Atmospheric CO_2 at Mauna Loa Observatory

1958-1974 Scripps Inst. Oceanography
1974-2007 NOAA/ESRL

As humans continue to burn fossil fuels, the amount of carbon dioxide in the atmosphere increases. Scientists measure atmospheric carbon dioxide in parts per million, which means there is one carbon dioxide molecule for every 1 million other molecules of atmospheric gases such as oxygen and nitrogen.

A simple mathematical model that models the carbon dioxide changes is given by

$$P(X) = 1.8X + 352$$

where X is the number of years since 1990.

Problem 1 - What does this model predict as the carbon dioxide abundance in the year 2012?

Problem 2 - In what year might the carbon dioxide abundance be 50% higher than it is in 2012?

Problem 1 - X = 2012-1990 = 22, so P(22) = 392 PPM. Students may graph this function and look for the solution where

P(X)= 392 x 1.5 = 588 ppm.

Problem 2 - The function predicts that this would happen for X = 131 in the year 2143.