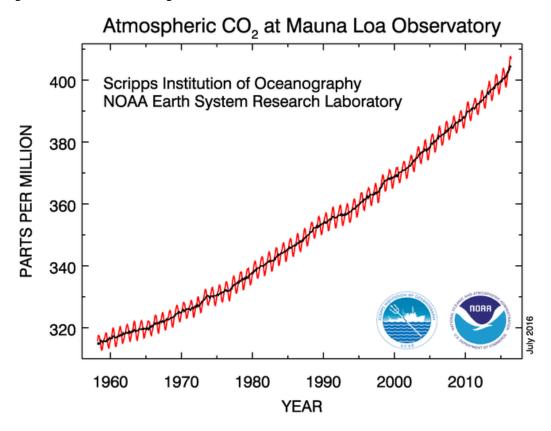
## CO<sub>2</sub> in the Atmosphere

## Learning goals:

 Analyze time series data of atmospheric CO<sub>2</sub> to determine current growth rate and how the growth rate has changed since measurements began.



The above figure shows the amount of  $CO_2$  in the atmosphere at Mauna Loa, Hawaii, the longest continuous direct measurements of  $CO_2$  in the world. The line with the up-and-down pattern shows monthly values, the smooth line is the seasonally corrected version of the same values. They are presented in parts per million (ppm). The data are the most recent available from the National Oceanic and Atmospheric Administration's Earth System Research Laboratory, and are continually updated at http://www.esrl.noaa.gov/gmd/ccgg/trends/#mlo\_full .

## In your group, answer the following questions and be prepared to discuss your answers with the class:

- 1. How much did CO<sub>2</sub> increase between 1960 and 1969, using the seasonally corrected data?
- 2. How much did CO<sub>2</sub> increase between 2006 and 2015, using the seasonally corrected data?
- 3. What does this say about the growth rate of CO<sub>2</sub> in the atmosphere since the 1960s?

4.	Can you think of some ways human society has changed since 1960 that could be responsible for the change in growth rate you observed?
5.	The monthly data has a clear "zig-zag" pattern to it. Can you think of some reasons why atmospheric $CO_2$ may predictably rise and fall over the course of a year?