**Air Masses and Fronts:**

**Unit 3: Interactions of the Atmosphere and Hydrosphere**

**Mini-Unit:** Weather

**Goal 3: The student will demonstrate the ability to explain how the transfer of energy affects the water cycle.**

Objectives – The student will be able to:

* + Identify causes of vertical air motion and their effects on cyclones and anticyclones

**Textbook:** Unit 7, Chapter 24, pg. 600 & Chapter 25, pg. 630

**Air Masses:**

Air moves from areas of high pressure to low pressure, which are caused by the uneven heating of the Earth’s surface

Air Mass: A large body of air throughout which temperature and moisture content are similar

* Take on the characteristics of the area over which they sit and remain stationary

Types of Air Masses:

* Classified by their temperature and moisture content which are dependent upon the area over which they formed
1. Continental – dry air masses that formed over land (c)
2. Maritime - moist air masses that formed over water (m)
3. Tropical – warm air masses that formed over warm areas (T)
4. Polar – cold air masses that formed over cold areas (P)

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| --- | --- | --- | --- |
| **Air Mass** | **Symbol** | **Formed Over** | **Weather** |
| Continental Tropical | cT | Warm land | Warm and dry |
| Continental Polar | cP | Cold land | Cold and dry |
| Maritime Tropical | mT | Warm water | Warm and wet |
| Maritime Polar | mP | Cold water | Cold and wet |



**Fronts:**

Fronts:

 Boundaries between air masses; dense cold air does not mix with less dense warm air; do not exist in tropics because no real temperature differences

Cold Front:

 The front edge of a moving mass of cold air that pushes beneath a warm air mass like a wedge; results in precipitation if warm air mass is humid, severe storms if cold front moves quickly





Warm Front:

 The front edge of advancing warm air mass that replaces cold air with warmer air; generally results in precipitation over a large area





Stationary Front:

 A front of air masses that move either very slowly or not at all, weather similar to a warm front



Occluded Front:

 A front that forms when a cold air mass overtakes a warm air mass and lifts the warm air mass of the ground and over another air mass



**Cyclones and Anticyclones:**

Cyclone: A low pressure storm system that is characterized by rotating wind that moves towards the rising air of the central low pressure region



* Usually lasts several days
* Spin counter clockwise
* Follow storm tracks or routes

Anticyclones: Flows outward from a center of high pressure in a clockwise motion

* Bring dry weather because of sinking air in the middle does not promote cloud formation





