Physical Geography Chapter 7-Part I

Air mass – large body of air, at times sub continental in size that moves over Earth's surface with distinguishable characteristics.

Source Region – place where the air mass originates

Defined by a letter code (two letters):

First Letter- Source Region – Land (c)
- Water (m)

Second Letter- Region
- Polar (P)
- Tropical (T)
- Equatorial (E)
-Arctic (A)

Table 7.1 Types of Air Masses

Modifications

k- if the air mass is colder than the surface over which it passes the surface will heat the air mass from below. instability (Bigger lapse rate)

*mTk- originating of Gulf of Mexico moves over warm land in summer MTK

w- if the air mass is warmer than the surface over which it passes, the surface will cool the air mass – more stable, less lapse rate: mTw

cA – source frozen surface of Arctic Ocean
- Extremely cold, very dry, very stable
- Rarely affects U.S.

cP – source North-Central N.A.
- Cold, very stable air
- rarely affects western U.S. (b/c of the mountains)

mP – cold and damp, unstable in general
- generally cloudy, precipitation (Pacific NW)
- Atlantic side-currents push it away - Nor easter

mT – Gulf of Mexico, subtropical Atlantic, warm and humid
-influences the weather of the US a lot
-fairly stable, although less stable on the western sides of oceans

mE – Maritime Equatorial
-Never affects U.S.
-ascending air, high moisture content

**Fronts**: surfaces of discontinuity

Cold Front: occurs when a cold air mass moves into a warm air mass.

- -narrow front
- -can be violent
- -most severe precipitation
- -shorter lasting

Warm Front: occurs when a warm air mass moves into a cold air mass.

- -wider front
- -longer lasting, but less violent Precipitation

Stationary Front: air masses are moving parallel, or have converged but not moved into each other.

Occluded Front: occurs when a cold front overtakes a warm front.

Front Symbols:

Atmospheric Disturbances

1) Cyclones and Anticyclones (Figure 7.5)

The Mid-Latitude Cyclone (Figure 7.7)

Veering Wind Shifts: the changing direction of wind in a clockwise direction.
>Indicates that you are south of a cyclone's center.
Backing Wind Shifts: the changing direction of wind in a counterclockwise direction.
>Indicates that you are north of a cyclone's center.

Weather Phenomena

1) Thunderstorms

a) Convective: affected by solar heating, which incr3eases the lapse rate, amking the air more unstable.

b) Orographic: controlled by the presence of mountains.

c) Frontal: usually a product of cold fronts. Severe updrafts can occur.

2) Tornado: is “actually a small, intense cyclonic storm of very low pressure, violent updrafts, and converging winds of enormous contrast.”

-80% by thunderstorms and the MLC.
-20% y Hurricanes that make it to land
-most common in the US
-Classified by the Fujita Scale (Tqble 7.2)

3) Easterly Wave: a weak tropical disturbance.

4) Polar Outbreak: brings polar air into the lower latitudes.

5) Hurricanes: severe tropical disturbances that originate over water and possess great destructive power.

-Accompanied by a storm surge.
-Also called typhoons, cyclones, and willi-willis.
-Classified via the Saffir-Simpson Scale