

Name _____

Earth Science

Lab 4: Carbon Dioxide in the Atmosphere

Date _____

Table A shows the average concentration of carbon dioxide (CO₂) in the atmosphere in parts per millions (ppm) for each year since 1959. Table B shows the average value by months for two periods of five consecutive years between 1959 – 1963, and 2002 – 2006.

TABLE A			
YEAR	Average	YEAR	Average
1959	316.0	1983	342.8
1960	316.9	1984	344.2
1961	317.6	1985	345.9
1962	318.5	1986	347.2
1963	319.0	1987	349
1964	319.2	1988	351.4
1965	320.0	1989	352.9
1966	321.4	1990	354.2
1967	322.2	1991	355.5
1968	323.1	1992	356.3
1969	324.6	1993	357
1970	325.7	1994	358.6
1971	326.3	1995	360.6
1972	327.5	1996	362.4
1973	329.7	1997	363.5
1974	330.2	1998	366.5
1975	331.1	1999	368.1
1976	332.1	2000	369.4
1977	333.8	2001	371.1
1978	335.4	2002	373.2
1979	336.8	2003	375.8
1980	338.7	2004	377.7
1981	340.1	2005	379.7
1982	341	2006	381.9

TABLE B					
	1959	1960	1961	1962	1963
Jan	315.6	316.4	316.9	317.9	318.7
Feb	316.5	317.0	317.7	318.6	319.1
Mar	316.7	317.6	318.5	319.7	319.9
Apr	317.7	319.0	319.5	320.6	321.4
May	318.3	320.0	320.6	321.0	322.2
Jun	318.2	319.6	319.8	320.6	321.5
Jul	316.6	318.2	318.6	319.6	319.7
Aug	314.8	315.9	316.8	317.4	317.8
Sep	313.8	314.2	315.0	316.3	316.2
Oct	313.3	313.8	315.3	315.4	316.0
Nov	314.8	315.0	316.1	316.7	317.1
Dec	315.6	316.2	317.0	317.7	318.4
	2002	2003	2004	2005	2006
Jan	372.4	374.9	377.0	378.4	381.4
Feb	373.1	375.6	377.9	379.7	382.2
Mar	373.8	376.5	378.9	380.9	382.7
Apr	374.9	377.8	380.4	382.2	384.7
May	375.6	378.5	380.6	382.5	384.9
Jun	375.4	378.2	379.7	382.1	384.0
Jul	373.9	376.7	377.4	380.6	382.1
Aug	371.8	374.4	376.3	378.6	380.3
Sep	370.7	373.1	374.2	376.7	378.8
Oct	370.5	373.1	374.5	376.8	379.0
Nov	372.2	374.8	376.2	378.3	380.2
Dec	373.7	376.0	377.5	380.1	381.9

Source: U.S. Dept. of Commerce - National Oceanic & Atmospheric Administration – Earth System Research Laboratory: Global Monitoring Division, <http://www.esrl.noaa.gov/gmd/ccgg/trends/>

Procedure:

1. Using Excel, plot the data from **Table B**.
2. Create graphs to show two lines:
 - a. Line 1 - Data from 1959 – 1963
 - b. Line 2 – Data form 2002 – 2006

1. What is one conclusion you can draw from Table A?

2. During which month of each year was the CO₂ concentration in the air highest? _____
3. During which month was CO₂ the lowest? _____
4. What gas do green plants take from the air to make sugars and starches during photosynthesis? _____
5. What causes CO₂ concentration to decrease during the summer months?

6. What effect does the burning of fossil fuels (coal, oil, gasoline) have on CO₂ concentration of the air?

7. Give two reasons why CO₂ concentration increases during the winter months?
 - 1.
 - 2.
8. What effect is the destruction of forests likely to have on the CO₂ concentration of the air? Why?

9. Using Table A, determine to the nearest tenth the AVERAGE increase in CO₂ concentration over the ten year periods from:
 - a. 1959 – 1969 = _____ ppm (first 10 years in Table A)
 - b. 1996 – 2006 = _____ ppm (last 10 years in Table A)

What do your values above for “a” and “b” indicate about future levels of CO₂ concentration in the atmosphere?

10. Identify three changes that are expected to result from your answer for question 9?
 - 1.
 - 2.
 - 3.
11. List two ways in which the rate of change in the atmospheric CO₂ concentration could be reduced?
 - 1.
 - 2.