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Module 03: Energy & Climate Change

Urban EcoLab

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## Student Pages - Is the earth's climate changing?

Center for Urban Resilience

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Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class/Period: \_\_\_\_\_

**Lesson 1.1: Is the earth's climate changing?**

1. Write an argument for whether or not the earth's climate is changing. Is global warming occurring? Provide evidence for your claim and provide your reasoning for why that evidence supports the claim. Your argument should contain three elements:
  - **Claim**  
(State whether you believe climate change is or is not occurring.)
  - **Evidence**  
(State the data or observations that you are supporting your claim.)
  - **Reasoning**  
(Explain why your evidence supports your claim. Describe how those data or observations convince you that your claim is correct.)

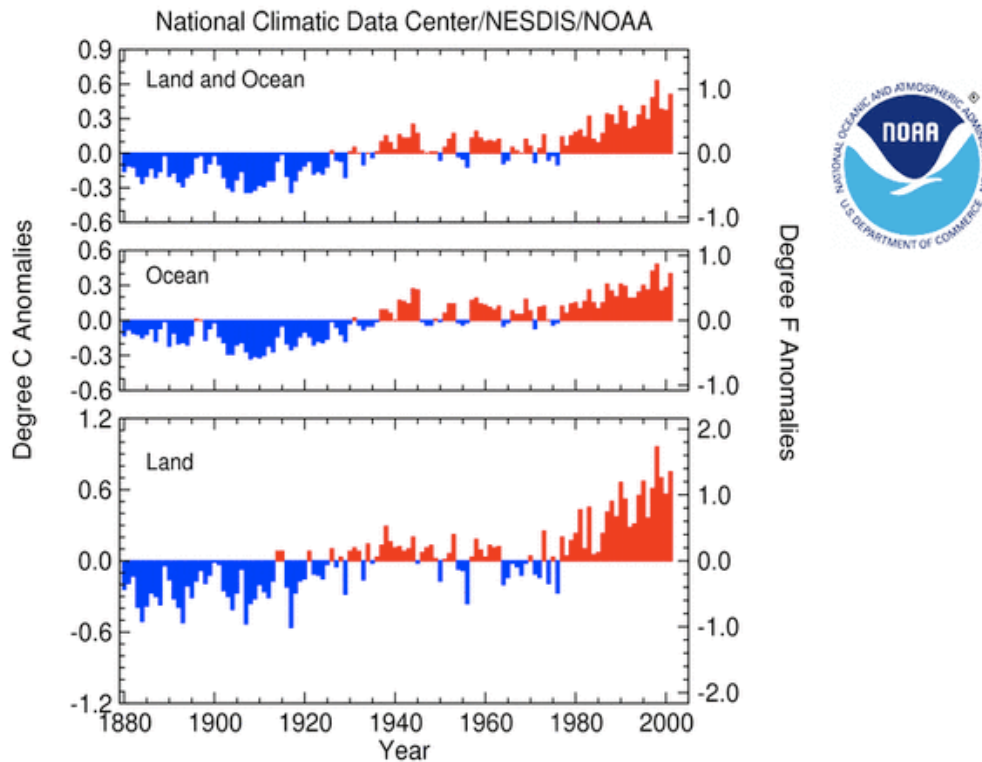
Name: \_\_\_\_\_ Period/Class: \_\_\_\_\_ Date: \_\_\_\_\_

### **Lesson 1.3: Is the earth's climate changing?**

#### **Purpose**

In this activity you will analyze data from the National Oceanic and Atmospheric Administration (NOAA), to determine whether or not global warming is occurring.

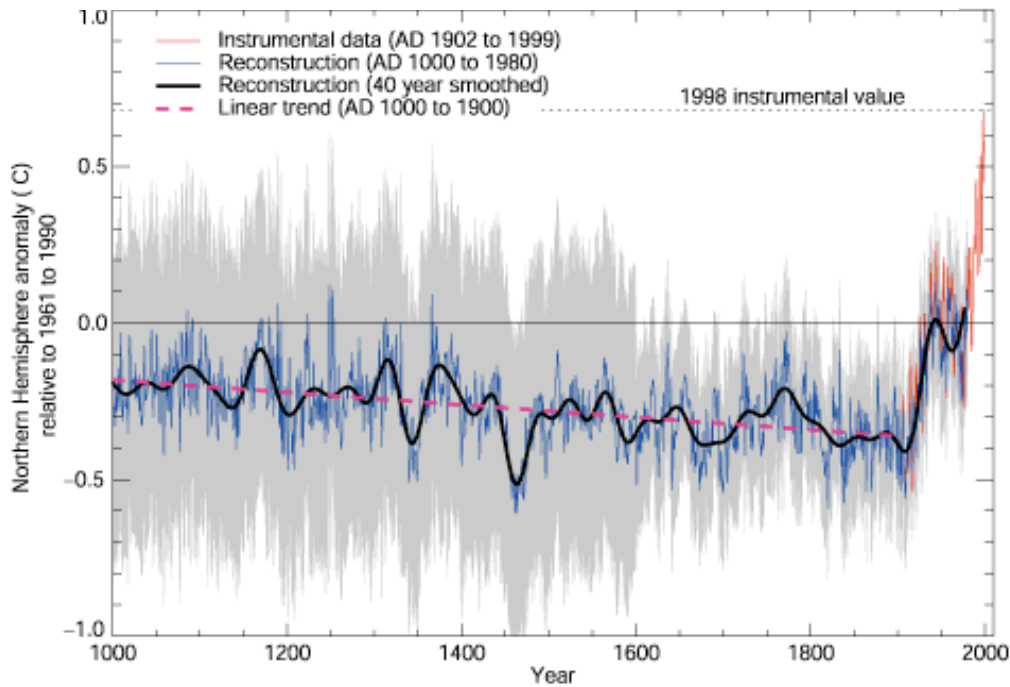
Figure 1: Variation from Mean Temperature, 1880-2001



<http://www.ncdc.noaa.gov/oa/climate/globtemp.html>

- The zero line in Figure 1 above represents the long term mean temperature from 1880-2001. The bars show annual departures from the mean.
  - What is the overall trend for temperature over time for land and ocean?
  - Do you think this provides convincing evidence of global warming?
  - Why or why not?

Figure 2: Variation from Mean Temperature, 1000-1999



<http://www.ncdc.noaa.gov/img/climate/globalwarming/ipcc20.gif>

2. Modern instrumentation has only been used to collect data since 1902. Many natural phenomena are influenced by the climate. By collecting data from glaciers, lake bottom sediments, tree rings and other phenomena, scientists can estimate the temperature of the earth. Examine Figure 2.

- What is the overall trend for temperature over time?
- Do you think this provides convincing evidence of global warming? Why or why not?
- Are there any other possible scientific explanations for this data?

3. Do you think these two graphs are convincing data that global warming is occurring? Is there other data that you think would be important to prove whether or not global warming is occurring? If yes, describe that data.

4. Many ecologists would consider global warming or climate change to be major drivers or forces that influence ecosystems. What relationship do you think climate change has to presses and pulses? Explain your answer.