



Emily's Perspective on the

Natural Causes of Climate Change

NAME _____

DATE _____

Imagine your friend Emily tells you she has been learning about the causes of climate change from reading and listening to news reports, searching the Internet, and talking with friends. All the information she has learned is **accurate and science-based**. However, the conclusion Emily makes using this information is **NOT** supported by science. Here's what Emily said.

Climate has changed in the past, and those changes were caused by several factors that are natural. Natural factors include variations in volcanic eruptions, solar flares, greenhouse gas concentrations, and other factors. In particular, concentrations of greenhouse gases, like carbon dioxide, have naturally fluctuated over time. The amount of carbon dioxide emitted from human activities is a tiny fraction of the total carbon cycling through the atmosphere, land, and oceans. Natural carbon dioxide emissions are 766 billion tons per year; human carbon dioxide emissions are only 20 billion tons per year. This current fluctuation in climate is similar to historic climate changes because human activities have not added that much carbon dioxide to the atmosphere. Therefore, climate change is a natural process that human activity is not impacting.

1. What were your initial thoughts as you read the paragraph?

2. What are the assumptions Emily makes to arrive at her conclusion?

3. What science-based information is relevant, but missing, from what Emily learned?

4. What would you say to Emily? REWRITE the conclusion to be more accurate, based on the additional information that challenges the conclusion.



Jamie's Perspective on the

Human Causes of Climate Change

NAME _____

DATE _____

Imagine your friend Jamie tells you he has been learning about the causes of climate change from reading and listening to news reports, searching the Internet, and talking with friends. All the information he has learned is **accurate and science-based**. However, the conclusion Jamie makes using this information is **NOT** supported by science. Here's what Jamie said.

Many factors affect the global climate of the Earth. The key factor to consider regarding climate change is carbon dioxide. By burning fossil fuels, such as oil, natural gas, and coal, we have increased the amount of carbon dioxide in the atmosphere and changed where the carbon can be found. The level of atmospheric carbon dioxide is higher now than it has been over the past 800,000 years. This increased amount of carbon traps more of the heat radiated from the Earth's surface, which amplifies the greenhouse effect. In addition, land-use changes have altered vegetation patterns around the globe. Deforestation has resulted in fewer trees to remove and store carbon through photosynthesis. These land-use changes have also affected levels of atmospheric carbon. The impact of human activities on carbon in the atmosphere and ocean is so large that it completely overshadows any natural causes of climate change. Therefore, while natural factors have played a role in the past, current and projected climate changes are only the result of human activities.

1. What were your initial thoughts as you read the paragraph?
2. What are the assumptions Jamie makes to arrive at his conclusion?
3. What science-based information is relevant, but missing, from what Jamie learned?
4. What would you say to Jamie? REWRITE the conclusion to be more accurate, based on the additional information that challenges the conclusion.



Micah's Perspective on the Greenhouse Effect

NAME _____

DATE _____

Imagine your friend Micah tells you he has been learning about the greenhouse effect from reading and listening to news reports, searching the Internet, and talking with friends. All the information he has learned is **accurate and science-based**. However, the conclusion Micah makes using this information is **NOT** supported by science. Here's what Micah said:

Several gases contribute to the greenhouse effect, including carbon dioxide (CO₂), methane (CH₄), ozone (O₃), and nitrous oxide (N₂O). These gases absorb heat radiating off of the earth and trap that heat within the atmosphere. Greenhouse gas emissions have increased since the Industrial Revolution, which has amplified the greenhouse effect. Scientists have noted that this rise in greenhouse gases coincides with rises in overall global temperature. According to existing climate models, global temperatures are expected to rise anywhere between 2 and 11.5 degrees Fahrenheit by the year 2100. Results of global temperature changes of this magnitude include sea level rise, increase in ocean acidity, decrease in snowfall and permafrost, and changes in precipitation. The greenhouse effect is a negative and harmful process because it is warming the planet and creating climate change.

1. What were your initial thoughts as you read the paragraph?
2. What are the assumptions Micah makes to arrive at his conclusion?
3. What science-based information is relevant, but missing, from what Micah learned?
4. What would you say to Micah? REWRITE the conclusion to be more accurate, based on the additional information that challenges the conclusion.



Jayden's Perspective on the

Effects of Climate Change

NAME _____

DATE _____

Imagine your friend Jayden tells you she has been learning about the effects of climate change from reading and listening to news reports, searching the Internet, and talking with friends. All the information she has learned is **accurate and science-based**. However, the conclusion Jayden makes using this information is **NOT** supported by science. Here's what Jayden said.

After analyzing climate observations, measurements, and data collected around the world, most climate scientists agree that the average surface temperature of the Earth is increasing. This is known as global warming. Most scientists also agree that human activities, which are increasing atmospheric levels of greenhouse gases, are partially responsible for this warming. As a result, the entire planet is and will continue to warm in the years to come. This warming will affect weather patterns around the world, changing climate averages and causing extremes in temperature and precipitation. The greenhouse gases that are causing global warming are found in the atmosphere, and the atmosphere surrounds the entire globe equally. Therefore, everywhere on Earth will be hotter and drier.

1. What were your initial thoughts as you read the paragraph?
2. What are the assumptions Jayden makes to arrive at her conclusion?
3. What science-based information is relevant, but missing, from what Jayden learned?
4. What would you say to Jayden? REWRITE the conclusion to be more accurate, based on the additional information that challenges the conclusion.