

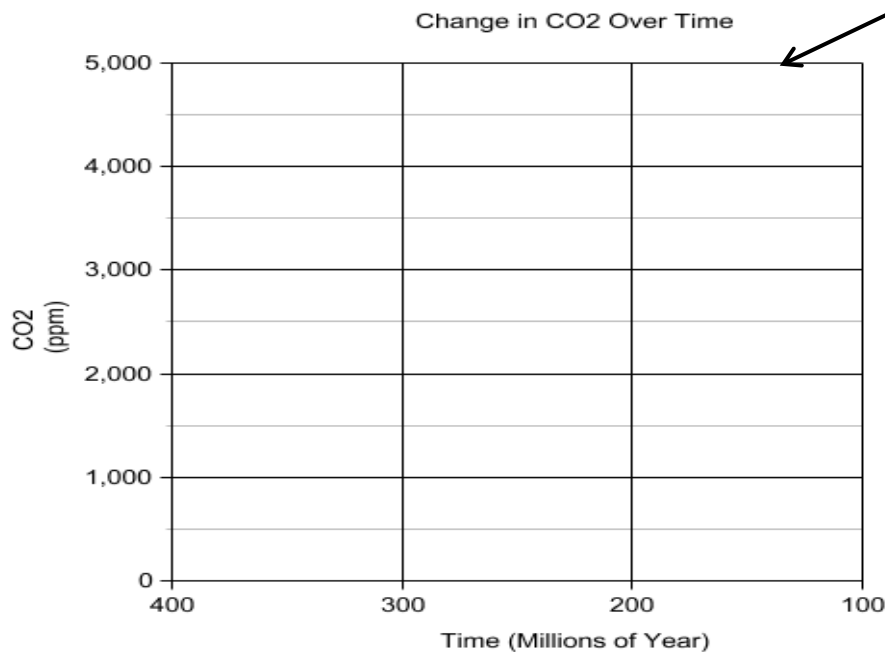
# CLIMATE CHANGE MODELS

## Activity 1 – Looking at the Numbers

CO<sub>2</sub> is measured in parts per million (ppm), which is the number of CO<sub>2</sub> molecules every million molecules in the atmosphere. Find the average of the CO<sub>2</sub> (ppm) for each period of time.

Millions of Year Ago	Source #1 CO <sub>2</sub> (ppm)	Source #2 CO <sub>2</sub> (ppm)	Average CO <sub>2</sub> (ppm)
400	3100	3300	
300	400	900	
200	4200	3600	
100	2100	1400	

Graph – Make a **line graph** to show the changes in CO<sub>2</sub> (ppm) over time. Please use the average CO<sub>2</sub> (ppm)



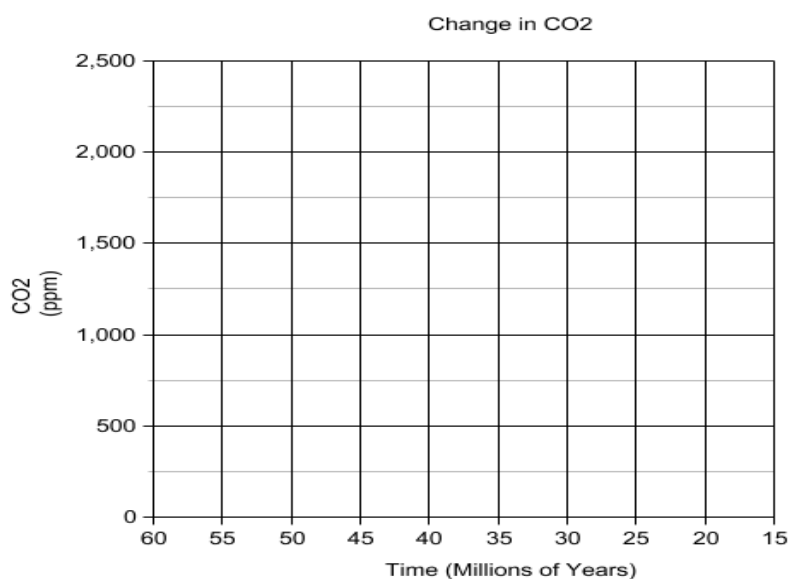
## Analysis Questions

1. What variable in the atmosphere is this graph showing?
2. Describe how this is a model.
3. When are CO<sub>2</sub> levels the highest?
4. When are CO<sub>2</sub> levels the lowest?
5. What pattern do you see in the line graph?

Scientists have even more information from more recent in times. Find the average CO<sub>2</sub> (ppm) of each period of time. (When doing the calculations, an “unknown” doesn’t represent a number, simply add up the 2 sources and divide by 2 to find the average when there is an unknown).

Millions of Years Ago	Source #1 CO <sub>2</sub> (ppm)	Source #1 CO <sub>2</sub> (ppm)	Source #1 CO <sub>2</sub> (ppm)	Average CO <sub>2</sub> (ppm)
60	1750	2100	Unknown	
55	850	875	1000	
50	Unknown	2200	1800	
45	600	650	1100	
40	600	1200	650	
35	1250	Unknown	1600	
30	Unknown	600	800	
25	1700	1000	Unknown	
20	650	900	475	
15	620	675	325	

**Graph** – Make a **line graph** to show the changes in CO<sub>2</sub> (ppm) over time. Please use the average CO<sub>2</sub> (ppm).

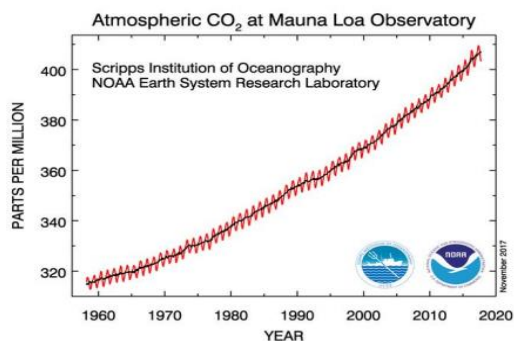


### Analysis Questions

1. When are CO<sub>2</sub> levels highest?
2. When are CO<sub>2</sub> levels lowest?
3. What pattern do you notice in this model?
4. How is this model similar to the first model?
5. How is this model different from the first model?

## Activity 2 – Tying it all Together

The Mona Loa Observatory in Hawaii has been collecting CO<sub>2</sub> in the atmosphere since 1965. Look at the graph below to help answer the analysis questions.



### Analysis Questions

1. What is similar between the 2 graphs you created and the Moana Loa graph?
2. What is different between the 2 graphs you created and the Mona Loa graph?
3. Each year the global CO<sub>2</sub> level increases by about 3.5 ppm. This increasing rate is faster than natural rates of the past, and there is strong evidence that humans are causing the rapid increase through the process of burning fossil fuels. Based on this information and the Earth’s past CO<sub>2</sub> levels, **explain why humans should be concerned about today’s rising CO<sub>2</sub> levels?**