

# Climate on Tap

*Facilitator:*  
Laura Tucker

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# What Have You Heard About Climate Change?

Write down what you've *heard*  
about climate change from any source:

- television/movies
- the internet
- social media
- books
- magazines/newspapers
- something someone told you

You don't need to agree with what you've heard.

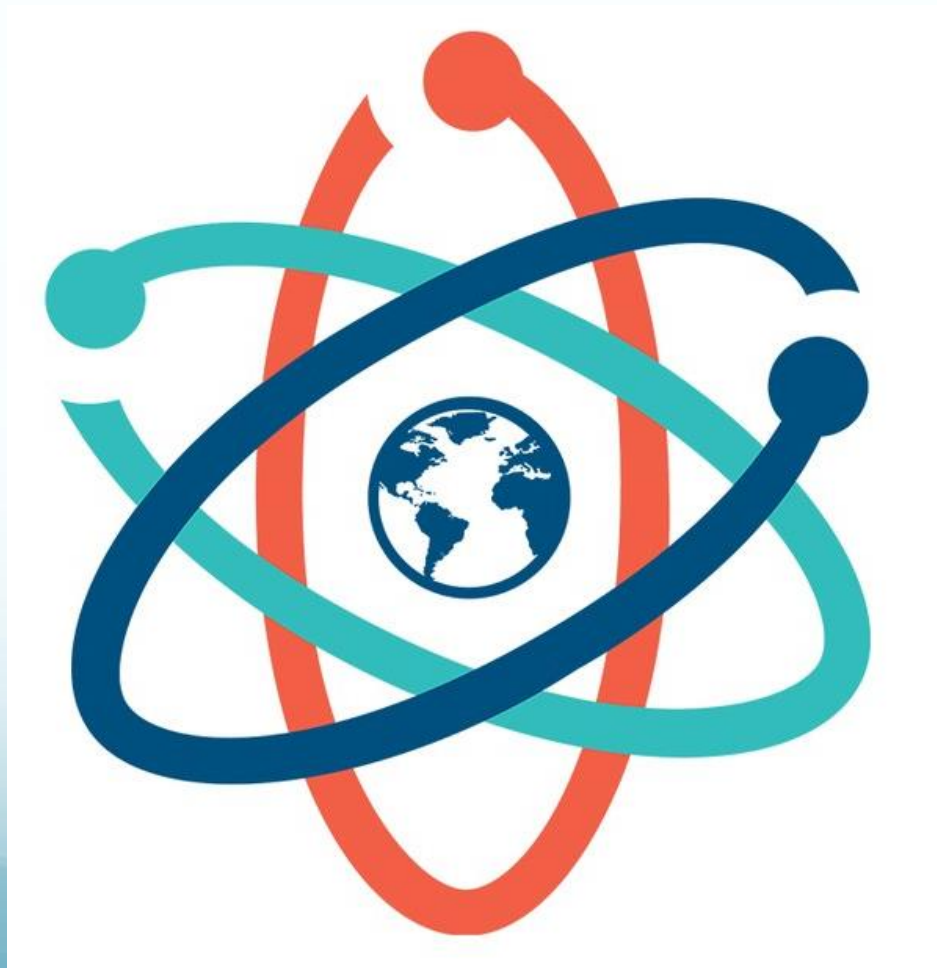
# Thought Swap

- 1) Each person will read their list to their table group**
- 2) No one is allowed to interrupt the speaker or comment on the information shared**
- 3) You may add what someone else says to your list**
- 4) After all members have had a turn, you can ask questions and discuss what was said**

# What We Want to Know About Climate Change

- Use your notes to create questions to put on sentence strips
- Post your questions on the wall as you write them
- Monitor the wall to make sure you don't write a duplicate question

A little science  
to get us started ...

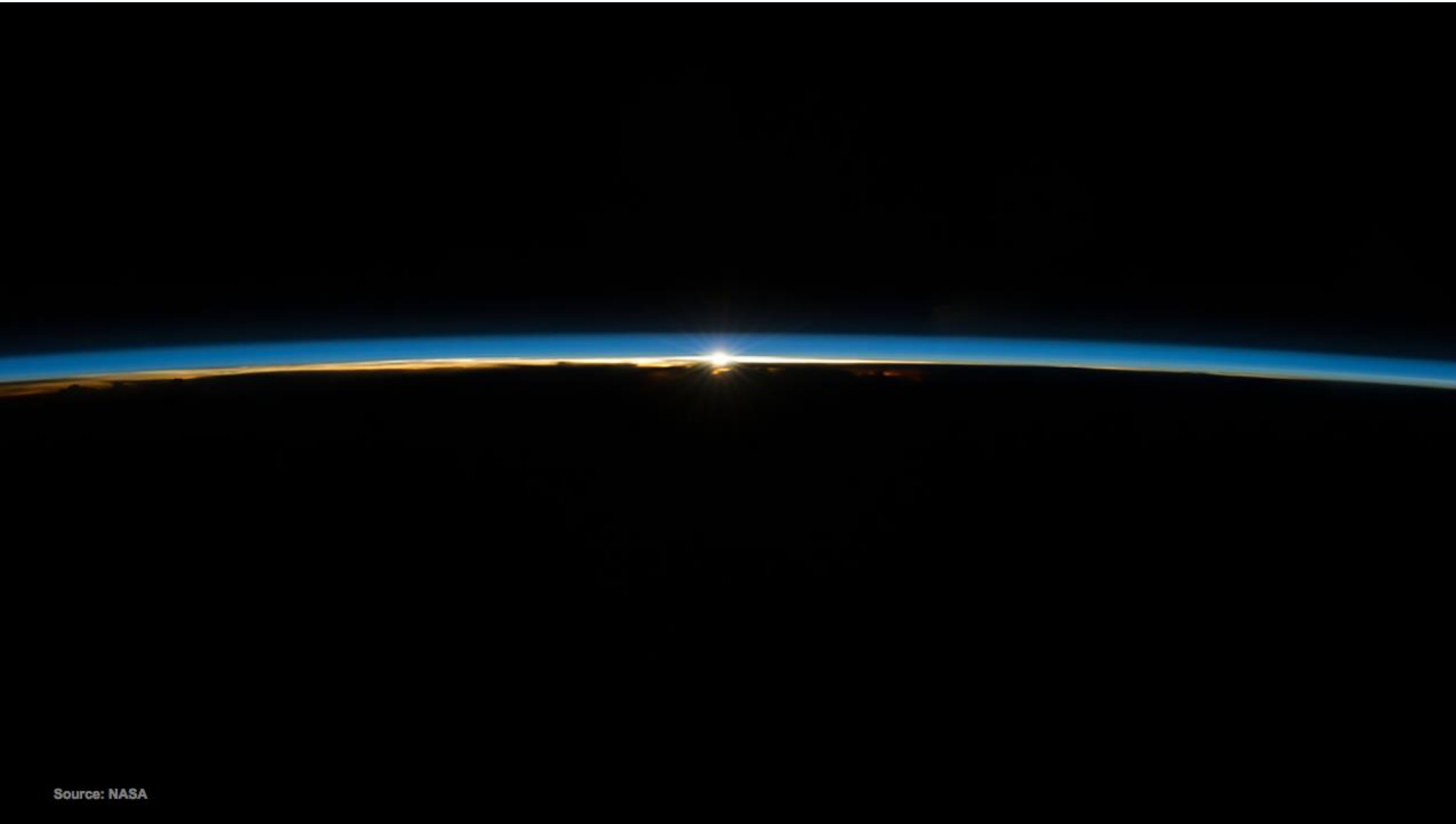


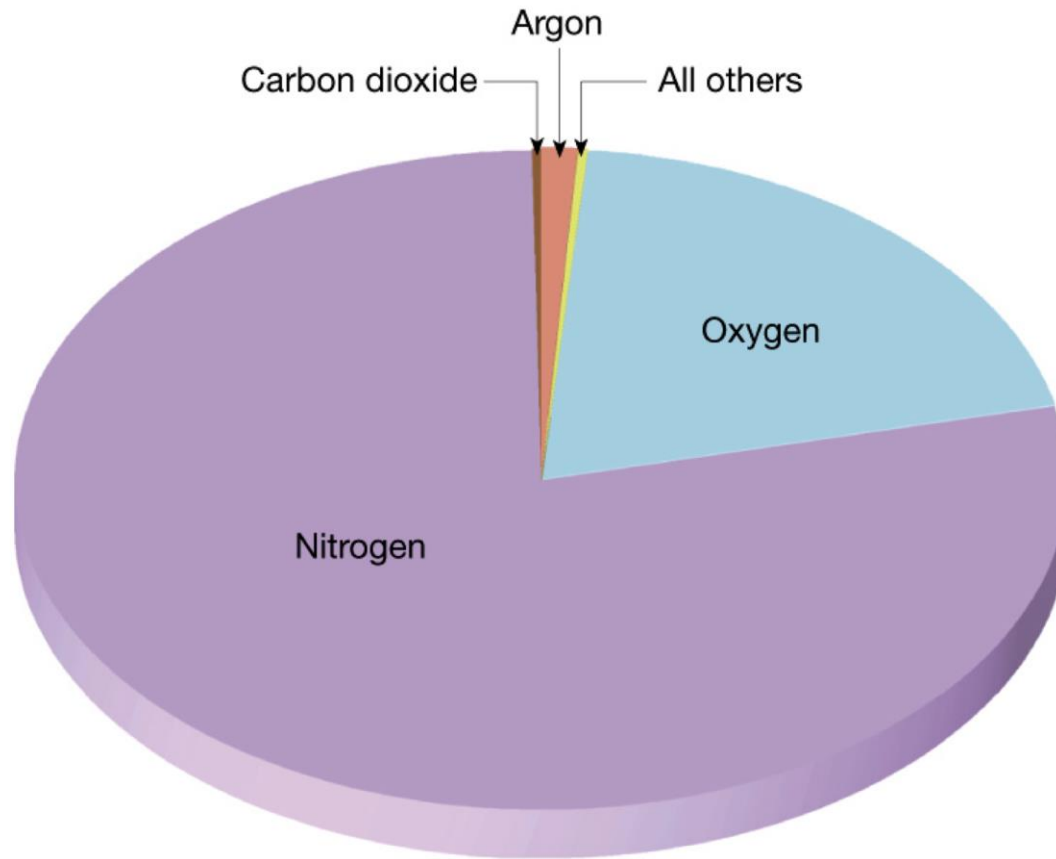
# Home





# Our Atmosphere





### **Gases in the Earth's atmosphere by percentages:**

Nitrogen – 78%

Oxygen – 21%

Argon – less than 1%

plus Greenhouse Gases:

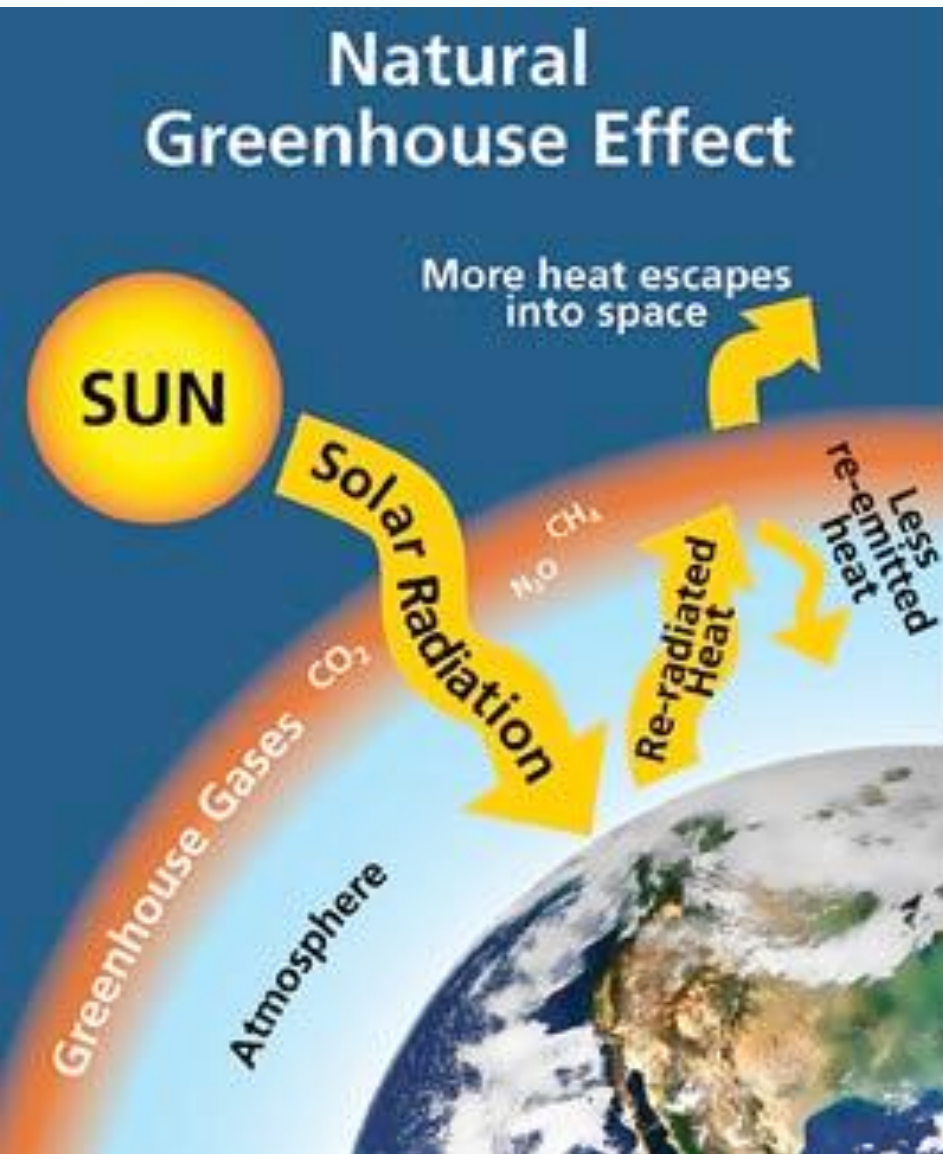
CO<sub>2</sub> - 0.040%

Methane – 0.00017%

N<sub>2</sub>O – 0.00003%

Water vapor (4% of the atmosphere) can also be considered a Greenhouse Gas, but is not always included in statistical data.





Over the past 4 billion years, the greenhouse gases such as  $\text{CO}_2$ , water vapor and methane have stabilized to trap enough heat so our planet is not too hot ...



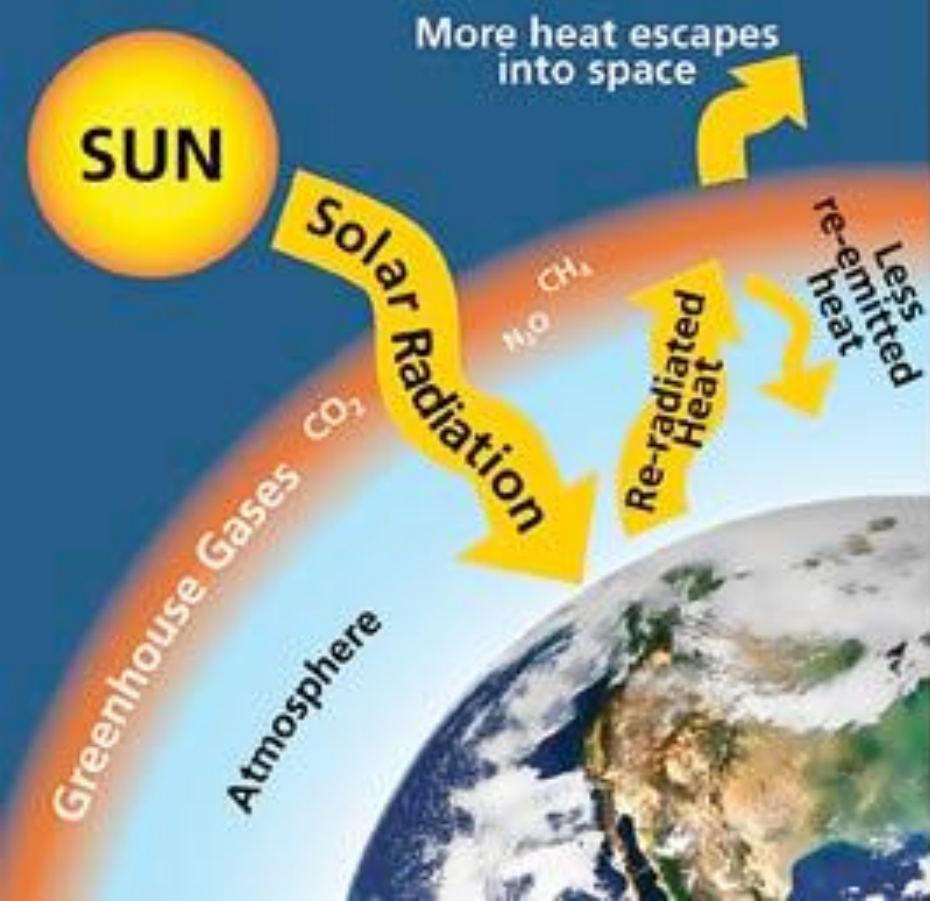
not too cold ...



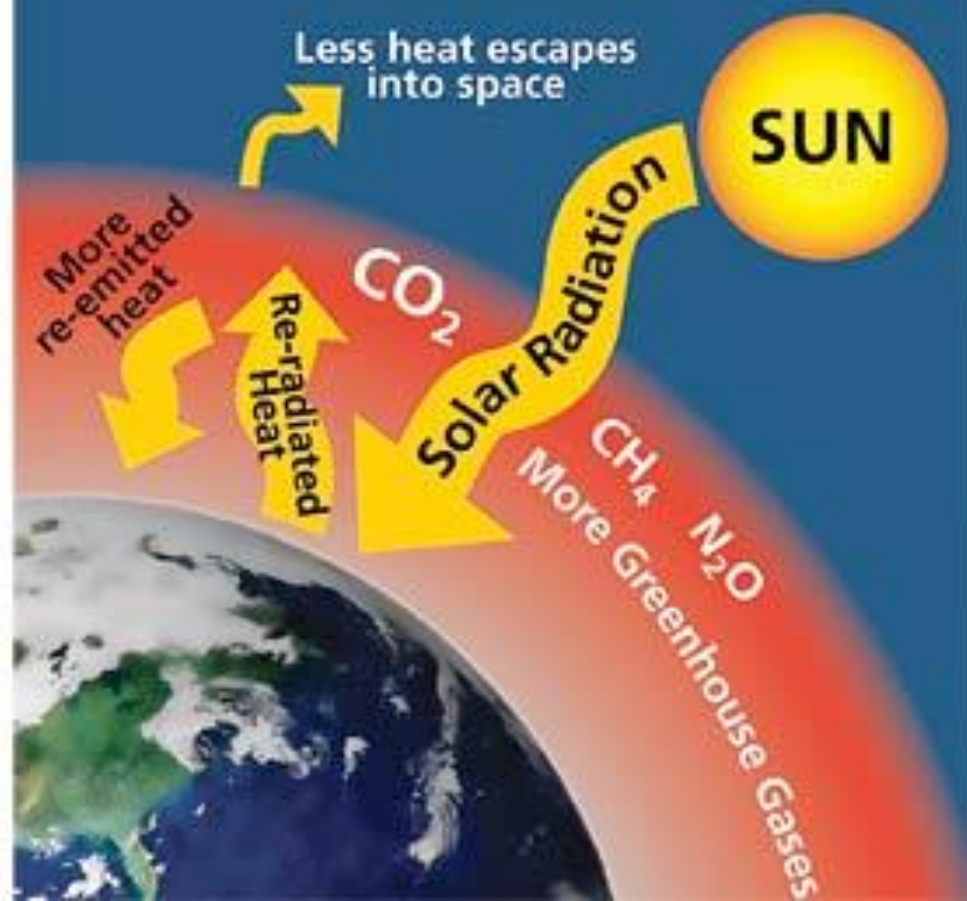
but 'just right'!



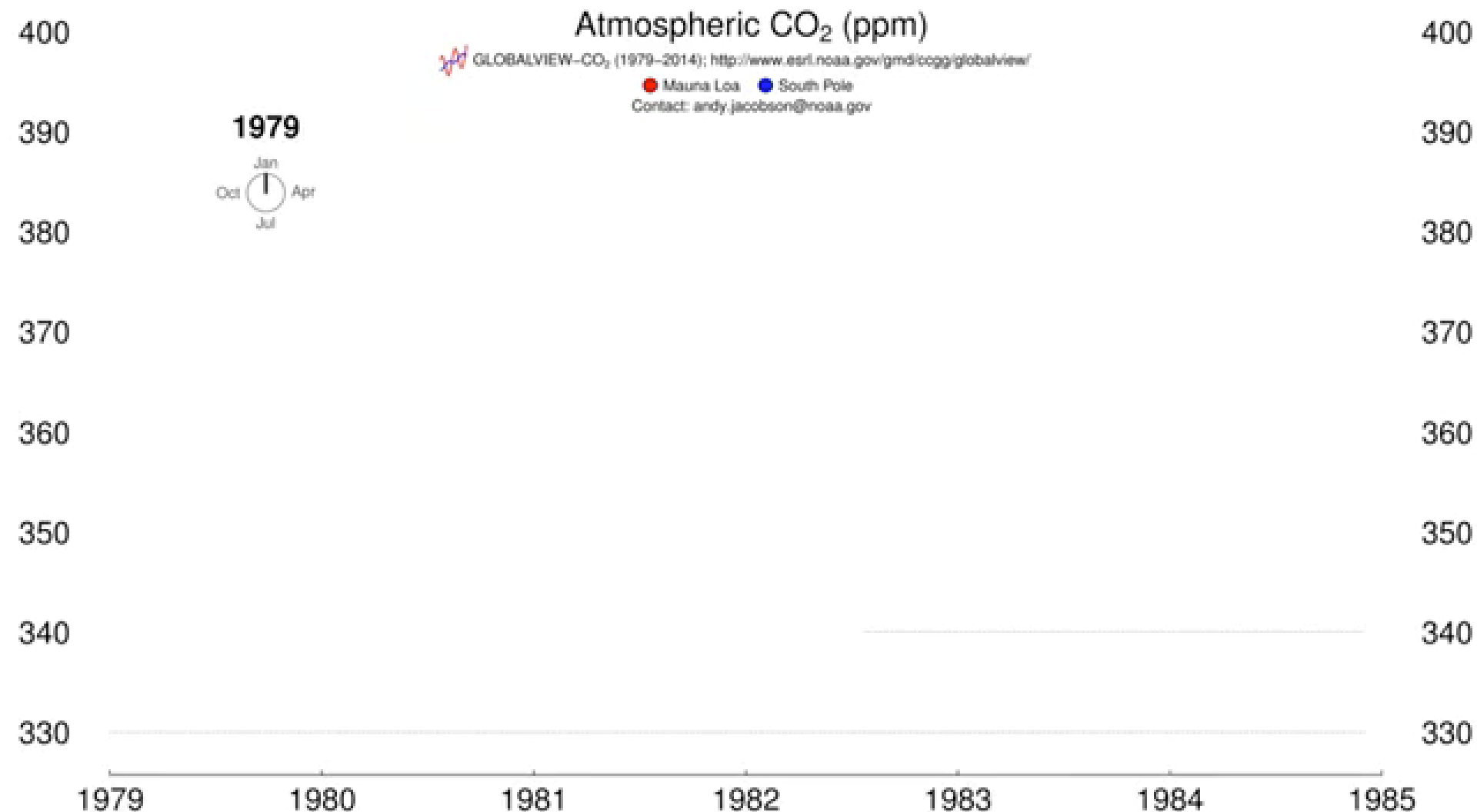
## Natural Greenhouse Effect



## Human Enhanced Greenhouse Effect

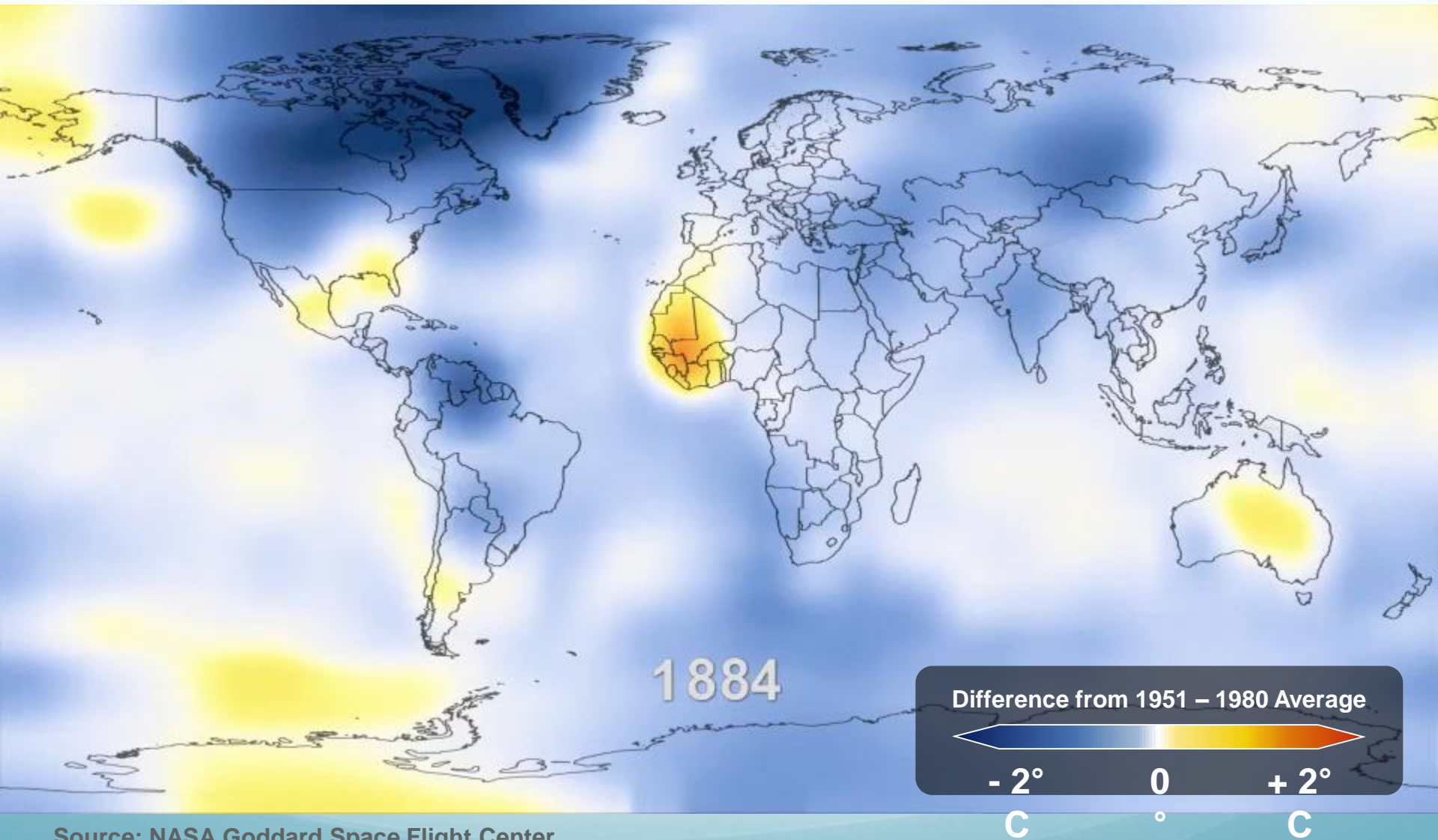


# History of Atmospheric CO<sub>2</sub> Levels





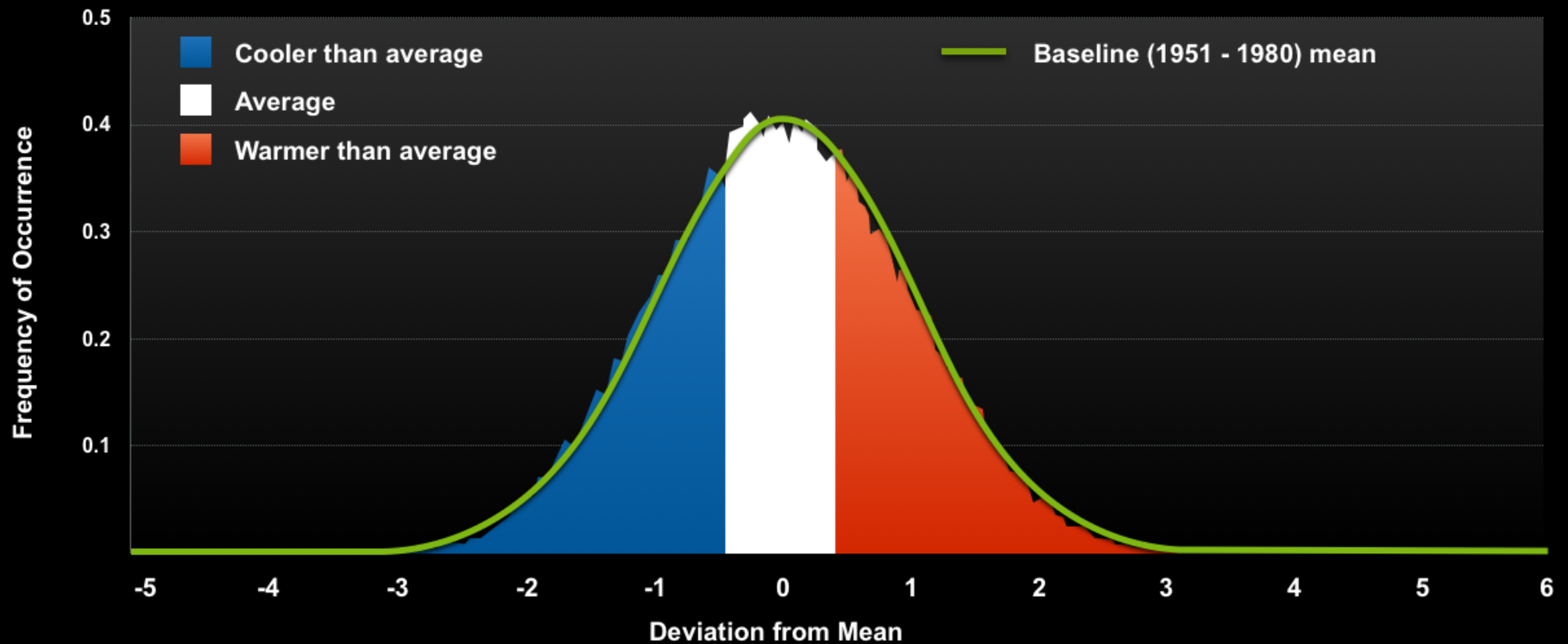
# Global Warming, 1884 – 2011



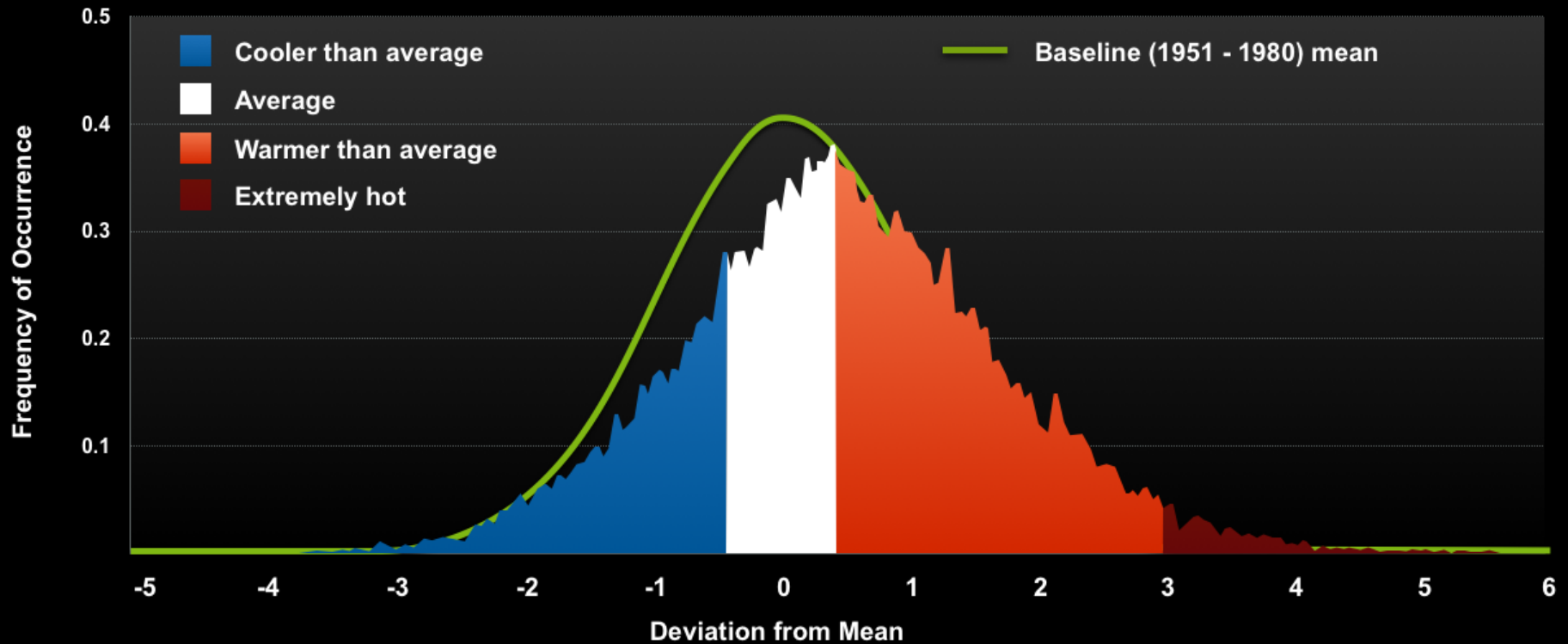
Source: NASA Goddard Space Flight Center  
Scientific Visualization Studio

# Summer Temperatures Have Shifted

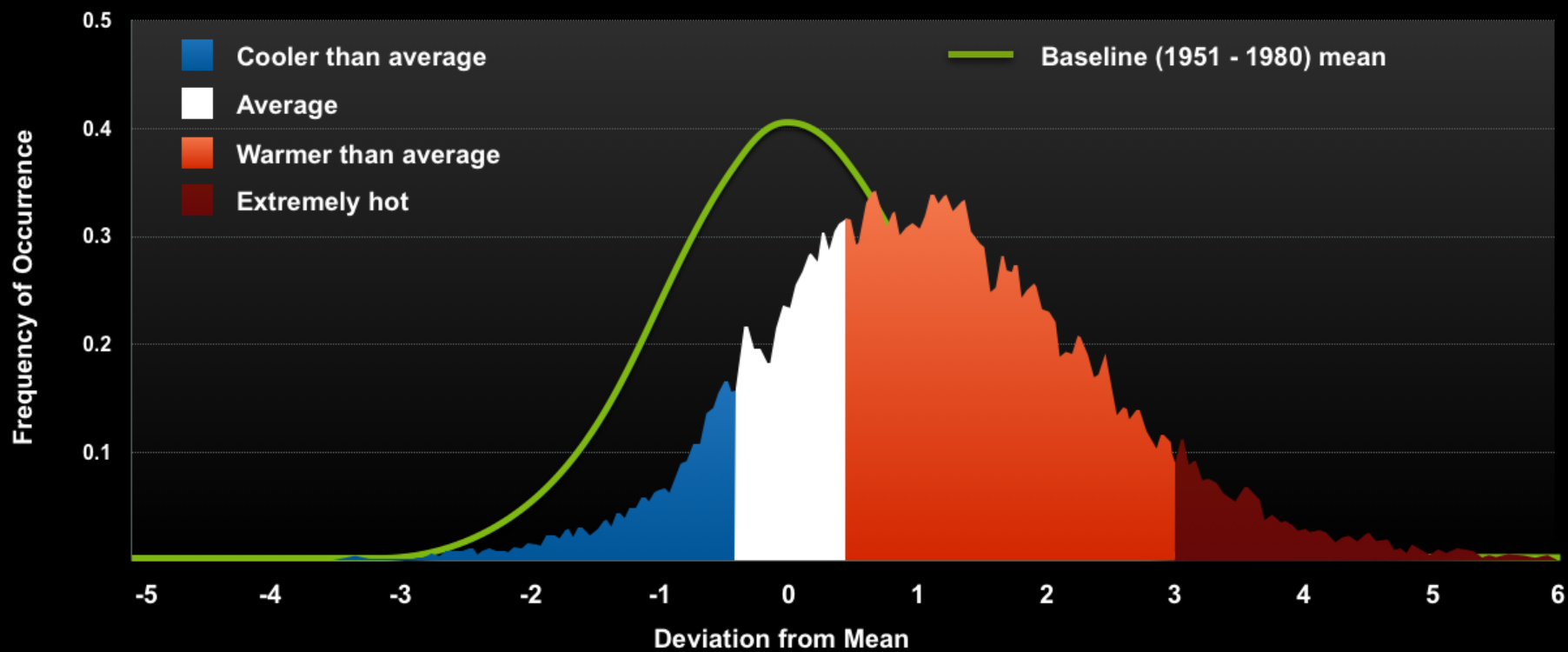
## 1951 – 1980



**1983 – 1993**

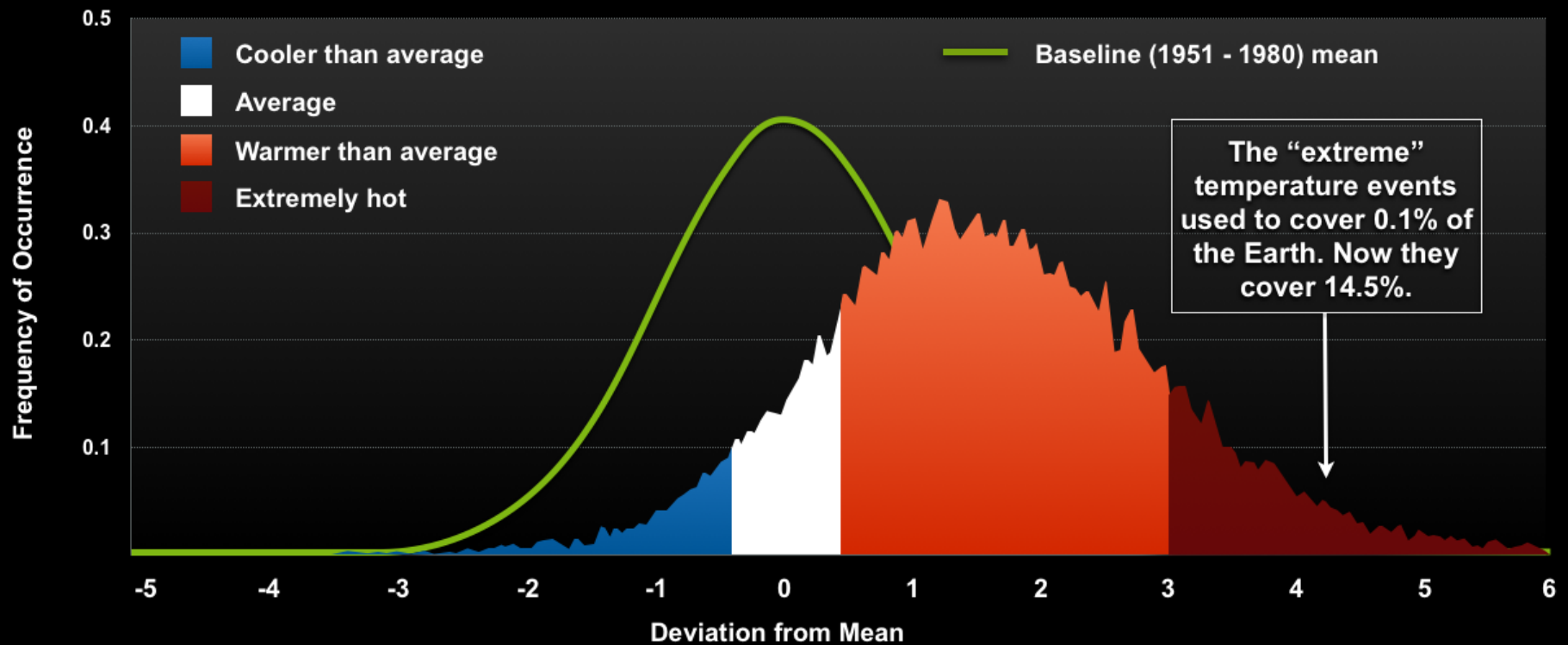


1994 – 2004





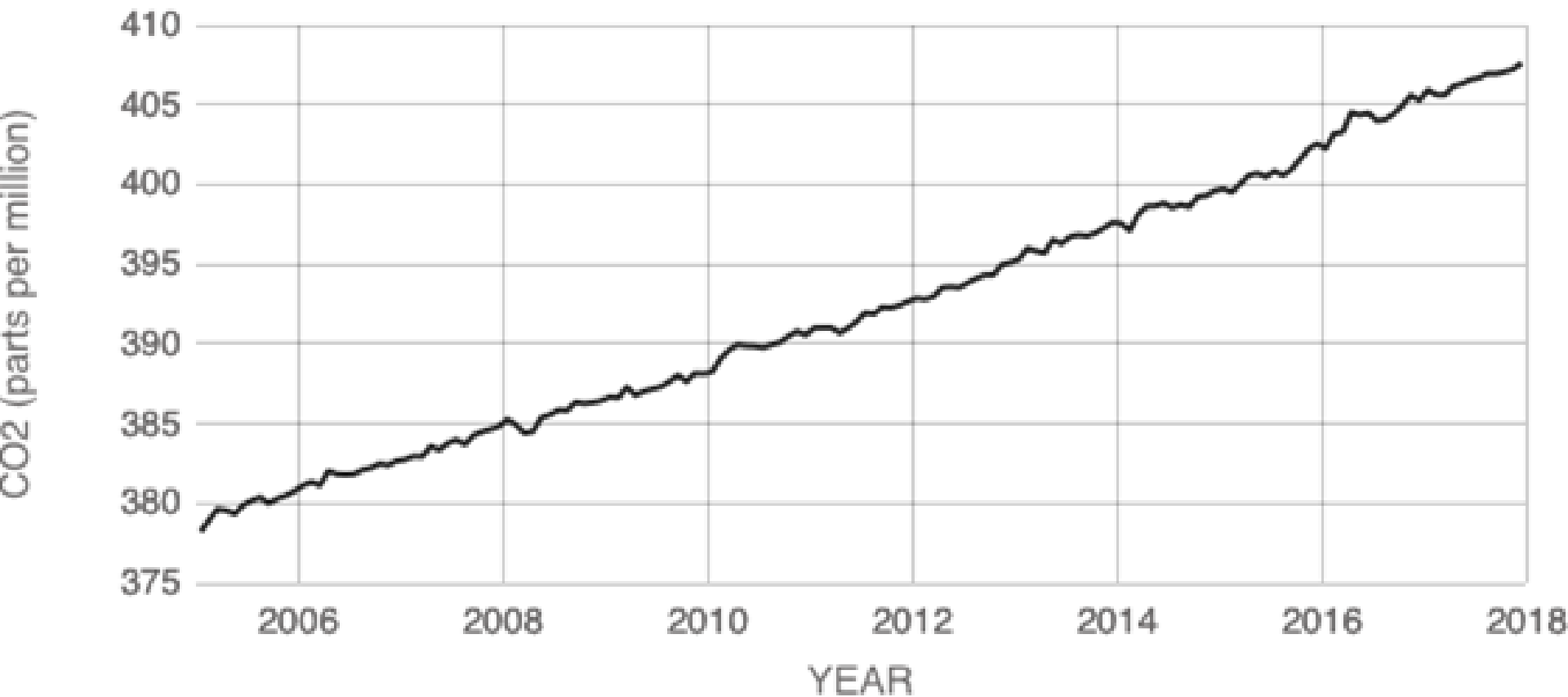
2005 – 2015



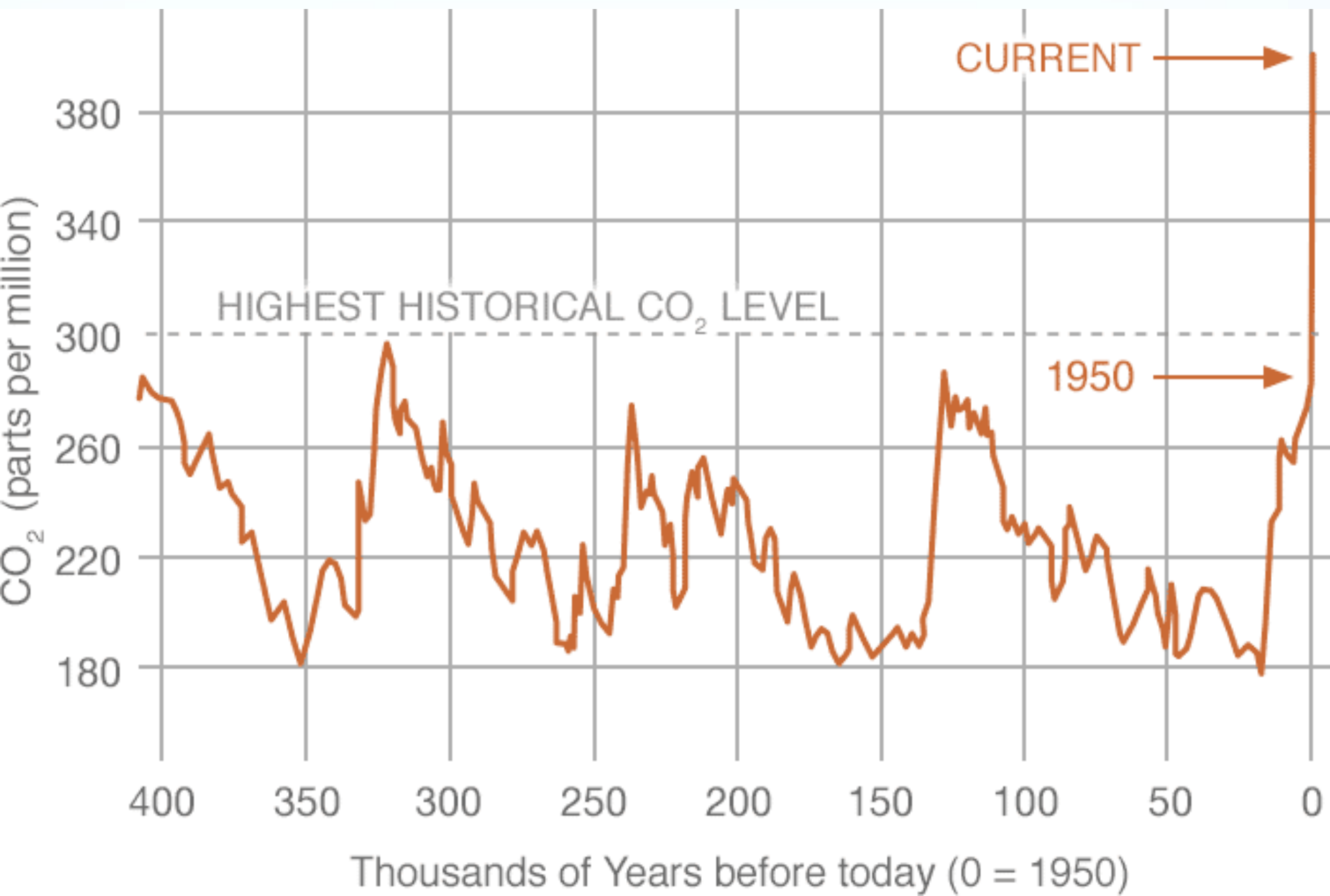
# What We Want to Know About Climate Change

- Add any additional questions on sentence strips
- Post your questions on the wall as you write them
- Monitor the wall to make sure you don't write a duplicate question

**Graph #1: Atmospheric CO<sub>2</sub> Levels Measured at Mauna Loa Observatory, Hawaii**



**Graph #2: Atmospheric CO<sub>2</sub> Levels Measured in Greenland and Antarctica**



### **Statement #1:**

The data in this graph indicates that our planet is warming and is cause for concern.

### **Statement #2:**

The data in this graph indicates that human activity is causing global warming.

### **Statement #3:**

I need more evidence to determine the cause of global warming.

# Scientific Discourse Circle

- 1) For each statement on the data sheet, one person says if they agree or disagree with the statement and provides their evidence for their claim
- 2) No one may make any comments while another person is speaking
- 3) The next person takes their turn, either agreeing or disagreeing with what the previous person just said, and then offering their evidence for their claim
- 4) After all group members have had a chance to speak, try to come to an agreement on the correct answer

# Explaining Misconceptions About Climate Change

- It has been warmer before, so no need to worry
- Increased solar activity is causing Earth to warm
- The Arctic is gaining ice.
- It has not warmed since 1998
- Increasing CO<sub>2</sub> has little or no effect on climate
- Scientists don't agree that humans are causing the Earth to get warmer



# Explaining Misconceptions About Climate Change

- 1) Select your favorite misconception
- 2) Use Handout 4.5 *Lines of Evidence* to evaluate
- 3) Record the following information on Handout 4.6:
  - List the misconception.
  - Identify scientific reasoning that dispels it.
  - Find an explanation of why someone might accept the misconception.

# Explaining Misconceptions About Climate Change

Did the evidence change your thinking on any of the misconceptions?

Which misconception was the easiest to dispel?  
Why?

Which misconception was the most difficult to dispel? Why?

# Challenge:

Can you find evidence that global warming is not directly related to the consumption of fossil fuels by humans?



# Climate on Tap

*Thank you for coming!*  
*Questions?*

*Facilitator:*

**Laura Tucker**

Ltucker@co.Jefferson.wa.us



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