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## Title: Graphing the Greenhouse

Introduction: Scientists have been studying the greenhouse effect and the relationship between CO 2 concentrations and temperature for a number of years. By drilling into ice cores they find trapped bubbles of ancient atmospheres and are even able to show how CO2 levels have changed over thousands of years and correlate the data to the fossil and rock record. Most scientists agree that increased levels of CO2 are warming Earth's climate but other groups disagree. Data can be understood more easily when it is graphed, but there are some ways that data can be "stretched" to prove a point. Both groups (non-global warming and global warming) present their data in the best light. In this activity you will look at graphs and see if you can find any bias that has been used in the graphs construction.

Materials: Graphs
Prediction: How could a graph be altered to help prove a point?

## Procedure:

1. Answer the questions at the end of these three graphs:

## Sample Data:

| Year | CO2 level | Average <br> Temperature |
| :---: | :---: | :---: |
| 0 | 305 | 20 C |
| 500 A.D. | 310 | 22 C |
| 1000 A.D. | 305 | 20 C |
| 1500 A.D. | 310 | 22 C |
| 2000 A.D | 315 | 23 C |

## Graph 1



## Graph 2



## Graph 3



Questions:

1. Are these graphs technically correct? (do the points correspond to the correct years?)
2. Which graph would best support non-global warming? Why?
3. Which graph would best support global warming? Why?
4. Which graph doesn't seem to support either? Why?
5. Fill in the data table for each graph shown below. Check whether the graph seems to support global warming, non-global warming or shows little bias. Give reasons to support your choice of global warming, non-warming or neutral.
6. Discuss your answers with your group. Be ready to report to the class on your results.

## Data:

Most likely supports:

| Graph | Global <br> warming | Non- <br> warming | Little bias | Reasons |
| :---: | :---: | :---: | :---: | :---: |
| A |  |  |  |  |
| B |  |  |  |  |
| C |  |  |  |  |
| D |  |  |  |  |
| E |  |  |  |  |
| F |  |  |  |  |
| G |  |  |  |  |
| H |  |  |  |  |
| I |  |  |  |  |

## Analysis:

1. Which graphs were most difficult to agree on in your group?
2. Which were more difficult?
3. What are ways graphs can be modified to alter their emphasis?
