

Extreme Weather

Goals:

After completing this investigation, you should be able to:

- define and describe the evidence of climate change;
- describe "extreme" weather events and define climate variability; and
- investigate climate models and predictions for future climate and weather patterns, especially temperature changes and explain the concept of "anomaly."

PART A: Wild Weather and Climate Variability

1. Why do scientists believe extremes of weather are becoming more common?
2. What types of weather events are not yet clearly linked to climate change?
3. Which extreme weather events are more likely to be influenced by climate variability, such as El Niño or La Niña?

PART B: Climate Change

1. Define anomaly in your own words. What does it mean to be different than *average*?
2. What is the trend in average global temperatures?

3. List three indicators of climate change that you examined, either using the printed or online materials, and describe the trends that are shown by each indicator.

Part C: Global Temperature Change

1. Why did the US Air Force study water vapor and CO₂ in the atmosphere? What did they learn?

2. What happens if you remove CO₂ from the atmosphere? How do we know?

3. How do glaciers record the temperature and CO₂ concentration of Earth's atmosphere?

4. What is happening to glaciers worldwide? How is this an indication of climate change?

5. List three natural causes of variation in Earth's climate that were mentioned in the video clip.

PART D: Climate Models: What does the Future Hold?

1. What regions of the Earth warm most dramatically in all of the climate models shown in Climate Wizard?

2. Compare the three ensembles: highest, average, and lowest. Describe your general observations about the differences in these three model outputs.

3. On the Climate Wizard website, choose your own variables from the list above. Describe your choices, then compare and contrast the model outputs. If possible, save copies of the maps, and insert them in your report.