

# **Assignment 1**

## **Writing the results**

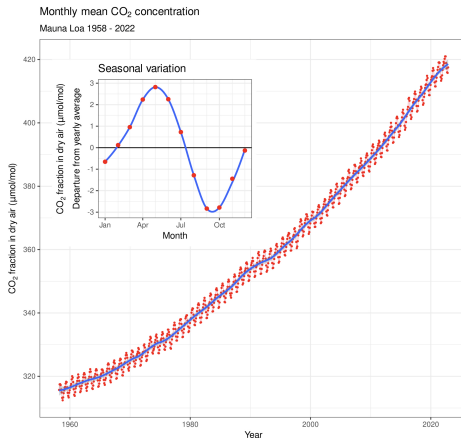
**Chao Song**

College of Ecology  
Lanzhou University

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# Assignment 1: writing the results

This assignment asks you to write 3-5 sentences describing the results shown in a given figure, using the typical style of writing the results section of a scientific paper.



## Typical style of writing results

Note the following tips for writing the results:

- Write the findings objectively without interpreting the results;
- Use past tense to describe findings;
- Use active voice as much as possible;
- Avoid verbosity, be concise;
- Maintain thematic coherence and flow;
- Check sentence completeness and grammatical correctness.

## An example

There are numerous ways to write results based on the figure. Below is an example that captures the basic message the figure conveys. Use this as a reference.

Atmospheric carbon dioxide (CO<sub>2</sub>) concentration increased steadily from 1960 to 2021 based on observations at the Mauna Loa research station located in Hawaii, USA. The mean annual CO<sub>2</sub> concentration increased from below 320 ppm prior to 1960 to almost 420 ppm in 2022 (Figure 1). The increase in concentration accelerated in recent years. In addition, CO<sub>2</sub> concentration exhibited pronounced seasonal variation, with peak concentration occurring in May and the lowest concentration observed in September and October. The magnitude of the seasonal fluctuation remained similar over time.

## Another example

There are numerous ways to write results based on the figure. Below is an example that captures the basic message the figure conveys. Use this as a reference.

As can be seen from Figure 1, the concentration of carbon dioxide in the air rose steadily year by year, and had an extremely strong seasonal cycle. During the 64 years from 1958 to 2022, the average concentration of carbon dioxide has steadily increased from 315 ppm to 420 ppm, an increase of up to 33%. In addition, with the passage of months, the concentration of carbon dioxide in the air showed seasonal changes, with the concentration of carbon dioxide reaching a peak in May, gradually declining in summer, and falling to a trough in September and October.

## Unnecessary materials

No need to introduce background or significance of the results.

At the end of the 19th century, scientists suggested that greenhouse gases might affect atmospheric temperatures, but due to an excessive belief that the oceans would absorb most of the increased carbon dioxide, it received little attention...Therefore, monitoring CO<sub>2</sub> levels in the atmosphere became an urgent scientific issue. This study monitored atmospheric CO<sub>2</sub> concentrations using infrared analyzers from 1958 to 2022 and found that the annual average concentration showed an overall upward trend, increasing from 315  $\mu\text{mol/mol}$  to 420  $\mu\text{mol/mol}$ . Notably, the period from 2000 to 2022 accounted for approximately 50% of the total increase during the monitoring period. Additionally, the study observed a relatively stable seasonal pattern in CO<sub>2</sub> levels. Specifically, CO<sub>2</sub> concentrations gradually rose from January to May, reaching their highest point of the year, and then decreased until mid-September, when they reached the annual minimum. Afterward, concentrations increased again, reaching levels near the annual average by December. This pattern held true throughout the observation period, challenging the previous belief that CO<sub>2</sub> concentrations exhibited no consistent pattern of change.

## Interpretation of results

Results section should present results objectively without interpretation. Interpretation or explanation of the results belongs to the discussions.

Figure 7 illustrates the overall trend of increasing carbon dioxide (CO<sub>2</sub>) concentration in the global atmosphere over time, which is attributed to human activities such as the combustion of fossil fuels. Concurrently, it also reveals seasonal fluctuations, owing to the fact that plants absorb CO<sub>2</sub> during the growing season and release it during the non-growing season. These findings provide crucial empirical data support for researching the long-term impact of human activities on atmospheric chemistry and their connection to climate change.

## Inappropriate tense

Results should mostly be written in past tense, unless you write existing theory or common knowledge.

The fraction of carbon dioxide in dry air **increases** year by year, and there **are** seasonal changes throughout the year. From 1958 to 2020, there **are** fluctuations in the carbon dioxide fraction, but the overall trend **is** upward and the rate of increase **is** gradually increasing. During the year, airborne carbon dioxide levels **peak** in May, and **are** at lowest between September and October. In short, the carbon dioxide fraction in the air **has** significant interannual and seasonal variations.



## No thematic coherence

Finishing presenting one aspect of the results before switching to another. Do not jump between topics in your writing.

The concentration of carbon dioxide in the dry air increased from 1958 to 2020. The concentration of carbon dioxide had seasonal fluctuations that it increases from February to June, while decreases in the remaining months. But overall the concentration steadily increased from 320 to 420  $\mu\text{mol mol}^{-1}$

## Grammatical correctness and formatting

Checking grammatical correctness and making editorial changes is often the last but nonetheless a crucial step of polishing your writing.

In order to explore changes in carbon dioxide concentrations over time. We statistically atmospheric CO<sub>2</sub> concentrations measured from 1958 to 2022 at the Mauna Loa Research Station in Hawaii, USA. It is found that the concentration of CO<sub>2</sub> increased exponentially over time. The inset shows how the CO<sub>2</sub> concentration varies from month to month: from February to July, the CO<sub>2</sub> concentration is higher than the annual average, with a maximum in May; from early July to January, the CO<sub>2</sub> concentration is lower than the annual average as a whole, with a minimum in mid-September (Figure 1).

## Verbosity

Writing should be concise. Delete words and phrases that add no additional meaning to the content.

As can be seen in figure 1, CO<sub>2</sub> concentration ...

According to our results, it is found that ...

This graph has an inset that shows how concentration ...

Carbon dioxide has been increasing year by year in the past 60 years.

The carbon dioxide fraction showed a positive correlation with the times.

## Results as figure caption

Results focus on findings. Figure caption explains what each element in the figure represent. Results should not be written as figure caption.

The full record of CO<sub>2</sub> fraction in dry air from 1958 to 2022 and mean monthly deviation from the annual average CO<sub>2</sub> fraction at the Mauna Loa research station in Hawaii, USA in the graph. The red lines and points represent the monthly mean values, centered on the middle of each month and the blue lines represent the same, after correction for the average seasonal cycle. After modelling the record from continuous observations, we found that the CO<sub>2</sub> fraction increased linearly year by year, and from 318  $\mu\text{mol/mol}$  to 419  $\mu\text{mol/mol}$  in the past 64 years.