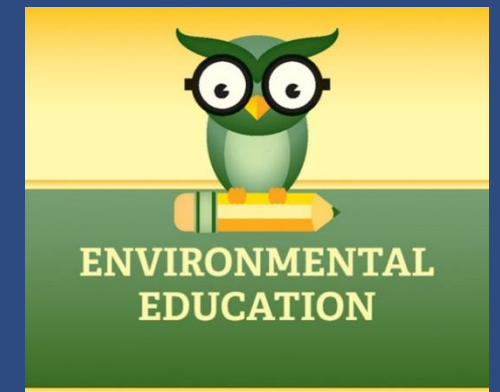


# Greenhouse Gases Activity

What are they and what do they do?



What you'll need....



2 Empty Mason Jars or plastic bottles

#1



Soil

#2



Water

#3



Thermometer

# Instructions



1. Assemble your two jars/bottles with soil, water, and a thermometer in each jar.
2. Place a piece of saran wrap over one of the jars and secure with a rubber band (with thermometer inside)
3. Leave the other jar uncovered with thermometer inside.
4. Record the initial temperatures showing on each of the thermometers.
5. Place both jars on a window sill or outside to set it in sunlight.
6. Leave jars in sunlight, or under a strong lamp, for 15 minutes.





After 15 minutes~

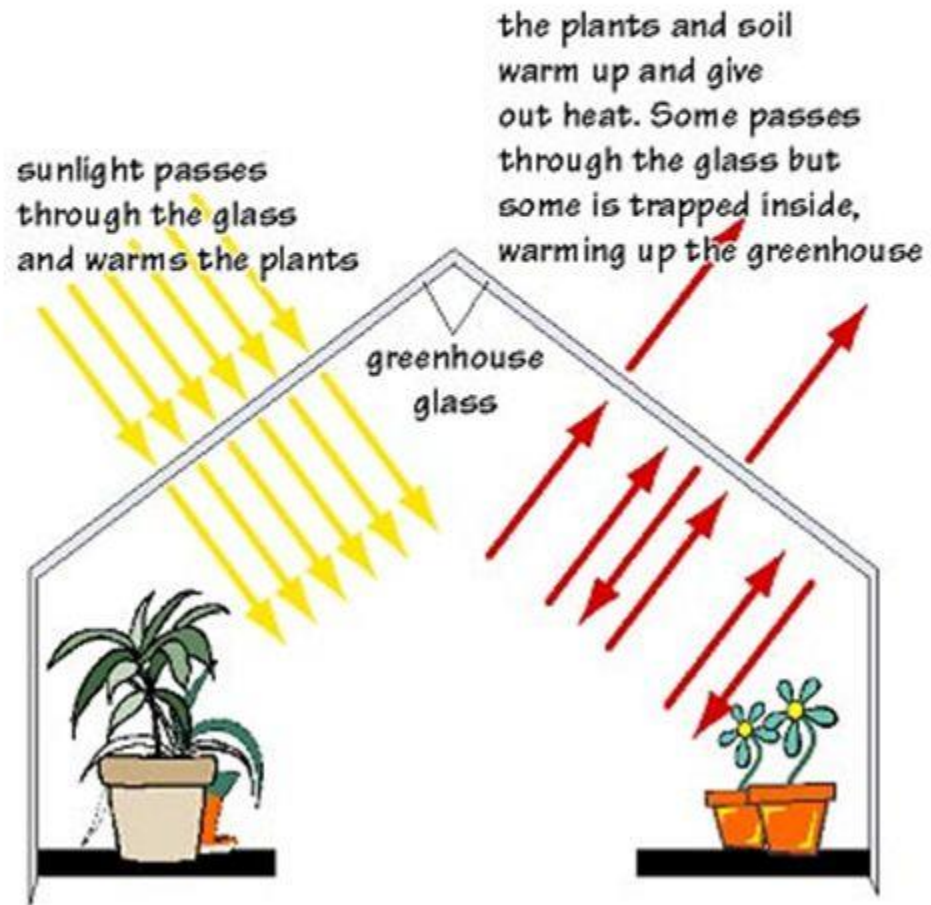
- Is the temperature the same in each jar/bottle?
- Is one a higher temperature? Which one?
- Calculate the difference between the two temperatures.
- What is your hypothesis as to why there may be difference in the temperatures?
- See next slides for possible explanation



GLOBAL WARMING IS ALSO CALLED:

THE GREENHOUSE EFFECT!

So what is a greenhouse? How does it work? What has this got to do with global warming then??



What if the whole earth was inside  
of a greenhouse?

What would happen?

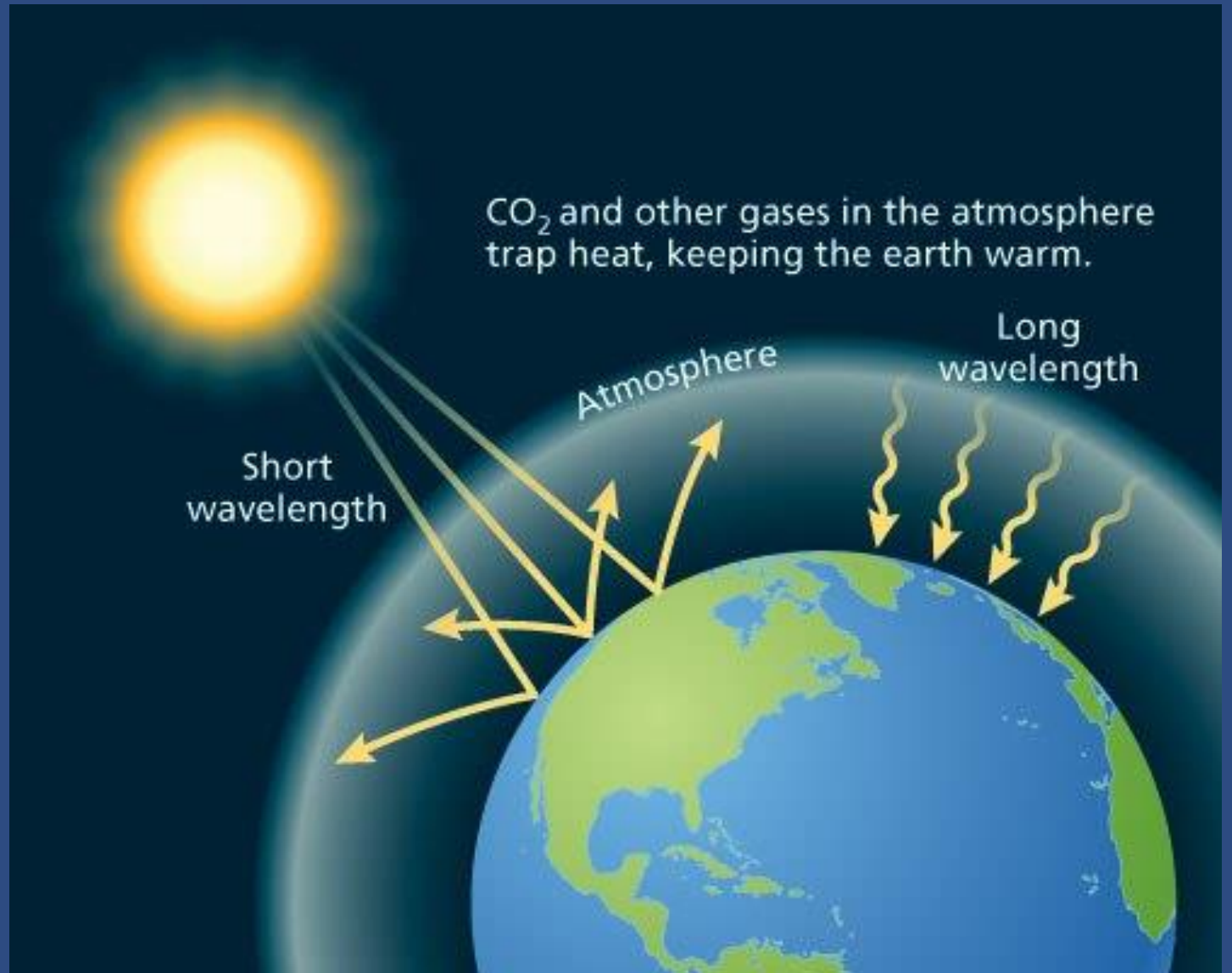
(think about the temperatures in  
your jars/bottles)



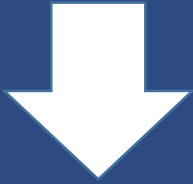
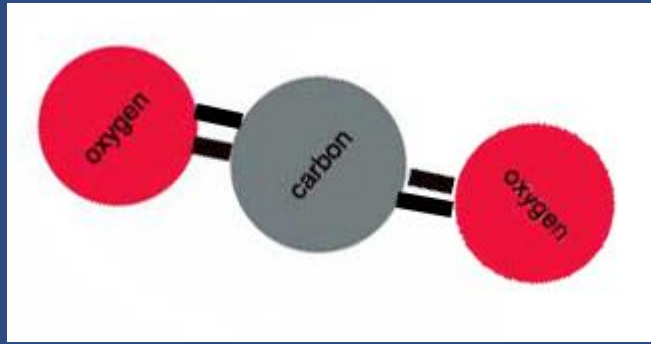
Carbon dioxide (CO<sub>2</sub>) is a colorless gas.

It occurs naturally in Earth's atmosphere as a trace gas.

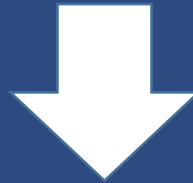
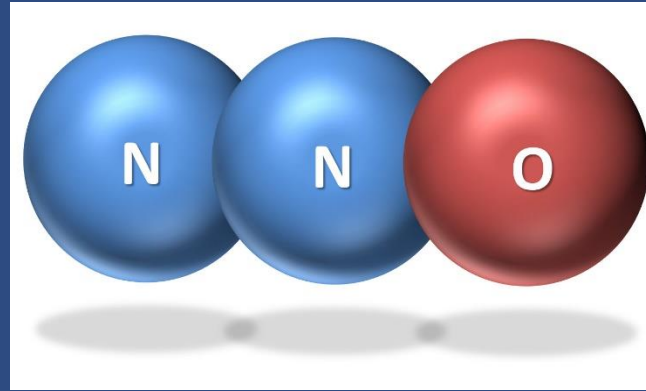
CO<sub>2</sub> and other “greenhouse gases” in the atmosphere trap heat around the earth, similar to if earth was placed inside of a greenhouse.



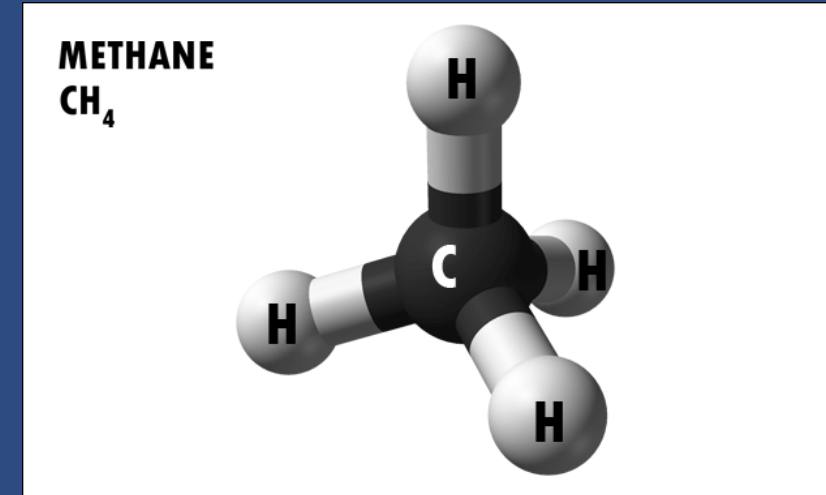
# Common Greenhouse Gases and how are they created?



Burning of  
Fossil Fuels

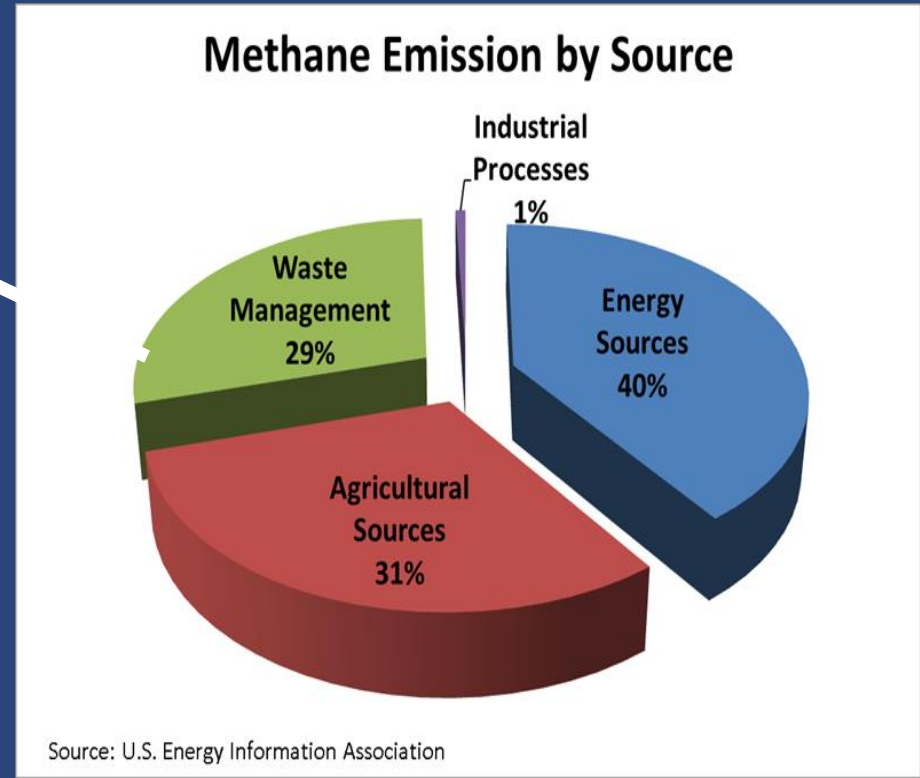


Burning of  
Fossil Fuels





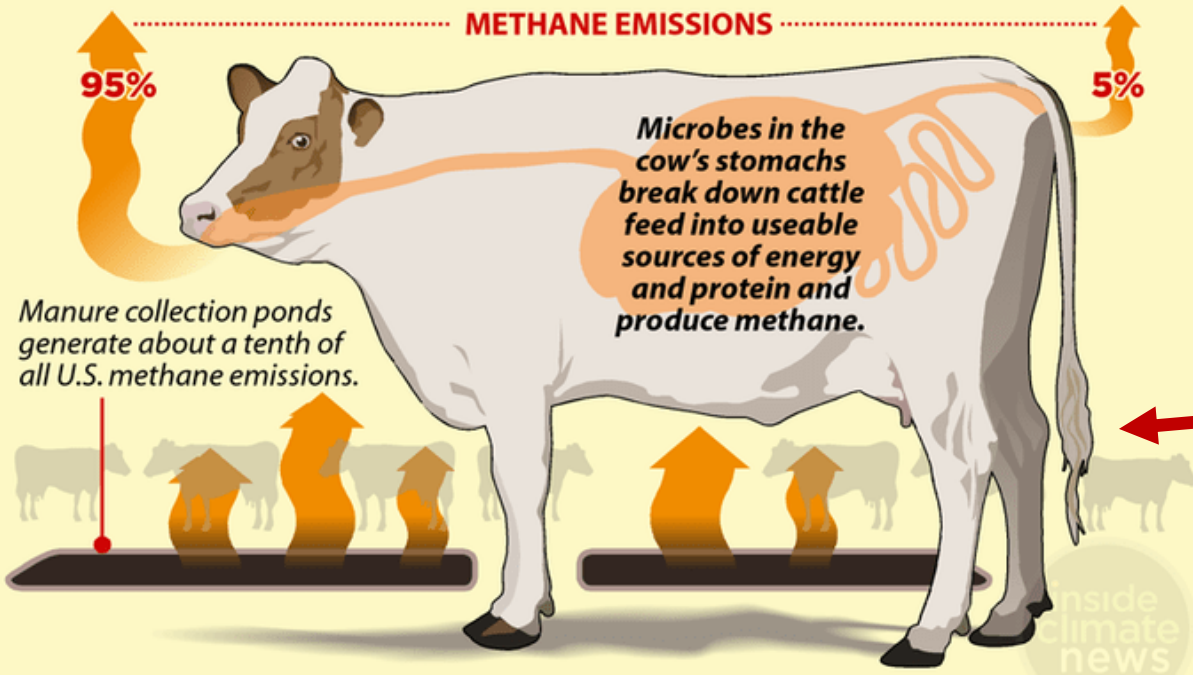
Landfills are the United States' third largest source of methane emissions, according to the EPA.



What are some ways you could reduce the amount of waste that goes into landfills?

# Livestock-Based Methane Emissions

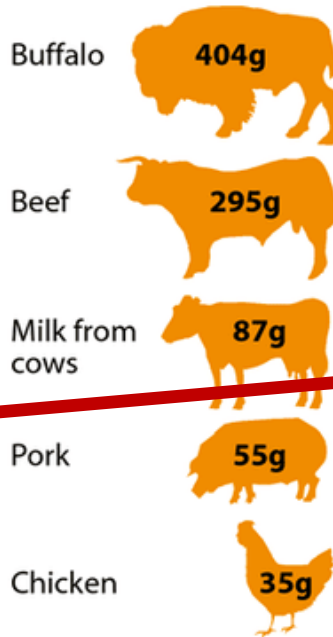
About a quarter of U.S. methane emissions come straight out of livestock, most of it from belching.



SOURCES: EPA; FAO

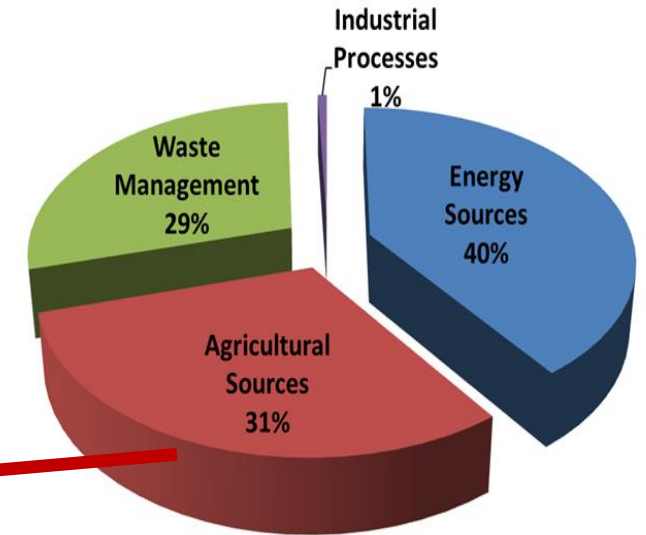
## METHANE EMISSIONS PER GRAM OF PROTEIN

Global estimates in grams, CO<sub>2</sub>-equivalent



PAUL HORN / InsideClimate News

## Methane Emission by Source



Source: U.S. Energy Information Association

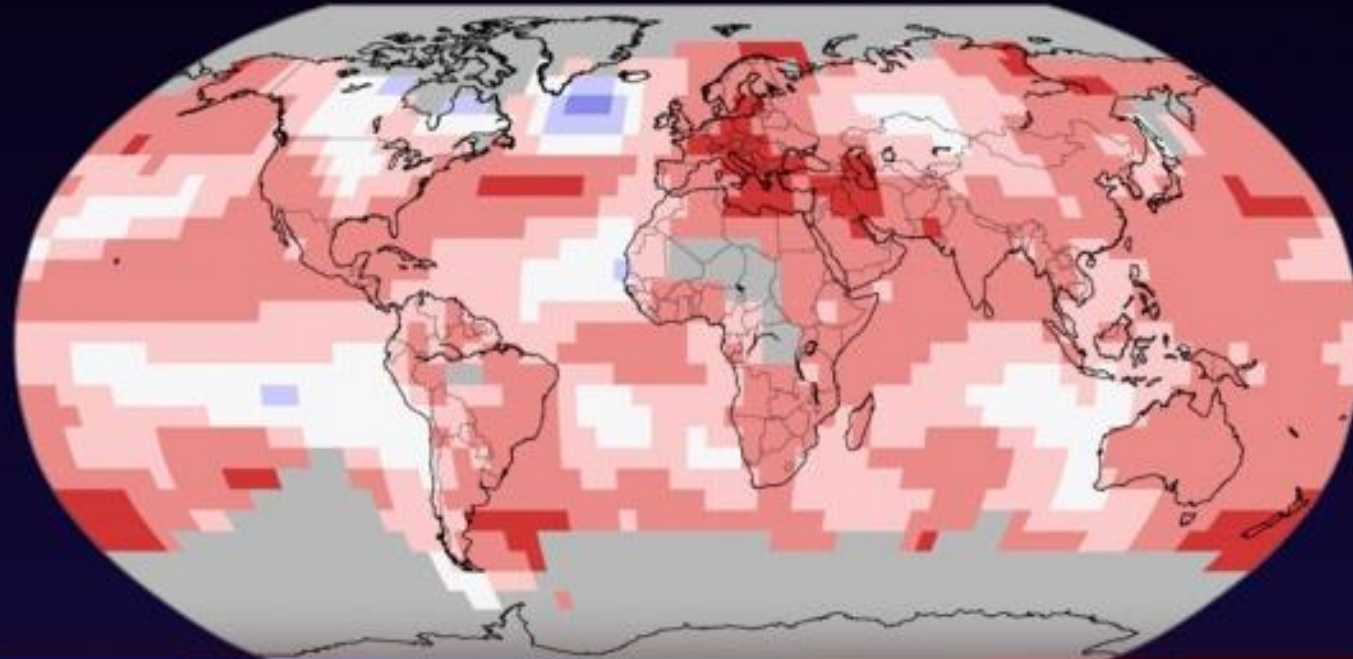
Agricultural Sources, like livestock manure, is the second highest source of methane emissions

*In New Jersey,  
transportation  
represents the largest  
single source of  
greenhouse gas  
emissions.*

*- NJDEP*



# 2018 GLOBAL TEMPERATURE 4TH HOTTEST YEAR ON RECORD



RECORD  
COLDEST

MUCH  
COOLER

COOLER

NEAR  
AVERAGE

WARMER

MUCH  
WARMER

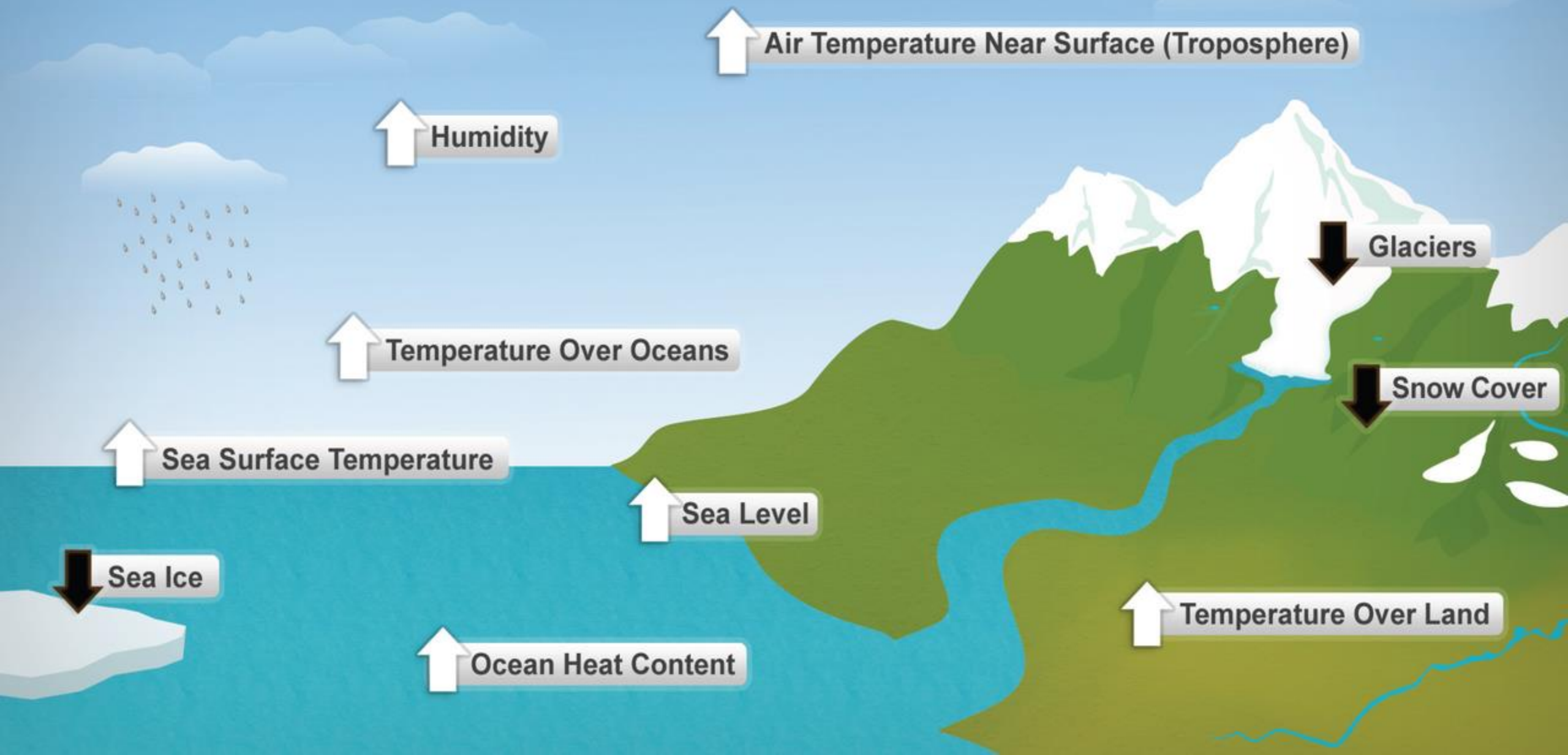
RECORD  
WARMEST

Source: NOAA/NCEI Climate at a Glance  
Data as of 2/6/2019

CLIMATE  CENTRAL

Temperatures are increasing globally as a result of increased in CO2 emissions

# Ten Indicators of a Warming World



**What are some ways that we could reduce green house gas emissions from transportation activity?**

