

Air Masses and Fronts

I. Definition -

- An air mass is a large body of air with similar characteristics of moisture and temperature throughout.
- While you are in an air mass, your weather will remain relatively constant
- When you change from one air mass to another, you will experience a change in weather.
- Air masses in our area tend to move from West to East because of the planetary winds.
- The position of the Jet stream (upper atmosphere wind current) can help steer air masses in our latitudes.

II. Air Mass Formation

- Air masses form when air gets stuck (stagnates) over a surface for an extended time period
- The surface which an air mass forms over is called the **source region**.
- Air masses are named for the source region they form over.

Name	Symbol	Characteristics
maritime		
continental		
tropical		
polar		
arctic		

	Characteristics	Source Region Example		Characteristics	Source Region Example
cP			cT		
mP			mT		
cA					

III. Fronts

- Fronts are the boundaries between air masses.
- When a front passes you experience a change in weather because you are going from one air mass into another with different characteristics of temperature and moisture.
- Air masses do not mix well because they have different densities.
- Colder air masses are denser so they stay closer to the earth's surface.
- At fronts warm less dense air rises, so cloud formation happens at most fronts.
- Passage of most fronts will cause some form of precipitation to occur.

IV. Types of Fronts

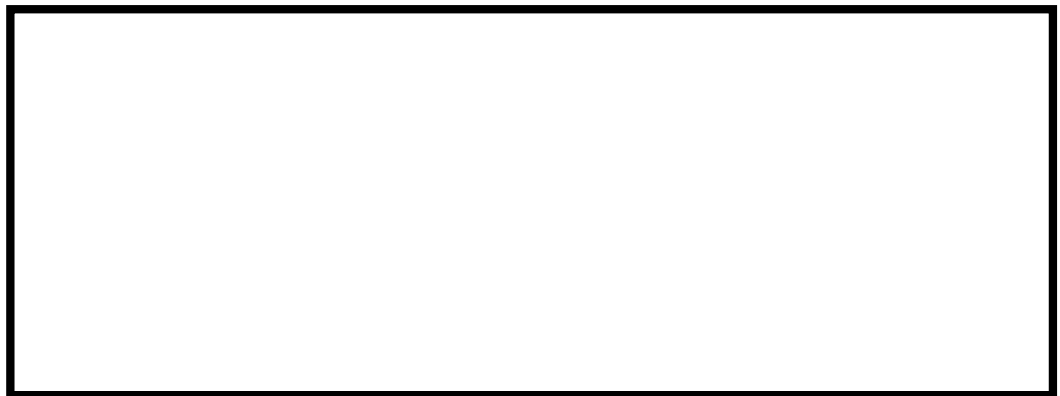
A. Cold Front

A faster moving cold air mass (cP) pushes under a slower moving warm air mass(mT).

Cold fronts tend to move faster than warm fronts.

Symbol

Drawing



Forecast

As the front approaches

When the front hits

After the front passes

B. Warm Front

A warmer less dense air mass (mT) rises over colder more dense air mass (cP).

Warm fronts tend to move slower than cold fronts

Symbol

Drawing



Forecast

As the front approaches

When the front hits

After the front passes

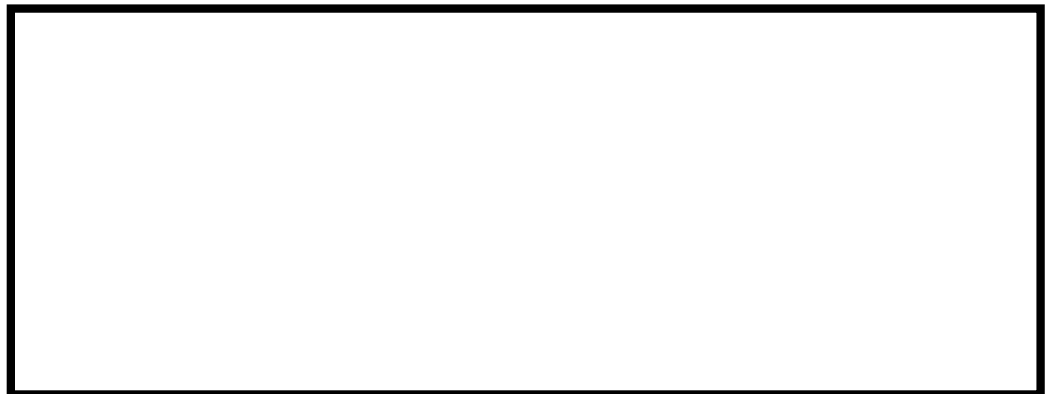
C. Stationary Front

Air masses slide past each other.

Stationary fronts tend to stay in the same location

Symbol

Drawing



Forecast

D. Occluded Front

A faster moving cold front runs into a slower moving warm front.

Stationary fronts form in the center of Low Pressure cyclonic storm systems

Symbol

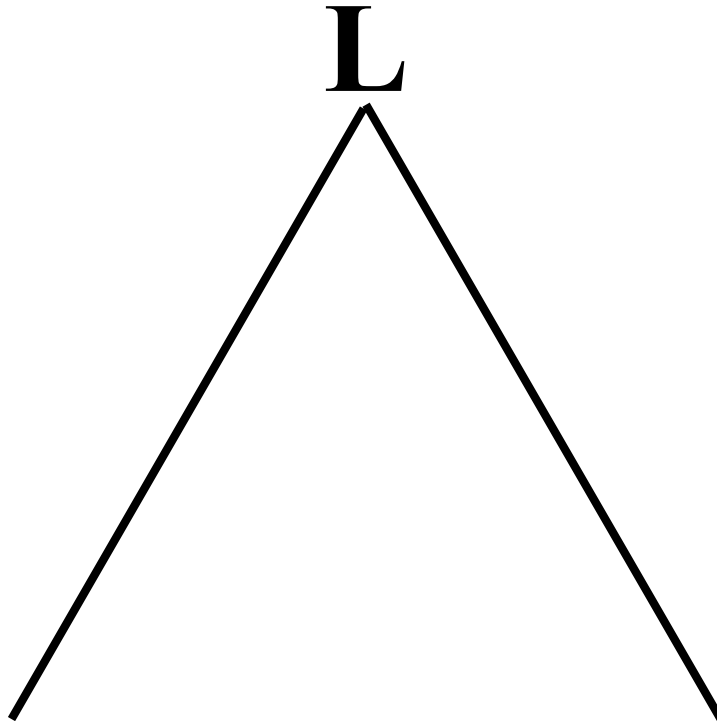
Drawing



Forecast

V. Mid latitude cyclonic (Low Pressure) Storm Systems

In our area, the major storm systems are Low Pressure Storms



Cross Section through warm sector of Low Pressure



Tracking and Changes in Low pressure storm systems.

- Low pressure storms tend to move west to east because of the planetary winds.
- The cold front moves faster than the warm front so eventually an occluded front may form in the center of the Low.

