

# MY NASA DATA Lesson:

## Is Grandpa Right, Were Winters Colder When He Was A Boy?

**Purpose:**

To use historic weather information and compare with current data to determine if there is significant temperature change



Image courtesy NOAA

**Grade Level:** 6 – 8**Estimated Time for Completing Activity:**

50 minutes

**Learning Outcomes:**

- Students will access NOAA and NASA climate data from Internet resources.
- Students will determine changes in average temperatures, precipitation and cloud cover over time from data.
- Students will relate global changes to local changes.

**Prerequisite**

- Familiarity with using latitude and longitude coordinates
- Familiarity with reading line graphs

**Tools**

- Computer with Internet Access
- Printer (optional)

**Vocabulary:**

- [anomaly](#)
- [climate](#)

- [temperature](#)
- [weather](#)

**Lesson Links:**

- [NOAA Paleoclimatology Website](#)
- [Live Access Server](#)
- [Historical Climate Data Search Interface](#)

**Background:**

Students often hear that winters were colder or had more snow in the past. This activity will help them to determine if this is a true or accurate statement for their location.

**Procedure:**

Part I: Review the NOAA Paleoclimatology website (lesson link) to learn about weather events and climate trends over the past 100 years. Also, click the link on that page called Climate History. Discuss as a class the trends shown on the NOAA graphs of carbon dioxide, cloud cover and precipitation.

Part II: Locate your school latitude and longitude by using Google Earth or by another method. Use the Live Access Server (lesson link) to create graphs of the same parameters for your location.

1. Click on the Live Access Server link.
2. If you are not automatically prompted with parameter choices click on 'Choose Data Set' in the upper left hand corner of the screen then, click on Atmosphere, then Atmospheric Temperature, then the radio button for Monthly Near-Surface Air Temperature (ISCCP).
3. Under the Line Plots options to the left of the screen, Select 'Time Series' and then click on the radio button at the top of the page next to 'Update Plot' to see the changes to your plot as you edit your options.
4. Enter your coordinates in the text boxes under the map
5. Select the full time range available.
6. Save or print your graph.
7. Repeat steps 2-6 except choose Atmosphere, Clouds, Cloud Coverage, Monthly Cloud Coverage (ISCCP).
8. Repeat steps 2-6, except choose Atmosphere, Precipitation, Monthly Precipitation (GCPC).

Note: You should now have a total of three line plots.

**Questions:**

1. What trends can you determine from your graphs of temperature, precipitation and cloud cover where you live?
2. Is it an accurate statement that winters were colder in the past?
3. What are some possible reasons for the changes?
4. Were there notable short-term changes that may have been caused by geophysical events such as a large volcanic eruption?

**Extensions:**

1. Examine historical climate data for your area to see if there has been a change in summer or winter temperatures over the past century.
2. Read historical fiction or non-fiction accounts of weather-related events (ex. The Long Winter, Ingalls)

*Lesson plan contributed by Rita Crocker, Holden, Missouri*

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