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# My NASA Data - Lesson Plans

## Create a Climograph for My Location

### Grade Band

- 6-8
- 9-12

### Time

- 50 minutes

### Overview

Download monthly precipitation and temperature data from the Earth System Data Explorer and copy it into a ready-to-use spreadsheet which will automatically generate a climograph in addition to yearly combination graphs. Use the climograph to understand local climate. Use the climograph with the yearly files to explore yearly variability compared with thirty year average data.

### Procedure

1. Have students read the [Weather and Climate Background](#), or go over it with them.
2. Follow the [Create a Climograph for My Location Turn-by-Turn Instructions](#) to access data and copy it into the [Climograph Data Spreadsheet](#).
3. The spreadsheet will automatically generate a climograph for the thirty years of data which will be displayed on the Raw Data tab. If it is printed out, there is a place to write the latitude and longitude on the graph.
4. Have students answer the following questions about the climograph.
  1. What does the climograph for the location show?
  2. How does the average monthly precipitation change over a typical year?
  3. How does the average monthly temperature change over a typical year?
5. The spreadsheet will also generate graphs for each individual year which can be found in the Individual Years tab. Select an individual year for comparison. If it is printed out, there is a place to write the latitude, longitude, and year on the graph. The year can be found on the x-axis.
6. Have students answer the following questions about individual years.
  1. How is the average monthly precipitation for the individual year during each month different from the climograph?
  2. How is the average monthly temperature for the individual year during each month

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- different from the climograph?
3. How does averaging the data over thirty years impact the overall climograph?
  4. What is the difference between weather and climate?

Source:

GLOBE. "GLOBE Program." *Making a Climograph: A GLOBE Data Exploration*, GLOBE, <https://www.globe.gov/documents/348614/353086/Making+a+Climograph-+A+GL...>. Accessed 2026 06 12.

## **NGSS Three Dimensional Learning**

### **NGSS Disciplinary Core Ideas**

- ESS2D: Weather and Climate

### **NGSS Crosscutting Concepts**

- Patterns
- Systems and System Models

### **NGSS Science and Engineering Practices**

- Analyzing and Interpreting Data

## **Supported Common Core Math**

- CCSS.Math.Content.6.EE.C.9

## **Learning Objectives**

- Construct a climograph using monthly temperature and precipitation data.
- Explain the difference between weather and climate.
- Make inferences about a location's climate based on data.
- Identify patterns and seasonal trends shown in a climograph.
- Use a climograph to justify a claim about a region's climate zone.
- Interpret climate data to describe stability or variability over time.

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## Essential Questions

- What is the climate like in my location?
- What does a climograph show?
- How does a thirty year climograph differ from the data for individual years that go into the climograph calculations?
- What variability is there in the thirty years of data which comprise the climograph for my location?

## Teacher Background Information

This lesson is based on the Global Learning and Observations to Benefit the Environment lesson, [Making a Climograph: A GLOBE Data Exploration](#). The excerpt below is taken from that lesson.

Weather refers to the day-to-day atmospheric conditions in an area over a short period of time from seconds to weeks. Climate is the weather of a place averaged over a longer period of time (typically over 30 years). Climate refers to statistical averages of temperature, precipitation and other aspects of the atmosphere.

Climographs (also called climatographs) are a graphic way of describing how temperature and precipitation vary through the year. Climatologists require 30 years of temperature and precipitation data to adequately capture a location's climate.

A graph of one year of temperature and precipitation data can be helpful for understanding the weather that took place within a given year; however, it can fail to capture climate patterns for a location, especially when there have been unusual weather events during that year. In this activity, students explore the distinction between one year's weather data and the average of 30 years of weather data, learning that long-term measurements are important for describing the "normal" climate patterns of a place.

## Student Resources

- [Weather and Climate Background](#)
- [Create a Climograph for My Location Turn-by-Turn Instructions](#)
- [Climograph Data Spreadsheet - Excel](#)

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## Google Sheet Interactive Files

[Climograph Data Spreadsheet](#)