

Climate Change Causes and Solutions

Mandy Philbrick

Instructional Science and Technology, California State University, Monterey Bay

IST 511: Writing Workshop

Dr. Sarah Evanick

November 1, 2022

Climate Change Causes and Solutions

It is imperative that residents of planet Earth be aware of climate change, but the subject is a complex one to breach. The Monterey Bay Aquarium's (MBA) mission to inspire conservation of the ocean drives their efforts to educate and empower the public (Monterey Bay Aquarium [MBA], 2022c). To this end, they offer online courses, field trips for students, and teacher development programs (MBA, 2022a). As my capstone efforts to collaborate with the Monterey Bay Aquarium commence, I am striving to solidify my understanding of climate change causes and the actions individuals can take to combat its negative effects.

It is helpful to begin with an understanding of the greenhouse effect. This is the warming that results when the atmosphere holds in heat that emits from the Earth toward space (Shaftel et al., 2022, para. 1). The greenhouse effect allows life to exist on Earth. However, emissions are accumulating at such a rate that negative effects of heat retention are affecting our planet.

Greenhouse gases that cause heat retention include:

- ◆ Carbon dioxide
- ◆ Methane
- ◆ Nitrous oxide
- ◆ Chlorofluorocarbons

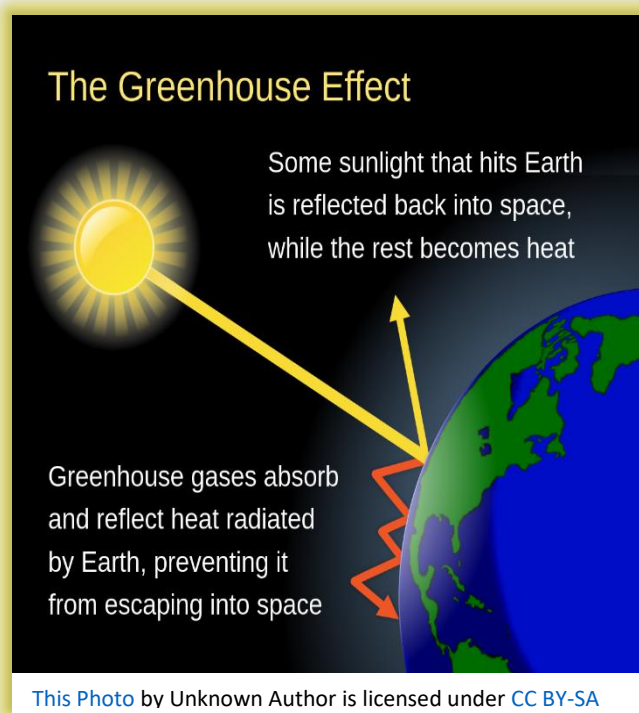


Figure 1: Untitled depiction of the greenhouse effect (Wikipedia, n.d.)

These heat-trapping greenhouse gases are made by a variety of sources. Production may be attributed to natural processes like volcano eruptions and organism decay, or they may be due to human activities like the burning of fossil fuels and deforestation (Shaftel et al., 2022). Review the table below to discover which greenhouse gas is solely the result of human activities.

Table 1

What Creates Greenhouse Gases?(Shaftel et al., 2022)

Greenhouse Gas	Carbon Dioxide (CO ₂)	Methane (CH ₄)	Nitrous oxide (N ₂ O)	Chlorofluorocarbons (CFCs)
Natural Processes	x	x	x	
Human activity	x	x	x	x

Climate change is warming the ocean, causing it to grow more acidic and reducing its oxygen levels (MBA, 2022b). The ocean absorbs most of the extra heat greenhouse gas emissions create. This warming leads to reduced ability of the ocean to hold oxygen, endangering much of ocean life. Additionally, the ocean has absorbed about 25 percent of the carbon dioxide created since the advent of the Industrial Revolution (MBA, 2022b).

Global leaders have taken action to protect our planet:



Figure 2. Picture of ocean (own photo)

The Paris Agreement is the first global commitment by world leaders to fight climate change. Signed in 2015, the Paris Agreement set the goal of keeping the average global temperature within 2 degrees Celsius of pre-industrial levels. The Agreement called on each nation to set its own targets and strategies to reduce emissions. (MBA, 2022b, para. 42)

You can make a difference in protecting our home planet as well. The Monterey Bay Aquarium suggests several actions individuals can take to reduce negative impacts (MBA, 2022d):

- ◆ Support climate leaders and policies
- ◆ Use alternative transportation
 - Research local transit options
 - Consider high-efficiency or electric options if purchasing a vehicle
- ◆ Reduce energy use
 - Turn off lights not in use and switch to LED bulbs
 - Wash laundry in cooler water
 - Put on extra clothing layers before adjusting the thermostat
 - Communicate with your utility provider on possible energy reduction options
- ◆ Reduce, reuse, and recycle
 - Buy from second-hand stores in your area
 - Repair items before replacing them
 - Eat sustainable seafood
 - Avoid single-use plastic

Addressing climate change is a daunting challenge. With the combined actions of individuals and world leaders, we can hope to make a difference.

References

Monterey Bay Aquarium. (2022a). *Bechtel family center for ocean education and leadership*.

<https://www.montereybayaquarium.org/for-educators/bechtel-education-center>

Monterey Bay Aquarium (2022b). *The challenge*. [https://www.montereybayaquarium.org/act-](https://www.montereybayaquarium.org/act-for-the-ocean/climate-change/the-challenge)

[for-the-ocean/climate-change/the-challenge](https://www.montereybayaquarium.org/act-for-the-ocean/climate-change/the-challenge)

Monterey Bay Aquarium. (2022c). *Our mission and leadership*.

<https://www.montereybayaquarium.org/about-us/our-mission-and->

[leadership#:~:text=The%20mission%20of%20the%20nonprofit,the%20best%20in%20the%20world.](https://www.montereybayaquarium.org/about-us/our-mission-and-leadership#:~:text=The%20mission%20of%20the%20nonprofit,the%20best%20in%20the%20world.)

Monterey Bay Aquarium. (2022d). *What you can do*.

<https://www.montereybayaquarium.org/act-for-the-ocean/climate-change/what-you-can-do>

Shaftel, H., Callery, S., Jackson, R., Bailey, D., & Callery, S. (2022, Oct 26). *The causes of climate change*. Earth Science Communications Team at NASA's Jet Propulsion

Laboratory/California Institute of Technology. <https://climate.nasa.gov/causes/>

[Untitled depiction of the greenhouse effect]. (n.d.)

https://en.wikipedia.org/wiki/Greenhouse_effect