

## Activity: Measuring Paleoclimate

The foraminifera (a microscopic protist) *Neogloboquadria pachyderma* is a great recorder of water temperature. When the Earth is cold, the ocean waters are also cold and the shell of *Neogloboquadria* coils to the left; conversely when the temperature is warm the shell coils to the right. The data below are of samples containing the plankton representing 10 000 year intervals for the last 160 000 years.

Age	Right coiling	Left Coiling	Total Number	% Right coiling	% Left coiling
0	230	50			
10 000	220	75			
20 000	70	230			
30 000	45	300			
40 000	50	302			
50 000	65	389			
60 000	20	140			
70 000	56	287			
80 000	63	267			
90 000	212	56			
100 000	120	23			
110 000	87	45			
120 000	203	66			
130 000	56	205			
140 000	45	332			
150 000	89	135			
160 000	123	166			

### Analysis

1. Graph the results with the age of the samples on the y-axis (start with 0 at the top and -160 000 at the bottom), and the % of right coiling foraminifera (from 0-100) on the x-axis.
2. Write a description of the climate over the past 160 000 years; explain and provide evidence from the graph.
3. How does your interpretation compare to the climate models? Use the Internet to locate a climate graph for the past 160 000 years.