Greenhouse Effect in Miami, Florida

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Abstract

Greenhouse gases in the Earth's atmosphere absorb the infrared radiation from the sun and release it. Much of the released heat reaches the earth, along with the heat of the sun that has already penetrated the atmosphere. Now both solar heat and radiated heat are absorbed by the earth and released. Some are reabsorbed by greenhouse gases to perpetuate the cycle. The problem is that the more of these gases exist, the more heat is prevented from escaping into space and, therefore, the earth is heated. This increase in heat is called the greenhouse effect.

Keywords: Methane, Carbon dioxide, pollution, greenhouse, temperature, levels.

Greenhouse Effect in Miami, Florida

According to the US National Oceanic and Atmospheric Administration (NOAA), the greenhouse effect is an increase in average earth temperature that occurs because certain gases absorb the infrared heat that normally radiates into space. Now, since carbon dioxide absorbs this heat, the more carbon dioxide there is in the atmosphere, the hotter the air will be. If the air gets too hot, the balance of life will be interrupted. Which will cause plant and animal species to die and the food chain to be altered. And this would cause many serious problems around the planet.

Atmospheric concentrations of both the natural and man-made gases have been rising over the last few centuries due to the industrial revolution. As the global population has increased and our reliance on fossil fuels (such as coal, oil and natural gas) has been firmly solidified, so emissions of these gases have risen. While gases such as carbon dioxide occur naturally in the atmosphere, through our interference with the carbon cycle (through burning forest lands), we artificially move carbon from solid storage to its gaseous state, thereby increasing atmospheric concentrations.

Climate Change

Climate Change versus global warming the term global warming has evolved over the past decade to the term climate change because we have realized that the greenhouse effect does not merely lead to warmer temperatures. The term global warming represents the long-term rise in the average global temperature and can be misleading because the actual weather effects associated with global warming can be highly variable, depending on the region. As a result, we now use the term climate change, which more accurately reflects that our concerns are much broader than global temperature increases.

Climate change is defined as a function of increased average temperature over time while the actual weather-related effects of a changing climate can impact variability and

extremes – including potential for warmer and cooler temperatures, wetter and dryer conditions, and changes in the intensity, frequency and patterns of storms. Global temperature increases affect many forces, including global weather patterns, ocean conditions and sea levels. Warming will not be the same for every region; long-term changes in average temperatures will have different impacts in different locations.

Greenhouse Effect in Miami

Florida is considered one of the most vulnerable areas to climate change, with southeast Florida especially susceptible to impacts such as rising sea levels. Miami-Dade County has been at the forefront of these issues for many years. The Board of County Commissioners and administrative departments have been implementing policies and initiatives to address climate change, environmental protection and other important sustainability issues, including energy efficiency and water conservation. Through early monitoring of greenhouse gas (GHG) emissions and analysis of climate change data.

One of the most significant challenges facing the southeast Florida region and the world is the threat of climate change although the planet has experienced natural cycles in atmospheric concentrations of carbon dioxide and temperature for more than 600,000 years, there is now an unprecedented rate of greenhouse gas (GHG) build up in the earth's atmosphere due to human activities. As a result, more and more of the sun's heat energy is trapped. Worldwide, changes are occurring to many interconnected forces that determine precipitation, temperature, severe weather patterns, sea level, ocean currents and acidification.

Current science is projecting that the southeastern United States could experience a general increase in average temperatures anywhere from 4.5o F to 9o F in the coming century depending on the Intergovernmental Panel on Climate Change greenhouse gas emissions scenario utilized for the projections (Intergovernmental Panel on Climate Change (IPCC), "Special Report" Appendix 1). This temperature change will likely manifest itself as an

increase in the number of days over 90o F, with the greatest temperature increases expected during the summer months.

Rising sea levels:It is important to note that relative sea-level trends vary across the world. Local sea level or the local mean sea-level trend is used for various planning needs associated with climate change adaptation planning.

The National Oceanic and Atmospheric Administration (NOAA) has three meters located in the southeastern region of Florida that measure the average sea level trend; Miami Beach, Vaca Key and Key West. According to NOAA, the average increase in sea level trend in the Key West tide indicator is about 2.24 millimeters per year from 1913 to 2006, which is roughly equivalent to a change of 0.73 feet in 100 years. A recent NOAA study indicates that additional tide gauges in the southeastern Florida area would allow more accurate regional integration of sea level rise and tidal fluctuations. These additional data can be useful as Miami-Dade County develops flood maps to assess vulnerable areas and infrastructure. The bottom line, however, is simple: sea level is increasing.

Temperature Increase in Florida.During the first seven months of 2010, southeastern Florida experienced firsthand the types of extreme temperatures that can occur as a result of climate change. According to the National Weather Service, the period from December 2009 to February 2010 was the coldest of three months in nearly four decades, with average daily temperatures of two to three degrees below normal throughout the region. Miami Beach experienced its second coldest winter, with an average temperature of 5.6 degrees below normal, and broke its coolest January-February mark of setting in 1958. United States Department of Commerce NOAA, "Hottest summer" n. In contrast, summer 2010 experienced higher than normal temperatures. These unusually high temperatures began in May and continued through the summer. In fact, the period from June to August was the hot summer of the history of the four major climate sites in South Florida such as Miami, Ft.

Lauderdale, Palm Beach and Naples. According to the United States Department of Commerce. NOAA

Rain Ends. Changes in precipitation patterns are also projected to affect the climate of Miami-Dade County. These changes may increase the likelihood of flooding and drought, which would have different but damaging impacts on the quality and supply of County water. Since the early 1900s, South Florida's spring, summer, and fall precipitation have fallen by almost 10 percent, as established by the United States Department of Commerce, NOAA, in 2009. However, local data indicate that there has been an increase in heavy downpours in the region, and a 2009 report from the Oceans and Coastal Council of Florida indicates that this trend may increase and be combined with longer droughts.

On the other hand, the six-month period from November 2008 to April 2009 was ranked as the second driest period recorded in most of South Florida. In May, this extremely dry season was quickly reversed to a very humid rainy season, with rainfall above normal that lasted until mid-July. In fact, a summer storm on June 5, 2009 threw a total of 9.3 inches of rainfall in South Beach, most of it in less than three hours, overwhelming the storm water drainage system by gravity. This caused severe flooding in areas of South Beach, Miami Beach and downtown Miami, leaving some areas with up to three feet of standing water.

Coastal erosion and shallow coastal flooding. Beaches and sand dunes are an important component of the region's coastline and are very dynamic, constantly changing due to natural erosion and the movement of sand by wind, currents and wave action. They can provide a first line of defense against the storm surge, and are significant assets that make the region an attractive tourist destination. Various climatic events leading to higher winds, tides and waves cause additional erosion, which can be severe. That is the case, which in Miami Dade County have addressed this issue since 1975 with their acclaimed Miami-Dade Beach Erosion Control Project. It is a highly recognized program as a national model and has won

numerous national and state awards. It is important to note that although the specific amount varies from year to year and from one project to another, Miami-Dade County invests approximately $ 6 million annually in beach restoration. On the other hand, communities adjacent to the ocean and intracoastal waterways regularly experience high tide floods, which occasionally inundate coastal communities through storm water drainage systems and low sea walls, to damage in infrastructure and goods.

Tide levels during June 2009 were six inches to two feet above normal, according to experts, the moon cycle contributed to this event, which is not necessarily unusual. But nevertheless, the geographic extension of this event along all the east coast made that this event of high tide was anomalous.

Storms and extreme Damage. There is a lot of scientific research on the causes, trends and complex factors that affect the development of tropical storms and hurricanes. As the atmosphere warms, sea surface temperatures and wind shear will also increase, these factors can have opposite effects in tropical storms. Also, the role of sea temperatures is complicated, as the temperature rises, the general frequency of storms may decrease, but the intensity of the strongest storms may increase.

However, account must also be taken of the problems they produce from climate change and its effects on these storms, and future trends and impacts become extremely abnormal. While what is clear is that our community will continue to experience these events, and they can have devastating impacts.

As is well known, the region is no stranger to hurricanes, as demonstrated by Hurricane Andrew in 1992 and the busy 2005 hurricane season where we live the power of Katrina and Wilma.

Our source of electricity. Florida Power and Light (FPL) is Miami-Dade County's main electricity provider, with two FPL power plants within the boundaries of Miami-Dade

County. Turkey Point, is located in Biscayne Bay, which holds two nuclear power units and is also an oil and gas facility. The 2,337.5 megawatt (MW) plant has the capacity to meet the annual electricity needs of more than 450,000 households. Cutler Ridge, an oil and gas plant, has a considerably smaller capacity of 236.5 MW (FPL).

Homestead Electric, a municipal-owned company, also serves Miami-Dade County, but supplies less than one percent of its electricity. In 2008, 219.6 million megawatts (MWh) were consumed in the state of Florida, approximately 27.3 million of which were used by Miami-Dade County households, businesses and government operations. Thus Miami-Dade's electricity consumption accounted for approximately 12.5 percent of Florida's total consumption, while its residents accounted for approximately 13.5 percent of the state's population.

Strategy: Expanding the industries of alternative fuels (biodiesel/biodiesel based on waste) or renewable energy is the most accessible and cost-effective way to reduce water and energy consumption. The use of renewable energy sources that can provide global sustainability benefits to our community should be encouraged: sustainable biodiesel, including waste-based biodiesel and renewable energy. The use of these nontraditional energy sources can be accelerated by the deployment of technology and the construction of local infrastructure, as the State of Florida does not have a renewable portfolio standard, and the community does not aggressively seek distributed solar or energy efficiency facilities, the initiatives in this strategy address the need to stimulate the renewable energy market.

New fuels should be analyzed to ensure they are of sustainable origin and have net environmental benefits. To estimate the impacts of renewable and alternative fuels on GHG emissions, the entire fuel life cycle, including fossil fuel extraction or raw material growth, fuel production, distribution and combustion, should be evaluated. No emission reductions

were calculated for this strategy; however, it is clear that by shifting the use of fossil fuels, large reductions of GHG emissions can be achieved.

An effective measure, it could be to replace conventional vehicles with their hybrid counterparts that are 25 percent more fuel efficient, we will have reduced emissions by 25 percent per year.As well as deploying more trains and buses, even though this action would increase overall fuel usage, implementing more means of transportation would help reduce miles traveled by personal vehicles.

Another way to reduce the effects of climate change is to use energy and water more efficiently and more conservatively, which would allow for the reduction of greenhouse gas emissions.

References

Cataldo R. (2014). Water Vapor, Not Carbon Dioxide, Is Major Contributor to the Earth's Greenhouse Effect: Putting the Kibosh on Global Warming Alarmists. XLIBRIS

Intergovernmental Panel on Climate Change (IPCC), “Special Report”. (2000). Published for the Intergovernmental Panel on Climate Change.

Johnson R. (1990). Greenhouse Effect Life on a Warner Planet. Lerner Pub Group

Karl T, Melillo J, Peterson T. (2009). Global Climate Change Impacts in the United States. Cambridge University Press.

Miller G., Spoolman S. (2010). Environmental Science. Book/Cole. Belmont. 13 edition.

Ronald F. Follett and John M. Kimble. (2000). The Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect. 1 edition

Solnes E. (2017). The Greenhouse Effect and Global Warming: Cause and Effect Amazon Digital Services LLC.

The National Oceanic and Atmospheric Administration (NOAA). Recovered from: http://www.noaa.gov/