Climate Change: How Carbon Dioxide Affects the Earth's Atmosphere and Oceans

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In the past century, global temperatures and emissions of carbon dioxide have increased. This project's purpose was to see how variations of carbon dioxide levels affected the temperatures of the Earth’s atmosphere and oceans. The hypothesis was that an increase in carbon dioxide leads to an increase in the temperature of both the air and water. In a novel approach, sealed jars with water equivalent to the average salinity of the ocean and sublimated dry ice that were placed in direct sunlight were used to model this phenomenon. Digital thermometers were used to measure temperatures of the air and water inside each jar. Three jars were used, each with varying levels of carbon dioxide, one with no additional carbon dioxide. Data collected from the air temperatures are inaccurate because of differing air pressures between the jars. Compared to temperatures of water with 10g of dry ice (maximum 11.9°C linear trendline y=0.6983x – 1.5568 R^2 0.5523), temperatures of water with 20g of dry ice increases the temperature faster but retains heat at the same rate (maximum 13.1°C linear trendline y=0.7534x – 0.9505 R^2 0.5779), with a mean distance between them at 2.36429°C. This study showed that carbon dioxide promotes an increase in temperatures in the ocean. Further experiments will clarify the air temperatures and provide more accurate measurements of variables.

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