

# Keynote Speaker Introduction



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Leache

SAO FOTOGRAFIA  
LABORATORIO COLOR  
VINTA DE PASTEL

NET  
EN EL

FILM



Source: NASA



Source: NASA

# Topics

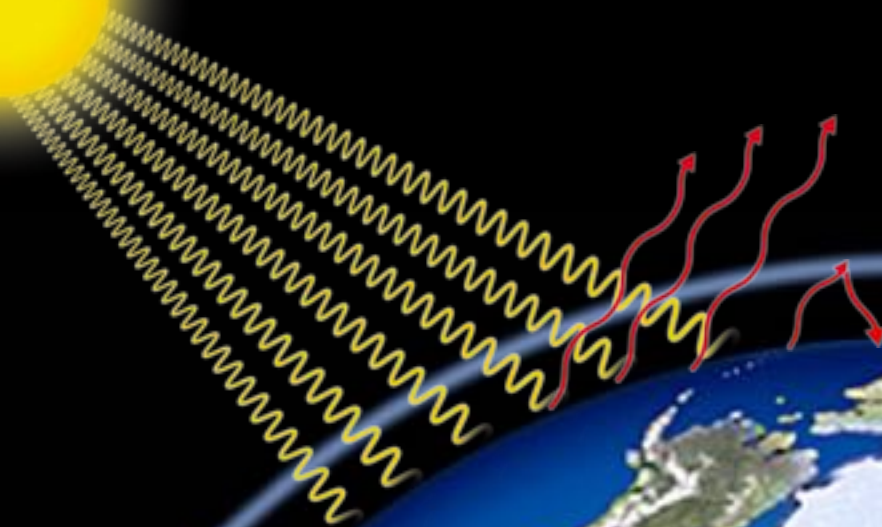
- Global perspectives- Why we need to act now
- SEM Program perspectives- What changes can we make
- Immediate action- Actions we can take today



# Part 1

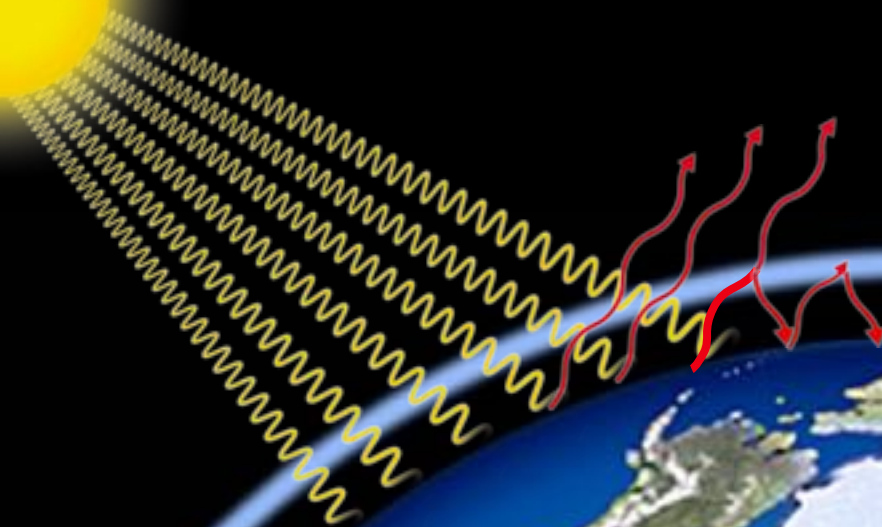


**The Climate  
Reality Project®**

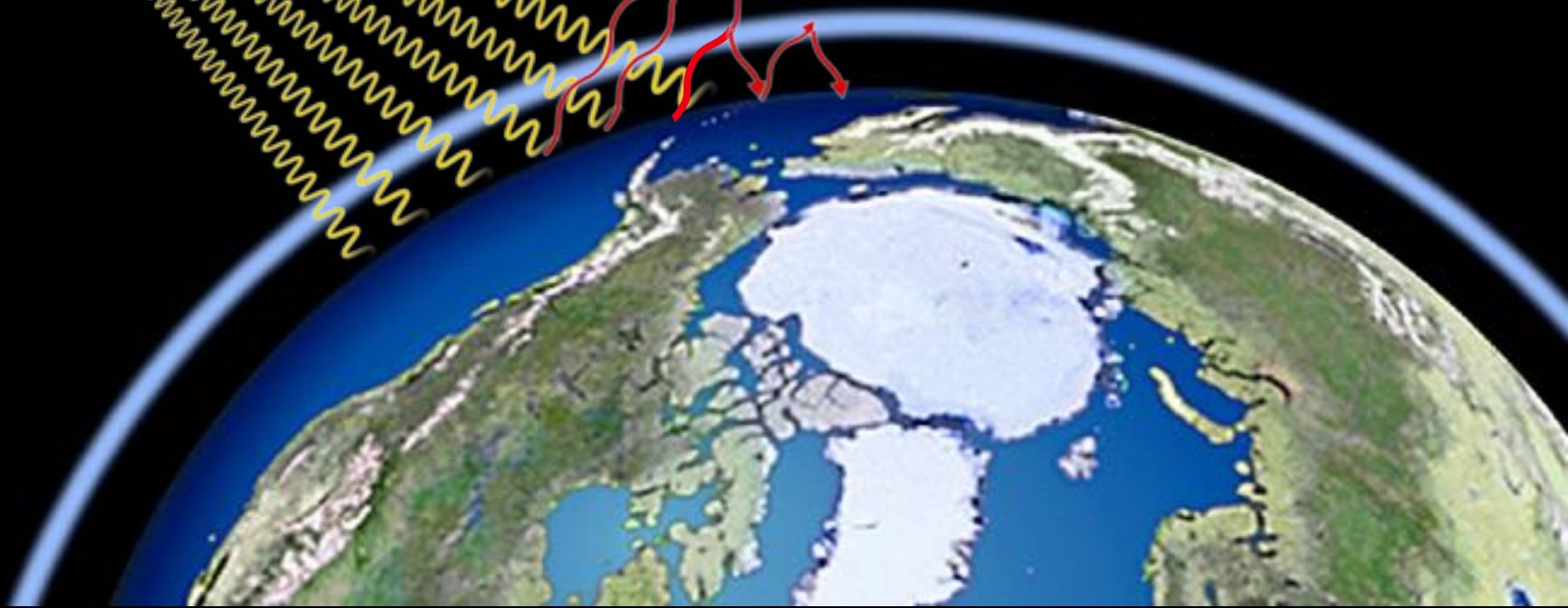


Some of this outgoing  
infrared radiation is trapped  
by the earth's atmosphere  
and warms it





As the CO<sub>2</sub> concentration increases, more of the outgoing infrared radiation is trapped.





**We are spewing 152 million tons of manmade global warming pollution into the thin shell of our atmosphere every 24 hours — as if it were an open sewer.**



THAWING PERMAFROST

COAL MINING

COAL PLANTS

AIR TRANSPORT

OIL PRODUCTION

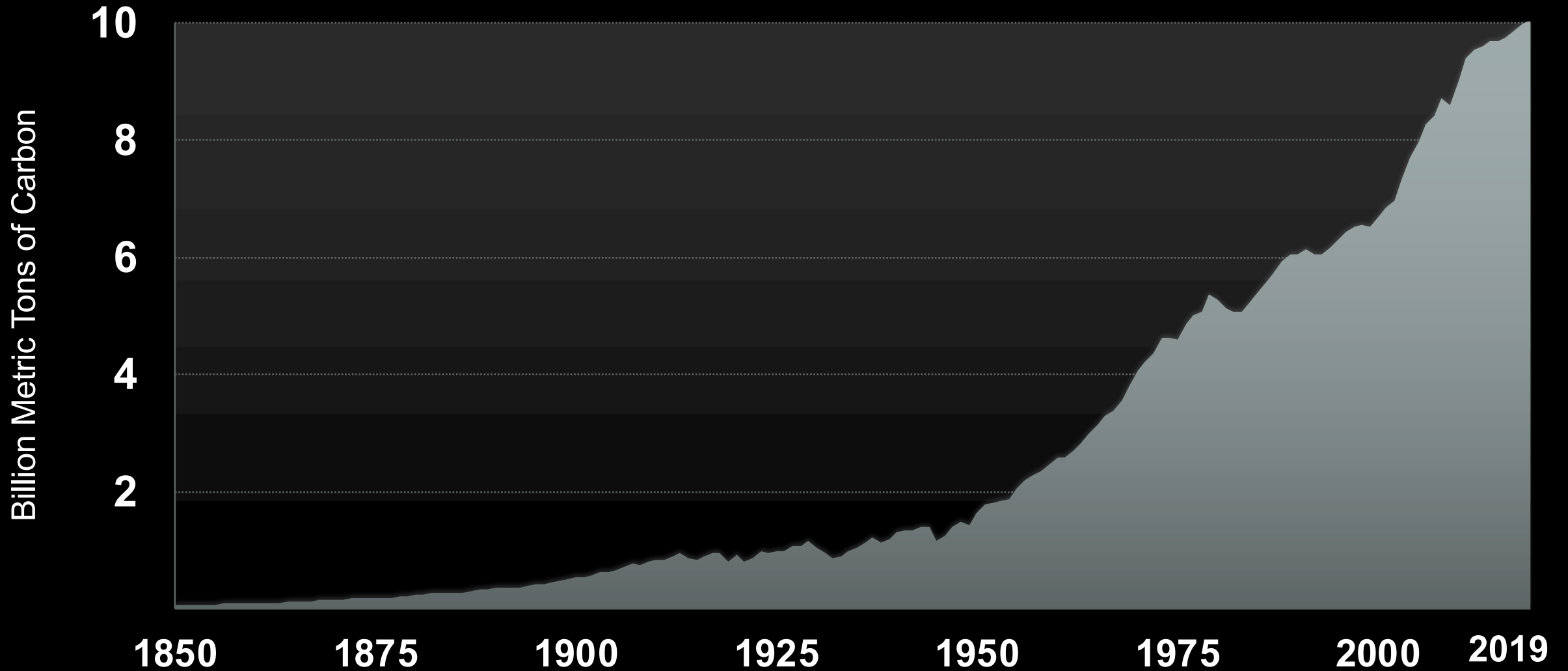
INDUSTRIAL PROCESSES

FERTILIZATION

LAND TRANSPORT

LANDFILLS

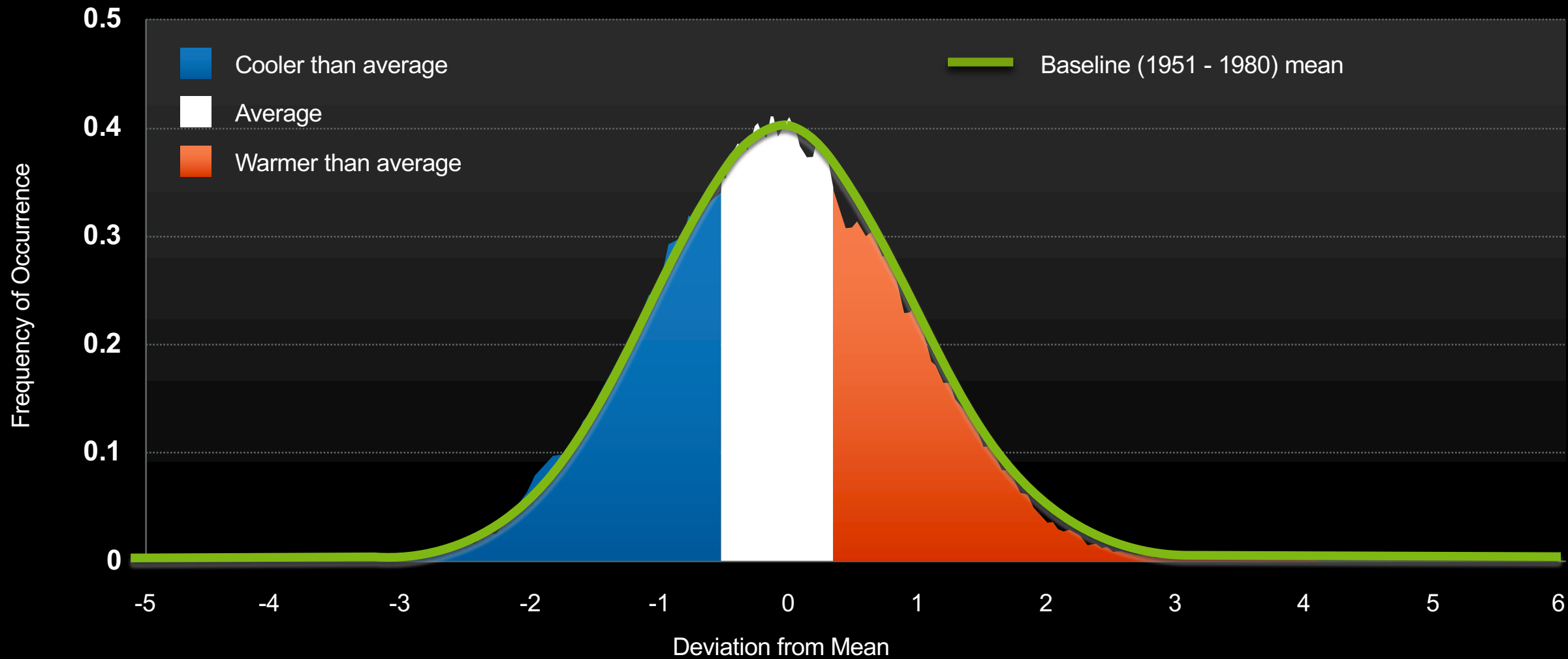
# The Largest Source of Global Warming Pollution Is the Burning of Fossil Fuels



Source: U.S. Department of Energy/CDIAC

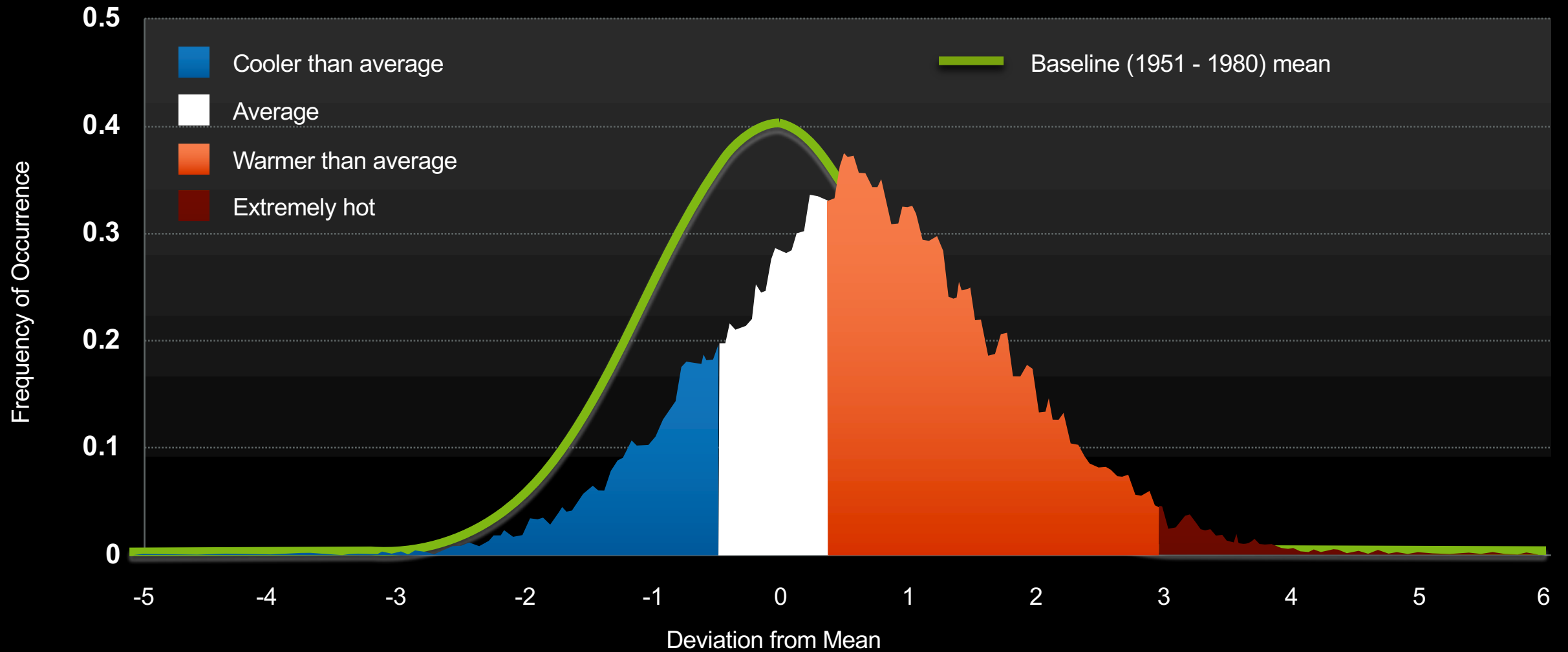
# Northern Hemisphere Summer Temperatures Have Shifted

1951 – 1980

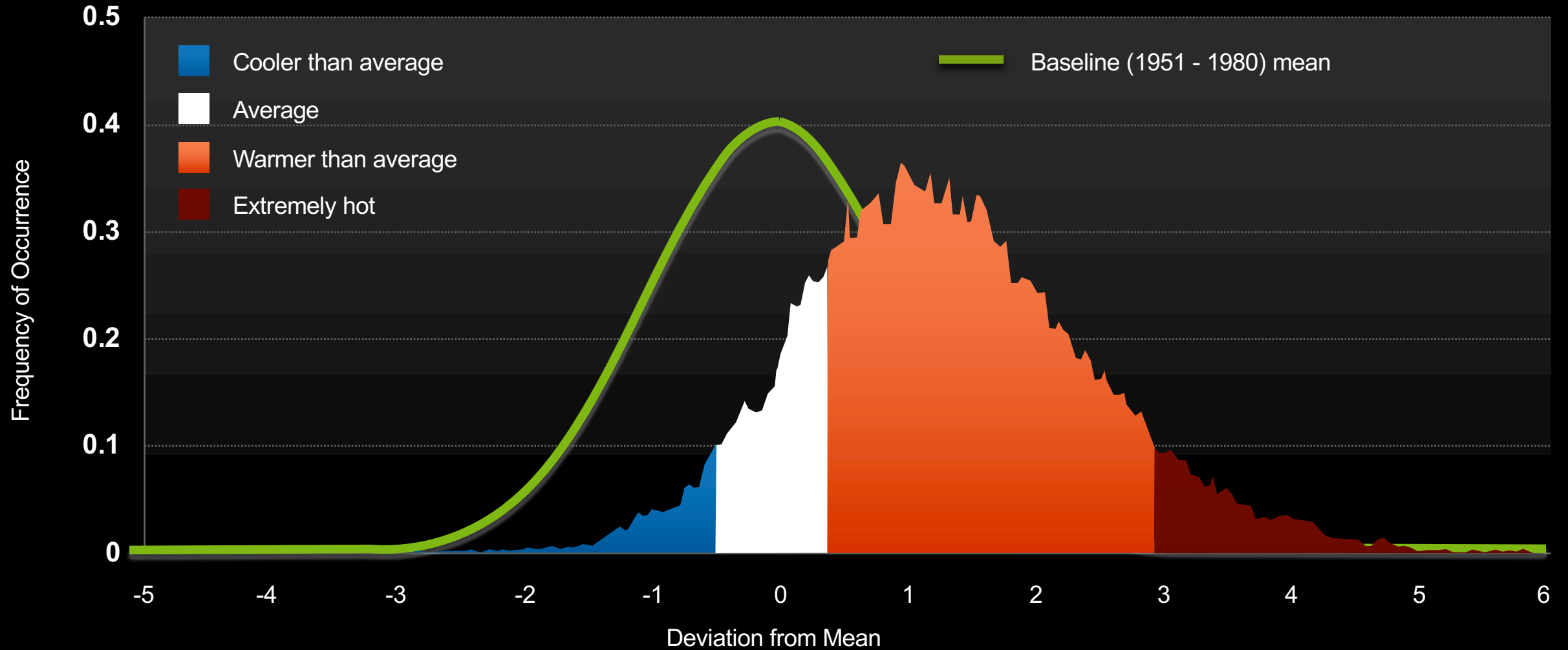


Data: James Hansen and Makiko Sato, July 2020

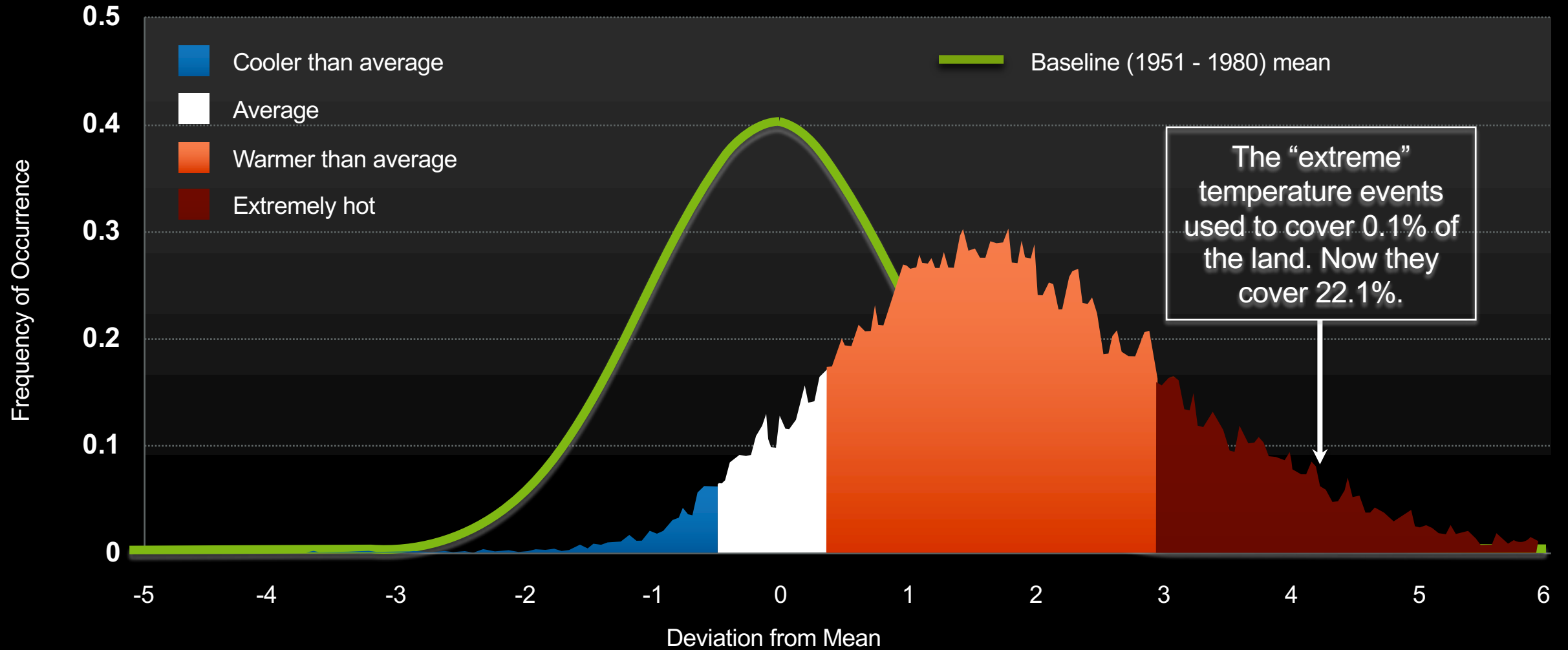
1987 – 1997



1998 – 2008

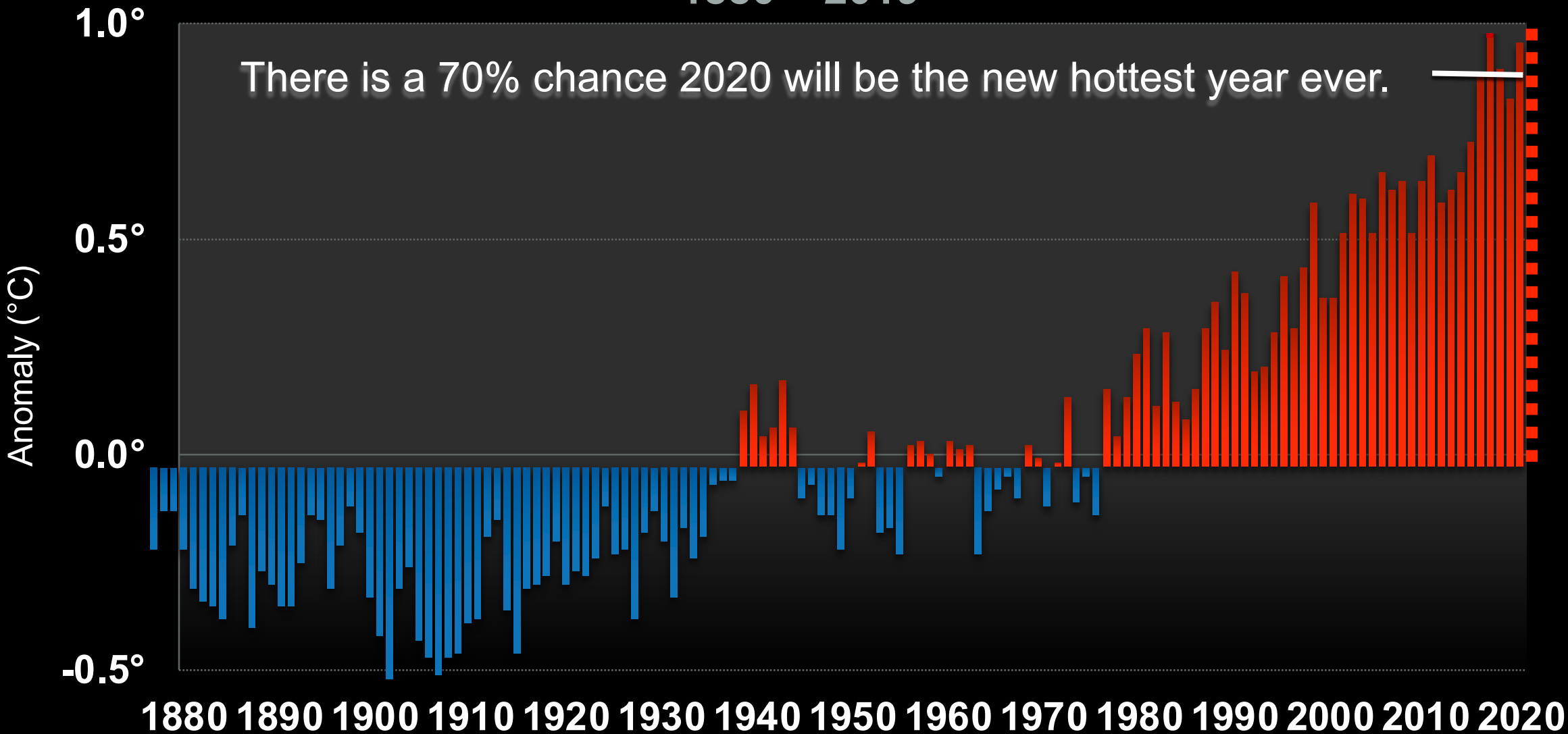


## 2009 – 2019



# Global Surface Temperature – Departure from Average

1880 – 2019



# Chiloquin, Oregon

September 7, 2020



# North Bonneville, Washington

September 4, 2017



# Vacaville, California

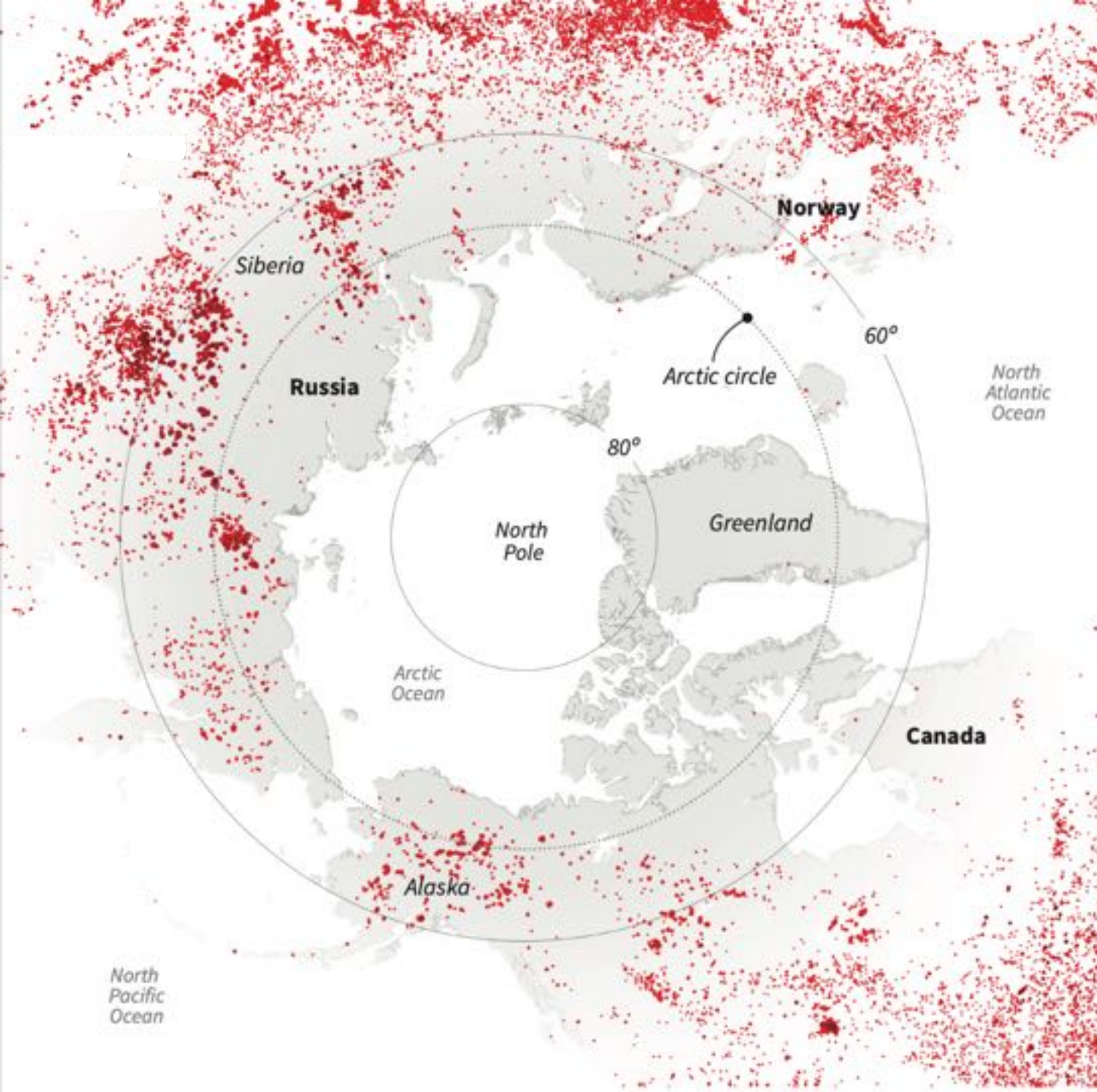
August 19, 2020

As of August 20, 2020, more than 360 wildfires were burning across California.




# Fires Detected

July 7 – August 27, 2019

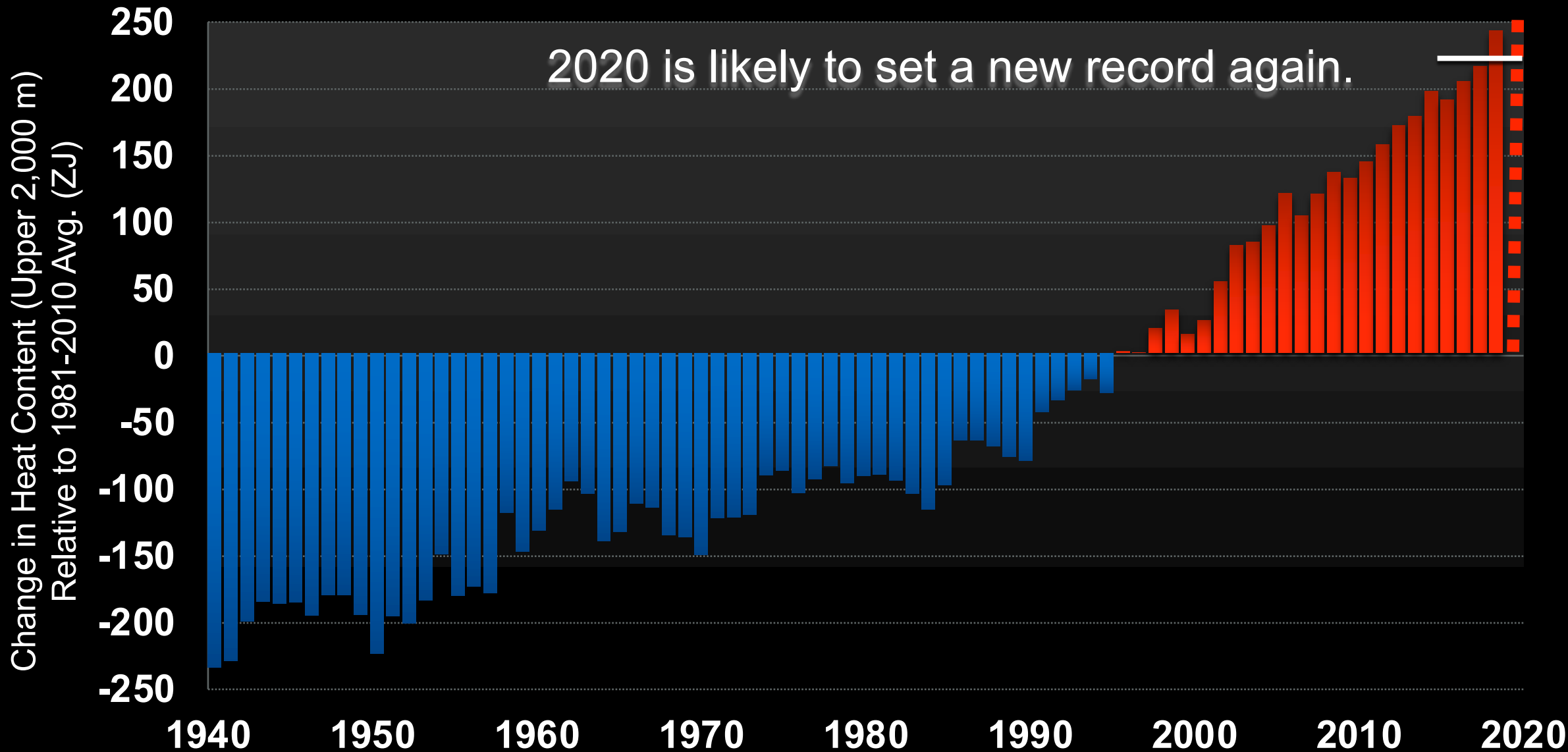


The area burned by boreal fires is expected to **increase 130-350%** by mid-century, threatening to turn boreal forests into net carbon emitters.

A satellite image of Earth, centered on the Pacific Ocean. The blue of the ocean dominates the frame, with green and brown landmasses visible along the edges. The text is overlaid on the central part of the image.

93% of the extra Heat  
trapped by manmade  
global warming pollution  
goes into the  
Ocean

# Ocean Temperatures Set a New Record in 2019

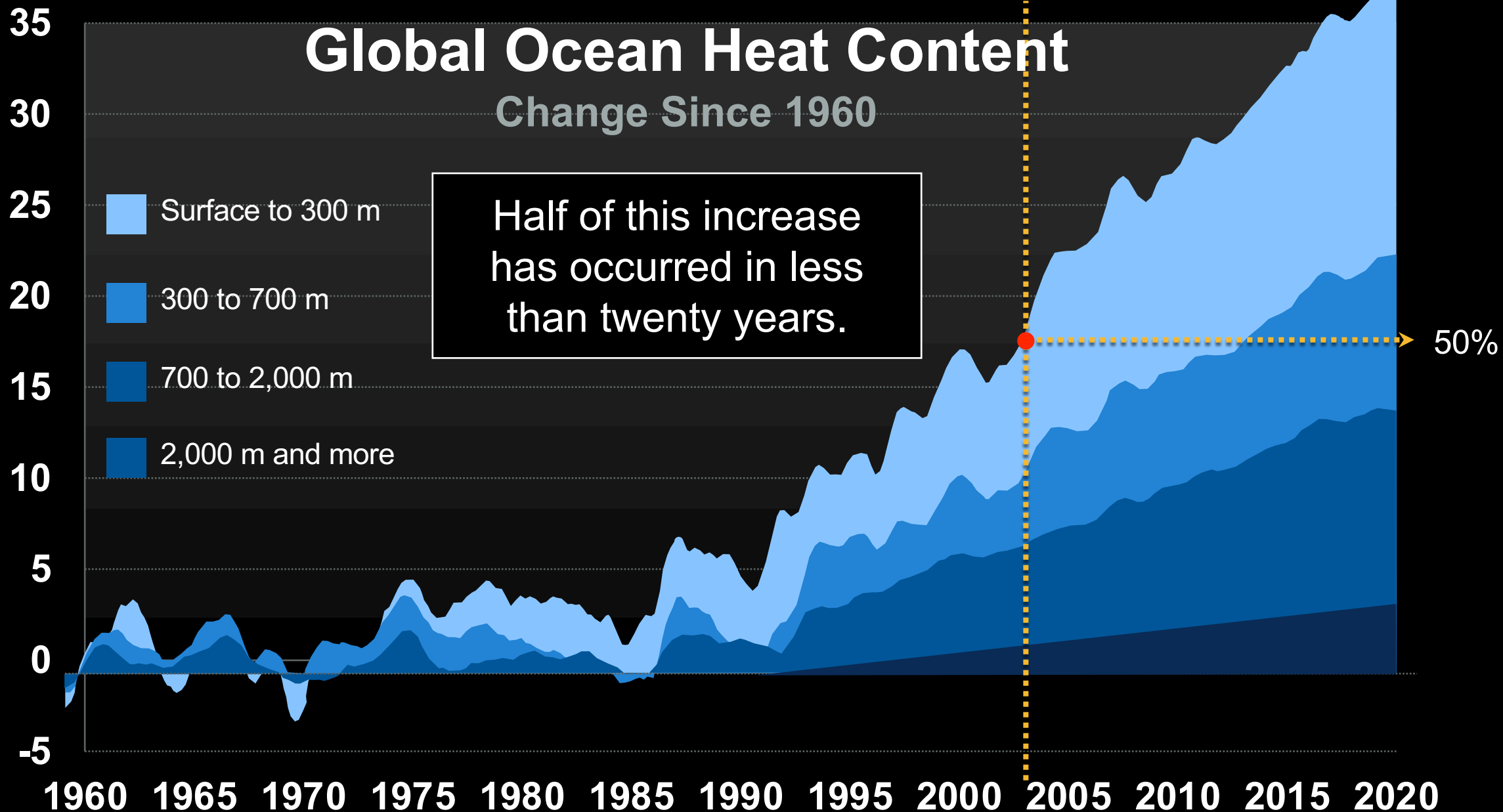


Data: Cheng, L. J., and J. Zhu, 2018: "2017 was the warmest year on record for the global ocean," *Advances in Atmospheric Sciences*, 34(3)

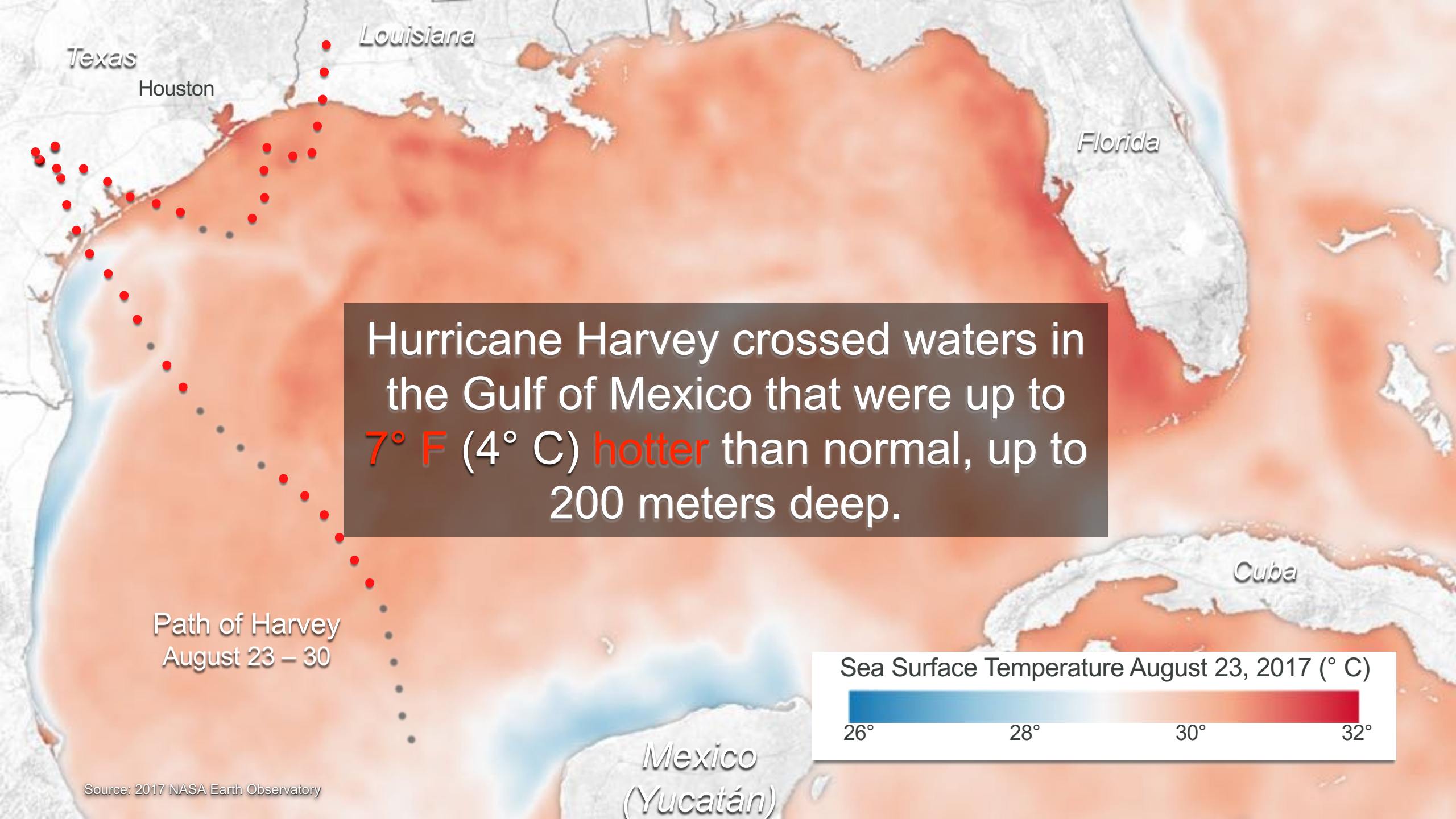
# Global Ocean Heat Content

## Change Since 1960

Ocean Heat Content ( $10^{22}$  J)  
0 – 2000 m Depth



# **As Temperatures Increase, the Oceans Evaporate More Moisture into the Sky**



Hurricane Harvey crossed waters in the Gulf of Mexico that were up to **7° F (4° C) hotter** than normal, up to 200 meters deep.

Path of Harvey  
August 23 – 30

Sea Surface Temperature August 23, 2017 (° C)



# Tropical Storm Isaias

August 4, 2020

Isaias killed at least nine people and caused \$4 billion in damage as it traveled up the U.S. Atlantic coast.

# Phoenix, Arizona

July 18, 2016

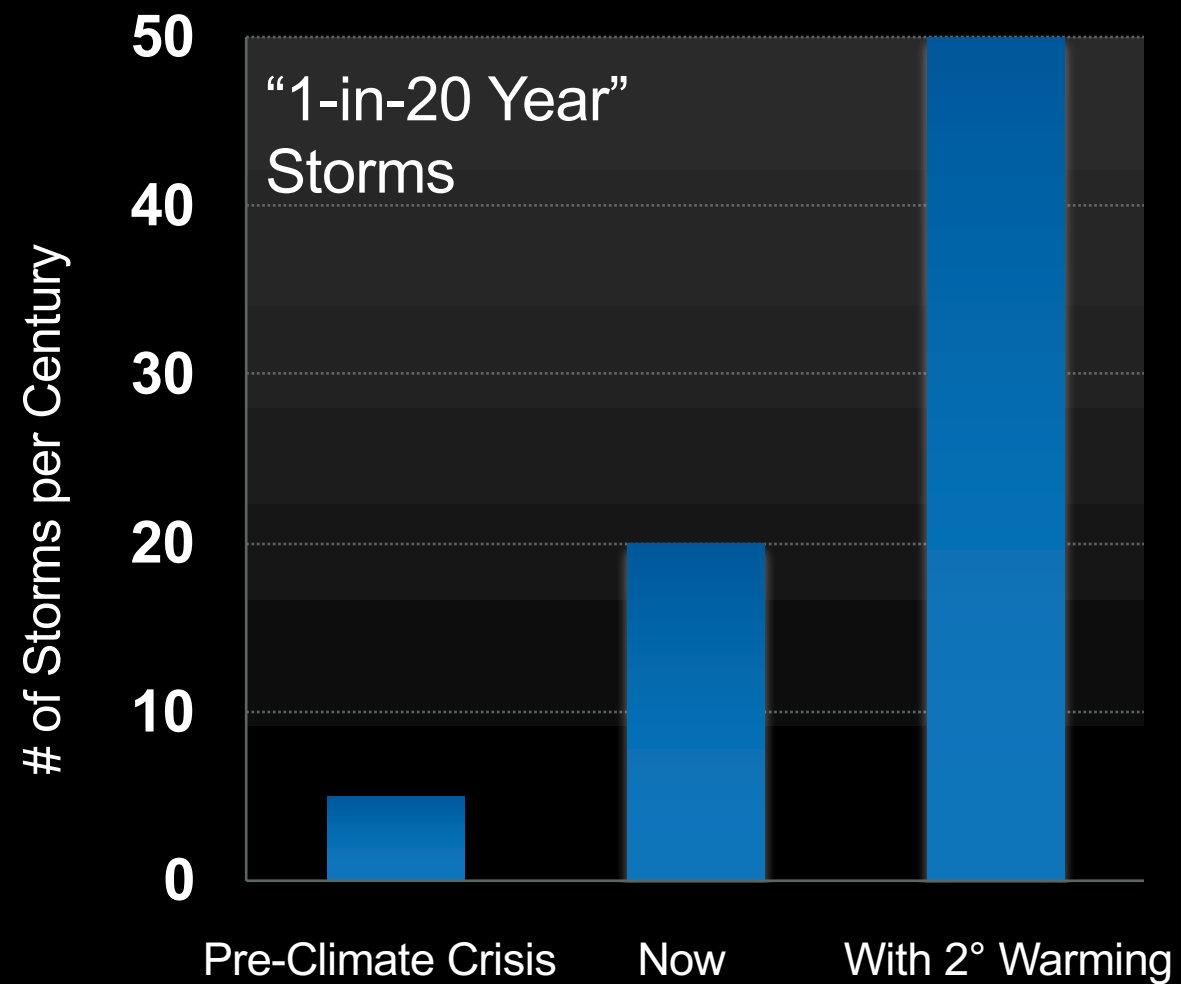
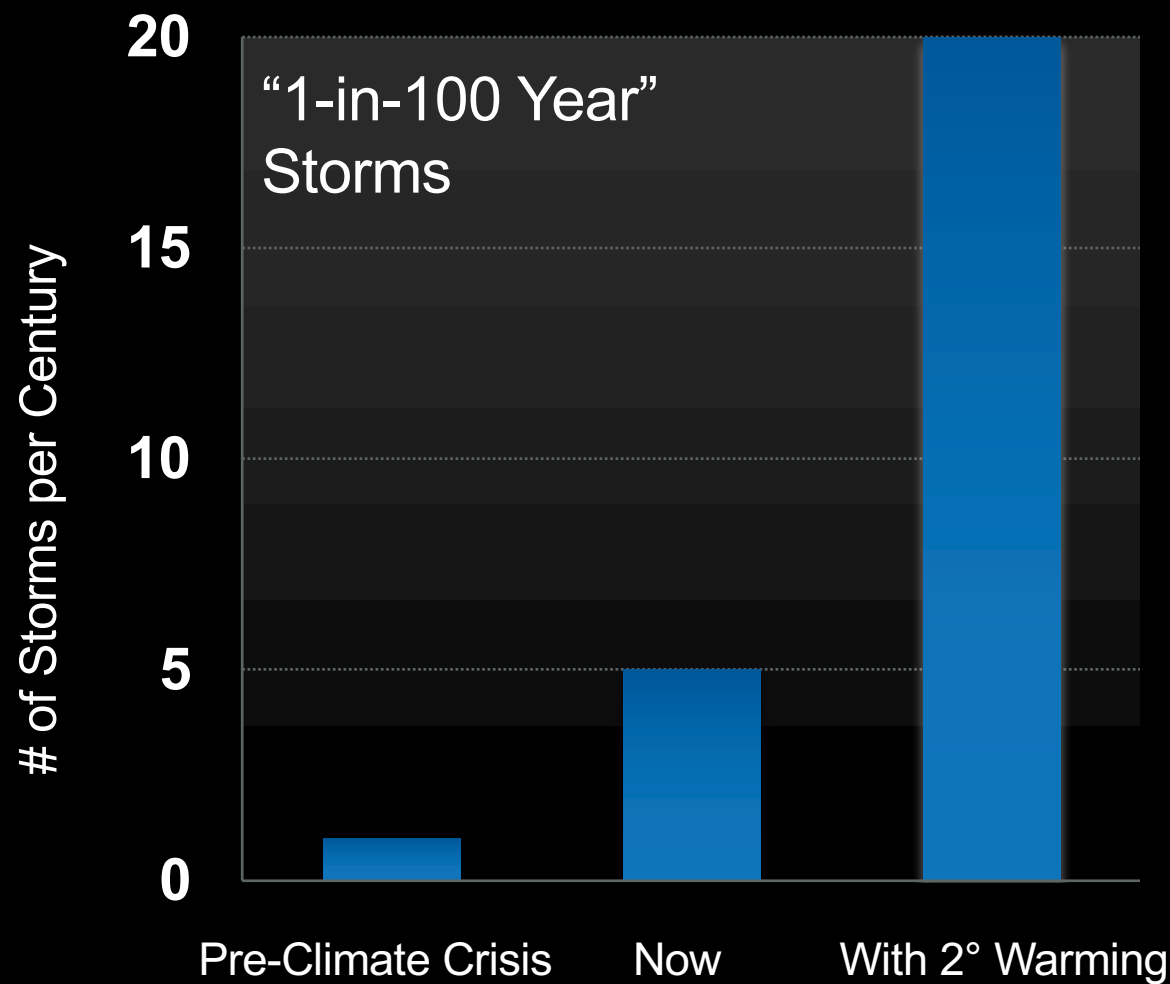


# Jackson, Mississippi

February 16, 2020



# Large North American Storms Are Happening More Often

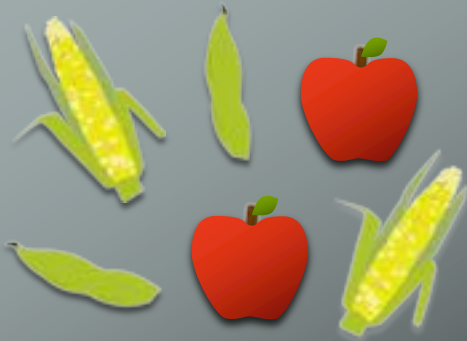


Data: Environment and Climate Change Canada, 2020

All time periods are on average.

# Global Systems Vulnerable to Climate

## Disruptions May Lead to Political or Societal Instability



Food Supply



Water



Global Health

## EU Parliament votes in favour of cutting emissions 60% by 2030

Frédéric Simon for Euractiv • Published on 07/10/2020, 11:20am



The European Parliament during a vote in February 2020. (Photo: [European Union 2020](#) – Source: [EP/Flickr](#))

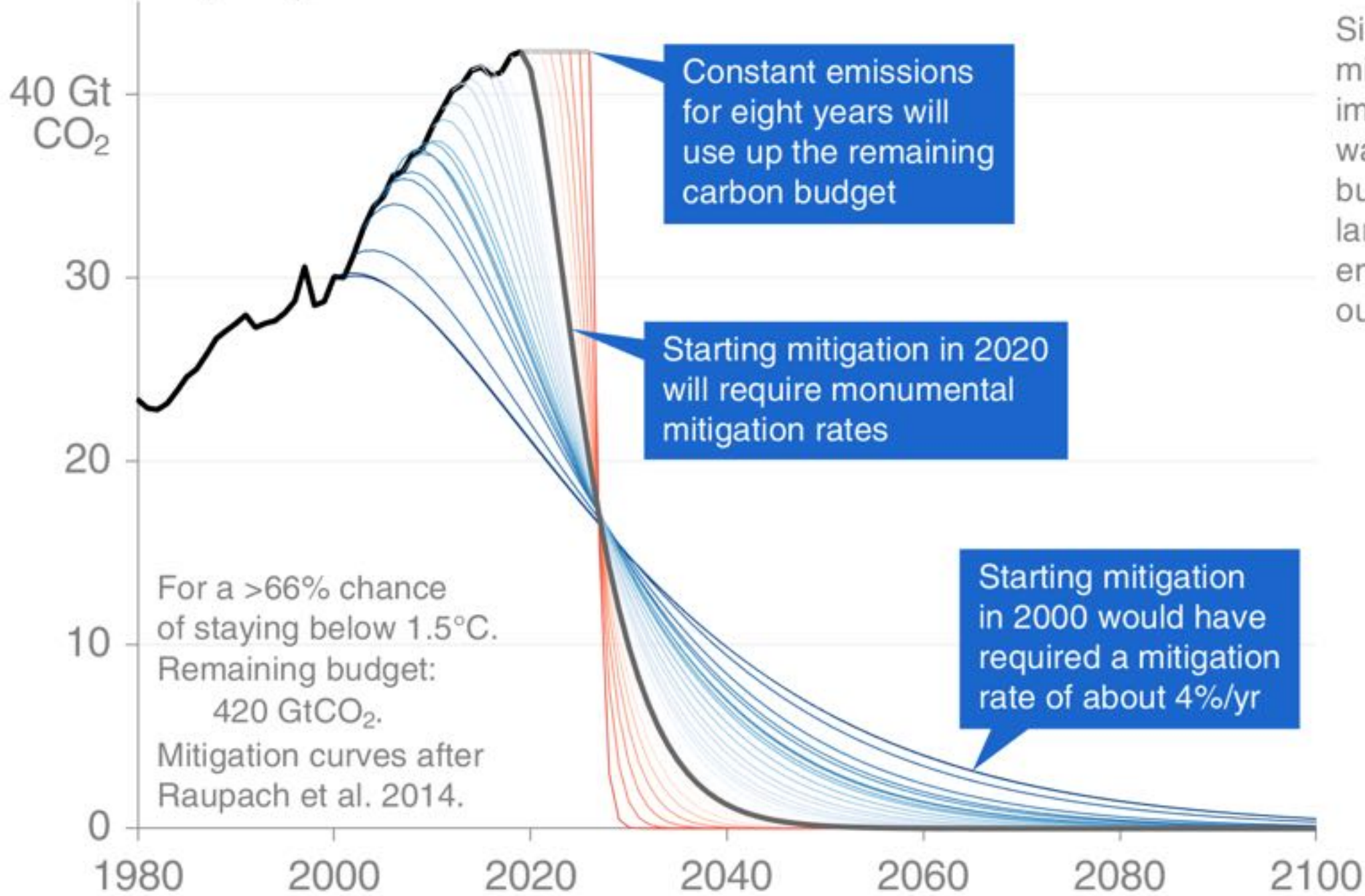
Lawmakers are putting pressure on EU leaders to raise the bloc's 2030 climate ambition beyond the Commission's proposed 55% emissions reduction target

The European Parliament voted on Tuesday to update the EU's climate target for 2030, backing a 60% reduction in greenhouse gas emissions by the end of the decade, up from 40% currently.

## EU carbon border tax: How a French idea ended up in the limelight



Since Jacques Chirac first proposed a carbon border tax, French presidents have never let go of the idea. Now, the European Commission plans to integrate it into its recovery plan, much to the irritation of Beijing, just as an EU-China summit opens on Monday (14 September). [EURACTIV France reports](#).



Since such steep mitigation is impossible, the only way to achieve this budget is with very large "negative" emissions: pulling CO<sub>2</sub> out of the atmosphere.

# Part 2

# Potential Changes to SEM Programs

- The goals of SEM programs





- Energy Efficiency
- Time of Use
- Demand Response
- Distributed Generation & Storage
- Transportation Electrification

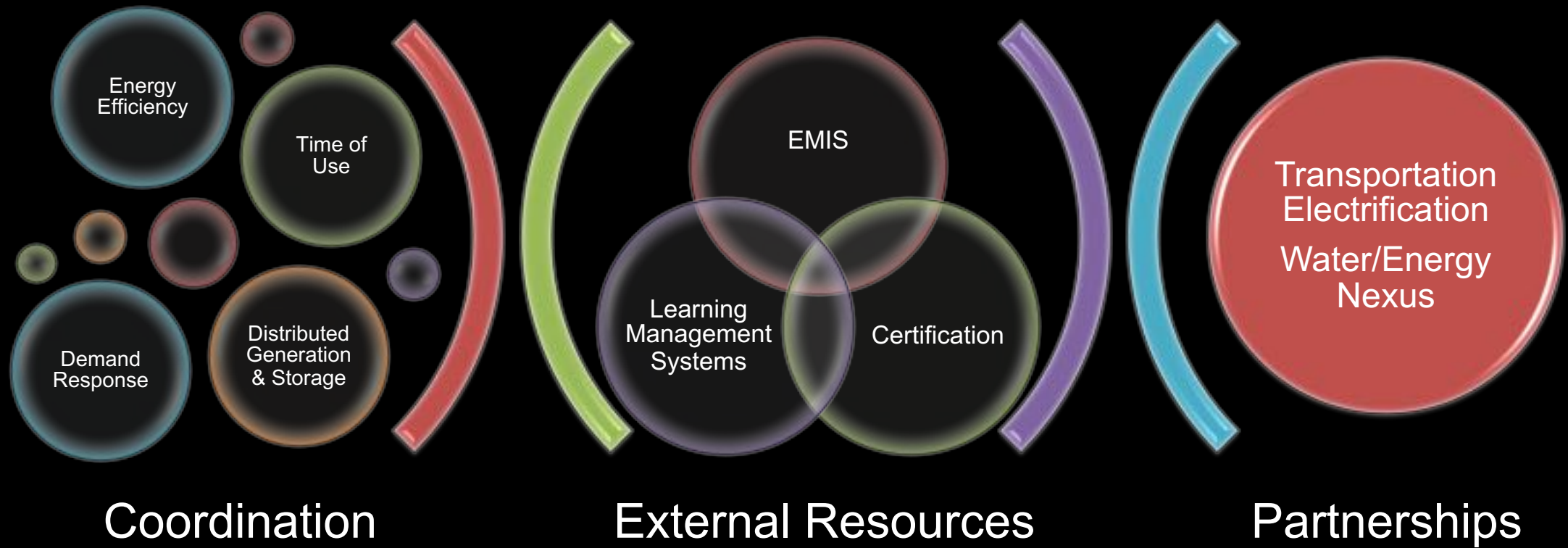
- Recognized approach
- Certifiable results



# Potential Changes to SEM Programs

- The goals of SEM programs
- The approach of SEM programs

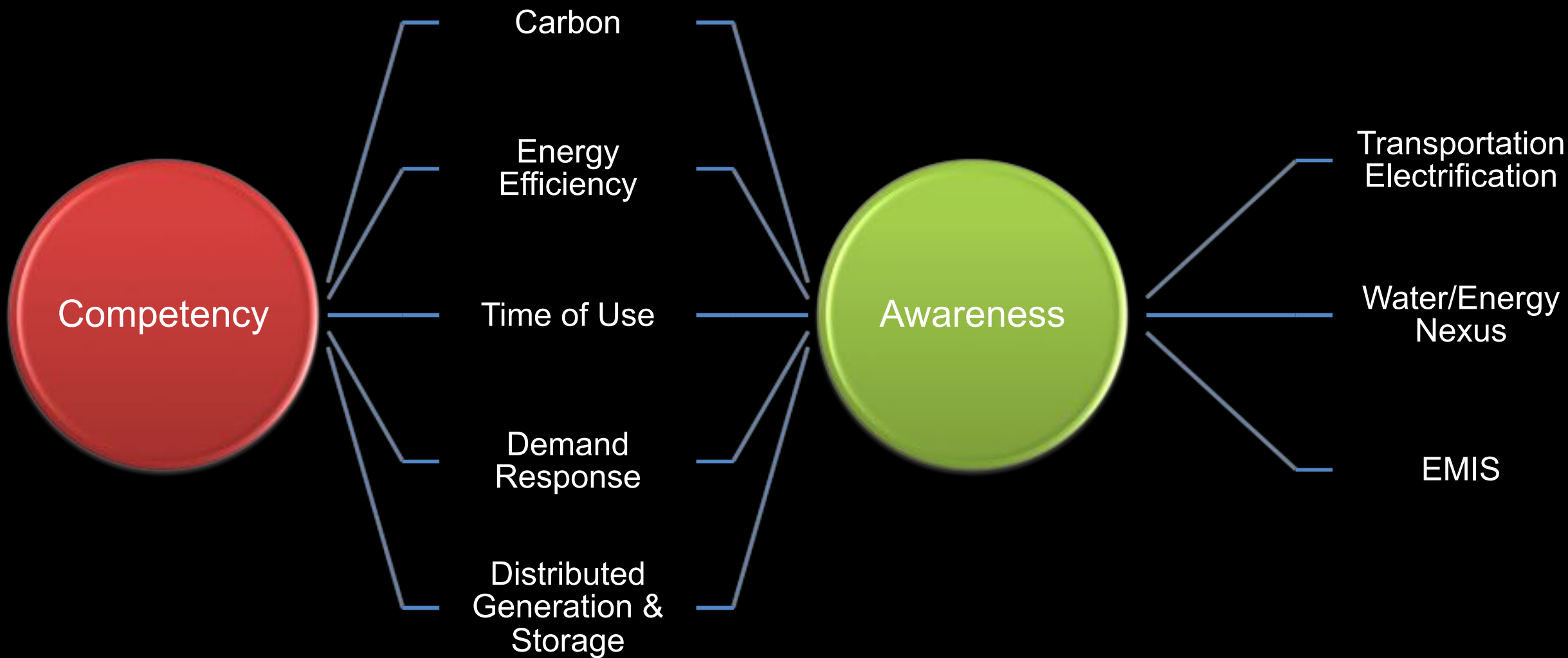




# Potential Changes to SEM Programs

- The goals of SEM programs
- The approach of SEM programs
- The skill set





# Potential Changes to SEM Programs

- The goals of SEM programs
- The approach of SEM programs
- The skill set
- The way we work together



Development  
of new topic  
materials

Training on  
new topics

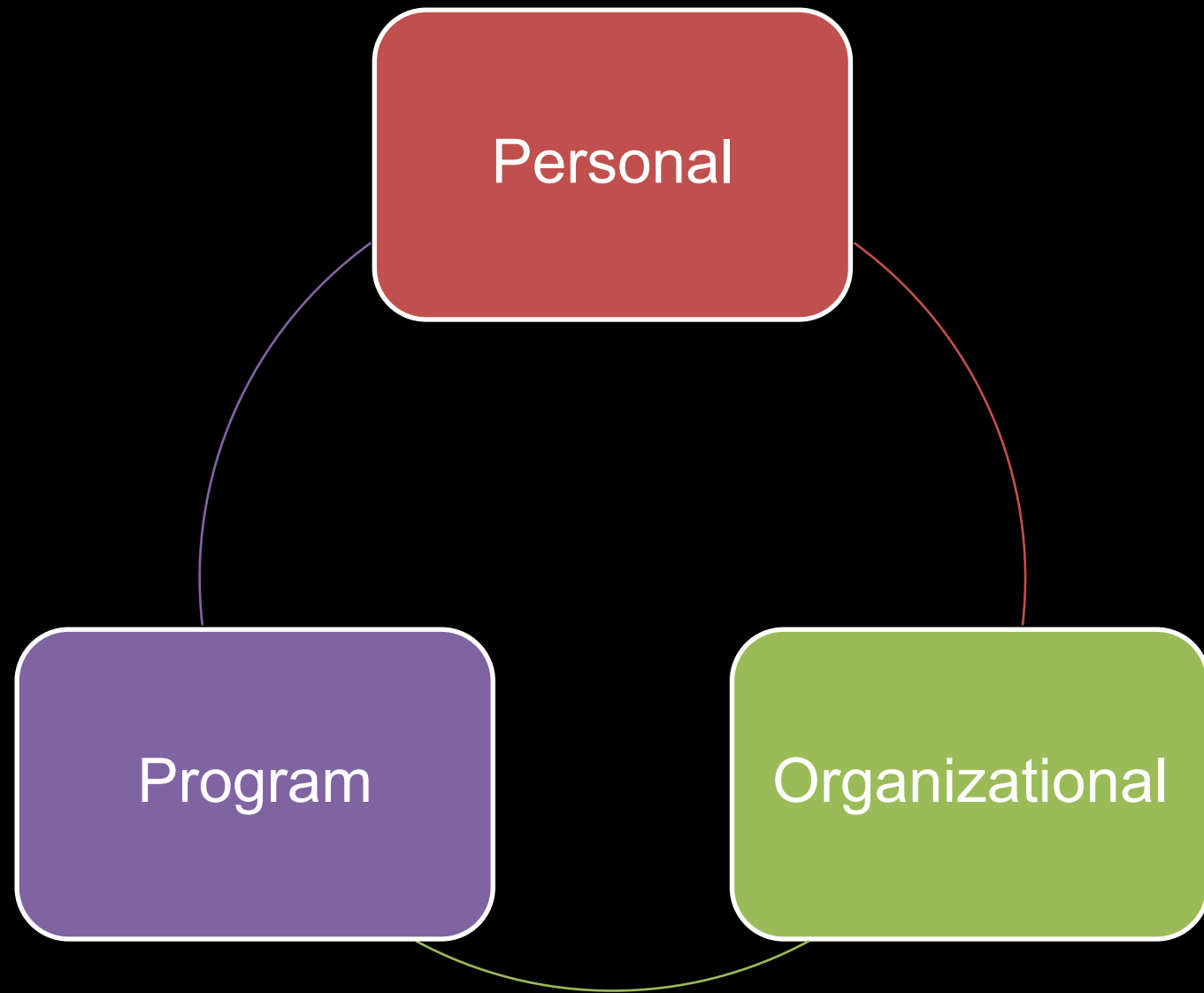
Development  
of shared  
resources

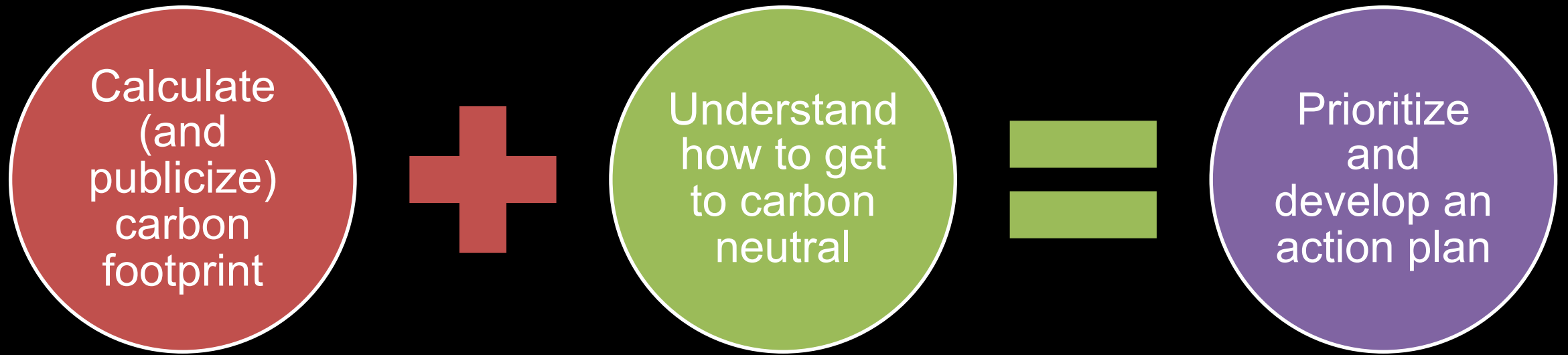
Research on  
new or key  
topics

Coordination  
with other  
entities

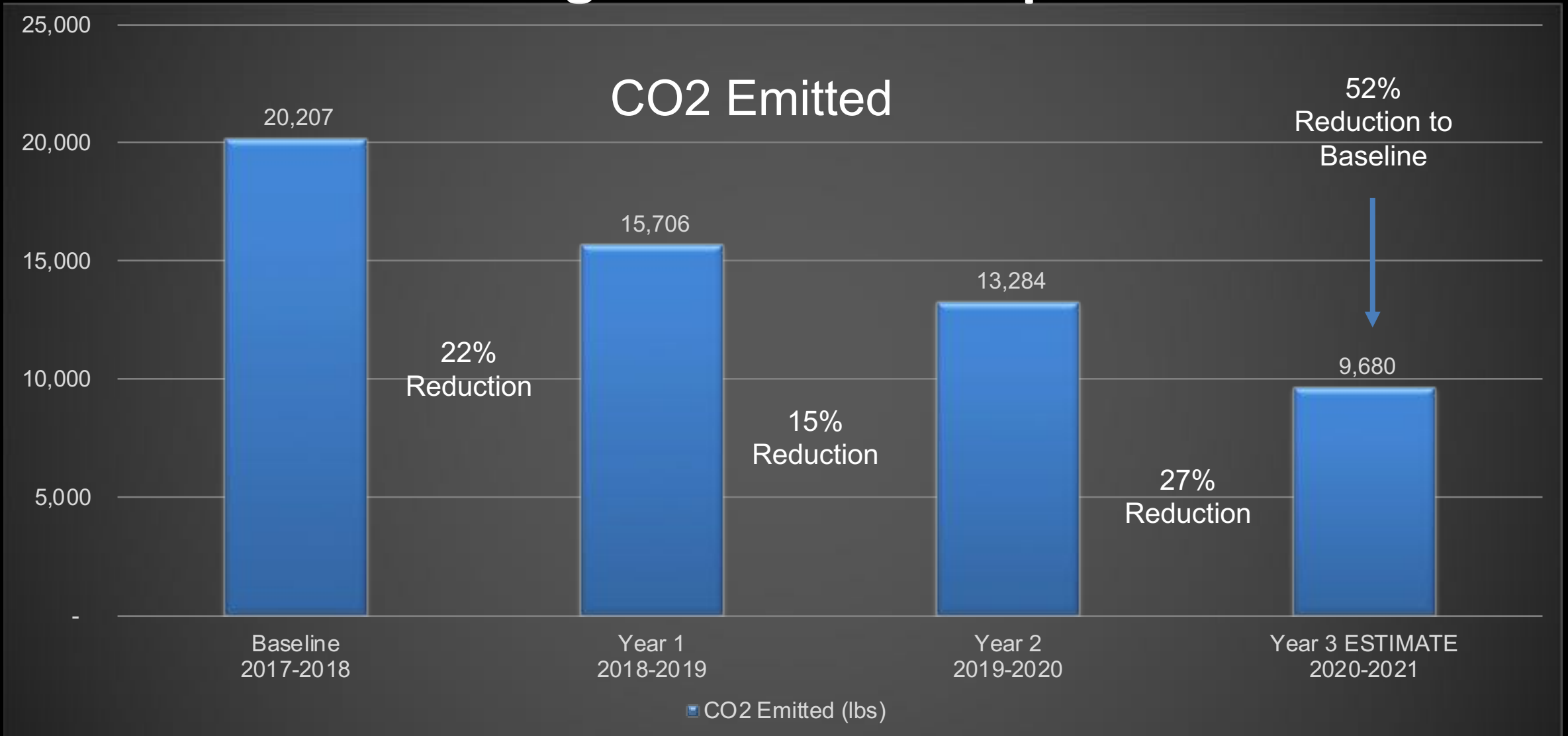


# Part 3





# Sergio's Carbon Footprint



NORTHWEST

COLLABORATIVE

**Q&A**

