

Name: \_\_\_\_\_

## Lab Quiz – The Scientific Method

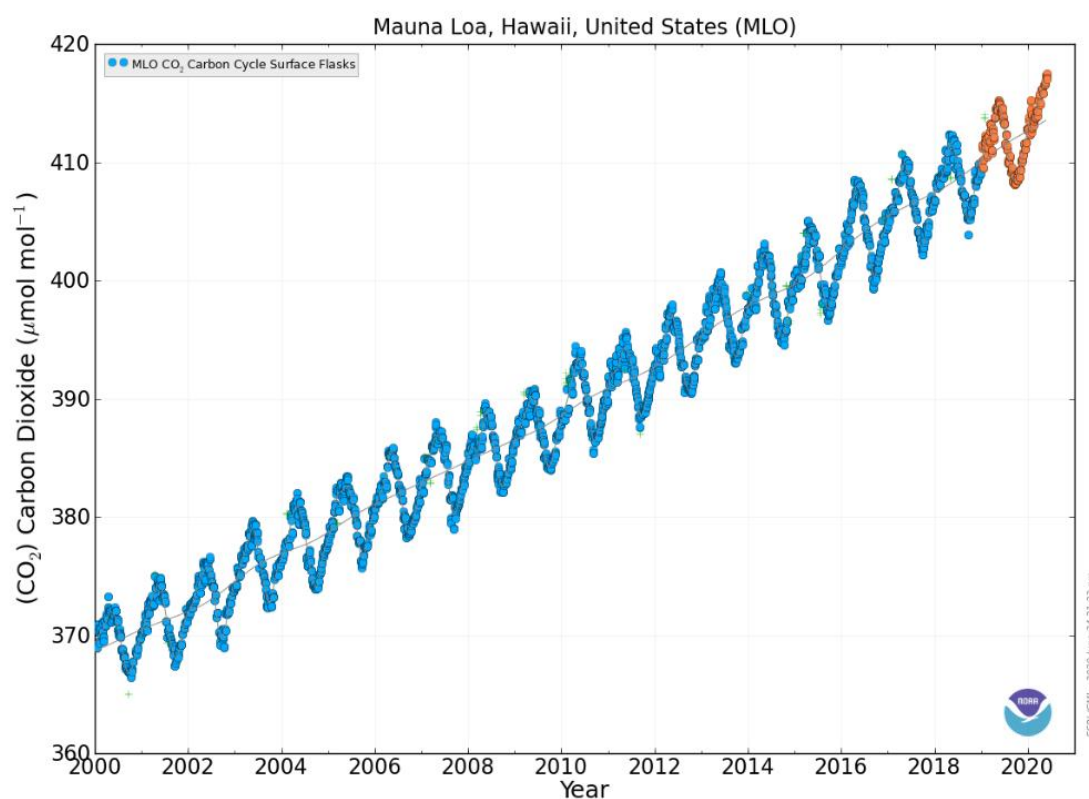
The Mauna Loa Observatory (MLO) is an atmospheric baseline station of the NOAA and Global Monitoring Laboratory (GML). MLO is located on the north edge of Mauna Loa Volcano. Due to its remote location in the



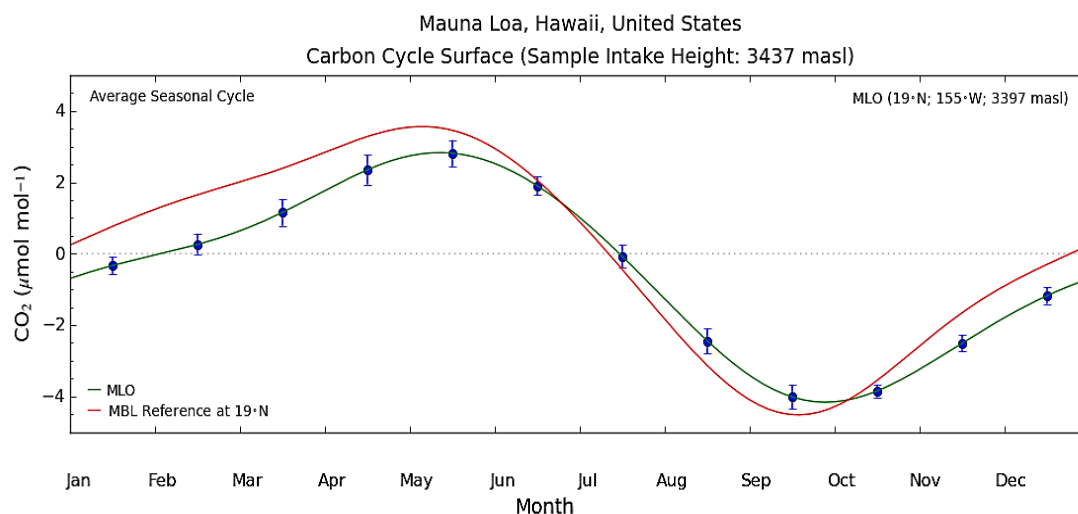
Pacific Ocean, high altitude (3397 meters or 11,135 ft. above sea level) and great distance from major pollution sources, it is a key spot for sampling the Earth's background air in the well mixed troposphere. In the 1950's, MLO began continuous monitoring and collecting of data on Green House Gases

(GHGs) related to climate change, atmospheric composition, and air quality. Today it is best known for its measurements of rising  $\text{CO}_2$  concentrations in the atmosphere. The graphs below are from an ongoing study of the contribution of greenhouse gases (GHG) by fossil fuels. Of the GHGs,  $\text{CO}_2(\text{g})$  is one of the most harmful to our environment.  $\text{CO}_2(\text{g})$  readings were taken from MLO. The data below represents readings between 2000 to 2020. The first graph represents the mole fraction or 'fraction' of  $\text{CO}_2$  in dry air at Mauna Loa, over a twenty-year timespan. The second graph shows the seasonal data for  $\text{CO}_2$  in dry air, collected at Mauna Loa, over one season, January to December. (Resources: NOAA, Global Monitoring Laboratory (GML), Scripps)

**Figure 1.** Data shown are measurements of air collected approximately weekly in glass containers and returned for analysis at a baseline observatory. **Circle Blue-Symbols** are regionally representative of a remote, well-mixed troposphere.



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**Figure 2.** The average seasonal cycle of CO<sub>2</sub> determined from the observations is shown (**solid green-line**).

### Assignment

Read the background information provided, then apply the Scientific Method to the information you are given.

Observations:

Question(s)

Data Collection / Experiment

Research – use **only** the **research data included in this document**.

Hypotheses

Conclusion(s)