

Name: _____
Air Masses and Fronts Notes + Review

Earth Science

Date: _____

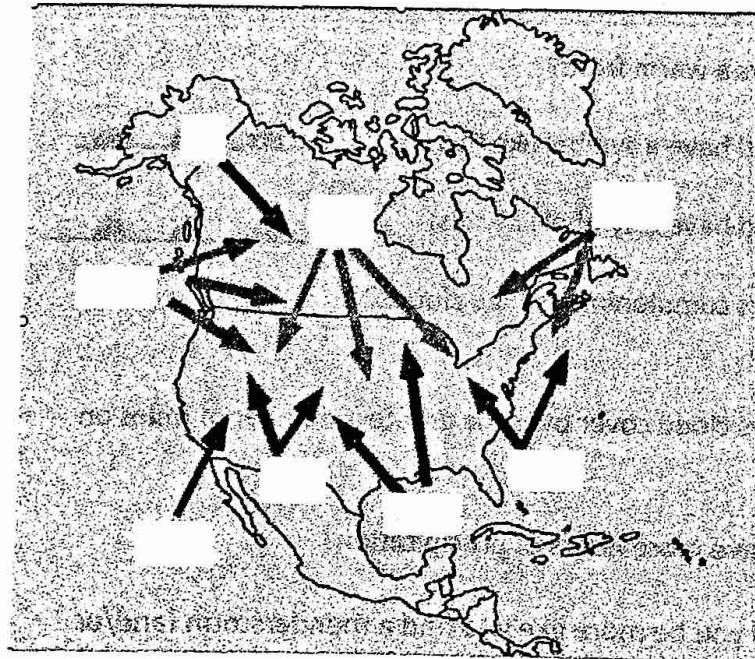
Air Mass

- Large body of air in troposphere that has similar **temperature** and **humidity**
- Classified according to where they originate (**source region**)

Source Regions of Air Masses – Categorized by Temperature and Moisture
Match the following terms with their descriptions.

- | | |
|---------------------------------|-------------------------|
| _____ 1. Continental | a) warm/hot |
| _____ 2. Maritime | b) extremely cold |
| _____ 3. Arctic | c) Cold and dry |
| _____ 4. Polar | d) over land (dry) |
| _____ 5. Tropical | e) cold |
| _____ 6. Continental Polar (cP) | f) Warm and moist |
| _____ 7. Maritime Tropical (mT) | g) over the sea (moist) |

Typical North American Air Masses – Use ESRT page 13



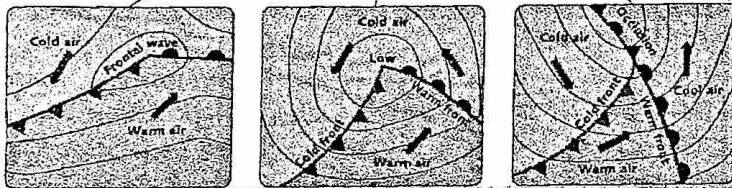
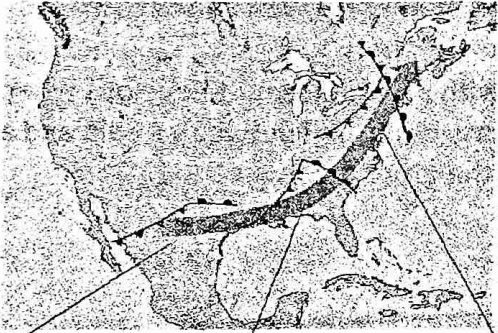
Front

- **Boundary** that separates opposing air masses
- Less dense air is forced to rise over “**mountain**” of denser air
- Source of most of the country’s **precipitation** because of unstable air

Storms Notes

- Storms are violent **LOW** pressure systems
- Rotate counterclockwise in N. Hemisphere due to Coriolis Effect
- In the United States, storms generally travel **WEST** to **EAST** because of global winds (westerlies)

Mid-latitude Cyclonic Storms



Blizzards = Mid-latitude storm occurring in winter

- Very high winds, very low temperatures, and falling/blowing snow

Thunderstorms

- Form in warm, moist, unstable air that rises (updrafts) → towering cumulonimbus clouds
- Causes heavy rain/hail, lightning (discharge of electricity), and thunder (lightning heats air and expands explosively)

Tornadoes = Violently rotating column of air that hangs down from thunderstorm clouds

- Center of funnel (vortex) has extremely low pressure causing extremely strong winds
- Relatively small and short-lived (minutes to hours)
- Damage measured with Fujita scale
- Tornado Location = "Tornado Alley" in central U.S.

Hurricanes

- Structure of a hurricane:

- Eye – central area of calm weather surrounded by dense thunderstorms

- A hurricane's birth: Ingredients

1. Weather disturbances – Thunderstorms off the coast of Africa
2. Warm Water -- Sea surface temperatures of 80°F or higher is the fuel; Hurricanes occur from June – November (**Hurricane season**) in lower latitudes
3. Coriolis effect
4. Consistent wind speed and direction -- Upper level winds in the same direction as the low pressure system

- Damage

- Most damage done on Eastern side of hurricane (Counterclockwise winds in same direction of hurricane's movement)
- Storm Surge -- Height of incoming water above normal high tide; Surge of water produced by the winds of the incoming hurricane causes major damage
- Leading cause of death from hurricanes is FLOODING
- Strength measured with the Saffir-Simpson Scale (1=lowest, 5=highest)
- In the United States a hurricane's path is determined by global winds (travels west below 30°N, then to the east above 30°N)

- A hurricane's death

1. Move over colder ocean waters
2. Move onto land
3. Large scale upper level winds are unfavorable

- After a hurricane passes air pressure increases and wind velocity decreases