

Student Journal



Name _____
Date _____

Worksheet 1.3: Climate Change

Keep in mind the ways Dyanna Riedlinger suggests “Local Knowledge” can be tied to scientific research.

1. Local Scale Expertise
2. Climate history and baseline data
3. Formulating research questions and hypotheses
4. Impacts and Adaptations
5. Community-based environmental monitoring

Sample

“The thing that I notice when I walk out on the tundra – now I can hear it crackle when I walk on it, and it’s dry. Whatever is out there is dried up. We didn’t get blueberries this year, last year, and the year before. I use to be able to find blackberries in abundance, and now I have to really search.” - Hannah Mendenhall, Kotzebue, Alaska
(SEARCH Brochure)

How could the “local knowledge” presented here be tied to scientific investigations?

This information could be used in a variety of ways...As an indicator of impacts of global warming for the local area (#1); As information toward the formation of a research question and hypothesis (#3); or as the beginning data of a long-term community based-environmental monitoring project about the tundra (#5).

While listening to the “Community-based Monitoring Report”, please note what you feel are the key points or observations in regards to climate change. Explain your reasoning for your choices and describe how you might use the data as part of a bigger research project. Remember, traditional knowledge represents another approach and perspective to researching global climate change by comparing what is happening at present to what has happened in the past.

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As a scientist researching explanations for and collecting evidence of climate change, in the Arctic, what are some questions you would want to ask local residents? How might you utilize the data/information you collect?

CHALLENGE ACTIVITIES:

1. Design a survey, questionnaire, study, etc specifically for your community. It should incorporate local knowledge and scientific inquiry skills/methods. What question are you researching? What is your prediction? What type of data will you collect and how? What will it look like? How will you use it as evidence? How long will the study last? Other?

Consider what you know about the Greenhouse Effect and analyze the atmospheric carbon dioxide records from Barrow <http://cdiac.esd.ornl.gov/trends/co2/noa2/bar-tre.htm>, summarized below. Explain how these two items are related and significance for climate change in the Arctic. Based on the data below, can you draw any conclusions or make predictions about climate and change in the Arctic?

Data

Atmospheric carbon dioxide records from sites in the NOAA/CMDL air-sampling network. The NOAA/CMDL flask data from Point Barrow show an increase in the annual atmospheric CO mixing ratio from 330.3 parts per million (ppm) in 1972 to 357.6 ppm in 1992, or 1.37 ppm per year.

*Barrow, Alaska, U.S.A.
Arctic coastal seashore
71°19' N, 156°36' W
11 m above MSL*

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Do you see any ways that the data from Barrow and the local knowledge information compliment or contradict one another? Explain.

2. Continue adding your own ideas to the topic web below. Two focus questions follow, “What are possible consequences of global warming? These physical changes to the environment might happen if the earth continues to warm. “What impacts will these changes have on flora and fauna (including humans)?”

