 Atmosphere MuralC:\Users\thollow\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\2LREU78T\MC900297967[1].wmf

**Objective:** Students will discover the altitude extent of Earth’s atmosphere, layers within atmosphere, temperature and air pressure changes, and common occurrence, both natural and man-made.

**Material:** Construction paper (11x17), meter stick/ruler, colored pencils and textbook.

**Procedure:** **Reference your Earth Science Textbook *Chapter 17 The Atmosphere: Structure and Temperature* to complete this assignment***.*

1. Obtain material for the project. Place your name and period on the back of your paper, near the top.
2. Turn paper over and position paper with long part vertically. In the middle at the top in bold letters **TITLE OF MASTERPIECE**. At the bottom of the paper, draw a straight line across the paper, no more than 1 cm from the bottom of the page. Label the line “Earth’s Surface.”
3. On the right side of your mural, create two vertical columns from top to bottom about 2 cm wide. Label one column **LAYERS** and the other **ALTITUDE**.
   1. For the altitude column mark each cm to the top and label the heights above Earth’s surface. The scale is 1cm = 4 km in altitude.
   2. For the layers column, use the altitude column to estimate and label four layers of atmosphere (troposphere, stratosphere, mesosphere, and thermosphere). Draw horizontal lines across the entire width of the paper. Label the layers of the atmosphere within the “layers” column.
4. On the left side of your mural, draw two vertical columns from top to bottom about 2 cm wide. Label one column **TEMPERATURE** and the other **AIR PRESSURE**.
   1. For temperature, indicate whether or not the temperature is rising or falling within each layer and list the temperatures (*hint: use figure 6 on page 480).*
   2. For air pressure, use dots or shading to indicate changing pressure within Earth’s four layers.
5. Draw, label and color all of the following objects at the proper altitude:

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| Mt. Everest - 8 km tall | Highest hot air balloon – 5 km |
| Cumulus clouds - 2 km in altitude | 747 Jet Airplane or Airbus – in jet stream |
| Stratus clouds - between surface and 3 km. | Rainbow – in troposphere starting at surface up to 18 km. |
| Cirrus clouds – between 12 and 15 km. | Aurora borealis – in the upper thermosphere. |
| Jet stream – 10.5 km | Meteorites- in the troposphere |
| Migrating Canada geese – near jet stream. | Meteors-lower layer of thermosphere of just above the mesosphere. |
| Ozone layer- between 10 and 50 km (but only 300 Dobson units thick (about 3 mm) | Add two other relevant objects to your Atmosphere Mural |

**Follow-up questions**. Answers should be placed on the back of your mural. Refer to pages 481-487 in Earth Science text. Use sentences to answer each question marked with an asterisk (\*). *Do not start sentences with because.*

1. *What is the coldest layer, include the temperature in Celsius?*
2. *What the hottest layer, include the temperature in Celsius?*
3. *Which layer contains the majority of air in the atmosphere (hint: It is the same one we live in, pg. 481.)?*
4. Why does earth have seasonal changes (explain with a diagram, pg. 481-482)?
5. Explain why Montana has day and night (pg. 481).\*
6. Describe conduction and give an example (pg. 483).\*
7. What is convection (support your answer with a diagram) (pg. 484)?
8. Read about radiation on page 485 and 486. Explain three different results from sun’s radiation striking an object.\*
9. Refer to Figure 12 on page 486. We have seen that 5% of all incoming solar radiation is reflected back to space by land-sea surface. Assume that value is for a green, well-vegetated portion of the surface. How would the amount of solar radiation reflected by the surface be different if the ground was covered in ice and snow?\*
10. Refer to Figure 12 on page 486. What would happen to Earth’s radiation if worldwide cloud cover increased to nearly 100%?\*

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| **Atmosphere Mural Grading** | | |
| Graded procedure | Points Received | Points Possible |
| Layers column |  | 5 |
| Altitude column |  | 5 |
| Temperature column |  | 5 |
| Air pressure column |  | 5 |
| Mural objects |  | 10 |
| Questions |  | 10 |
| Neatness/creativity |  | 10 |
| **Total Points** |  | **50** |