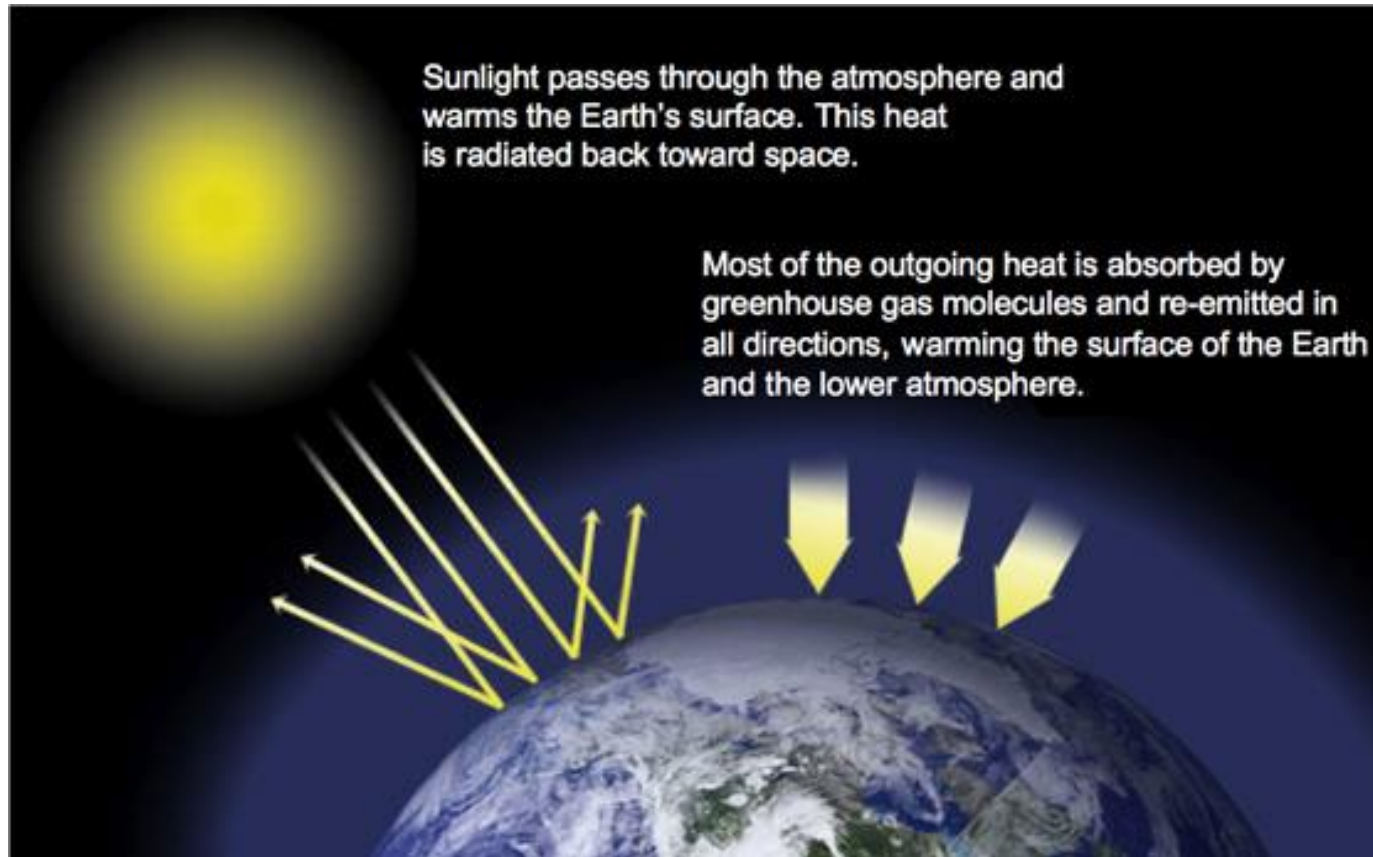


Final project

Luis jorge

How does Carbon
Emissions Contribute to
Climate Change?

We live in a greenhouse

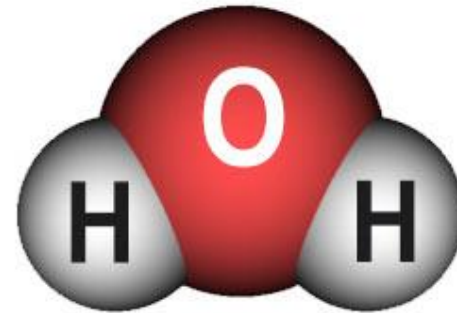


According to NASA, half the sunlight reaching Earth's atmosphere passes through the air and clouds to the surface, where it is absorbed and then radiated upward in the form of infrared heat. About 90 percent of this heat is then absorbed by the greenhouse gases and radiated back toward the surface accumulating heat on a global scale.

Molecules that make up greenhouse gases

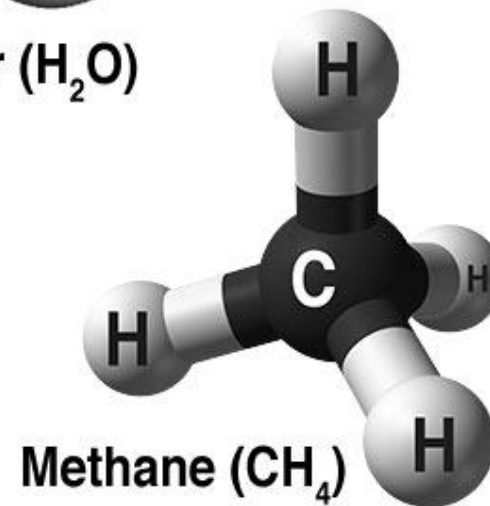
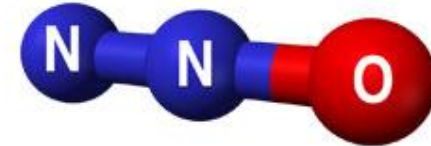
Water vapor increases as the Earth's atmosphere warms, but so does the possibility of clouds and precipitation, this is one of the most important feedback mechanisms to the greenhouse effect.

carbon dioxide is released through natural processes such as respiration and volcano eruptions and through human activities such as deforestation, land use changes, and burning fossil fuels. Humans have increased atmospheric CO₂ concentration by more than half since the Industrial Revolution began.

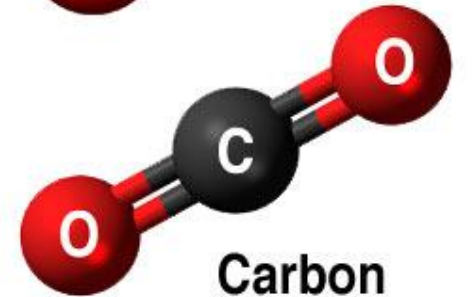


Water vapor (H₂O)

Nitrous oxide (N₂O)



Methane (CH₄)

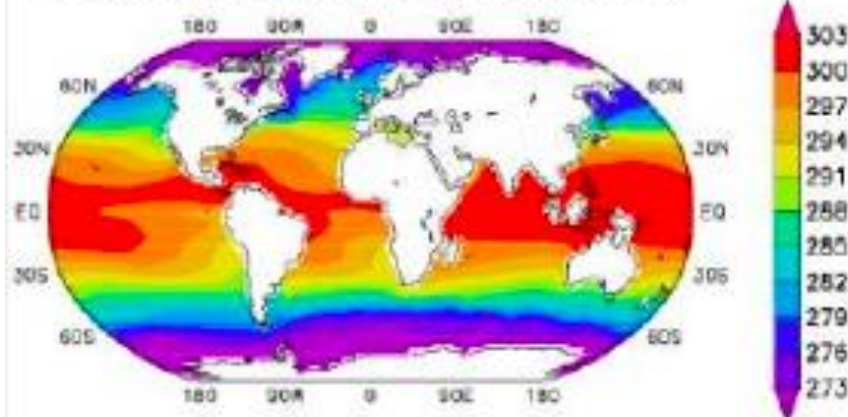


Carbon dioxide (CO₂)

Water Vapor Feedback

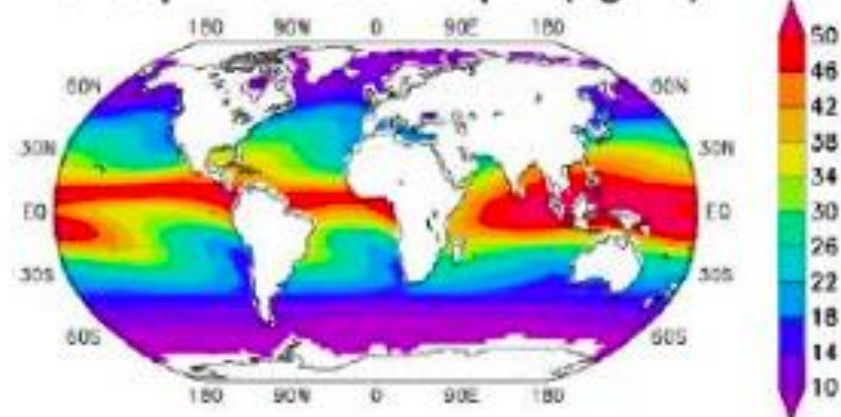
Satellite observations illustrate how water vapor enhances regional differences in ocean temperature.

Ocean Surface Temperature (K)



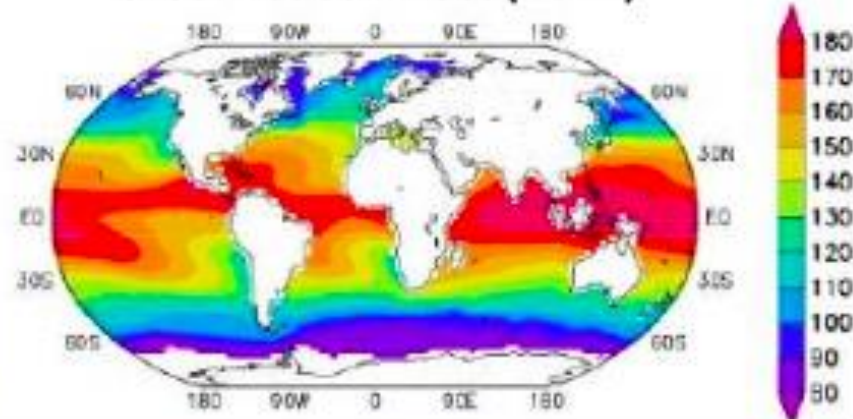
1.

Atmospheric Water Vapor (kg/m^2)



2.

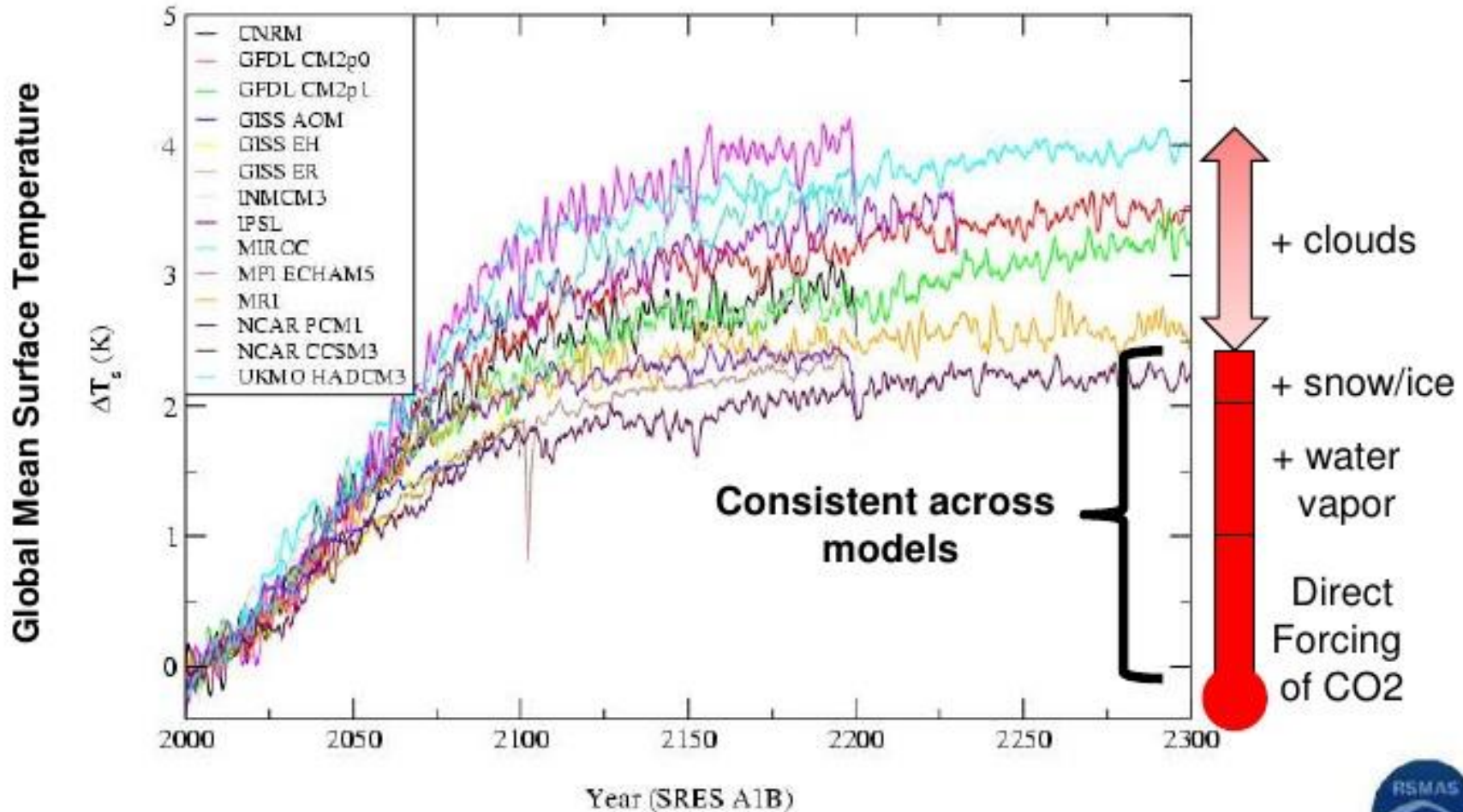
Greenhouse Effect (W/m^2)



3.

1. Warmer oceans \rightarrow more water vapor.
2. More water vapor \rightarrow larger Greenhouse Effect.
3. Larger GHE \rightarrow warmer oceans.

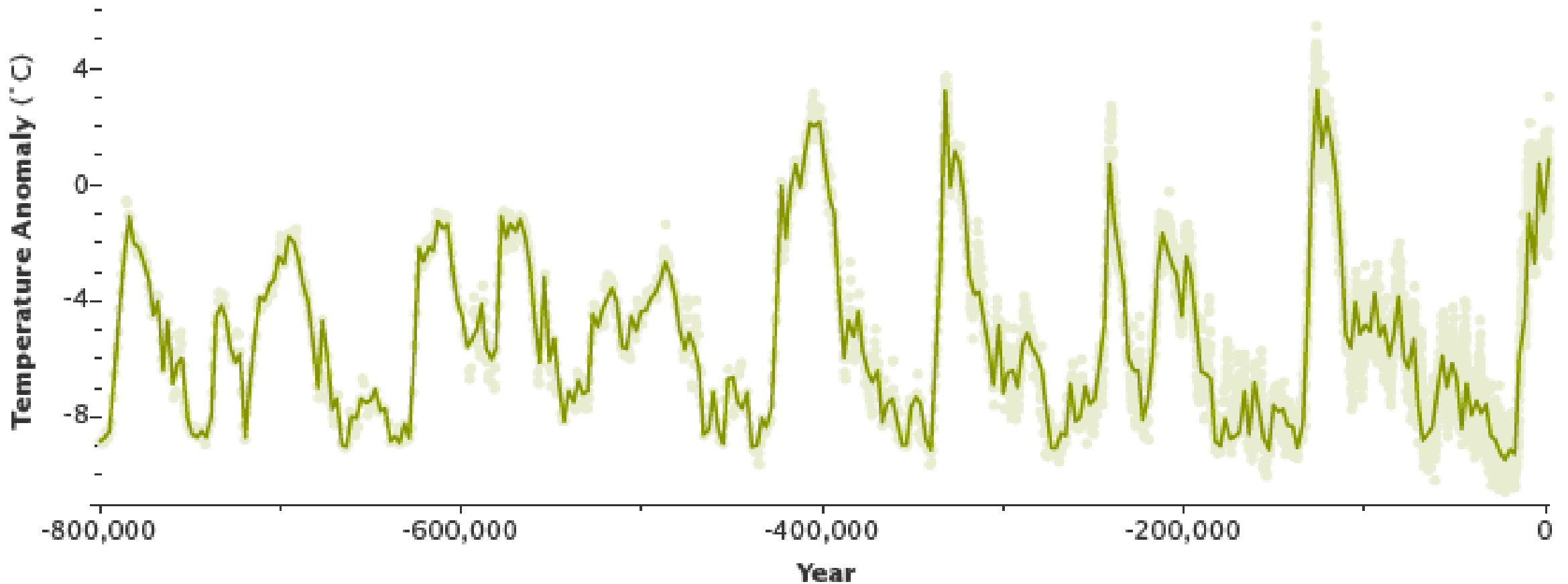
Key Climate Feedbacks IPCC AR4 GCMs



How hot has it gotten ?

- Averaged over all land and ocean surfaces, temperatures warmed roughly 1.53 degrees Fahrenheit (0.85 degrees Celsius) from 1880 to 2012

Temperatures On An Average Paleoclimate Years



Human Activity Produces



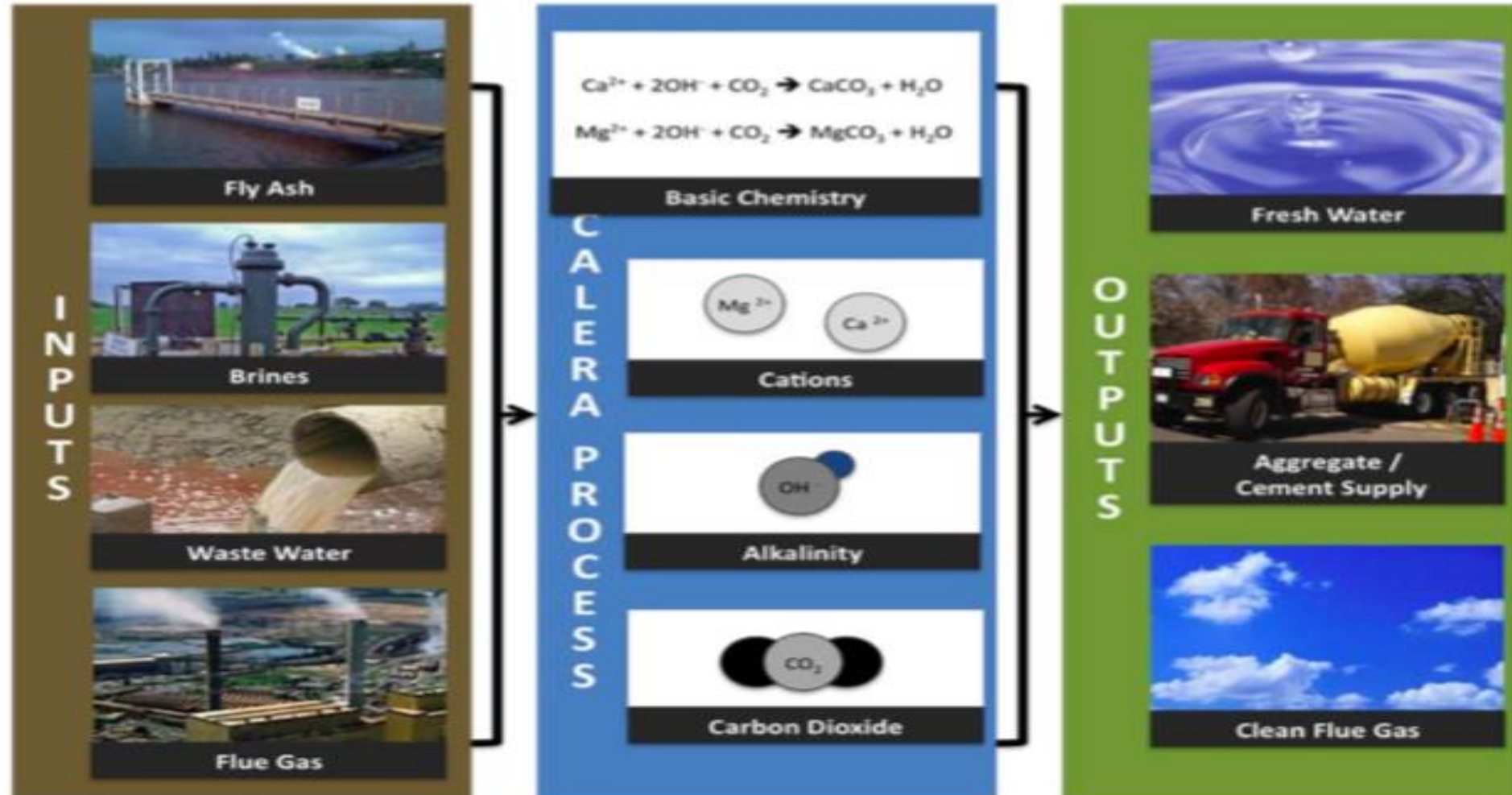
In Fifth Assessment Report produced by the Intergovernmental Panel on Climate Change the Intergovernmental Panel on Climate Change, a group of 1,300 independent scientific experts from countries all over the world under the auspices of the United Nations, concluded there's a more than 95 percent probability that human activities over the past 50 years have warmed our planet. Activities such as Commercial and Residential deforestation to place commercial and Residential buildings. The barely “regulated” production needed to place items of value For both commercial and residential buildings

Rising carbon dioxide is making the world's plants more water-wise

- According to Pep Canadell, a research scientist in CSIRO Oceans and Atmosphere, and the Executive Director of the Global Carbon Project, an international research project to study the interactions between the carbon cycle, climate, and human activities.
- Land plants are absorbing 17% more carbon dioxide from the atmosphere now than 30 years ago, as predicted shows

The Calera Process

Inputs and Outputs of the Calera Process



References

Callery, Susan. "Climate Change Causes: A Blanket around the Earth." NASA, NASA, 10 Aug. 2017, climate.nasa.gov/causes/.

Canadell, Pep, et al. "Fossil Fuel Emissions Hit Record High after Unexpected Growth: Global Carbon Budget 2017." *The Conversation*, 13 Nov. 2017, theconversation.com/fossil-fuel-emissions-hit-record-high-after-unexpected-growth-global-carbon-budget-2017-87248.

Canadell, Pep, et al. "Rising Carbon Dioxide Is Making the World's Plants More Water-Wise." *The Conversation*, 24 July 2017, theconversation.com/rising-carbon-dioxide-is-making-the-worlds-plants-more-water-wise-79427.