

Daniel Milan

Grand Canyon University

ENG-456 Communicating Scientific Ideas to Popular Audiences

Brigit McGuire

July 17, 2021

## **The Uncertain Science of Climate Change and How That Uncertainty is Used to Spread Misinformation**

**Date:** July 17, 2021

**Williamsburg, VA** – Climate change is a hot-button issue across the nation. Scientists and politicians debate the causes and the effect it will have on the world during every election cycle. Some things within the science are not debatable, such as Greenhouse Gases do influence climate (Mesarovic, 262). Unfortunately, that is about where the agreement amongst each side of the debate stops. Global warming or climate change happens when the Earth's temperature starts to rise. Over the last century, "global average ground surface temperature has increased by at least 0.5 °C" (Mesarovic, 262). Climate change is not something that occurs overnight; it is something that happens over decades to centuries. The length of time climate change happens is challenging to study and discern. The fact that scientists say that they are not sure is also what drives the controversy. The idea that both sides have a point and could be right is unacceptable in the political debate; there are too many variables to include for scientists to get right without more data.

First, you must try to get a grasp of what exactly climate change is. If our atmosphere were not there to protect the Earth, the surface temperature would be -18C, with the protection of the atmosphere +15C (Mesarovic, 262). The atmosphere can protect us due to the natural

greenhouse gas effect. There already exist greenhouse gases in our atmosphere; those gases include Water Vapor, Carbon Dioxide, Methane, and Nitrous Oxide. These gases act like a blanket that keeps the sun's rays from escaping and warms the Earth. The problem comes in when man-made greenhouse gases are mixed with natural greenhouse gases. This is why all the policies put in place to curb greenhouse gases by making vehicles more fuel-efficient, producing less CO<sub>2</sub>, and the big push for electric cars. The evidence that greenhouse gases are on Earth is rise is irrefutable; simply, the proof is in the pudding. What is up for debate is whether the man-made gases are negligible and how long the lag time is from the rise in greenhouse gases and the temperature rise.

Many things can cause Greenhouse Gases to be negligible; one of them is significant volcano eruptions. When volcanos erupt, it sends out ash into the atmosphere; this acts as a cooling effect and can account for up to 1% of man-made greenhouse gases (Mesarovic, 261). The ocean has a large capacity to store energy and can store CO<sub>2</sub> emissions. Our oceans can store up to 50 times more CO<sub>2</sub> than the atmosphere and will play a huge role in "moderating climate swings and will probably determine the global pattern and speed of climate change" (Mesarovic, 262). The ocean moves constantly and exchanges heat between the ocean and the Pacific Decadal Oscillation atmosphere (Mesarovic, 262). Pacific Decadal Oscillation plays a significant role in weather patterns over a large area. It will switch off over 25 to 30 years. Many scientists argue that warming is due to this natural cycle (Mesarovic, 262-263) So, many natural phenomena will render a portion, not all, of man-made greenhouse gases negligible.

Another aspect of global warming that is up for debate is the lag between the emission of greenhouse gases and their potential impact on Earth's temperature and whether it happens over decades or centuries (Mesarovic, 264). This also means that any policy to put into place to curb

the effect of greenhouse gases will also take the same amount of time to start to help (Mesarovic, 264). Mark Winfield, an environmental policy expert from York University, says, "the reality at this stage is that a full reversal is passing beyond the realm of possible. What we are trying to do at this stage is to avoid what the intergovernmental panel on Climate Change has termed dangerous climate change which increases in temperature above 2 degrees centigrade, and we should be aiming for 1.5 or so" (Climate Change Q&A). So many opinions are out there that say we may be beyond the point of a complete reversal and not knowing just how and when the increase in greenhouse gases will affect the Earth.

As you can see, there are many thoughts, opinions, and hypotheses out there amongst the scientific community on just how climate change will affect us. But some things remain undisputable, but because of the uncertain science that exists, it allows other scientists and politicians to deny outright that global warming is a thing. But, even if that is your view, how can reducing greenhouse gases and reducing our carbon footprint be a bad thing? Hopefully, in the coming years, scientists can create models that will more accurately predict the effects the gases will have on the Earth and what we should do to reverse the trend.

## Reference

"Climate Change Q&A." Youtube.Com, 2021,

<https://www.youtube.com/watch?v=uIVtKocdzZI>. Accessed July 18, 2021.

Mesarovic, Miodrag. "Scientific Uncertainties Feed Scepticism On Climate Change". *Thermal*

*Science*, vol 19, no. suppl. 2, 2015, pp. 259-278. *National Library Of Serbia*,

doi:10.2298/tsci150628194m. Accessed July 17, 2021.