

What effects does Climate Change have on Agriculture?

BY MARIE DORLINE DESIR

A solid green horizontal bar at the bottom of the page.

Throughout history earth has warmed up and cooled down naturally

SNOWBALL EARTH

700 million years ago ice sheets covered more and more of earth's surface.

Earth was in an ice age so cold that sheet of ice reach the equator



Throughout history earth has warmed up and cooled down naturally 2

DINOSAUR ERA

About 55 million years ago earth's temperature kept rising up and up/

It was so hot that tropical species, like palm trees and crocodiles lived above the circle

There is no proof of glaciation in this era



The Green House Effect History

In the 1930's a British engineer Guy Stewart Callender claimed that carbon emissions have a warming effect in the earth's atmosphere. This graph represents the raise in temperature over an 100 years period. It depicts a change of 4° Celsius over that period

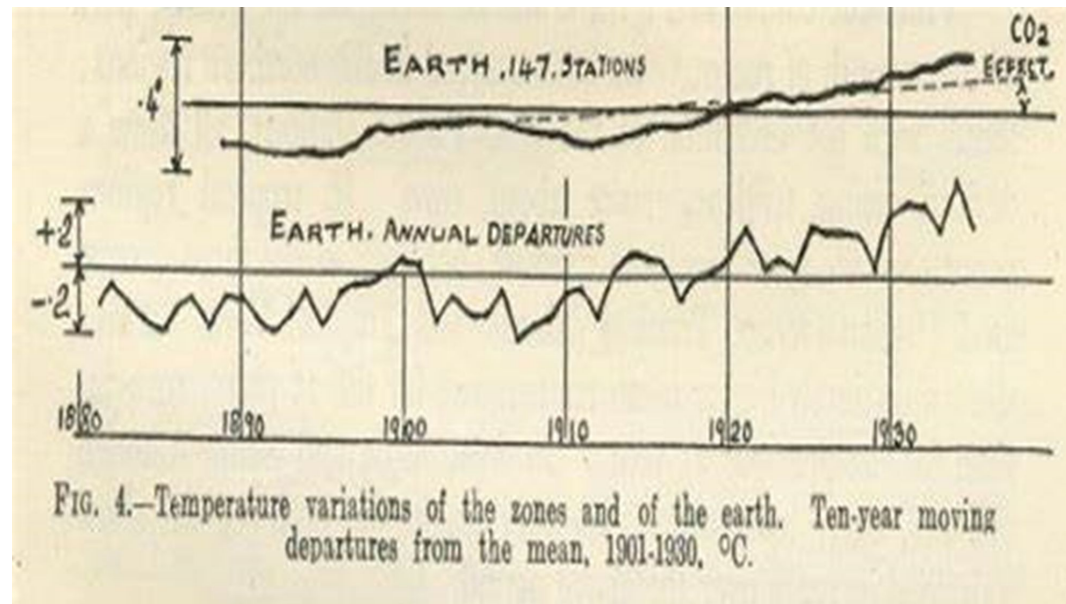


FIG. 4.—Temperature variations of the zones and of the earth. Ten-year moving departures from the mean, 1901-1930, °C.

The Green House Effect History 2

A four degree difference may seem small but considering that having a fever is the difference of 1°C . Where 38°C is having a fever compare to 37°C that is a normal temperature.

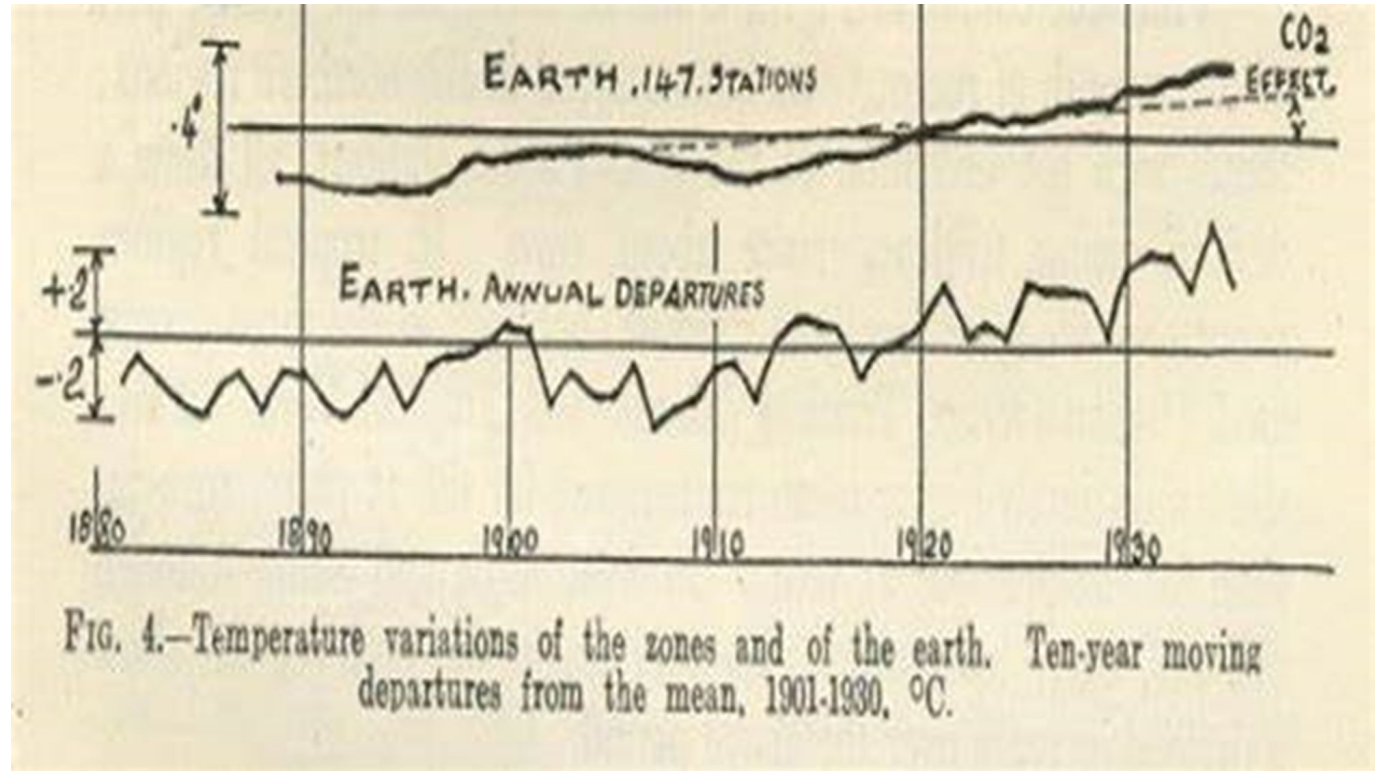
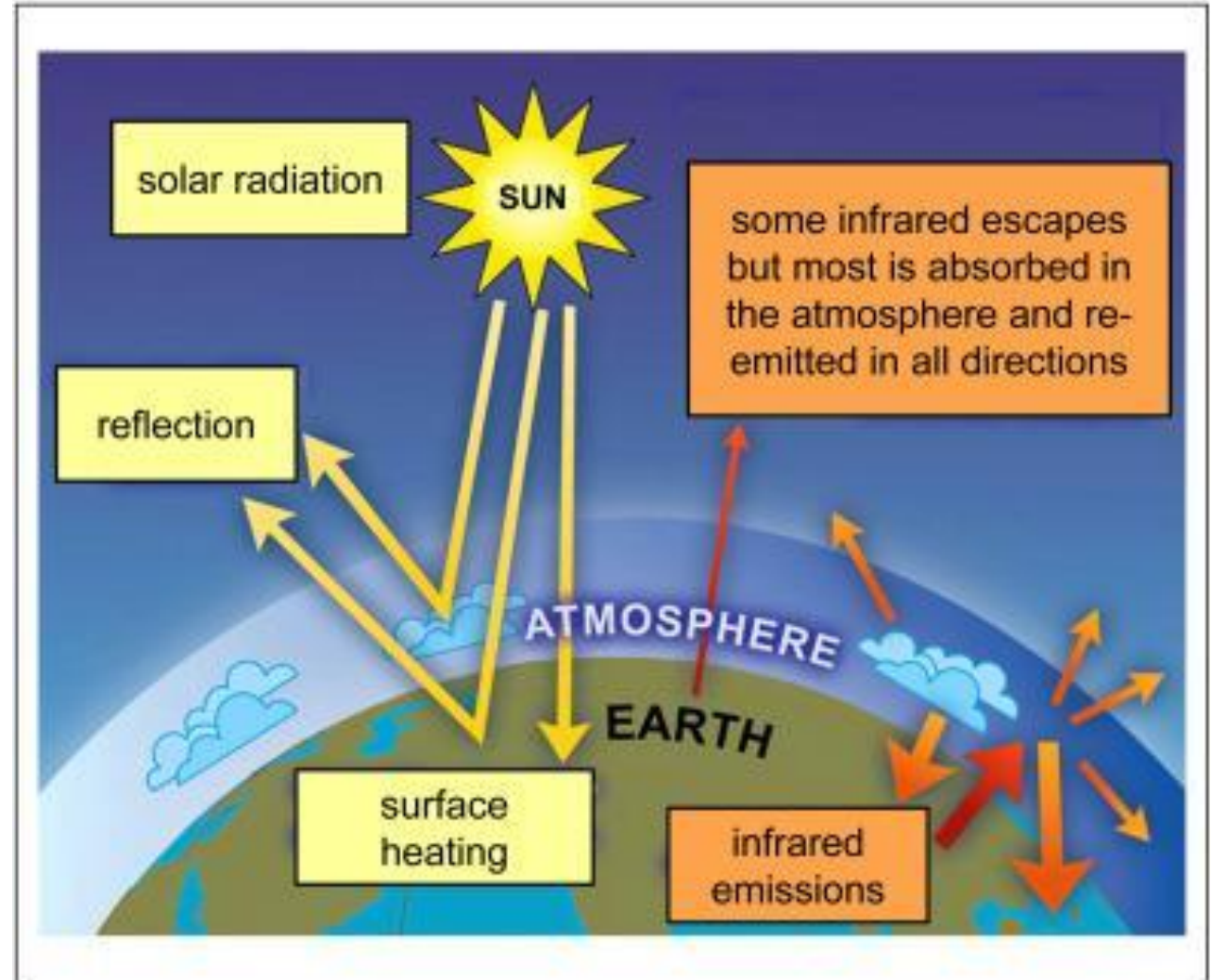


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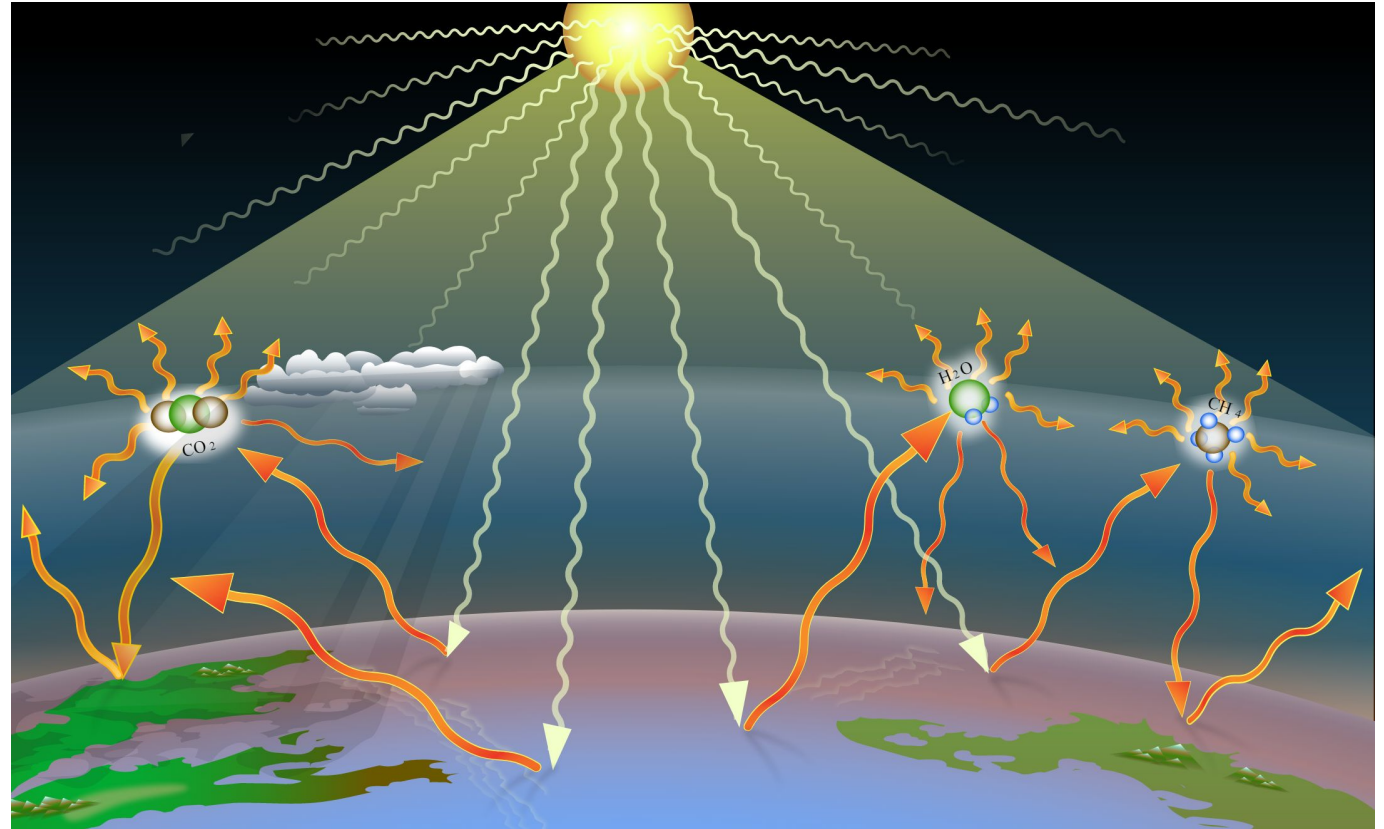
The Green House Effect History 3

In the 1960's early research predicted rising of carbon dioxide levels could produce a warming of 1 degrees C in the next century.



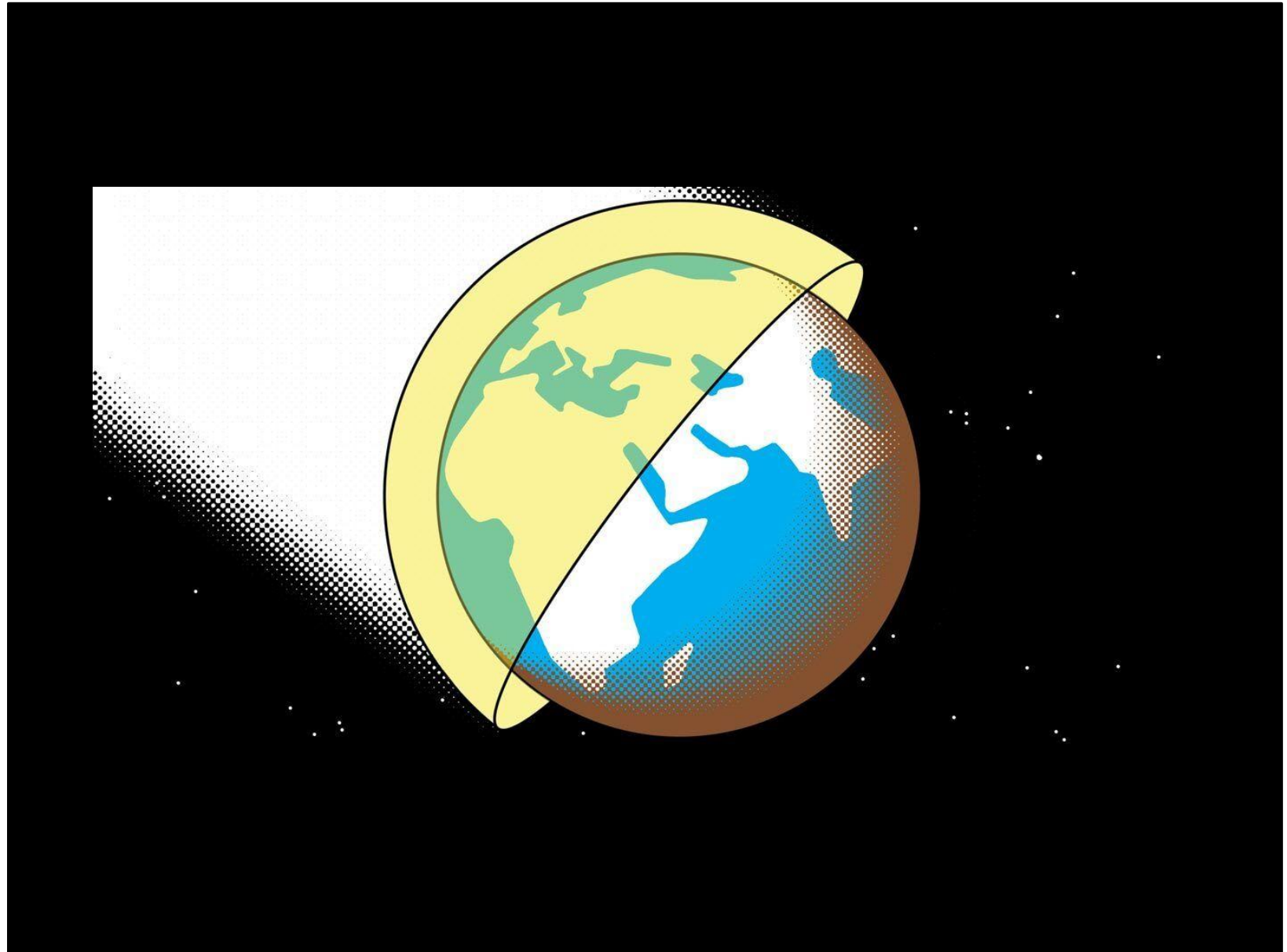
The Green House Effect History 4

The CO₂ form an extra layer that prevent to heat radiate from the sun or generate on earth to leave the planet. It keeps the planet from cooling down



The Green House Effect History 5

However in the 1970's earth went through a cooling period because aerosol pollutants droplet in the atmosphere reflecting sunlight away from the planet. This cooling period was short and temperatures resumed climbing up and up.



The Green House Effect History 5

In the 1980's global temperatures rise again. Up until that point 1988 was the hottest summer ever recorded. 1988 saw widespread droughts and wildfires.

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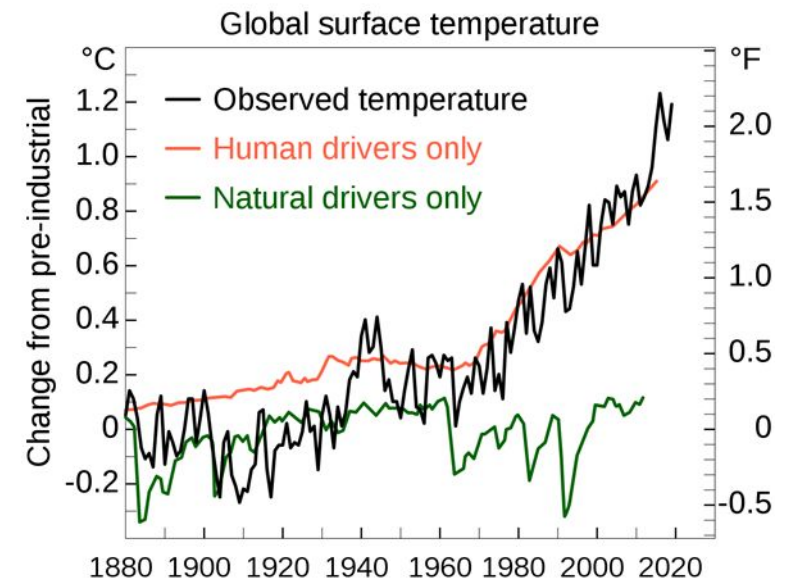


Sources of Greenhouse Gas Emissions Today

Greenhouse gases trap heat and make the planet warmer.

- Carbon Dioxide
- Water Vapor
- Methane
- Nitrous Oxide

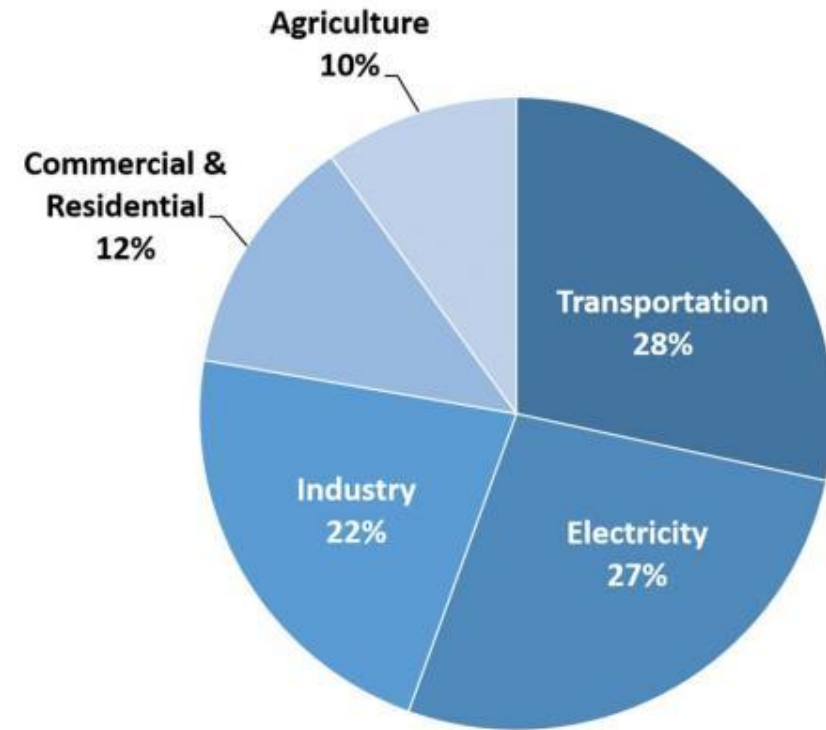
People are responsible for an increase in the amount of greenhouse gases in earth's atmosphere.



Sources of Greenhouse Gas Emissions Today 2

Most of greenhouse gas emissions come from burning fossil fuels needed to make our cars, trucks, and plane run.

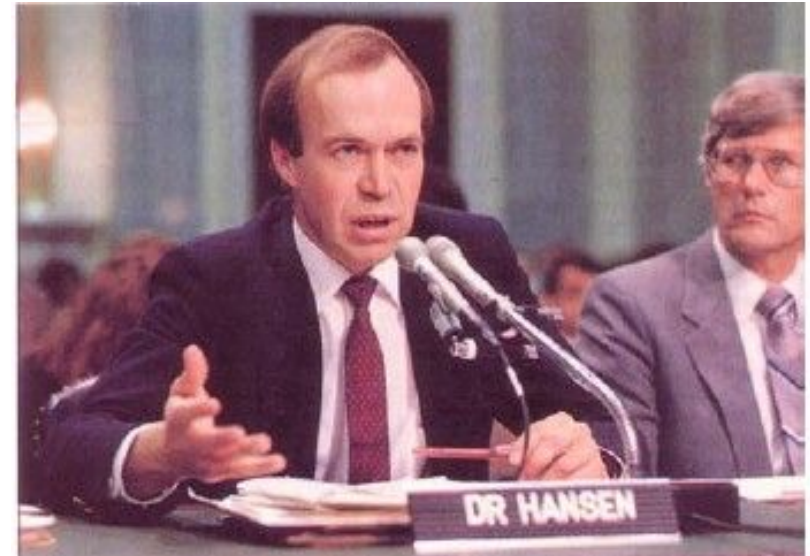
9.9 percent of 2018 greenhouse gas emissions are from agriculture. This includes cows, agriculture soils, and rice production.



Global warming gets real

Once scientists began speaking up about climate change. The media and the general public started to pay attention.

In June 1988, James Hansen a NASA scientist state that global warming has arrived.

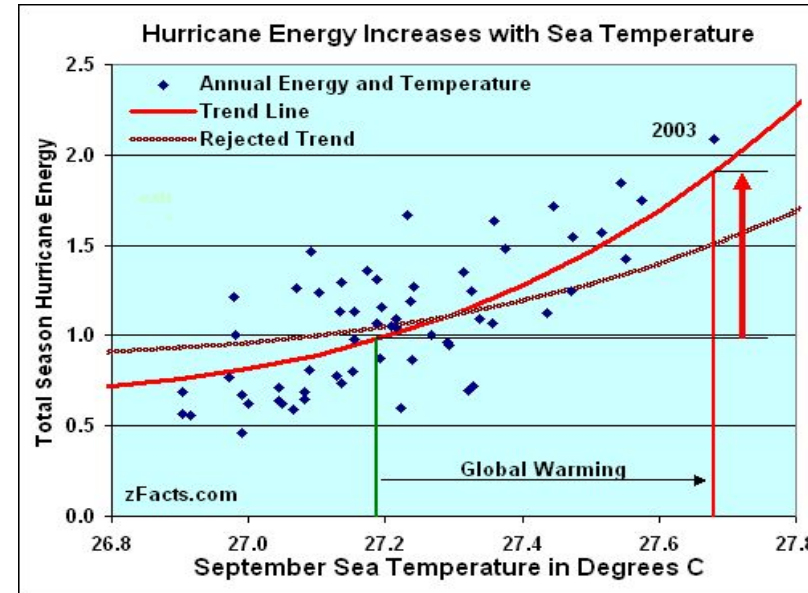


Hansen giving testimony before the United States Congress in 1988

Global warming gets real 2

In 1989, scientists began to learn about the consequences of a warming climate.

Studies at that time predicted severe heat waves, droughts, and hurricanes would hit



As temperature rise, we will see 60% more hurricane than what was projected.

Climate Change

What is climate change?

- Climate change is rising temperatures.
- Climate change is severe droughts.
- Climate change is increased rain and snowfall.
- Climate change is **EXTREME WEATHER EVENTS**.

How Climate Change Affects Agriculture?

Within the same location there are more heavy rainfalls and longer dry periods. This causes the soil to become bare and low in organic matter (minerals).

How Climate Change Affects Agriculture 2?

There are more extreme heat days throughout the smaller crop yields. Crop failures increase from extreme temperature changes. Crops can only grow within certain temperature ranges.

There is more flooding across the Midwest. Flooding accelerates soil erosion and water pollution.

There are new threats to crops like pest and weeds.



Dying crops due to heat



Water Pollution



Field flooding



Soil Erosion

Farmers and Ranchers have Set up a Petition

The are advocating for change and action because climate change is threatening the agriculture industry.

Temperatures are rising and flooding is severe and there are long stretches of drought.

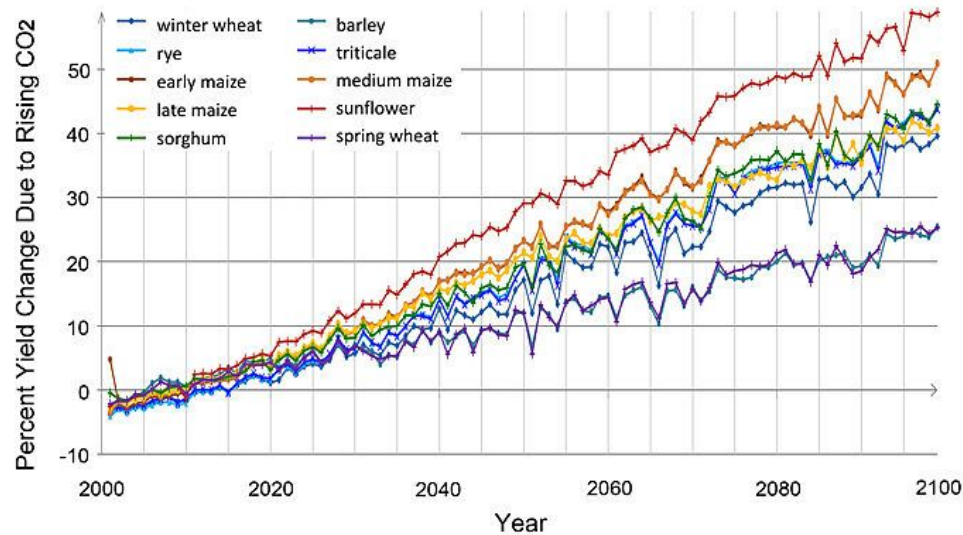
New farming measures need to be put into place to make farming more resilient to extreme weather events.

Farmers need to be apart of the climate change solution.

Farmers must take steps to reduce their reliance on fossil fuel to reduce the greenhouse gas emissions.

Preparing Plants for Climate Change

This is research study trying to show how climate change has an effect on how crops will grow when there is more carbon dioxide in the atmosphere.



They set up an experiment where they increase the amount of carbon dioxide in earth's' future atmosphere.

Preparing Plants for Climate Change 2

The researchers used warmer weather temperatures, less water and light.

The result showed that higher levels of carbon dioxide does not affect how plants grow.

However the change in temperature affect the change in weather condition which is affect other aspect of farming.

- Water pollution
- Field flooding
- Soil erosion

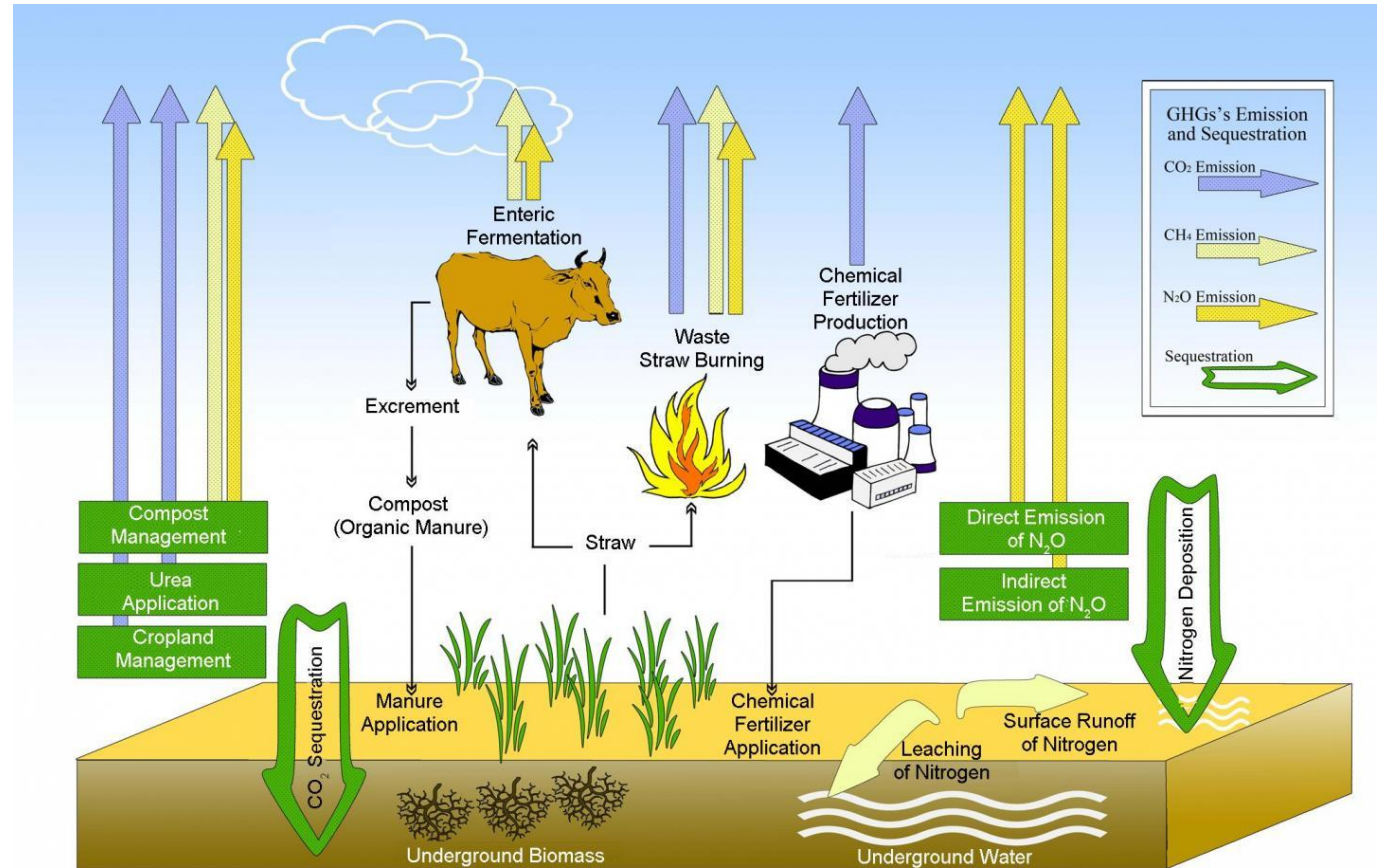
Think about carbon dioxide greenhouse gas emissions and how it affects earth's atmosphere

Organic Farming

Some scientist believe organic farming reduces greenhouse gas emissions.

The organic compound use in the soils reduce the greenhouse gas residing in the ground

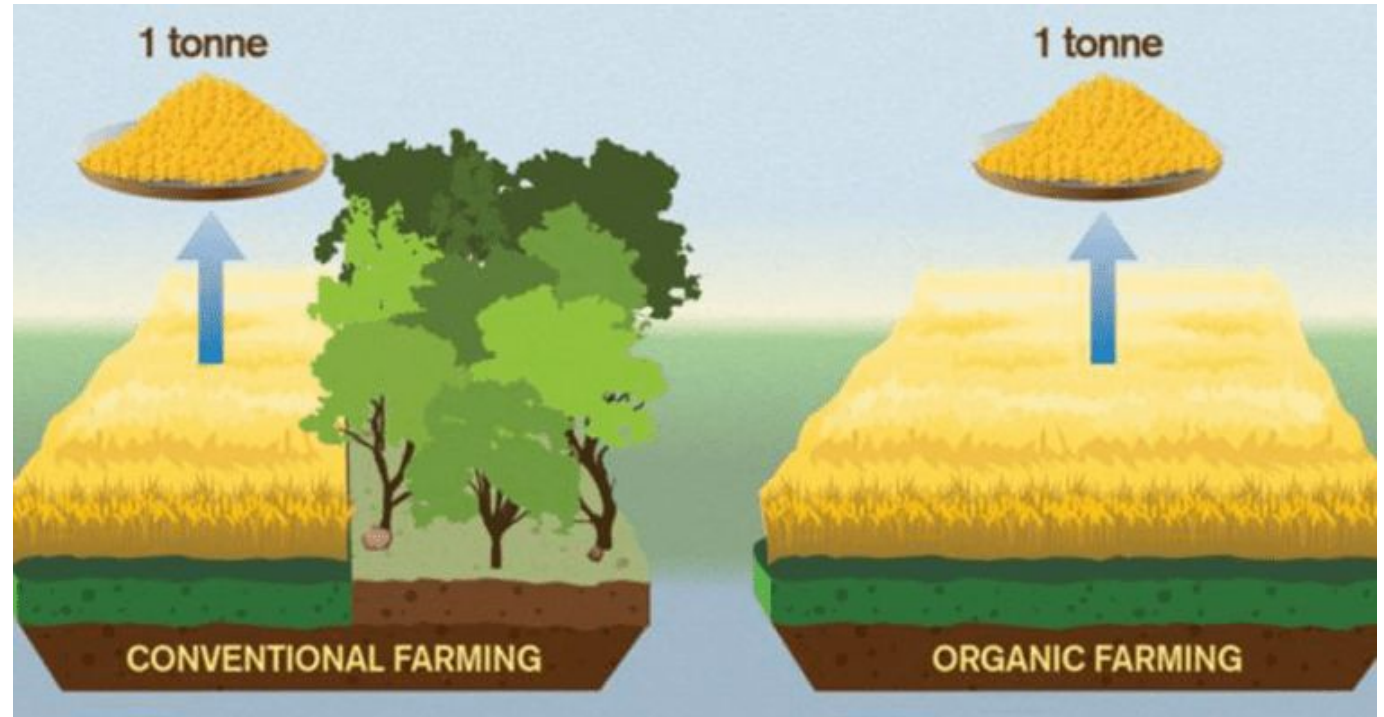
Organic farming builds up the organic matter in the soil that help farmers produce healthy crops and retain water.



Organic Farming

Some scientists believe organic farming is worse for the environment and cause climate change.

Organic farming use more land to grow crop but yield lower produces by using more land they emit more greenhouse gases while producing lower result.



What Do Farmers Think About Climate Change?

Farmers who trust environmental groups for information believe climate change is occurring and is caused by humans

Most farmers who trust environmental groups support adapting to climate change.

The change include

- Covering crops to hold soil.
- Managing fertilizers more efficiently.
- Reduce tillage

What Would Happen to Our Planet if Climate Change Continues?

- Farms could shutdown.
- People could starve and get sick
- The cost of food could rise uncontrollably
- Trade would be affected.
- Countries could hoard their crops.
- Crops could be held for political control.
- THE WORLD WOULD FALL INTO UTTER CHAOS AND CONFUSION.

Conclusion

Farmers work hard to produce the foods we eat.

Farming must become more sustainable .

Farming must become more environmental and resourceful friendly.

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Thank you for your attention

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