For 650,000 years, atmospheric carbon dioxide had never been above this line.

Current level

1950 level
Why Do We Graph?

- Helps scientists to analyze their data so they can draw conclusions.
- Important for deciding whether to accept or reject a hypothesis.
Remember:

- **Independent variable**: the variable that we change in the experiment (What we know before the experiment)
  - *Goes on the x-axis*

- **Dependent variable**: the variable that we are measuring in the experiment (What we are looking for; what we don’t know before the experiment)
  - *Goes on the y-axis*
SULTAN: Acronym to help with graphing

- Scale
- Units
- Label
- Title
- Accuracy
- Neatness
Scale

- Scale is needed to make sure that the data on the graph is readable
- Graph must fill nearly the whole area (>80% of space)
- Numbers are evenly spaced
  - Ex: Each increment increases by 10 units on the y-axis
- X-axis and Y-axis can have different scales
  - Ex: X-axis can increase by 5 while the y-axis can increase by 10
Units

- Each axis must contain units, which is the denomination (type) of measurement.
Labels

- Informational description of each axis
Title

- The title of the graph should briefly describe what the data is about.
Accuracy and Neatness

- The graph should plot the data accurately without any errors.
- Graph should be neatly drawn to avoid any confusion.
Determining the Scale

- Finding the appropriate scale for a graph can be challenging, but it is one of the most important steps in creating a graph.

- \[
\frac{(\text{Highest data value} - \text{smallest data value})}{\text{Number of boxes available on the axis}} = \text{Value each box on the axis should be}
\]

- If you get a decimal number, round up to the nearest whole number to make it simpler.
  
  - \[
  \frac{(100 - 37)}{20} = 3.15 \rightarrow 4
  \]

- Graphs do not always have to start at (0,0).