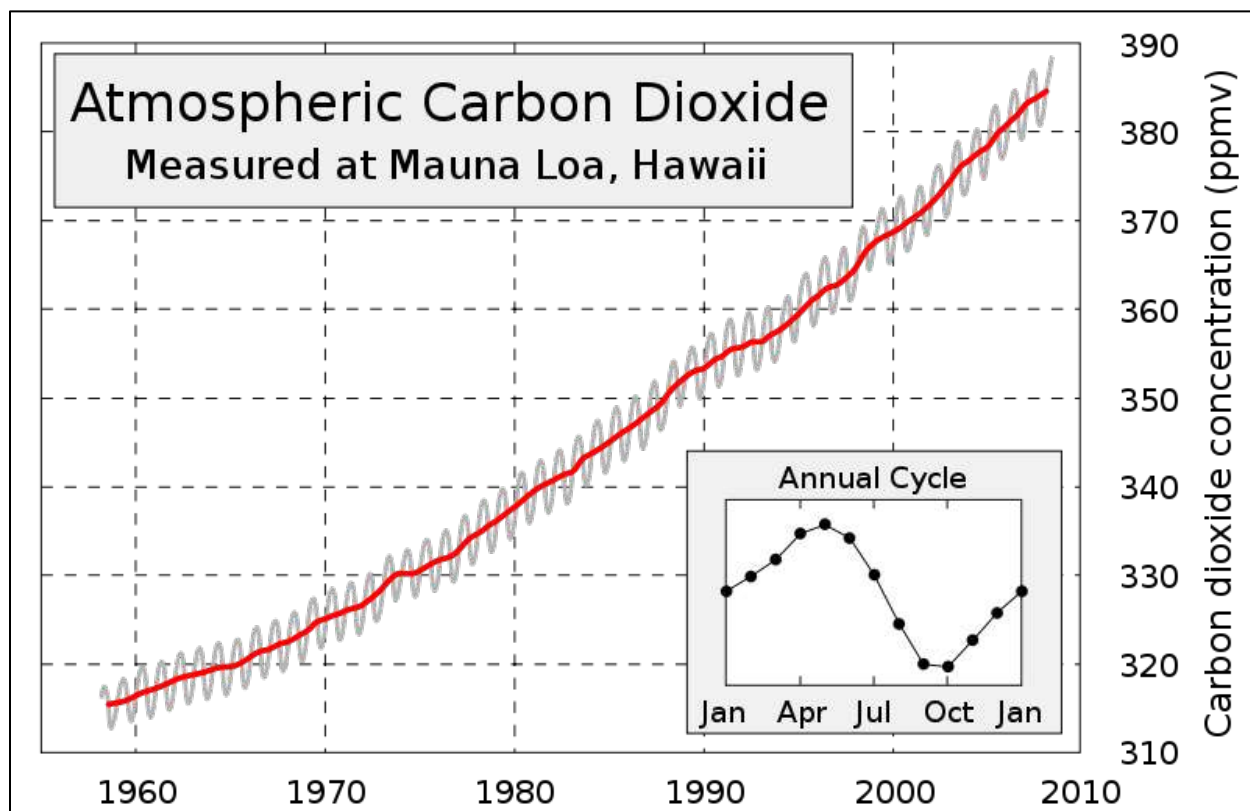


Name \_\_\_\_\_ Teacher \_\_\_\_\_ Date \_\_\_\_\_

## Activity 4.5: The Upward Trend Worksheet

You've seen this graph before, right? We learned that the seasonal flux of carbon between the atmosphere and biomass pools causes the small rise and fall each year (the light grey line). Use this worksheet to record your ideas about what causes the upward trend.



The Keeling Curve: Atmospheric CO<sub>2</sub> concentrations measured at Mauna Loa Observatory

1. **What does the upward trend tell you?** What does this part of the graph mean? Describe the trend in your own words.



Human Energy Systems Unit, Activity 4.5  
Carbon: Transformations in Matter and Energy  
Environmental Literacy Project  
Michigan State University

2. Remember the second rule: **Carbon cycles!** This means that if CO<sub>2</sub> concentration is increasing in the atmosphere, then the carbon atoms must be coming from somewhere else. Where do you think this carbon is coming from that causes this increasing trend?

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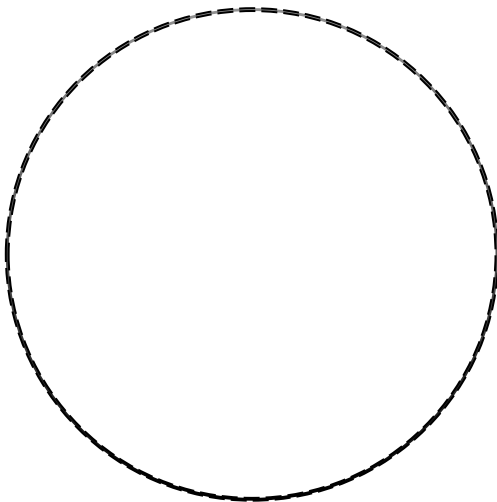
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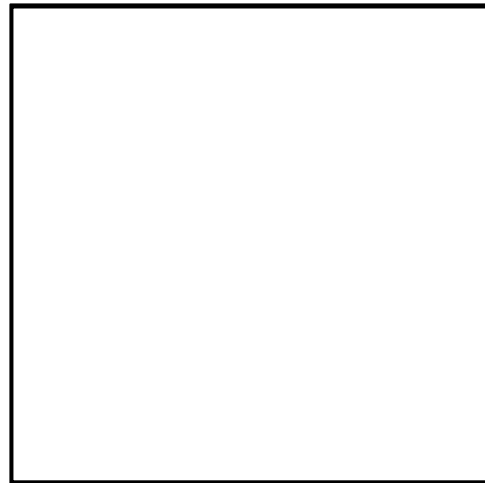
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3. The dark line in the Keeling Curve above tells us something about how carbon atoms are moving in the world. Draw arrows to show how carbon atoms are moving from pool to pool to account for both the seasonal cycle and the upward trend.

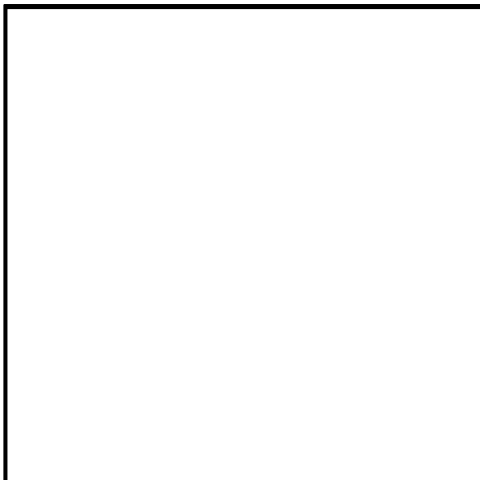
**Atmosphere Inorganic Carbon Pool**



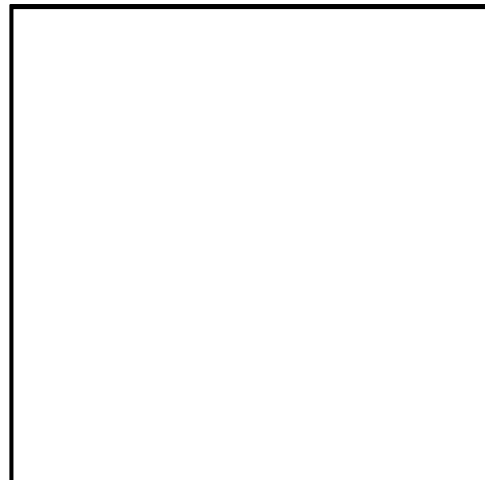
**Biomass Organic Carbon Pool**



**Soil Organic Carbon**



**Fossil Fuel Organic Carbon**



4. Which carbon transforming process is causing the upward trend in the Keeling Curve?  
(Circle One)

Photosynthesis    Biosynthesis    Cellular Respiration    Combustion    Digestion

Explain your choice. How does this carbon-transforming process cause the upward trend in the Keeling Curve?

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5. In this unit, we have discussed how energy use causes this upward trend. What are three ways humans use energy that cause carbon to enter the atmosphere?

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