Student Investigation Sheet

Using Climate Models to Forecast Impacts of Climate Change

In this investigation, you will be analyzing archived climate data. You can choose whether to analyze climate for your city, state, province, region, or the entire nation as a whole. You also will be able to choose which variables of climate to analyze (average temperature, high temperature, low temperature, precipitation, air pressure) and on which time scale (averaged annual values vs. values for a given month throughout the years).

You will graph the data to examine it for trends, cycles, and other patterns. These will form the basis of a calculation-or graph-based climate model. You will use this model to make predictions about future climate changes and their potential impact for your chosen area.

Objective(s):
In this investigation, you and your lab group will graph and analyze climate data sets, make a forecast of future climate change, and then compare results with other groups.

Materials:

- graphing calculator, computer graphing software, or graphic paper and pencil
- access to the Internet
- poster board for group comparisons

Safety Concerns

Identify any safety equipment and concerns that need to be observed in this lab.

Key Question

What is the question you want to answer?	
	Directions: Write the question for the investigation. The question should be specific and investigable.
	Key Components • Specific (one general thought, does not combine two or more questions) • Is able to be investigated

Hypothesis

What do you predict will be the result of the investigation?	
	Directions: Develop a claim about what you think is going to happen.
	Key Components • Expresses a cause-and-effect relationship • Is testable • Incorporates prior knowledge

Plan

How will you investigate the question?	
	Directions: Describe the plan that you will use to study your question and analyze your hypothesis.
	Key Components • Plan is easily repeatable by others • Plan describes the use of materials • Plan is in a logical order

Data

What evidence was gathered during the investigation?	
	Directions: Record all of the evidence that has been collected. Use graphic organizers, tables, and graphs when appropriate.
	Key Components • Data (from an investigation and/or other sources, such as observations, reading material, archived date, etc.) • Appropriate (data applies directly to the question) • Sufficient (uses enough data to completely answer the question and determine a finding on the hypothesis)

Conclusion

What did you learn from this investigation?	
	Directions: Develop a conclusion for your investigation. The conclusion should contain clear thoughts and proper vocabulary. This section focuses on the answer to your question. It should support or refute the hypothesis by using logical reasoning to link the hypothesis to the data.
	Key Components • Use precise and accurate language • Use scientific vocabulary • Provide clear logical thoughts • Use evidence and reasoning to support or refute the hypothesis

Analysis and Conclusions

1. Which source(s) did you choose to extract data from and why? How reliable do you think your primary data source was, and why did you choose to use data from that source? Of all the sources you looked at, were there any in particular that seemed more or less reliable? What evidence did you use to evaluate the reliability of each source?

2. How would obtaining results from a variety of different sources strengthen your climate forecasts?

3. Develop a summary statement regarding the conclusion of your data analysis

4. One student claims that the climate has never changed and never will. What evidence from the data, your lab group, and other lap groups collected suggests otherwise?

5. Another student says that climate change means that every place will become hotter and drier at all times of the year. What evidence from the data your lab group and other lab groups collected suggests otherwise?

6. How do you think climate change will impact the economy and lives of people in the area you have selected? For example, what could its impacts be on agriculture, energy consumption or health?

7. Do you think that global warming will have a major impact within your lifetime?