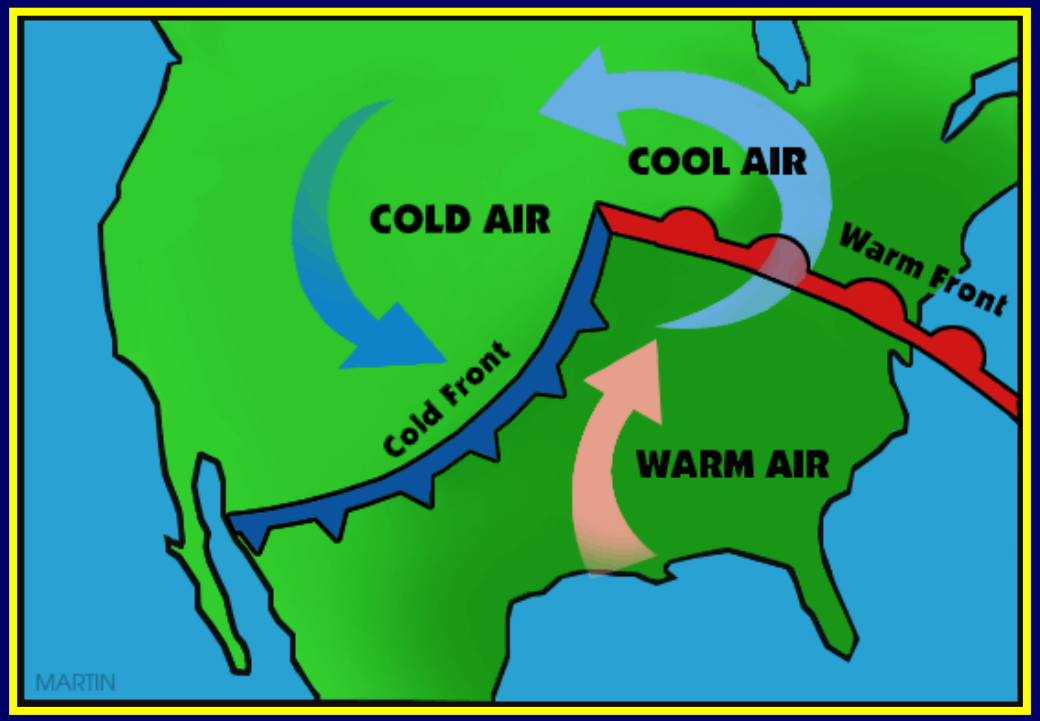
Air Masses & Fronts



Essential Standard 2.5: Understand the structure of and processes within our atmosphere.

Objective 2.5.2: Explain the formation of typical air masses and the weather systems that result from air mass interactions.

I Can Statements

At the end of this lesson, you should be able to say, with confidence:

- I can explain how heat is transferred through radiation, conduction, and convection.
- I can list four different types of air masses and describe their characteristics.
- I can distinguish describe the weather associated with cold, warm, stationary, and occluded fronts.

Air Mass

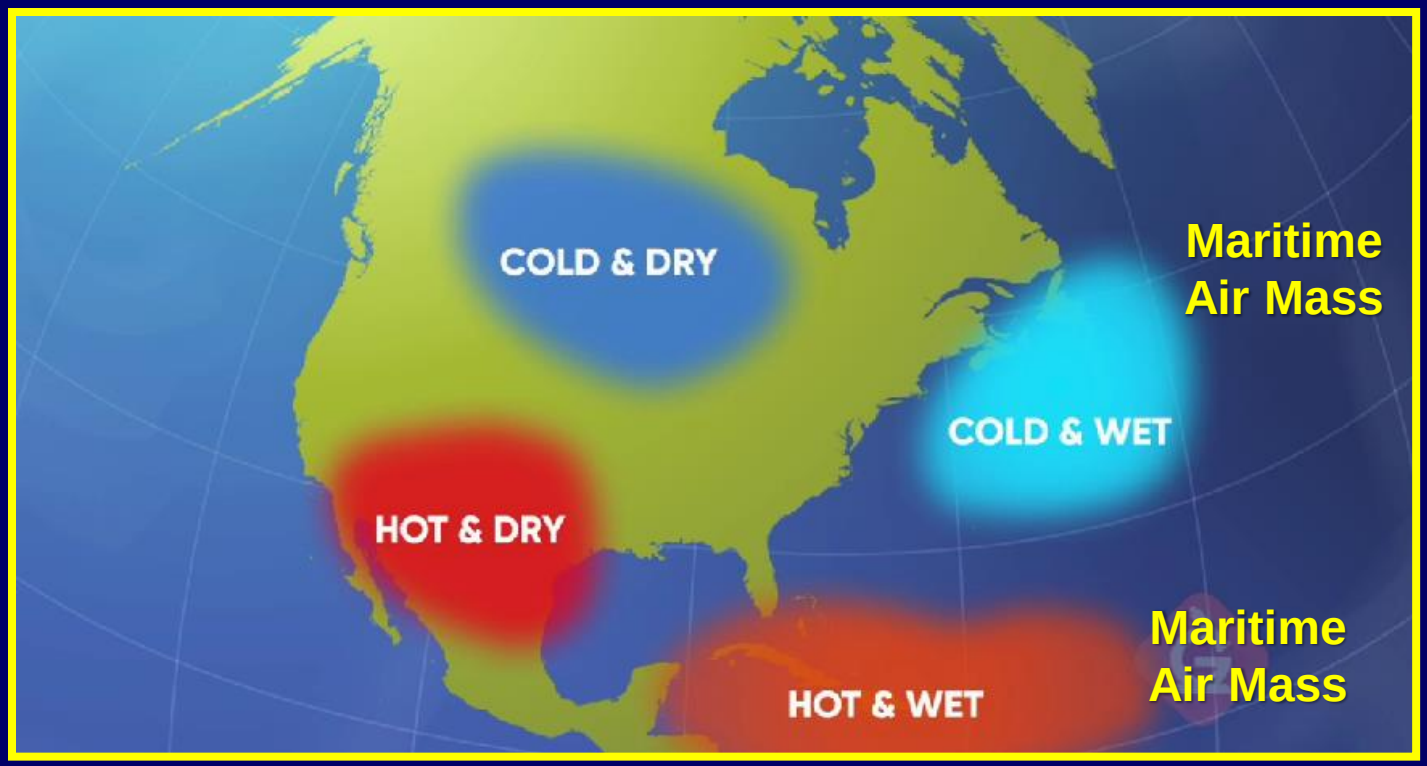
When warm air rises and remains over the same area for days or weeks, the result is a formation of an air mass.

An air mass is a large body of air that takes on the characteristics of the area over which it forms.

Air masses can form over both land and water.

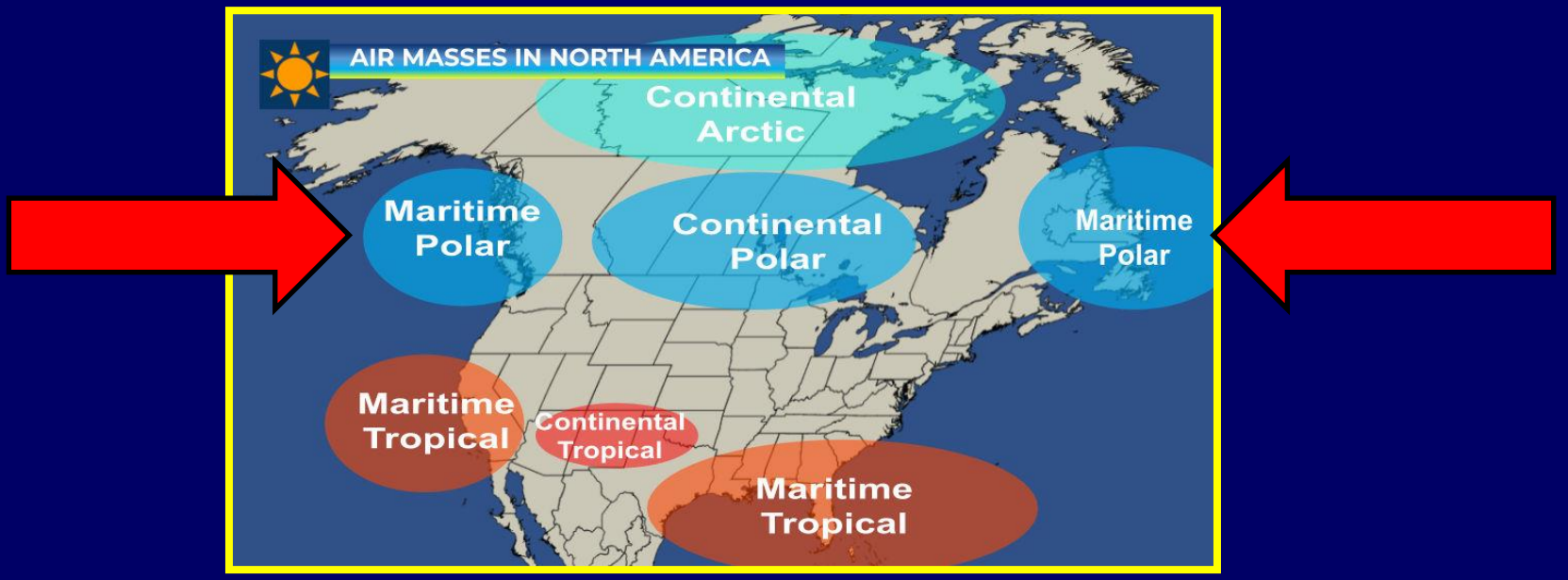
Maritime Air Mass

An air mass that forms over water will have high water content and are called maritime air masses.



Maritime Polar Air Mass

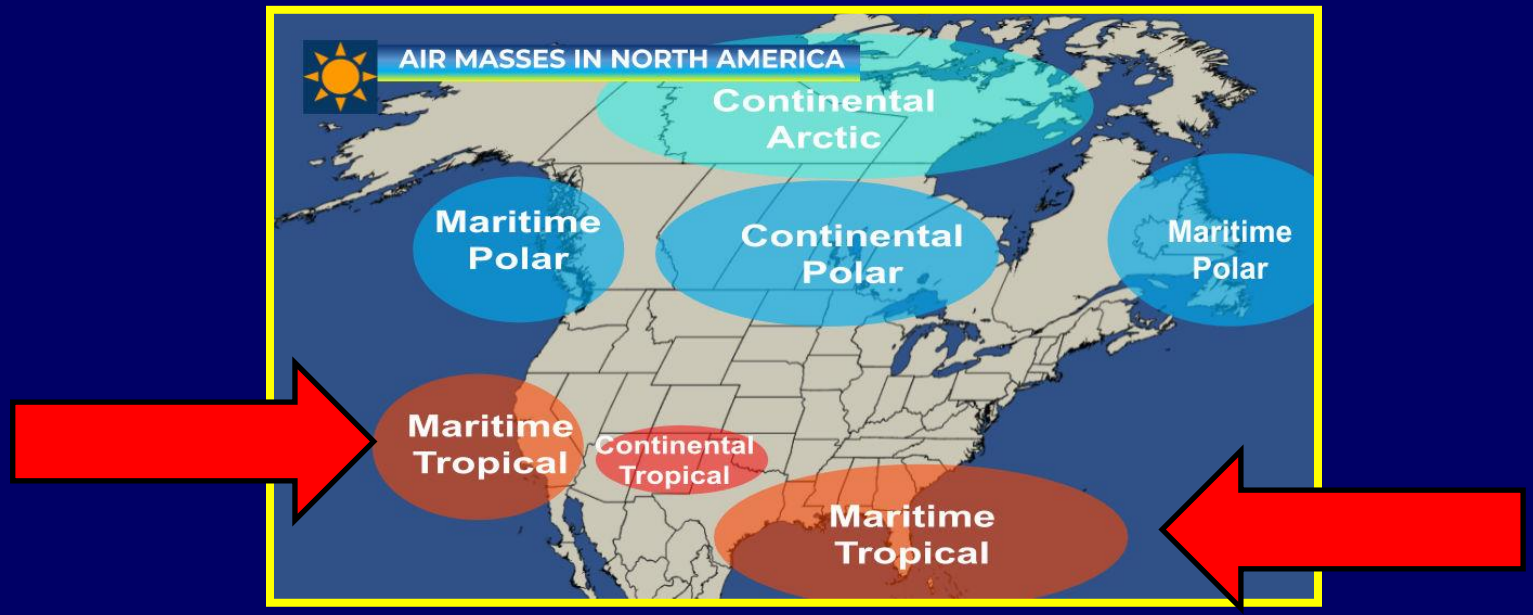
An air mass that forms over cold water is called a maritime polar air mass.



These air masses are associated with moist, cool air.

Maritime Tropical Air Mass

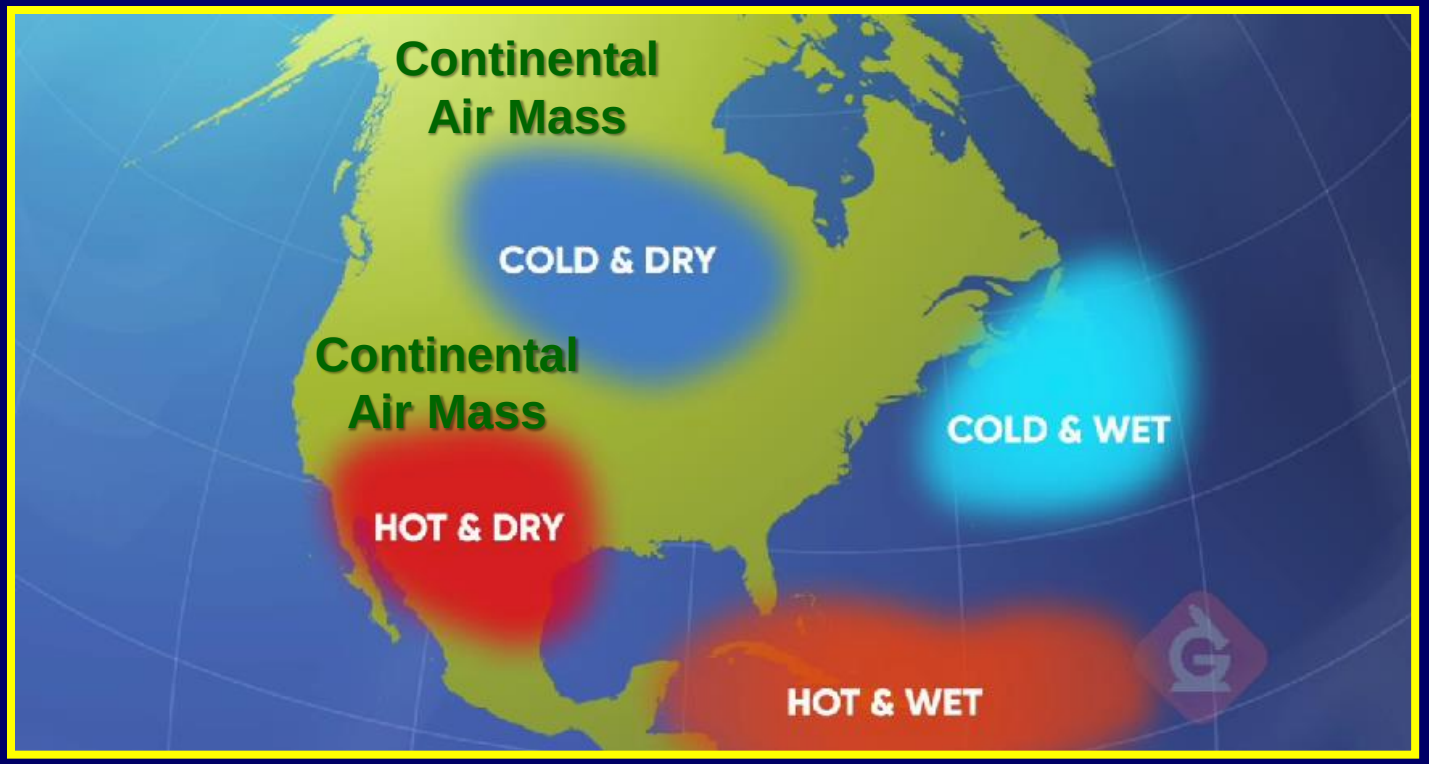
An Air mass that forms over warm water are called a maritime tropical air mass.



These air masses are associated with warm, moist air.

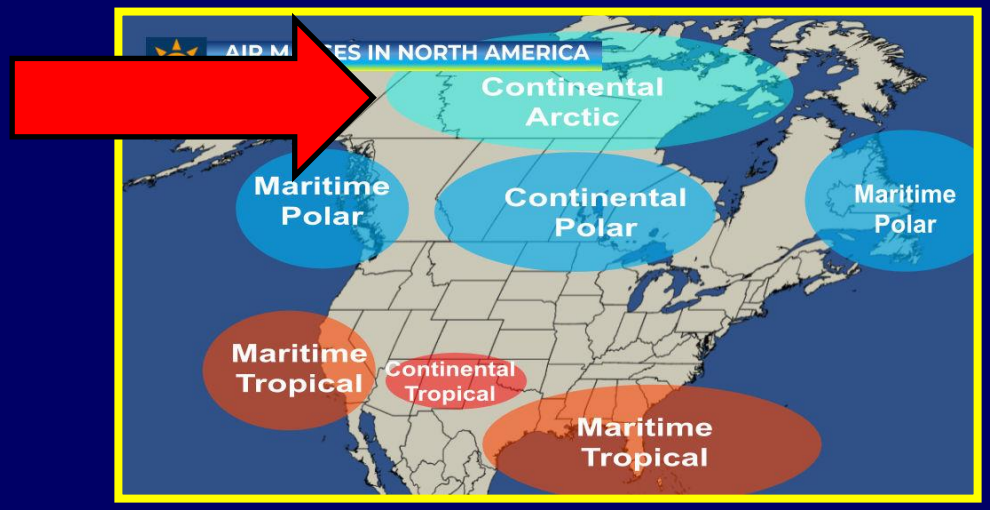
Continental Air Mass

An air mass that forms over land is called a continental air mass and tends be very dry.



Continental Arctic Air Mass

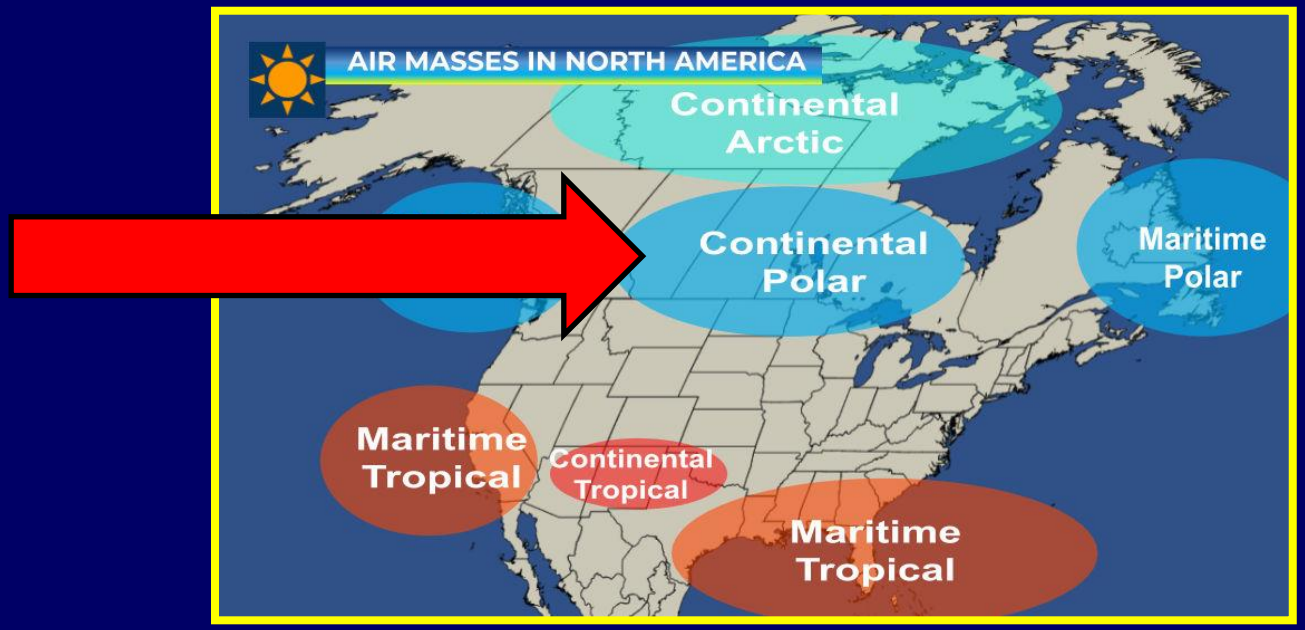
An air mass that forms over land near the poles is called a continental arctic air mass.



These air masses are associated with bitterly cold, dry air.

Continental Polar Air Mass

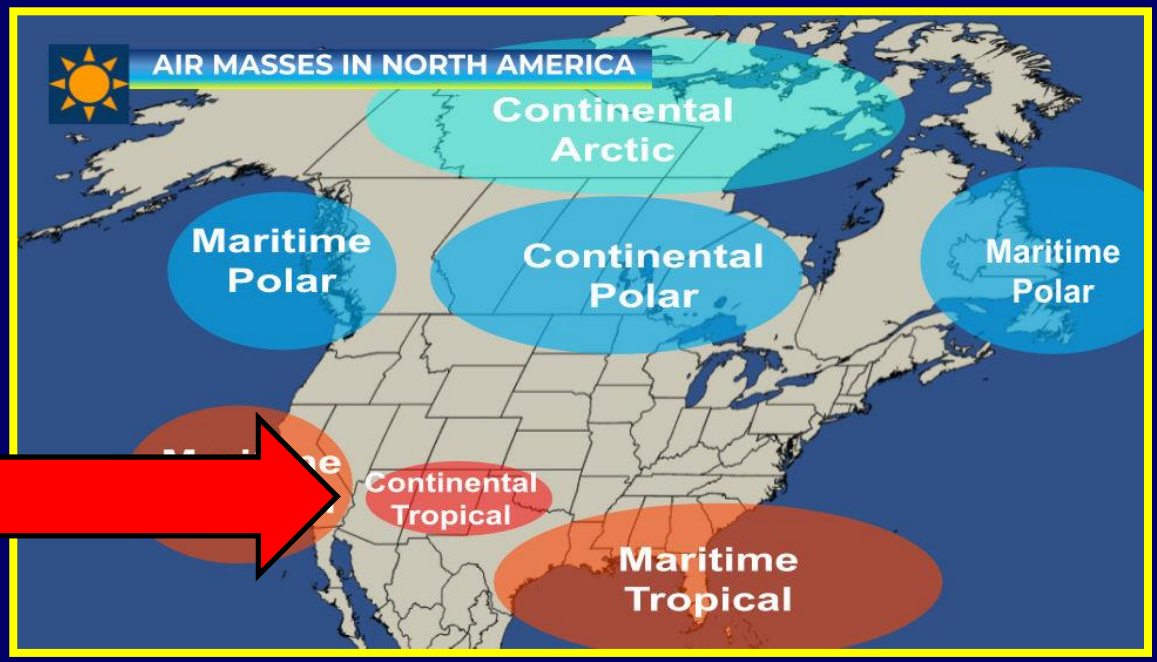
An air mass that forms over cold land is called a continental polar air mass.



These air masses are associated with cold, dry air.

Continental Tropical Air Mass

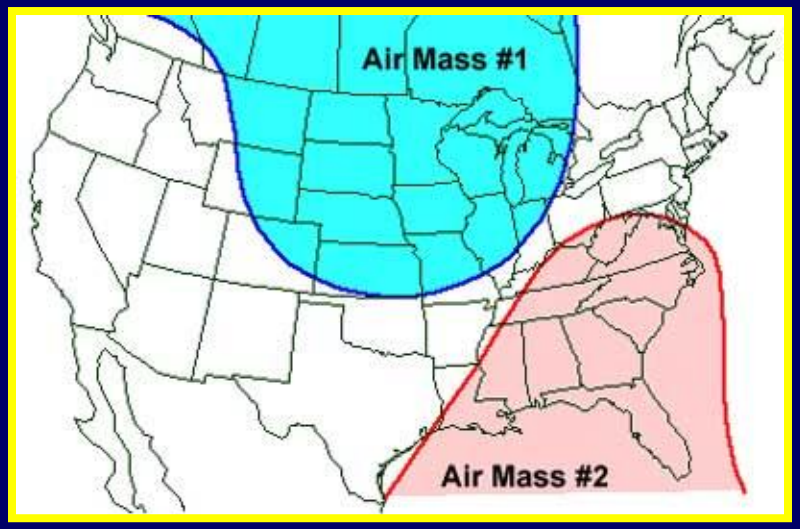
An air mass that forms over warm land is called a continental tropical air mass.



These air masses are associated with warm, dry air.

Fronts

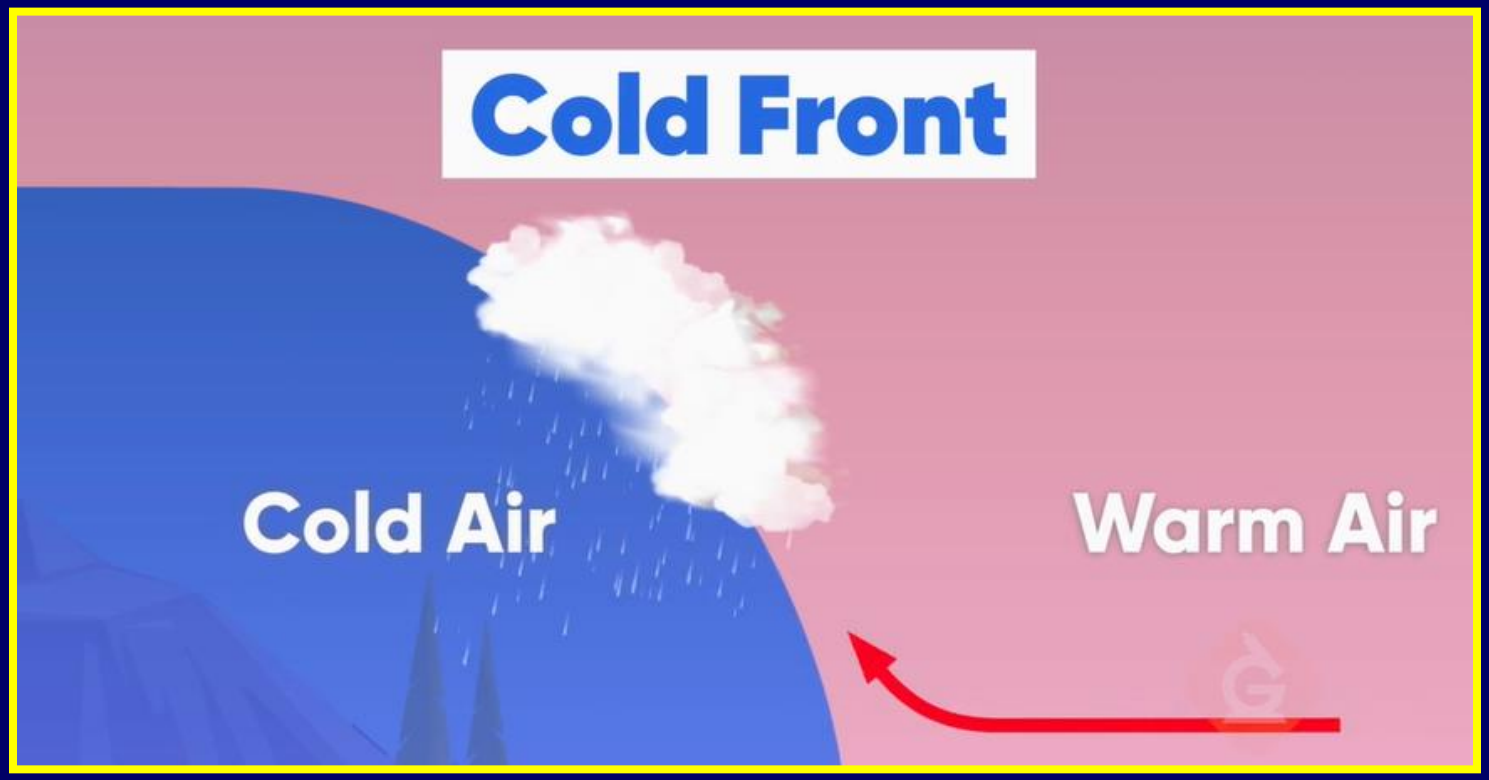
Air masses do not stay in one place indefinitely. Eventually they move and encounter other air masses.



When two different air masses interact, it is called a front.

Cold Front

In a cold front, cold, dense air forces warm air upwards quickly, causing the warm air to cool and condense.

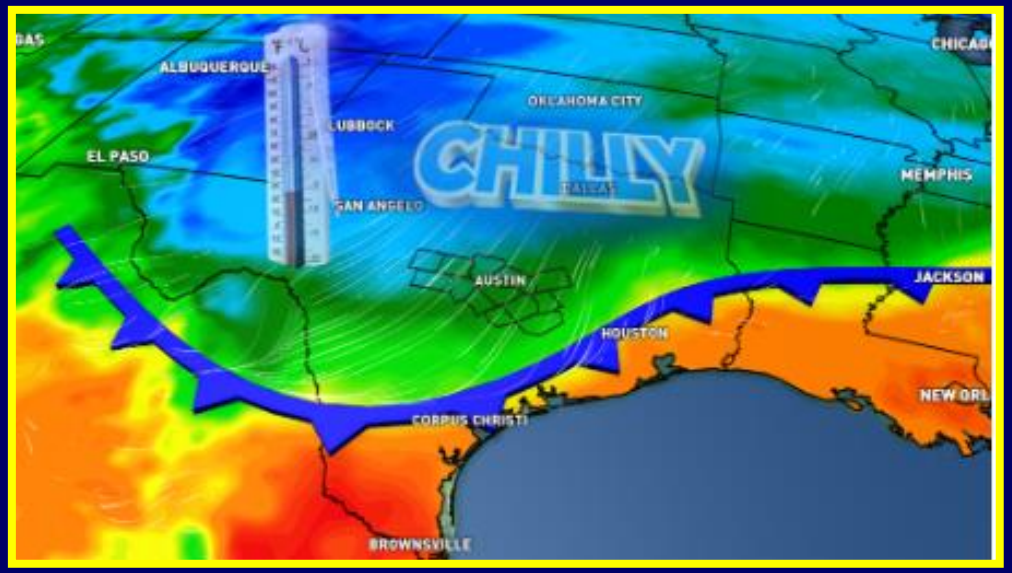


Cold Front – Rain & Thunderstorms

Cold fronts are associated with heavy rains, thunderstorms, and cooler temperatures.

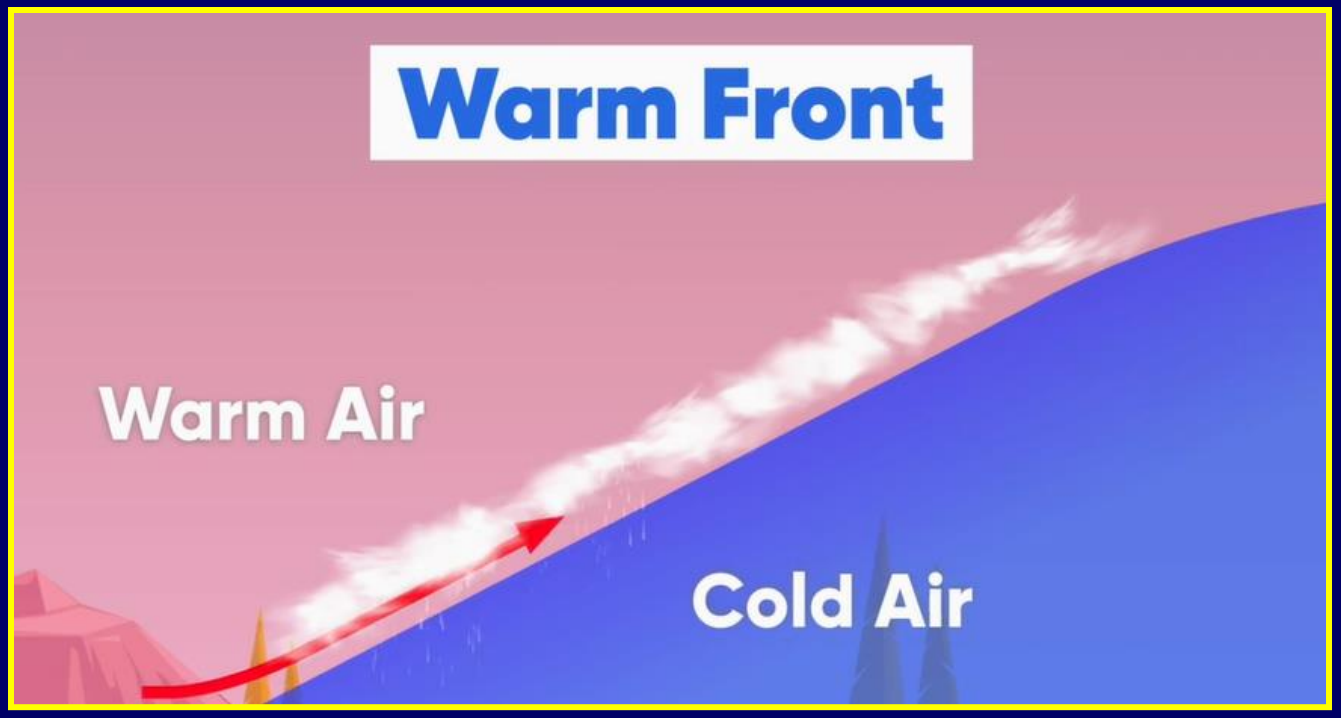
Weather Map

Solid blue line with triangles that point in the direction of the front's motion.



Warm Front

In a warm front, advancing warm, moist air from the southwest gradually displaces cold air.



Warm Front – Gentle Rains

Warm fronts are associated with cloudiness, gentle rains, and warmer temperatures.

Weather Map

Red lines with semicircles pointing toward the direction the front is moving.

Stationary Front

A stationary front occurs when two air masses meet with neither one advancing into the other's territory.

Stationary Front - Continuous Rain

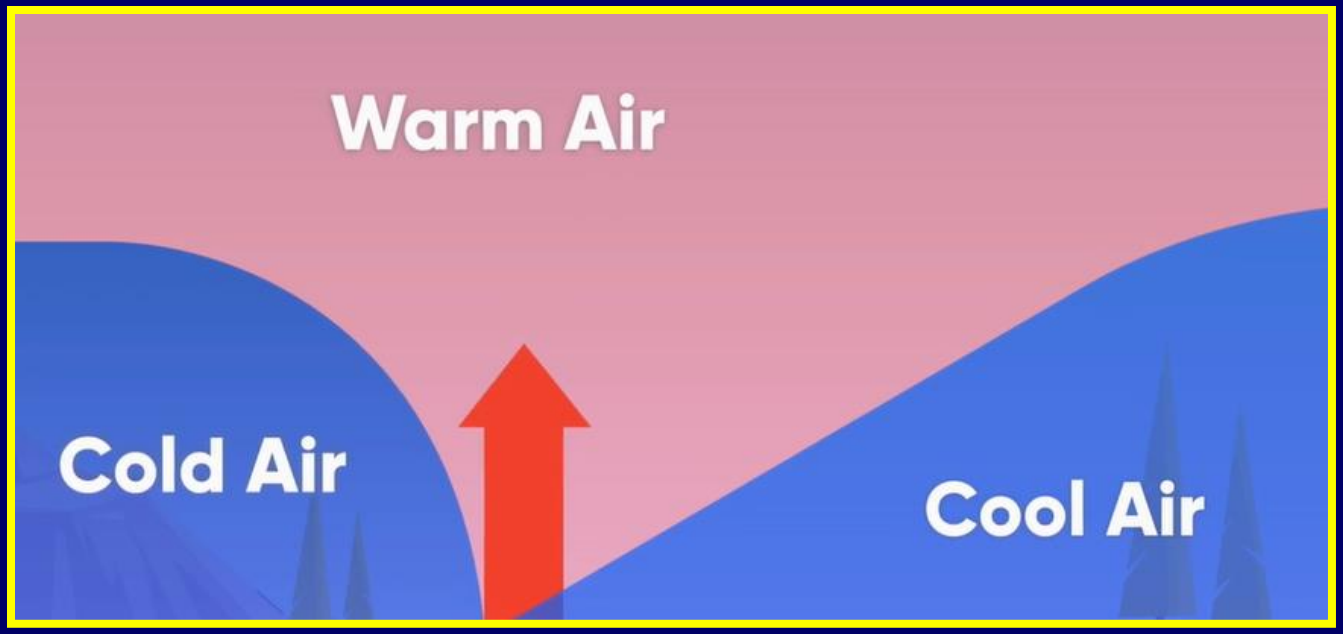
Stationary fronts are associated with a few days of light winds, clouds, and fog.

<u>Weather Map</u>

Combination of blue triangles and red semi-circles on opposite sides.

Occluded Front

An occluded front occurs when a warm front becomes wedged between two cold fronts with the warm air being pushed upwards.



Occluded Front – Rain or Snow

Occluded fronts are association with heavy rain or snow, followed by drier air.

<u>Weather Map</u>

Alternating purple triangles and semi-circles on the same side.

The End