

Notes for: Climate Impacts and Solutions

Bill Middlecamp

What Greenhouse Gasses Do For Us

The interaction of sunlight on the Earth is like water flowing by an island in a stream. The Earth absorbs light energy from the Sun, which converts to heat energy to warm the Earth, and then the energy radiates out to space. Over time, equilibrium is reached with the outflow matching the inflow, and this determines the average temperature of the Earth.

Without an atmosphere the equilibrium temperature would be about zero degrees Fahrenheit. Greenhouse gasses in our atmosphere slow down the energy escaping to space, like the way that a dam below an island would raise water levels around it, which increases the level of heat in the Earth system so that average global temperature is about 57F. This equilibrium has been in place for about 8,000 years. When the height of a dam is raised, water begins to inundate the land and changes its nature until a new equilibrium is reached. When atmospheric greenhouse gasses are increased, heat flows into our environment until a new equilibrium is reached, which changes the Earth's nature in ways that humans have not lived since the rise of civilizations.

The Earth's Nature Changing Nature

Heat is the fuel that powers weather, and climate follows where the weather leads. Climate determines where humans can live and grow food. The measurability of impacts has been growing since about 1980. The rate of impacts is accelerating. Future impacts cannot be predicted because the amount of greenhouse gasses is beyond human experience and continues to increase.

Solutions Are Possible

Aggressively reducing the releases of greenhouse gasses can slow the impacts of climate change, giving humans more time to mitigate the damages and to develop systems to eliminate further releases. Individual actions cannot solve this. The solutions touch nearly every human activity. Status quo is ultimately more expensive than the solutions.

What You Can Do

1. Talk about it
2. Encourage change toward solutions goals
3. Support legislation to set the economy on a winnable path

Resources

1. <https://nca2023.globalchange.gov> FIFTH NATIONAL CLIMATE ASSESSMENT
2. <https://climate.nasa.gov> NASA GLOBAL CLIMATE CHANGE
3. <https://citizensclimatelobby.org> Citizens' Climate Lobby
4. <https://fresh-energy.org> Fresh Energy (MN Organization)
5. Book: Saving Us – A Climate Scientist's Case for Hope and Healing in a Divided World, By Dr. Katharine Hayhoe
6. <https://www.climateinteractive.org/en-roads/> EnROADS global climate simulator
7. <https://umcmmission.org/earthkeepers/> UM Global Ministries EarthKeepers
8. <https://www.minnesotaumc.org/hopefulearth> UM MN Hopeful EarthKeepers