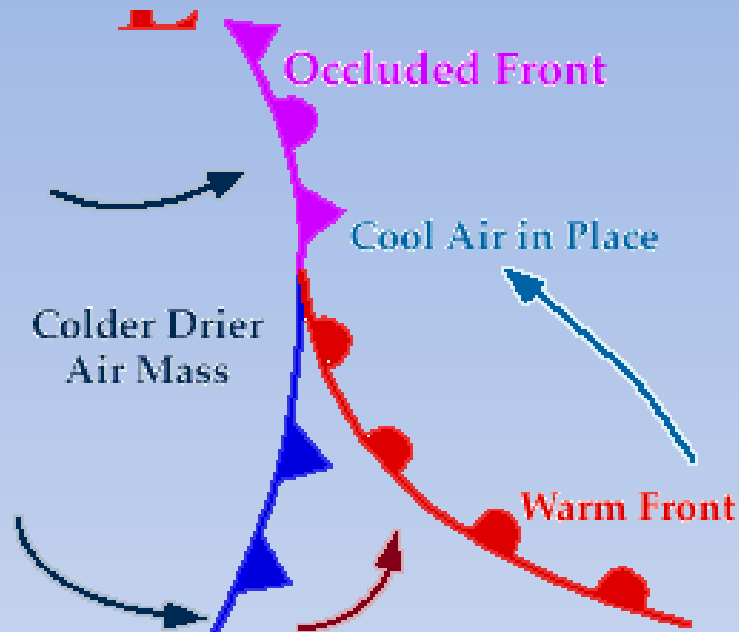


## Air Masses

a large dome of air which has similar **horizontal** temperature and moisture characteristics.? Why **horizontal**?

Vertically(with altitude) temperature usually drops and the amount of moisture varies. Within an air mass one finds similar temperatures and humidity along the same altitude

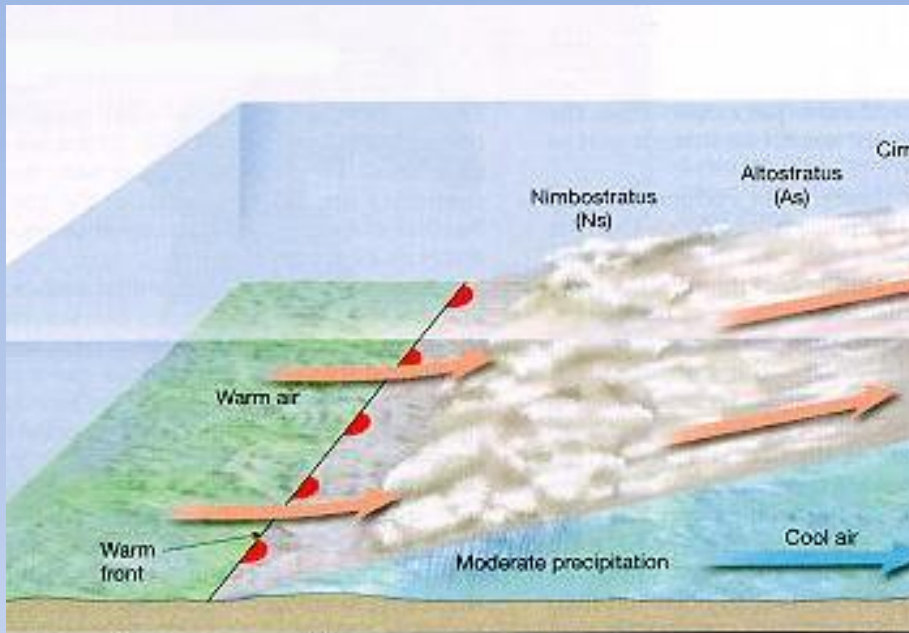
Air Mass Type	Temperature Characteristic	Moisture Characteristic
<b>Arctic or Antarctic (A or AA or cA)</b>	<i>Extremely cold</i> , formed over poles.	<i>Very dry</i> due to extreme cold.
<b>Polar Continental (cP)</b>	<i>Very cold</i> , having developed over sub-polar regions.	<i>Very dry</i> , due to the cold and having developed over land.
<b>Polar Maritime (mP)</b>	<i>Very cool</i> because of the high latitude but not cold, due to moderating influence of the sea and the warm ocean currents at these latitudes.	<i>Moderately moist</i> because of the cool temperature, but not as dry as polar continental air because of evaporation from the water surface.
<b>Tropical Continental (cT)</b>	<i>Very warm</i> because of the lower sub-tropical latitude of formation.	<i>Dry</i> because it formed over land
<b>Tropical Maritime (mT)</b>	<i>Very warm</i> because of the sub-tropical latitudes at which it forms.	<i>Very humid</i> because of the warm tropical waters below.
<b>Equatorial (E)</b>	<i>Hot.</i>	<i>Extremely humid.</i> Continental is not differentiated from maritime because much of equatorial land is covered with humid tropical rainforests.



## Fronts

A front is a boundary between air masses. Why are they important?

They are responsible for much of our weather.



Warm front produced as warm air glides up over a cold air mass.

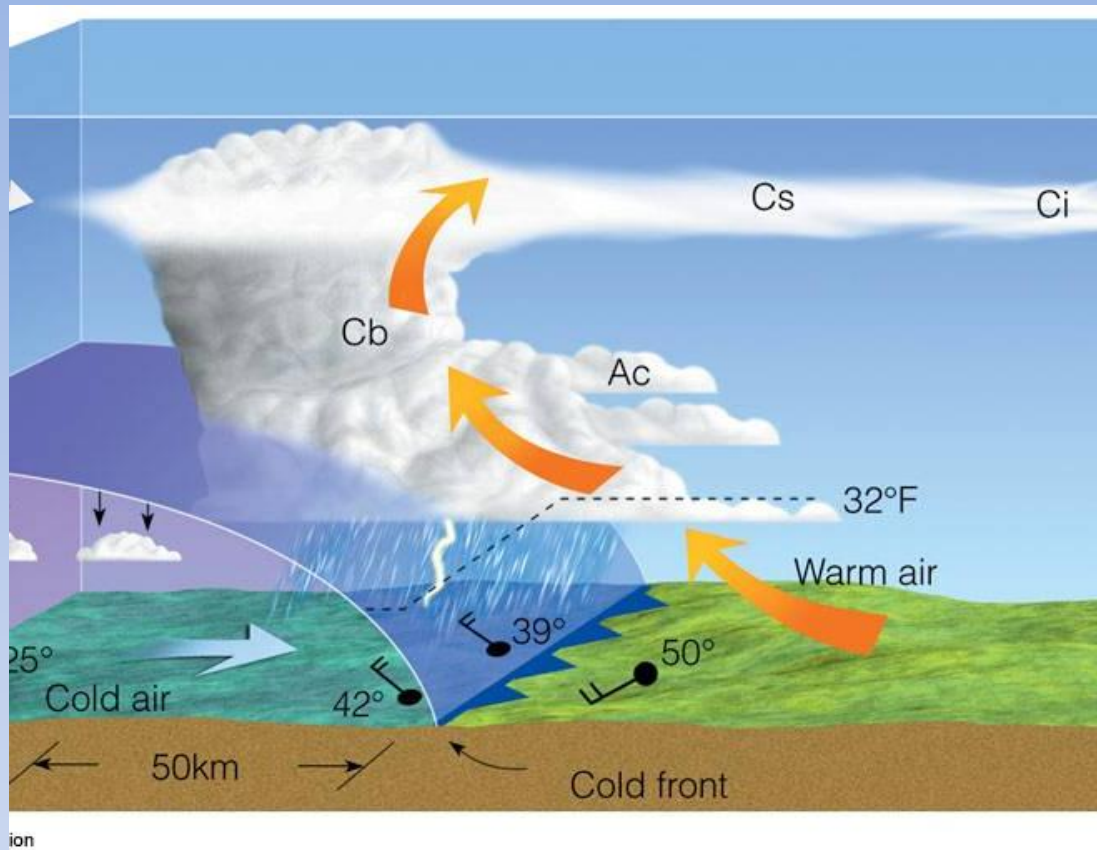
## Warm Front

Why causes precipitation to occur here?

It's caused by the contact between warm and cooler air.

Why are these not associated with storms?

There's a slow rate of advance and a less steep slope between air masses, so they tend to have moderate precipitation spread out over a broad area.



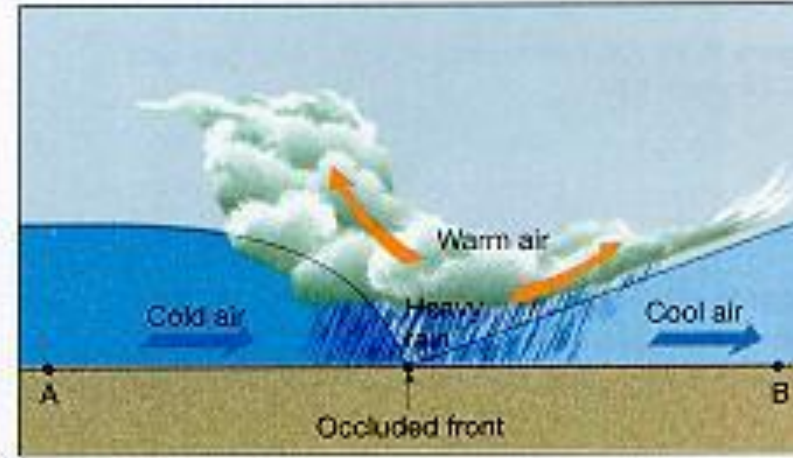
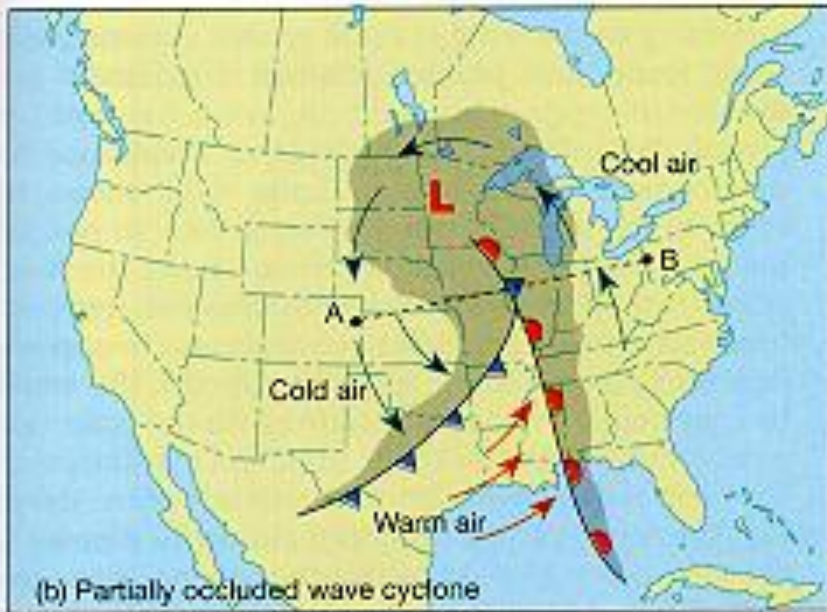
## Cold Front

Cold fronts have narrower and steeper slopes. Because of their steep slope, air rises quickly, condenses and cause large rain storms but they are limited to a certain area.





**Cumulonimbus from Cold Front**



## Occluded Front

An **occluded front** is formed when a cold front overtakes a warm front.

Thunderstorms are possible. But often, they feature heavy rain without lightning.



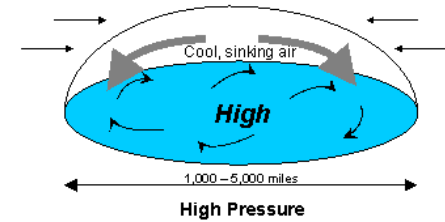
## Cyclones

Cyclones are huge revolving storms caused by winds blowing around a central area of low atmospheric pressure. (low pressure is caused by warm rising air pushing against the usual downward force)

In the **northern hemisphere**, severe cyclones are called hurricanes or typhoons and their winds blow in an **anti-clockwise** circle.

In the southern hemisphere, these tropical storms are known as cyclones, whose winds blow in a clockwise circle.





## Anticyclones

Areas of sinking air which result in high pressure are called anticyclones or high pressure systems. (sinking force is in same direction as weight of air, leading to high pressure)

High pressure systems have small pressure differences (the air pressure doesn't change rapidly). This means that the winds are gentle. As the air sinks, it warms up, leading to warm and dry weather. Anticyclone winds move clockwise in the Northern hemisphere. In the south, their winds move anticlockwise.

Anticyclones are much larger than depressions and can lead to many days or weeks of settled and calm weather. Anticyclones often block the path of depressions, either slowing down the bad weather, or forcing it round the outside of the high pressure system.



## **Recipe for Tornado**

- 1) Large thunderstorm
- 2) Winds from opposite directions
- 3) Strong updraft in thundercloud