**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ IB Biology Lab, Topic 4.4**

**Mauna Loa Lab**

**Lab objective:** Become familiar with data processing and the requirements for ICT: [Datalogging](http://web.me.com/mindorffd/Site/datalogging.html), [Spreadsheets](http://web.me.com/mindorffd/Site/Spreadsheets.html), [Graphing](http://web.me.com/mindorffd/Site/Graph_plotting.html), [Modeling & Simulations](http://web.me.com/mindorffd/Site/Simulations.html) and [Accessing Databases](http://web.me.com/mindorffd/Site/databases.html).

**Report objective:** Understand global climate change by analyzing the changes in concentration of atmospheric carbon dioxide using historical records from Mauna Loa, Hawaii.

**Source:** <http://www.esrl.noaa.gov/gmd/ccgg/trends/>

*This report must be entirely in your own words (no quotes, please) and must CITE every source both in-text AND at the Works Cited at the end of the lab report.*

Your **introduction** should include (and be in paragraph form, complete sentences):

1. Background informationabout taking CO2 measurements. Reference this website: <http://www.esrl.noaa.gov/gmd/ccgg/about/co2_measurements.html>
2. What are the units for the amount of CO2 in the air? Why were those units chosen?
3. A map locating Mauna Loa, Hawaii.
4. What makes Mauna Loa an ideal location for measuring atmospheric CO2 levels?
5. Describe the difference between an “annual mean” and the “annual mean rate of growth” of CO2.

Create a **data table** using Mauna Loa Annual Mean Data. What does the uncertainty reflect?

Create a **data table** using Mauna Loa Annual Mean Rate of Growth Data. What does the uncertainty reflect?

Create one or more **graphs** to allow the reader to quickly see trends in data.

**Analyze** the data for trends. Discuss the data as it appears, i.e. fluctuations and trends.

**Conclude** the lab by discussing the *implications* of the data.

1. Use the following website to reference atmospheric CO2 trends in the southern hemisphere: <http://data.aad.gov.au/aadc/soe/display_indicator.cfm?soe_id=11>
2. Using the above website and any other research, *explain the relationship between rises in concentrations of atmospheric carbon dioxide, methane and oxides of nitrogen and the enhanced greenhouse effect*.
3. Discuss how changes in CO2 levels might affect Hawaii’s ecosystem.
4. How have changing CO2 levels already affected the globe?
5. How could changing CO2 continue to affect the globe?