

The human factor of global warming assignment



While global warming may not be in question, many scientists have questioned the actual global warming effect theory due to many uncertainties. Whether or not humans are inherently responsible is debatable and subject to skepticism along with whether or not the human race can influence the outcome of such. * The first theory on global warming dates back to 1886. A Swedish chemist by the name of Svante Arrhenius had a theory that a rise in atmospheric carbon dioxide emissions as a result from combustion fossil fuels could enhance the average surface temperature of the earth (Muslin, 2004).

While close to half the solar radiation reaching the earth's surface is reflected back into space, the remainder is absorbed by land masses and oceans, warming the earth's surface and atmosphere. This warming process radiates energy, most of which passes through the atmosphere and back into space. However, small concentrations of greenhouse gases like water vapor and carbon dioxide convert some of this energy to heat and either absorb it or reflect it back to the earth's surface (Christianson, 1999).

It is this foundation that fuels our cognitive notion of global warming and the concatenation of events that result in a global rise in temperature. Global warming is a well known fact; however, there are many different speculations as to the causes. While there are those that like to believe that humans control the course of the global climate system, the truth is that there is also natural climate variability on a year to year basis (Jump, 2011). This variability results through natural cloud changes, which alter the amount of sunlight being absorbed by the planet (Spencer, 2010).

There is more complexity to climate variability than sunlight and clouds. Our planet's climate is dynamic and naturally varies on seasonal, decadal, centennial, and longer timescales. Each "up and down" fluctuation can lead to conditions which are warmer or colder, wetter or drier, more stormy or quiescent (Millard & Woolens, 1999). * Perhaps the most well understood occurrence of climate variability is the naturally occurring phenomenon known as the El Niño-Southern Oscillation (ENSO), El Niño is a term coined by Peruvian fisherman to identify meteorological instability and ecological effects on fish and coastal life (Cavities, 1984).

This is an interaction between the ocean and the atmosphere over the tropical Pacific Ocean that has important consequences for weather around the globe. The ENSO cycle is characterized by coherent and strong variations in sea-surface temperatures, rainfall, air pressure, and atmospheric circulation across the equatorial Pacific. El Niño refers to the warm phase of the cycle, in which above-average sea-surface temperatures develop across the east-central tropical Pacific (Cavities, 1984).

These variables in our climate are due to the change in the amount of energy entering and escaping from the Earth. The largest contributor in climatic forces comes in the form of short wave radiation from the Sun. Solar variability is major player in the distribution of energy throughout the Earth's atmosphere. The changes in solar energy can be directly related to the Earth's orbital path, changes in the tilt angle of the Earth, or variations in the energy coming from the Sun.

Also additional factor which can cause climatic fluctuations on yearly to decal timescales are volcanoes. Volcanic eruptions lead to enhancements of stratospheric and troposphere aerosols which for the most part reflect solar radiation, hence leading to global cooling on a global average (Carlen, et al. , 2005). * While humans might not be solely to blame for global warming we definitely have a ajar role. Most are familiar with the burning of fossil fuels (coal, oil, and gas) as a major contributor to the overall CO, although, just as equally important is that of deforestation.

It was realized that “ conversions of land use, primarily deforestation in the tropics, induce substantial terrestrial carbon losses to the atmosphere, approximately 1. 6 billion tons annually/” (Broadleaved, Freer-Smith, ; J. Lynch, 2007). While the cause of deforestation varies in different regions, the key contributors are cutting down tree to open up more land for agriculture, urban sprawl (Turk ; Bunsen, 2011). Forests work like filters to remove CO from the air and store it in the trees.

When the trees are felled or burned, huge amounts of CO are released into the atmosphere at a rapid pace. Urban Sprawl, a result of deforestation releases significant amounts of green house gases such as CO. Not only do you have carbon dioxide being release from burning or cutting of forests, it is coupled by urban sprawl. It just so happens one of the effects of urban sprawl is that “ Concrete production contributes 5 percent of annual anthropogenic global CO production, mainly because such vast quantities are used” (Chemistry World, 2008).

The result of urban sprawl worldwide currently accounts for 20-25 percent of the annual global carbon dioxide emissions, which equates to 1 to 1.5 billion tons of carbon (Manson-Smith, Panda, gamma; Toffee, 2003). A byproduct of urban sprawl is that of transportation, which also has profound effects in terms of releasing greenhouse gases. In the United States transportation alone makes up 450 million metric tons of carbon dioxide, with the Department of Energy projecting an annual growth of 1 percent (Turk ; Benders 2011).

Sprawl-induced driving not only contributes to the annual accumulation of carbon dioxide which is a greenhouse gas but also volatile organic compounds such as nitric oxides. These volatile organic compounds have a small direct impact as greenhouse gases but they are also an ozone precursor and account for seven million tons annually (Turk ; Bunsen, 2011). Just as devastating as deforestation due to urban sprawl, is that of deforestation due to agriculture and agriculture by itself and how they contribute to global warming.

During agricultural practices, methane gas which is a greenhouse gas, is produced when bacteria decomposes organic matter. It has been estimated that close to a quarter of methane gas from human activities result from livestock and the decomposition of animal manure. Paddy rice farming, land use and wetland changes are also agricultural processes that could contribute to the release of methane to the atmosphere. Use of fertilizers for agricultural activities also leads to higher nitrogen concentrations from nitrification and denitrification in cropped soil. (Adler, Del Gross, ; Barton, 2007).

A report from the American Farmland Trust in 2007 stated that “ from 1982 through 2007 the United States lost 41. 3 million acres of rural land which was converted to developed uses”. To put that into perspective that is roughly the size of Arid. An increase in farm land means an increase in crops and in animals, which translate into an increase in ammonia. This by-product of animal waste is due to the often inefficient conversion of feed nitrogen into animal product. Livestock and poultry are often fed high-protein feed, which contains surplus nitrogen.

Nitrogen that is not metabolize into animal protein is excreted in the urine and feces of livestock and poultry where further microbial action releases ammonia into the air during manure decomposition (Virginia State University, n. .). Studies have shown by the FDA that broiler producers have contributed “ 8 times... More ammonia emission annually than oil refineries and steel mills combined in poultry’ heavy states” (Merchant, 2008) and accounts for 27% of total man-made ammonia balkanization in the United States (Virginia State University, n. D.).

Not only do crops and live stock emit large quantities of greenhouse gases, but also the machinery used to aid in farming. The fuel that is used by agricultural machinery for tillage, planting, harvesting and applying pesticides also contributes to carbon dioxide emissions. The U. S. Environmental Protection Agency released a report in 2007 detailing U. S. Agricultural Greenhouse Gas Sources, which accounted for six percent of all U. S. Emissions. Despite the amount of influence humans have to the overall contributions of global warming, we have made efforts to reduce our carbon footprint.

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While the inception is conceivable that the human race could influence the effects of global warming, it has yet to be proven. The reluctance in this ever being proven relies on the fact that it would take the entire global community to be involved. That means not only must it be approached scientifically, but also from an economical, social, geopolitical, local political standpoint, and that of an individual's choice of lifestyle (Christianson, 1999). Humans in general are doing many things everyday to help reduce their carbon footprint believing that their efforts will help stop global warming.