

Performance Task Organizer

Unit 4 Climate Change

Earth and Space Science

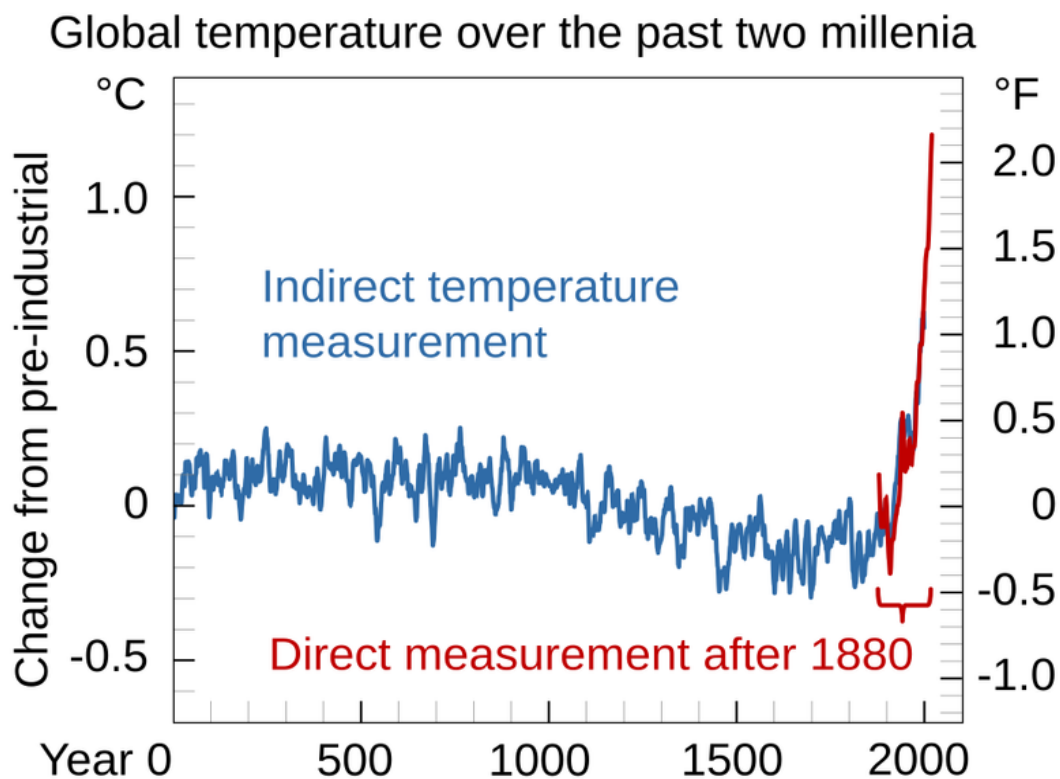
Student Name:

The Effects of Climate Change and its Perceptions

Directions:

1. Silently read or watch the “text” provided to you.
2. Record or annotate three details that are most important to the phenomenon being described for each text.
3. Share with your group. Each person should identify the details that they circled.
4. Discuss as a group, and determine the overall story. What is the phenomenon?

Text #1: Arctic (above 65° north) Summer Temperature Over Last 2000 Years



- The y-axis is difference **compared** to the average Arctic Temperature over the last 2000 years
- The blue line shows estimates of Arctic temperatures over the last 2,000 years, based on records from lake sediments, ice cores and tree rings
- The red line shows the recent warming based on actual observations

Important Details

1.

2.

3.

Text #2: Climate-Related Human Displacement in 2023

Important Details

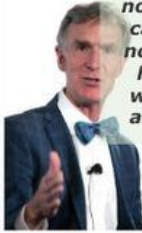
1.

2.

3.

Text #3: Scientist vs. Public Opinions of Climate Change

How do scientists think about climate change?



You can't choose to believe in gravity; if you walk off a cliff, you will be affected adversely. Climate change is not a 50-50 thing which you can choose to believe in or not. If you choose to ignore human's influence on the world's climate, we will be affected adversely. Bill Nye

99.9% of research papers indicate scientific consensus that climate change is real and caused by human activities

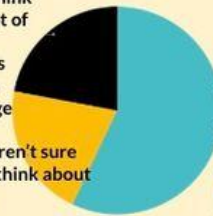
"It is unequivocal that the increase of CO₂, methane, and nitrous oxide in the atmosphere...is the result of human activities and...is the principal driver of many changes observed across the atmosphere, ocean, cryosphere, and biosphere.- IPCC

What about the public?

The public thinks scientists aren't certain about the cause of climate change

22% of people think that there is a lot of disagreement among scientists about the cause of climate change

21% of people aren't sure what scientists think about climate change



57% of people think that scientists agree that climate change is caused by human activities

The public isn't sure about the causes of climate change, or even that it is happening

29% of people think climate change isn't happening or isn't caused by humans

12% of people aren't sure what is causing climate change

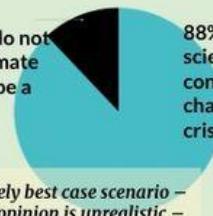


59% of people think that climate change is caused by human activities

"I do believe [the climate] is changing, but I believe it is changing in a natural cycle that happens all the time. What I don't believe is that humans are 100% responsible for climate change." –Man, 50s, Mountain West

Most scientists agree that climate change is a crisis

12% of scientists do not believe climate change to be a crisis



88% of scientists consider science change to be a crisis

"The absolutely best case scenario – which in my opinion is unrealistic – with the minimum expected climate change... we end up with an estimate of 9% [of all species] facing extinction." – Chris Thomas, ecologist

Much of the public isn't convinced

37% of people say they are not worried about climate change



63% of people say they think of climate change as a problem or are worried about it

"We don't know that there's going to be major climate change in the next few years or the next few months. It's kind of more of a guess, a hypothetical thing, so I feel like people are making a big deal out of it when really in all actuality no one knows what's going to happen long term. It's kind of just guessing and theories, but no one knows." –Woman, 30s, Coastal Florida

Sources: [Cornell Chronicle](#), [Pew Research](#), [Yale Climate Change Communication](#), [Nature Human Behavior](#)

Important Details

4.

5.

6.

Important details our group surfaced (provide at least 5):

1.

2.

3.

4.

5.

Overall Story of the Phenomenon (based on group discussion):

Use details from above to tell the story of the phenomenon.

Educating your Community about the Predicted Impacts of Climate Change on Human Populations

Climate change, a scientifically proven phenomenon with dire consequences, faces significant public skepticism despite overwhelming consensus among experts. Research reveals that 99.9% of climate scientists attribute global warming to human activities. However, in the United States, skepticism persists, with over 40% of citizens doubting human involvement and one-third unconcerned about its repercussions.

While global efforts intensify, political leaders are not taking enough action to adequately address the challenge. Urgent public demand is crucial to motivating leaders into meaningful climate policies. This will require educating individuals to grasp why experts overwhelmingly blame human actions, specifically greenhouse gas emissions, for climate shifts, and what negative effects will likely result from these shifts.

Your task in this unit is to communicate the validity of the scientific consensus around the cause and importance of climate change. To do so, you will:

1. Analyze and interpret data to confirm scientists' understanding of human activities as the cause of climate change in this moment in time
2. Analyze and interpret data to determine future impacts of climate change
3. Explain how these impacts are expected to affect human populations

Initial Model

What factors are contributing to climate change, and how is that resulting in human displacement?

Your first step in this investigation is to work with classmates to develop an initial model that illustrates how different climate factors and how those factors impact average global temperatures.

Initial Climate Change Models

Directions

1. Review all the climate factor ideas the class surfaced during the Rumors routine.
2. In your group, identify the most likely causes of present climate change on Earth.
3. Consider how those factors and resulting climate change could result in the climate displacements we observed
4. Represent all your ideas in the form of a model.

Revisiting the Performance Task: Earth-Sun Dynamics 5E

Disproving climate skeptics

Using the data about historical temperature changes over time, the changes in orbital factors over the past 9,000 years, the solar cycles, and the effect of solar factors on energy entering Earth's systems, make and support a valid claim about the role of orbital factors and solar cycles on the melting of ice caps today.

Revisiting the Performance Task: Climate Feedbacks 5E

Disproving Climate Skeptics

Using the data about carbon dioxide levels and temperature changes, the roles of carbon dioxide and ice caps in climate change, and the feedback mechanisms between parts of Earth's systems, make and support a valid claim about the role of carbon dioxide and human activities on the warming of the planet today.

Disproving Climate Skeptics

Using the data about projected temperature changes, other projected climate changes, and information about their role in shaping human lives, make and support a claim about how human populations will likely be impacted by climate related hazards in the near future.

Final Performance Task

Share with the community

For this final task, communicate to someone in your community who is skeptical about climate change. In a letter, public service announcement, pamphlet, or other format:

1. Explain how the data demonstrates human causes of climate change
2. Describe the ongoing and future impacts on the planet of climate change
3. Explain how these changes are likely to affect people in your community

Use the space below to craft your communication. If you are using a written format, you can write it below. If you are using something with video/audio elements, write the script below.

