**How’s The Weather up There? – NCFE Review**

**Atmosphere**

Define **atmosphere** - \_\_\_a layer of gases(air) covering Earth\_\_\_\_\_\_\_\_\_\_\_

As \_\_\_altitude\_\_\_\_\_\_\_ increases, density decreases.

Composition: Mix of gases & percentage (%)

1. Nitrogen – 78%

2. Oxygen – 21%

3. Other 1% (Argon – 0.9%, Carbon Dioxide - .04%)

* \_\_\_\_\_\_\_ Temperature\_\_\_\_\_\_\_\_\_\_\_ is used to **define** the layers of the atmosphere.

|  |  |  |
| --- | --- | --- |
| **Layer of Atmosphere** | **Temperature** | **Air Pressure** |
| Troposphere | **Decreases** with altitude (b/c further away from Earth’s surface) | decreases |
| Stratosphere | **Increases** w/ altitude (b/c of ozone) | decreases |
| Mesosphere | **Decreases** w/altitude | decreases |
| Thermosphere | **Increases** w/ altitude b/c of solar activity | decreases |
| Exosphere |  | decreases |

Identify 3 human activities that produce chemicals that destroy the ozone layer.

\_\_\_using electricity\_\_\_\_ , \_\_\_transportation use\_\_\_, \_\_\_\_campfire\_\_\_

\_\_\_Humidity\_\_\_ is the amount of water vapor in the air.

Explain how the ***Coriolis Effect*** affects wind.

It causes global winds to curve. Wind appears to bend to the right in the Northern Hemisphere. In the Southern Hemisphere, winds appear to bend to the left.

Warm air holds \_\_\_\_\_\_more\_\_\_\_\_\_\_ (more or less) water vapor.

Cool air holds \_\_\_\_\_\_\_\_\_\_\_less\_\_\_\_\_\_\_\_\_\_\_\_ (more or less) water vapor.

* There is a \_\_fixed\_\_ amount of water on Earth that is constantly moving and changing forms through the water cycle.
* All of this water is known as the \_\_\_\_\_hydrosphere\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Clouds**

* 3 Main types & descriptions:
  + \_\_\_cirrus\_\_\_\_\_\_\_ - **appear feathery or wispy; made of ice crystals;**

**form at high altitudes**

* + \_\_\_stratus\_\_\_\_\_\_\_\_ - **spread out; form in flat layers; mid to low**

**altitudes**

* + \_\_\_cumulus\_\_\_\_\_\_\_\_\_\_ - **heap or pile; puffy; can be very tall &**

**produce rain; low to mid altitudes**

**Air Masses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of Air Mass** | **Abbreviation** | **Description** | **Weather** |
| Maritime Tropical | mT | Warm, wet air masses | Influence weather along the entire east coast.  Summer: thunderstorms & summer showers  Winter: heavy snow or rain |
| Maritime Polar | mP | Cold, wet air masses | Influence the weather of the west coast more so than that of the east coast.  Summer/Winter: fog, rain, & cooler temperatures |
| Continental Tropical | cT | Warm, dry air masses | Influence the weather of the southwestern part of the US & southern Great Plains (Kansas, Oklahoma, Texas, Iowa).  Summer: Hot, dry |
| Continental Polar | cP | Cold, dry air masses | Winter: Clear, cold, dry  Summer: Potential for storms due to interaction with Maritime tropical air moving up from the Gulf of Mexico. |

**Fronts**

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Name** | **Description & Associated Weather** |
| http://www.hpc.ncep.noaa.gov/images/cold_front.png | Cold Front | * **Cold front** - a cold front marks the advance of colder air undercutting warm air. The gradient of the cold front is steeper than that of a warm front, and the rainfall is usually heavier. Thunderstorms sometimes form along a cold front. Then cool dry air behind it. |
| http://www.hpc.ncep.noaa.gov/images/warm_front.png | Warm Front | * **Warm front** - when a warm moist air mass rises above a cold air mass, a warm front forms(can bring steady rain or snow). The gradient of the front is very shallow. Warm fronts occur at the forward edge of a depression (a low-pressure system). |
| http://www.hpc.ncep.noaa.gov/images/occluded_front.png | Occluded Front | * + - A warm air mass is caught between 2 cooler air masses. |
| http://www.hpc.ncep.noaa.gov/images/stat_front2.png | Stationary Front | * **Stationary Fronts** - If air masses maintain their warm/cold identity but don't exert any displacement force, a stationary front is formed. Cloudy weather can cover the area for days. |

**Pressure Systems**

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| --- | --- | --- |
|  | **Description** | **Associated Weather** |
| High-Pressure System (H) | a whirling mass of cool, dry air | Fair weather and light winds |
| Low-Pressure System (L) | a whirling mass of warm, moist air | Storms and strong winds |

**Storms**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **How It Forms** | **Season** | **Rating Name/Scale** |
| Hurricanes | Only forms as a low-pressure area over warm water (80° or higher). At a low-pressure area, warm, moist air rises and forms clouds. More air is drawn in as winds spiral inward toward the areas of low pressure. | late July to early October. | Saffir-Simpson Scale: Category 1-5 |
| Thunderstorms | moist, unstable air and lift. You need moisture to form clouds and rain. You need unstable air that is relatively warm and can rise rapidly. Finally, you need lift. This can form from fronts, sea breezes or mountains. | Typically form on hot, humid afternoons or when a fast moving warm front over takes a slower cold front. |  |
| Tornadoes | Warm, moist air flows in at the bottom of a cumulonimbus cloud & rapidly moves upward generating a low pressure area inside the cloud. | Typically form during the Spring & Summer | Fujita Scale: F0 – F5 |

**Multiple Choice Practice Questions**

1. A student is given a balloon filled with air and tied. Which answer best explains what would happen if the balloon were placed in a freezer?  
     
   a. The air molecules in the balloon would spread out and the balloon size would

increase.  
b. The air molecules in the balloon would condense and the balloon size would shrink.  
c. The air molecules will freeze and the balloon will pop.  
d. There will be no change in the balloon.

1. The layers of the atmosphere are classified according to changes in

a. altitude

b. air pressure

c. temperature

d. pollutants

1. A golfer is out on the golf course. She notices that a large, towering puffy cloud seems to be approaching quickly. The top of this cloud seems to be sheared-off flat, while the bottom is dark in color. Which of the following is the most immediate hazard to the golfer?
   1. Getting wet from rain
   2. Being struck by lightning
   3. Getting caught in a tornado
   4. Being pelted by hail stones
2. Which statement is ***true*** about the role of the atmosphere?
   1. Keeps us from floating into space.
   2. Keeps us the right temperature to sustain life.
   3. The percentage of water vapor never varies
3. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ front is described as a mass of warm air trapped between two colder air masses.
   1. Cold
   2. Occluded
   3. Stationary
   4. Warm
4. Tornadoes form in what type of cloud?
   1. Cirrus.
   2. Cumulonimbus.
   3. Nimbus.
   4. Stratus.
5. How are clouds classified?

a. color and size

b. shape and size

c. appearance and altitude

d. size and altitude

1. About how many cloud water molecules must condense does it take to make one single raindrop?

a. one

b. hundreds

c. thousand

d. millions