood and a drought?