

Carbon Dioxide: You're getting warmer!

Carbon dioxide is the most important of the Greenhouse Gases, or those gases which contribute to the Greenhouse Effect, even though it only makes up about 0.035% of all of the gases in the atmosphere! Carbon dioxide (CO₂) is one of the gases that scientist believe is contributing to Global Warming.

One way of determining how much carbon dioxide has been in the atmosphere in the past is by examining how much carbon dioxide has been preserved in the annual layers of the ice of polar regions, such as Antarctica and Greenland. The ice cores from the Vostok station (a Soviet base in Antarctica) show us a snap shot of the climatic variations of the last 160 000 years. Using these ice cores, we can also determine the average temperature of the air when the snow fell, by examining the concentration of deuterium, a heavy isotope of hydrogen in the ice core.

Materials

- Atmospheric carbon dioxide concentration data
- Graph paper

Method

1. Using the Atmospheric carbon dioxide concentration data, plot a graph of year versus concentration of carbon dioxide on some graph paper with the concentration along the left hand side.
2. On the same graph, plot a graph of the year versus the average global temperature.

Results and Discussion

1. What can you see happening to the level of carbon dioxide in the atmosphere since the Industrial Revolution in the late 1700's?

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2. What does your graph of the average global temperature tell you about what has been happening to the temperature of the Earth since the industrial revolution?

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3. Unfortunately, scientists cannot predict the future, so we cannot be sure if the slight increases in the average global temperature are due to global warming. What other factors could contribute to a change in the average global temperature of the Earth?

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Carbon Dioxide Concentration Data

Year	CO ₂ (ppmv)	Ave. Global Temperature (°C)
1740	280	
1760	280	
1820	285	
1850	290	
1890	295	14.6
1915	300	15.0
1930	305	15.0
1950	310	14.9
1960	317	15.0
1965	315	14.9
1970	325	15.0
1975	330	14.9
1980	338.5	15.2
1985	350	15.1
1990	353	15.4