

Global Warming:
Causes, Effects on Climate Change, Potential Solutions, and My Christian Worldview

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The extreme changes in the world's storm system and natural phenomenon have some scientists convinced that mankind's actions have caused an influx of carbon dioxide to be released in the atmosphere. This influx is considered the primary cause of the greenhouse effect, which some scientists attributed to global warming. "Global warming is a term widely used to describe a potentially dramatic rise in the annual average global surface temperature of the Earth." (Houghton, Meira Filho and Callander) The premise of the argument is that the rise of global surface temperature and the influx of carbon dioxide will trap the outgoing thermal radiation which then warms the Earth. (Drake) The purpose of my paper is to evaluate the evidence of global warming, offer solutions to prevent the predicted affects of global warming's outcome on Earth, and explain why as a Christian I have a duty of care to do so.

There has been a great deal of conversation about the speculation that the increase in the atmosphere's carbon dioxide content has caused global temperatures to increase accordingly. According to Tarbuck and Lutgens, "A report by the Intergovernmental Panel on Climate Change (IPCC) indicates that the speculation is true. To support this presumption the following was surmised from research of annual average global temperatures variations over a period of approximately One Hundred Forty-Three years:

- During the twentieth century, the global average surface temperature increased by about 0.6°C (1°F).
- Globally it is very likely that the 1990s was the warmest decade and 1998 the warmest year since 1861."

This has caused many scientists, especially Christian scientists, to lean towards the belief that as the Earth surfaces heat up more and more natural phenomena will occur, such as, "the

most powerful El Niño ever recorded, the hottest European summer on record, and the first South Atlantic hurricane in the past 10 years.” (Valigra) A simple look at the last couple of years reveals how true this belief may be from the Tsunami that hit Telaga Harbor, Malaysia on December 26, 2004 killing tens of thousands of Malaysians. Or consider the South Atlantic hurricane, Hurricane Katrina, which has been labeled as the costliest and one of the five deadliest natural disasters in United States history.

The intensity in weather has other effects. “In the long list of potential damages from global warming, the risk to world agriculture stands out as among the most important.” (Cline) “Agriculture will be affected in two ways: first, by the carbon dioxide fertilization effect and second, the climate changes which will also affect growth and yield. Many of the changes concerning agriculture are related to temperature and precipitation. On a global scale the predictions are for crop yields to fall and prices to rise with a consequent loss of human life. Such a crude picture, however, fails to portray the complexity of the likely crop changes and economic impact.” (Drake) Other effects include sea level rise, species loss, loss of water supply, tropospheric ozone air pollution, hurricane damage on human health and loss of life, forest loss, and increased electricity requirements. (Cline)

So the question becomes, what is the severity potential of global warming? The answer may not be as simple. There are some schools of thought that defer on whether global warming is the primary result of human kind actions or other factors. Regardless of the school of thought, many agree “that global warming loads the atmospheric dice to roll “heat wave” or “intense storm” more often.” (Amand) This is a basic fact of climate, meaning that the most intense storms occur when warm fronts or air interacts with cold air. Thus, the warmer the Earth surface becomes the more likely we are to experience extreme weather patterns that are capable of

resulting in extreme temperatures, droughts, heavy rainfall, and intense flooding. This deduction is supported by a study conducted by NASA, which states in relevant parts:

“A simple diagnosis of cumulus updraft speed that depends only on the large-scale thermodynamic structure reproduces the observed magnitude and land-ocean differences in convective intensity in a GCM. The model predicts more intense convection (by $\sim 1 \text{ m s}^{-1}$) in a warmer climate over land... Mid-latitude severe weather may also not change dramatically, but the most severe storms may occur more often... Temperature gradients and wind shears may increase with warming only in lifted frontal air, precisely where thunderstorms should strengthen. Thus, winds and severe weather may intensify locally in the midst of a general decrease in synoptic wind shear as climate warms.” (Del Genio, Yao and Jonas)

If Earth's atmosphere continues to warm and carbon dioxide continues to filterate the atmosphere without intervention to curbe the greenhouse effect then Earth may one day look like its twin, Venus.

One of the more practical effects yet to be discussed has to be the increased health issues to humans that could result if global warming is left to intensify without reduction to the release of trace gases in the atmosphere. “Mortality may well rise in the more developed nations as death from coronary heart disease and stroke increases at the extreme temperature ranges.

Increases in mortality in Greater London have been noted during spells of hot weather.”

(Haines) “Severe air pollution is linked to longer, warmer summers which are likely to increase with global warming. Air pollution affects those suffering from respiratory tract problems such

as asthma and severe attacks can lead to death. Climatic change could increase both the spread and range of diseases that require an animal or plant to carry them (vector-borne infectious diseases). Therefore mosquito-borne diseases in Australia and America could well increase.” (Drake) “During the summer of 1994 six people in the Paris airport region were affected by malaria from infected mosquitoes that had travelled on planes.” (Guillet, Germain and Giacomini)

According to Tarbuck and Lutgens, “carbon dioxide is not the only gas contributing to a possible global increase in temperature. In recent years, atmospheric scientists have come to realize that the industrial and agricultural activities of people are causing a buildup of several trace gases that may also play a significant role” in the increase of global temperatures. Trace gases are the remaining gases in the Earth’s atmosphere and are called such, because they make up approximately 1% by volume of the remaining gases in the atmosphere. The primary trace gases that assist in creating the natural greenhouse effect that keeps Earth warmer than other planets are water vapors, methane, nitrous oxide, ozone, and carbon dioxide. Other trace gases that contribute to global warming are nitric oxide and sulphur dioxide, which derive from forest fires, lightning strikes and volcanic eruptions.

There are several solutions being offered to reduce the increase in Earth’s natural greenhouse effect that contributes to global warming. This includes the production of “green vehicles” that operate on energy sources other than fossil fuels, such as corn or other natural resources. Brazil uses sugarcane to produce ethanol that now amounts to approximately forty percent of the world’s ethanol production. As a result, Brazil no longer relies completely on pure gasoline to run their vehicles, which has resulted in a decrease in pollutants in the global atmosphere. Other solutions being offered include, but are not limited to nuclear energy, wind

energy, other renewable energy sources, and the most practical choice of energy conservation and efficiency improvement. The ideas behind any of the options listed are either related to “those that deal with carbon dioxide reduction and those that investigate reducing the other greenhouse gases.” (Drake) As far as which are better implemented or more feasible it may become obvious that a combination of all the solutions may be required to effect real change.

My Christian worldview has a basic premise that God created the universe including man and then gave Man the Responsibility of caring for all of God’s creation. Therefore, I believe mankind has an innate obligation to ensure that we greatly reduce the causes of elevated greenhouse effect within our atmosphere. Mankind’s actions must be regulated and tapered so that the unchecked release of carbon dioxide gas and other trace gases into the atmosphere can be reduced. Mankind’s indifference is the opposite response required by God. Thus, my Christian worldview dictates that I practice good stewardship upon the Earth so that it may continue to provide enough food, water and shelter for all of creation.

After researching this topic I have a new found appreciation for my duty as a Christian to care for all of God’s creation. I will definitely be more conscientious in conserving energy. This includes turning off lights and other appliances when not in use. I have already refitted my apartment with energy saving light bulbs to reduce kilowatts used in my household. Another change since the conduction of this research has been to purchase appliances that have received the energy saving stamp of approval. From this day forward I plan to be proactive in reducing my portion of the greenhouse effect that is harmful to God’s creation. Rarely does a research paper change a person’s view or daily actions. This paper will be different.

In conclusion, there are strong reasons to believe that global warming does exist. The effects of global warming have some severe consequences that could forever change the face of

the Earth as we know it. As such, it is paramount for mankind to implement changes to the way we produce and consume energy. These changes will greatly reduce the causes of global warming within Earth's atmosphere and allow us to fulfill our duty to care for all of God's creation.

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