Layers of the Atmosphere Virtual Lab

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_

Website: **http://bit.ly/ESS-AtmosphereLayers**

Procedure:

1. Record in the Table the Atmospheric Data – Density, Pressure, & Temperature at sea level (0 km).

* Drag the red slider along the altitude measurement bar and select another altitude.
  + If you select an altitude < 30 km above sea level, a balloon will appear.
  + If you select an altitude > 30 km above sea level, a rocket will appear.
    - Rockets are used to collect atmospheric data at altitudes greater than 30 km above sea level because the low atmospheric pressure at high altitudes causes balloons to burst.
* Click the Launch button to launch the balloon or rocket.
* Observe the balloon or rocket being launched into Earth´s atmosphere, peaking at the selected altitude, and then returning to Earth by parachute.

1. Repeat the Virtual Lab until you have collected data in the Table for each of the eleven altitudes. As you collect data, watch for trends in atmospheric pressure, density, and temperature within the four layers of Earth´s atmosphere.
2. If the Show Phenomenon button is enabled, click it to learn about a meteorological or astronomical phenomenon that occurs at or near the selected altitude. To see the phenomenon again, click its label.

**Atmospheric Data Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Altitude (km) | Density  (% of sea level density) | Pressure  (Pa) | Temperature  (oC) | Phenomena |
| 0 |  |  |  |  |
| 10 |  |  |  |  |
| 25 |  |  |  |  |
| 50 |  |  |  |  |
| 75 |  |  |  |  |
| 100 |  |  |  |  |
| 150 |  |  |  |  |
| 200 |  |  |  |  |

1. Complete the questions.
   1. Which layer of the atmosphere do you live in?
   2. What kinds of meteorological phenomena can be found in this layer?
   3. What is the ozone layer? In which layer of the atmosphere is it found?
   4. What is the importance of the ozone layer to life on Earth?
   5. Describe the pattern of air density changes within layers of the atmosphere. Describe the pattern of air pressure changes within layers of the atmosphere.
   6. What is the relationship between air density and air pressure?
   7. Draw what more dense air looks like, and what less dense air looks like. Use N2, O2 H2O, CO2

* 1. Describe the pattern of temperature changes within the layers of the atmosphere. Why do you think temperature changes follow this unique pattern?