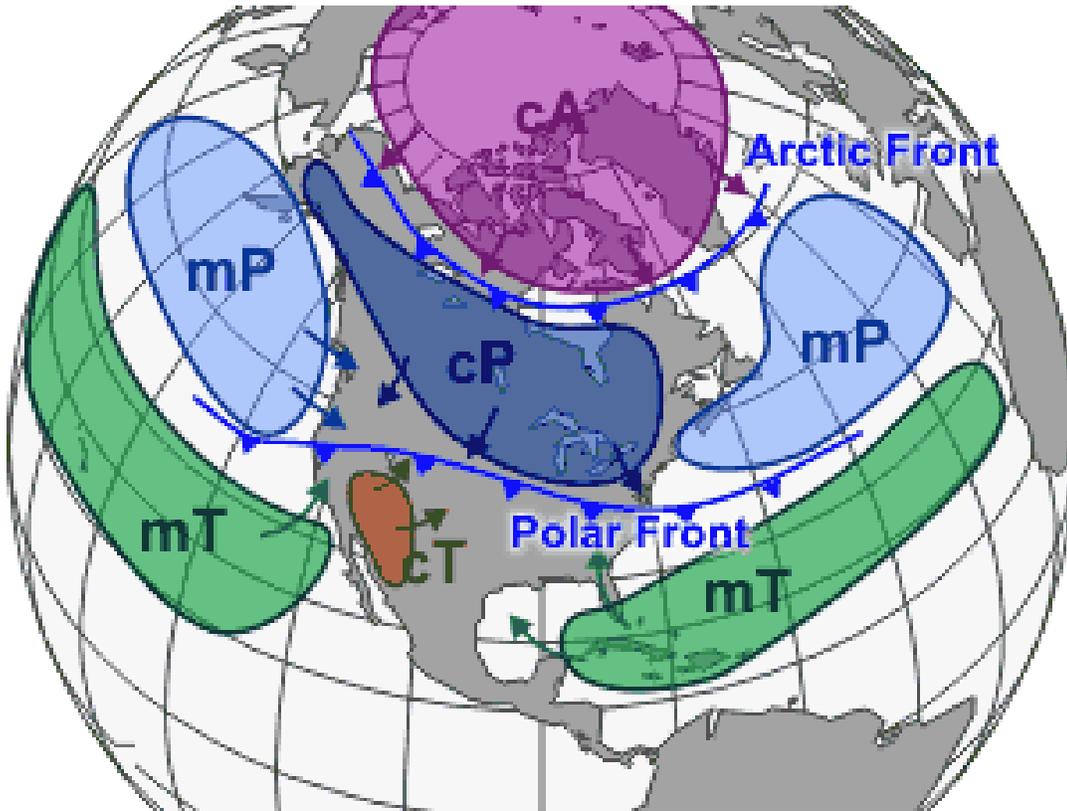


Introduction to Air Masses and Weather Fronts

Air Masses

An air mass is a large body of air that has relatively uniform temperature and humidity characteristics. The regions where air masses form are referred to as air mass source regions. If air remains over a source region long enough, it will acquire the properties of the surface below. Ideal source regions are regions that are generally flat and of uniform composition. Examples include central Canada, Siberia, the northern and southern oceans and large deserts.



Air Mass Classification

Air masses are classified according to their temperature and moisture characteristics. They are grouped into four categories based on their source region. Air masses that originate in the cold, polar regions are designated with a capital "P" for polar. Air masses that originate in the warm tropical regions are designated with a capital "T" for tropical. Air masses that originate over land will be dry and are designated with a lowercase "c" for continental. Air masses that originate over water will be moist and are designated with lowercase "m" for maritime. These letters are combined to indicate the type of air mass:

cP: cold, dry air mass ~ mP: cold, moist air mass

cT: warm, dry air mass ~ mT: warm, moist air mass

In winter, one more type of air mass may form, an extremely cold, dry air mass referred to as cA, continental arctic. Once formed, air masses can move out of their source regions bringing cold, warm, wet or dry conditions to other parts of the world.

Fronts

A front is simply the boundary between two air masses. Fronts are classified by which type of air mass (cold or warm) is replacing the other.

Cold Fronts

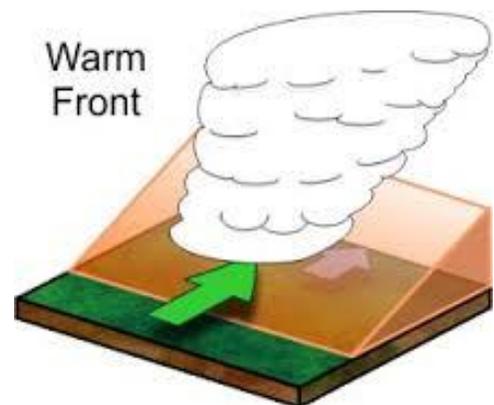


Cold Front

A front is called a cold front if the cold air mass is replacing the warm air mass. The air behind a cold front is colder and typically drier than the air ahead of it, which is generally warm and moist. There is typically a shift in wind direction as the front passes, along with a change in pressure tendency (pressure falls prior to the front arriving and rises after it passes). Cold fronts have a steep slope, which causes air to be forced upward along its leading edge. This is why there is sometimes a band of showers and/or thunderstorms that line up along the leading edge of the cold front. Cold fronts are represented on a weather map by a solid blue line with triangles pointing in the direction of its movement.

Warm Fronts

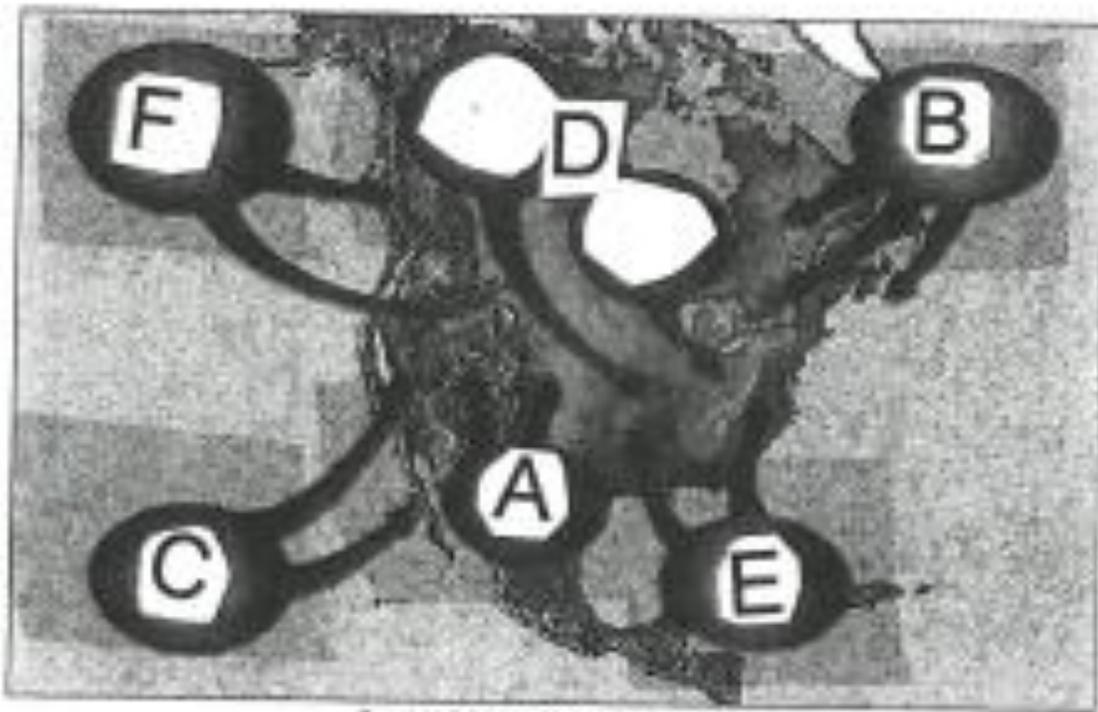
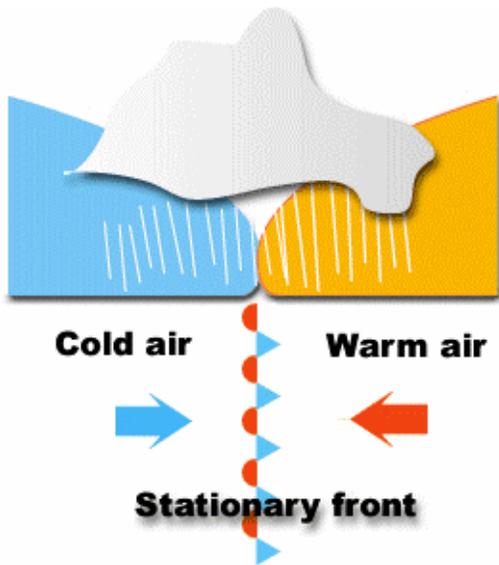
A warm front occurs when a cold air mass is receding (i.e. a warm air mass is replacing a cold air mass). The air behind a warm front is warm and moist, while the air ahead of a warm front is cooler and less moist. Similar to the cold front, there will be a shift in wind direction as the front passes and a change in pressure tendency. Warm fronts have a more gentle slope than cold fronts, which often leads to a gradual rise of air. This gradual rise of air favors the development of widespread, continuous precipitation, which often occurs along and ahead of the front. Warm fronts are represented on a weather map by a solid red line with semi-circles pointing in the direction of its movement.



Warm Front

Stationary Fronts

A stationary front is a front that is not moving. Although the frontal boundary does not move, the air masses may move parallel to the boundary. Stationary fronts can also produce significant weather and are often tied to flooding events. Stationary fronts are represented on a weather map by alternating red and blue lines, with blue triangles and red semi-circles facing opposite directions.



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Air Masses: cP: cold, dry air mass ~ mP: cold, moist air mass
cT: warm, dry air mass ~ mT: warm, moist air mass

Make a guess which air masses above match with the lettered areas above. Re-read Air Masses on the front page. Be able to reason why you made the matches you did.

A _____ B _____ C _____ D _____ E _____ F _____

Introduction to Air Masses & Fronts

Name: _____ Date: _____ Period: _____

LT: I can read a nonfiction article and use the information I gain to better understand what air masses and fronts are and how they impact the weather.

Directions: Read the article two times. After completing the reading, get a highlighter. As you answer the questions below, highlight where you found each answer in the article.

Air Masses:

1. What is the definition of an air mass... IN YOUR OWN WORDS?

2. Air masses are classified based on what characteristics?

3. Fill in the blanks in the following sentences

a. P stands for _____. These air masses are _____ (*warm or cold*)

b. T stands for _____. These air masses are _____ (*warm or cold*)

c. c stands for _____. These air masses are _____ (*wet or dry*)

d. m stands for _____. These air masses are _____ (*wet or dry*)

4. What do you think Maritime means? WHY?

5. Describe the moisture and temperature characteristics of an cP air mass.

6. Describe the moisture and temperature characteristics of a mT air mass.

Fronts:

1. What is a front? (In your own words)

2. List 3 types of fronts and describe the temperature of the air masses that are meeting at each.

a. _____

b. _____

c. _____