

# Can we avoid dangerous Climate Change? The Paris Climate Agreement The end of Fossil Business

Lecture 2

Hurtigruten Antarctica – January 2017

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# Recap Lecture 1

## Mars

Thin atmosphere

(All CO<sub>2</sub> in ground)

Average temperature : - 50°C



## Earth

0,03% of CO<sub>2</sub> in the atmosphere

Average temperature : + 14°C

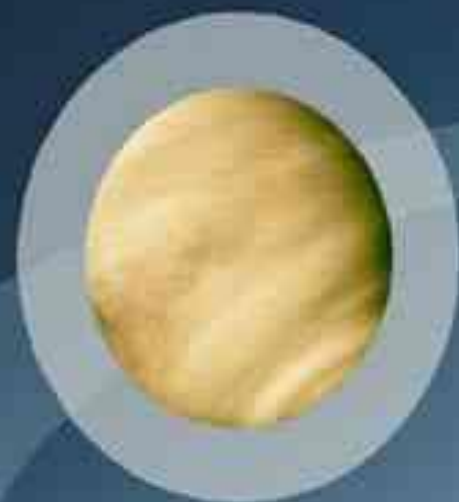


## Venus

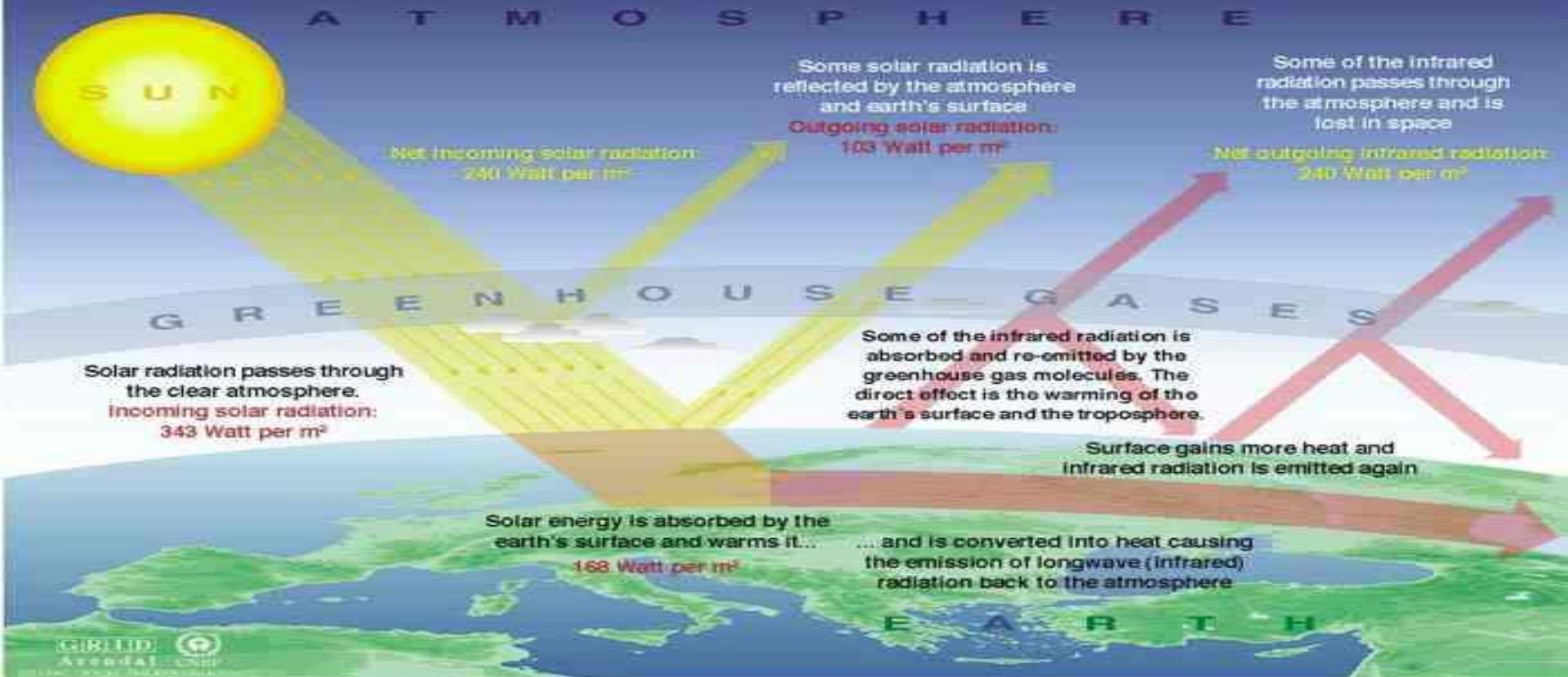
Thick atmosphere

containing 96% of CO<sub>2</sub>

Average temperature : + 420°C



# The Greenhouse effect



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States-Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

°C

4

0

- 4

- 8

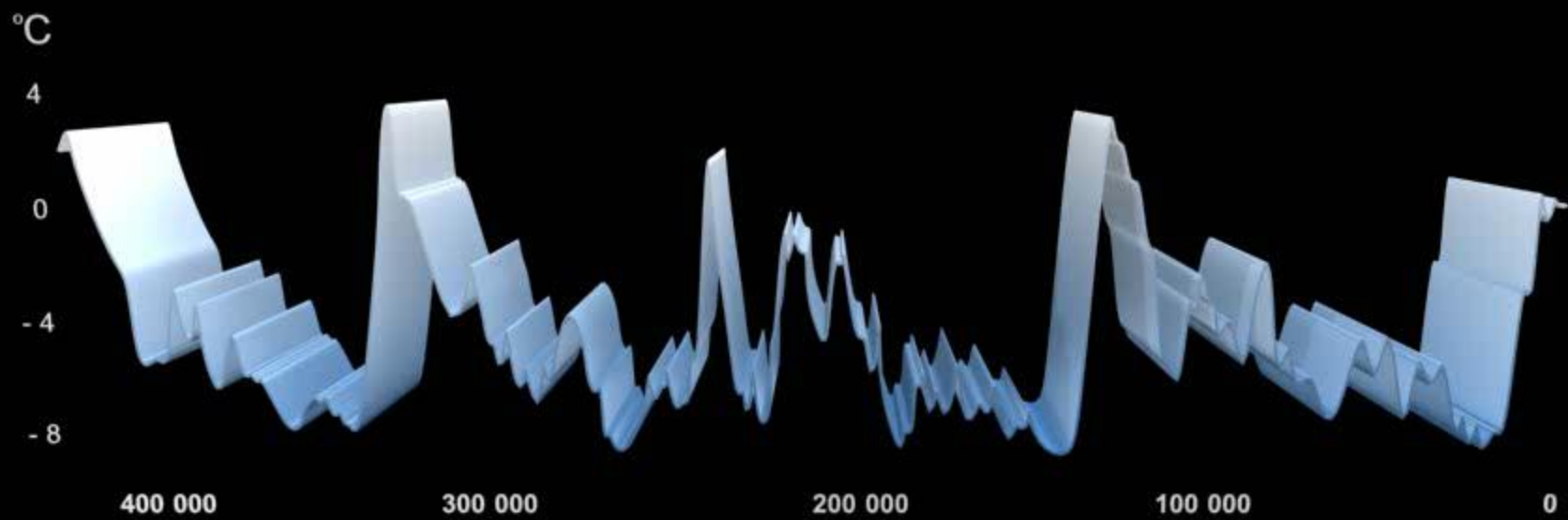
400 000

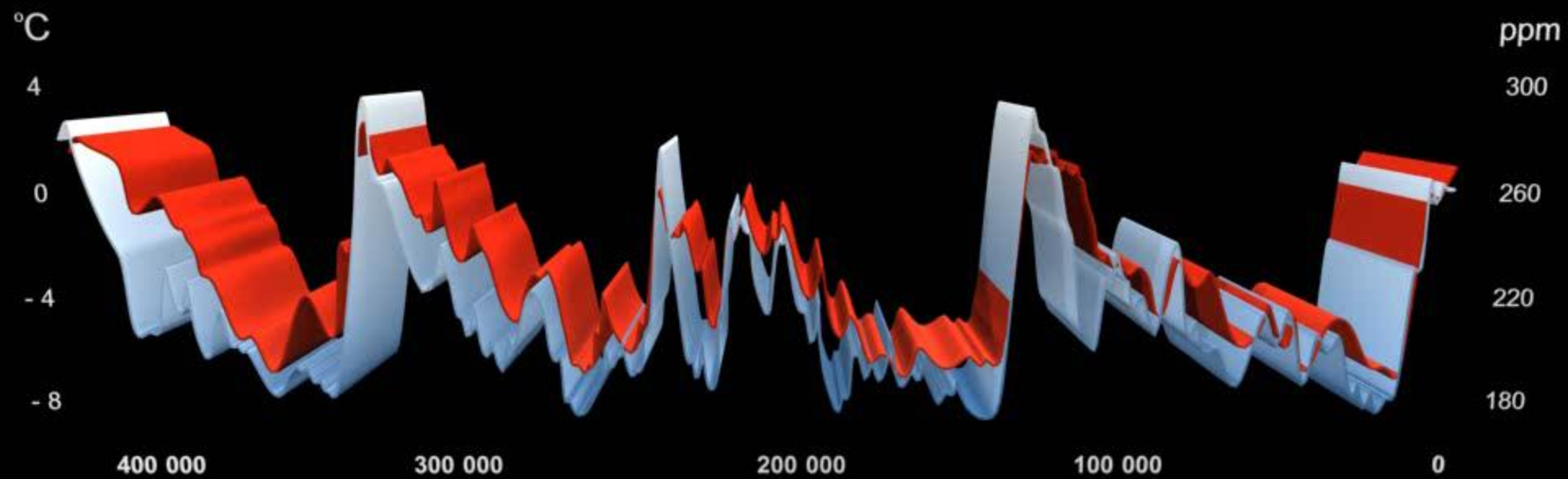
300 000

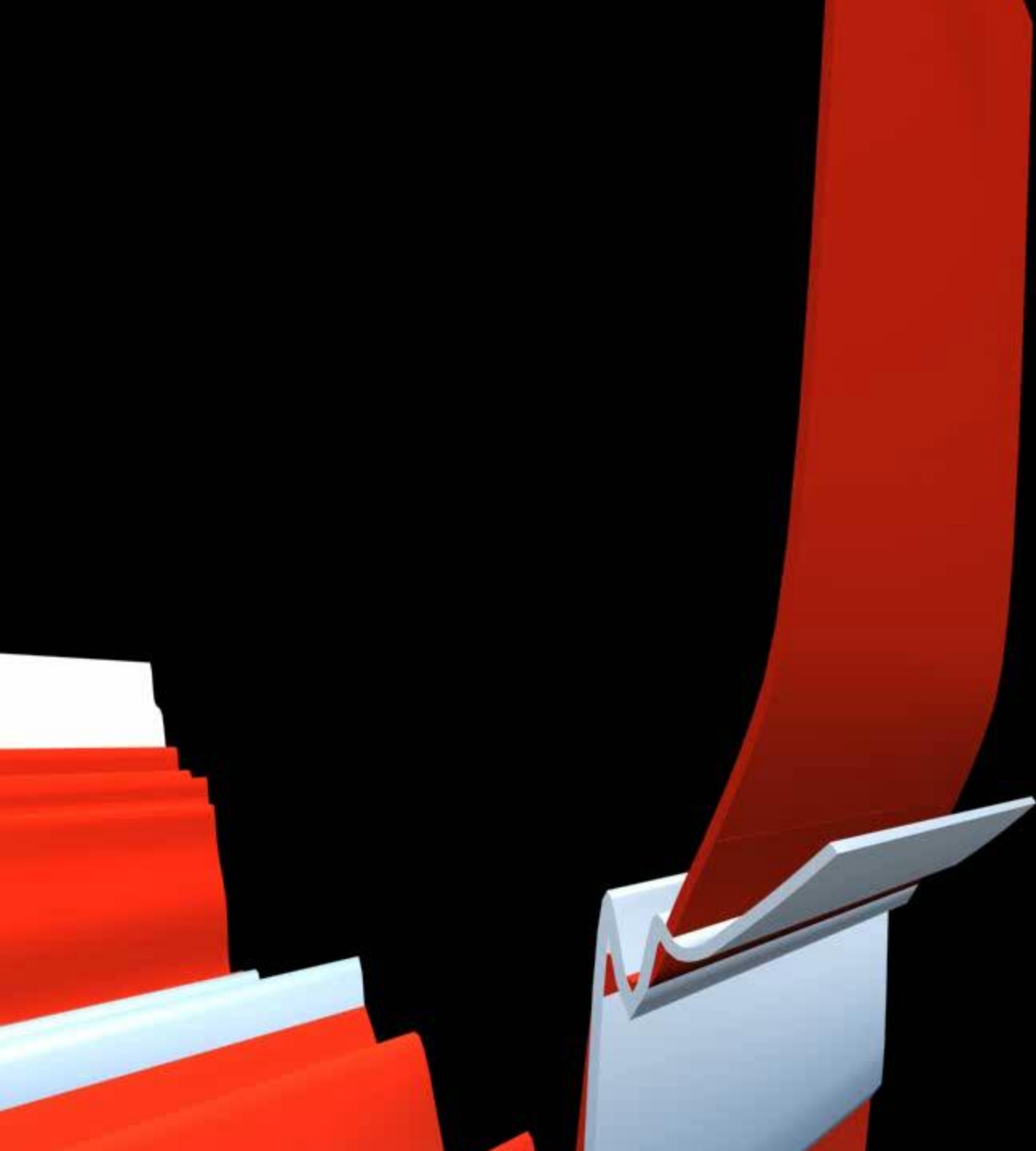
200 000

100 000

0

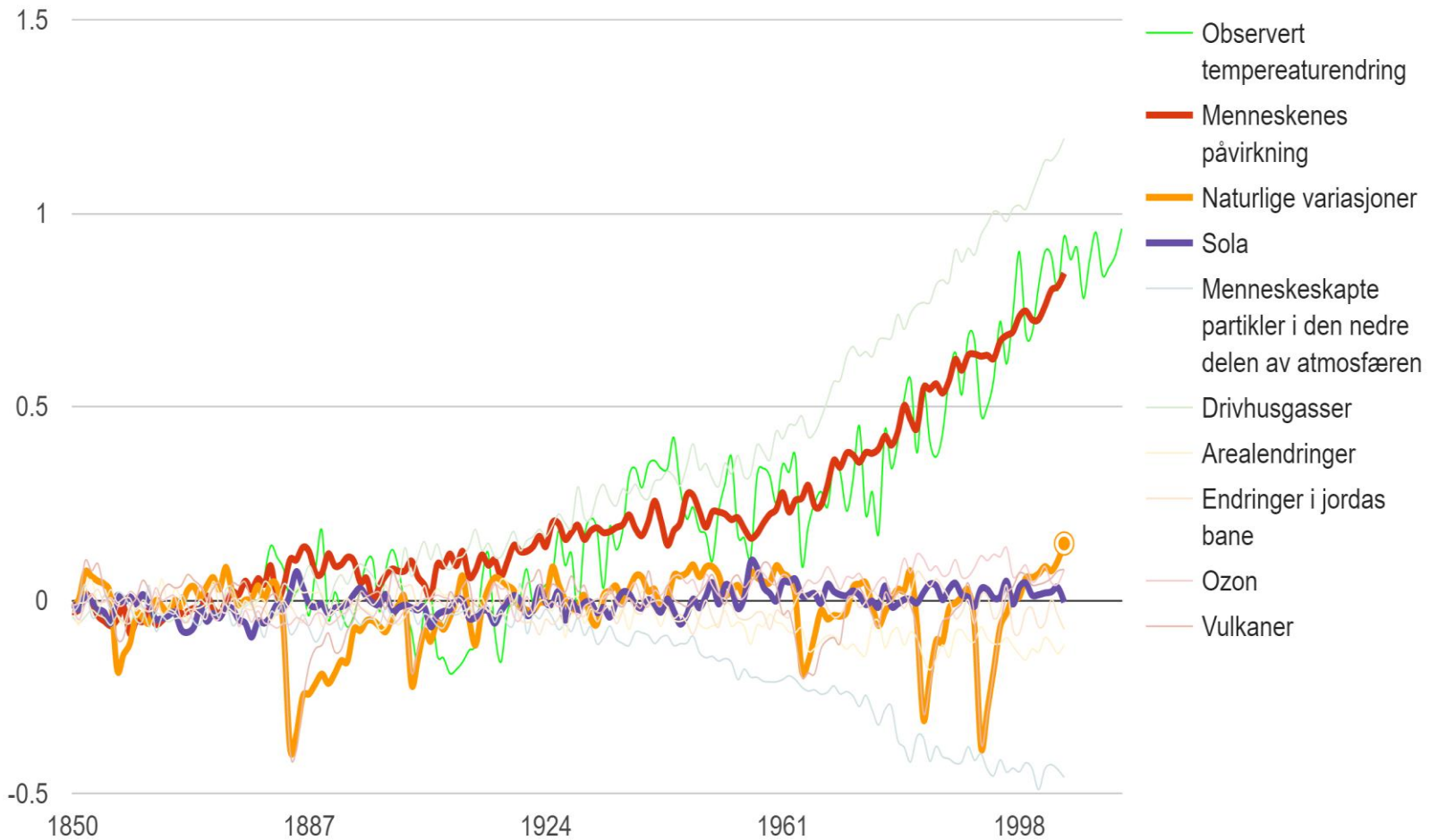




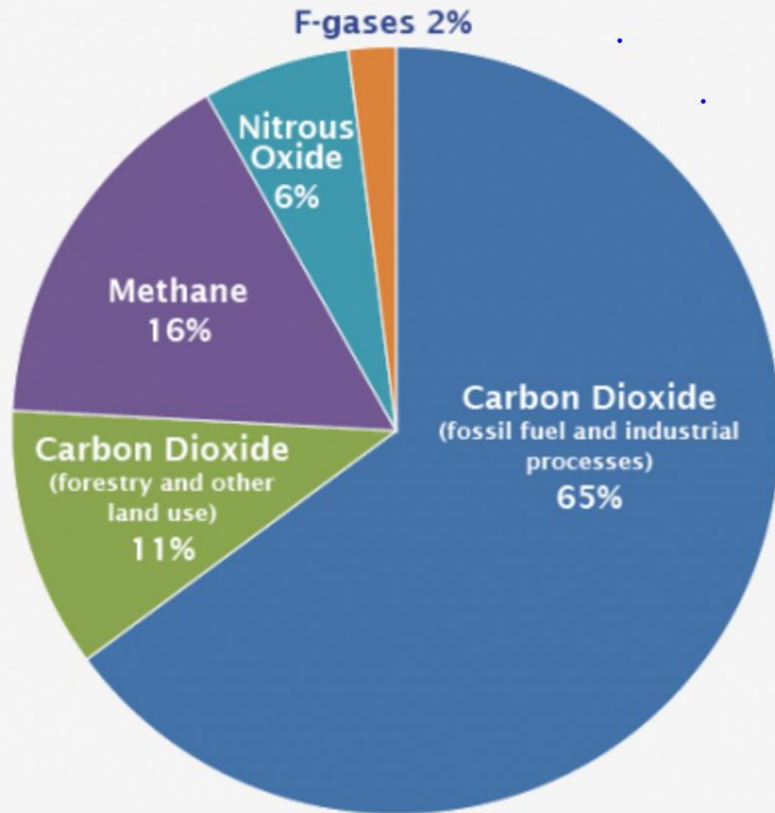


# Hva varmer kloden?

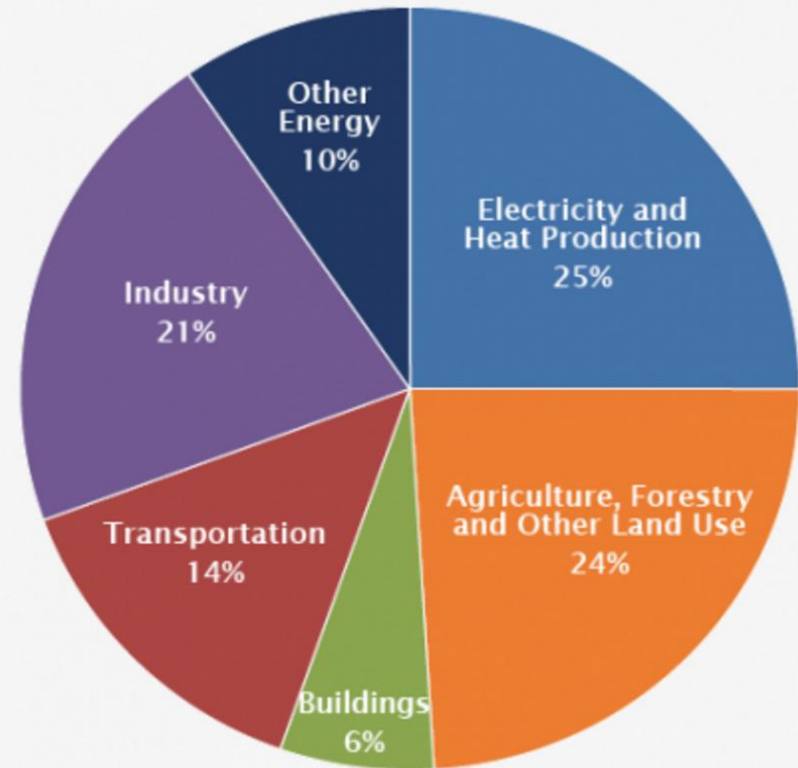
Avvik fra gj. snittstemperatur 1880-1910 (°C)



### Global Greenhouse Gas Emissions by Gas



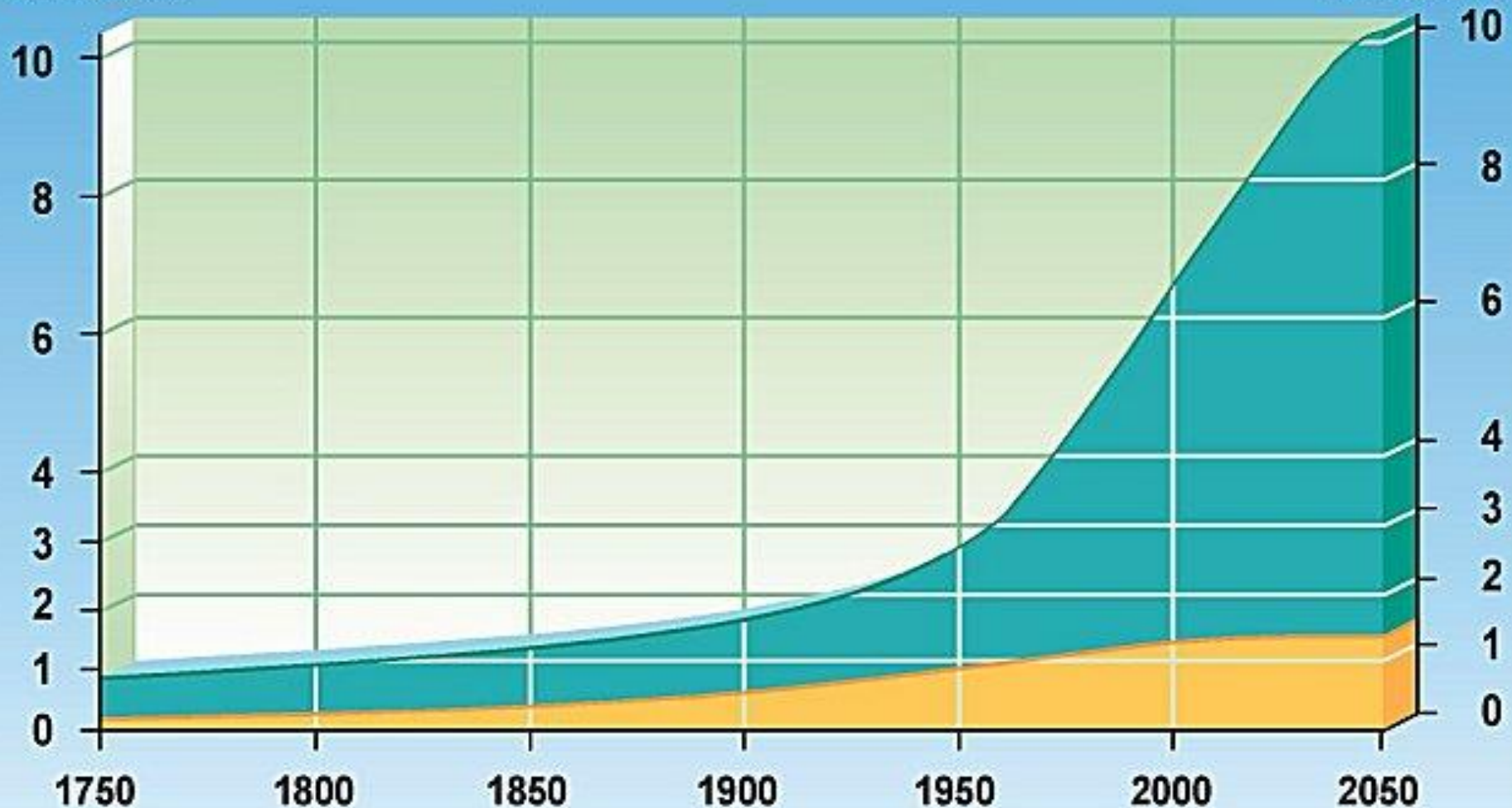
### Global Greenhouse Gas Emissions by Economic Sector



# Global befolkningsutvikling

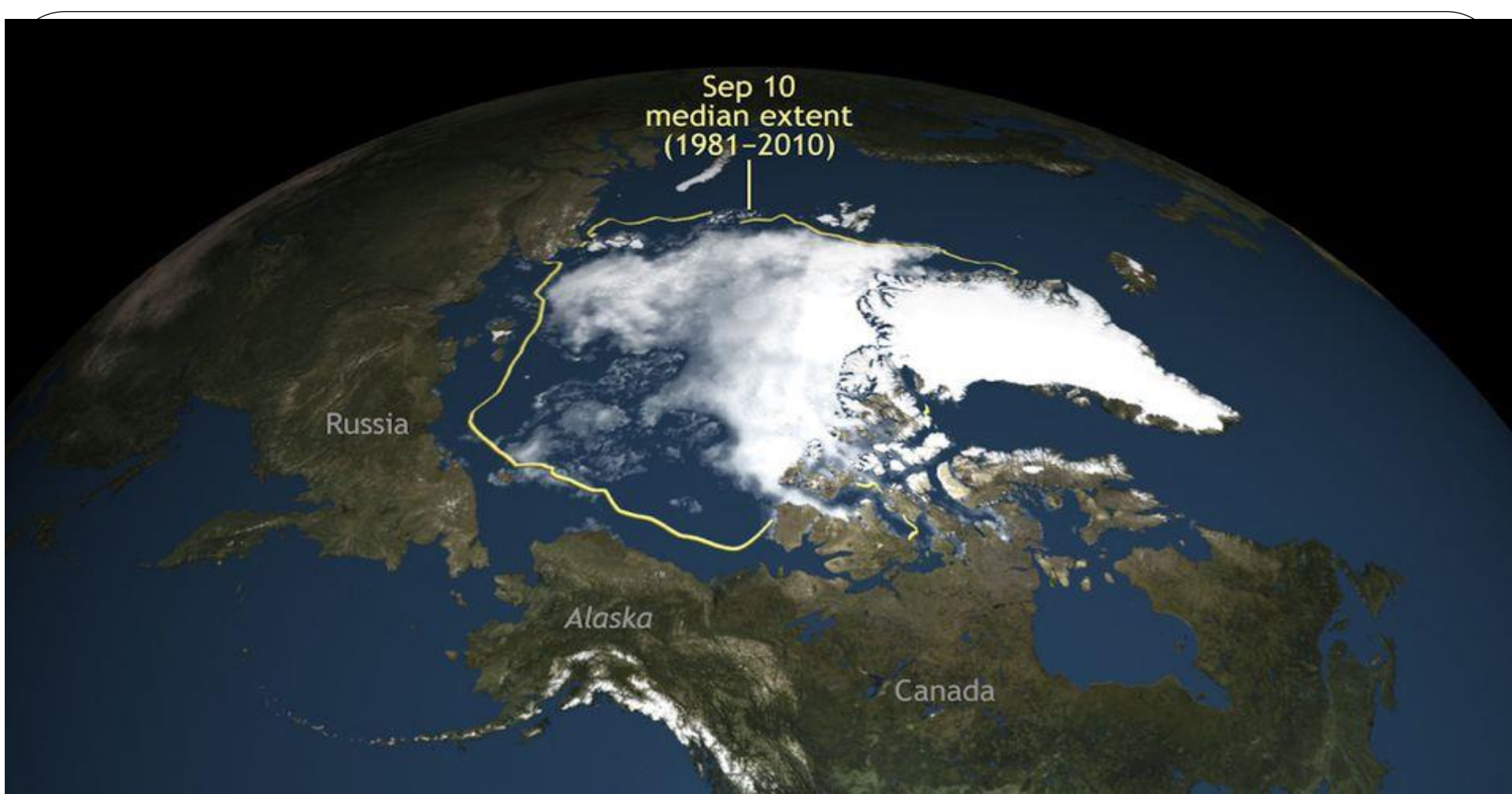
Milliarder

Milliarder



GRID  
Arendal





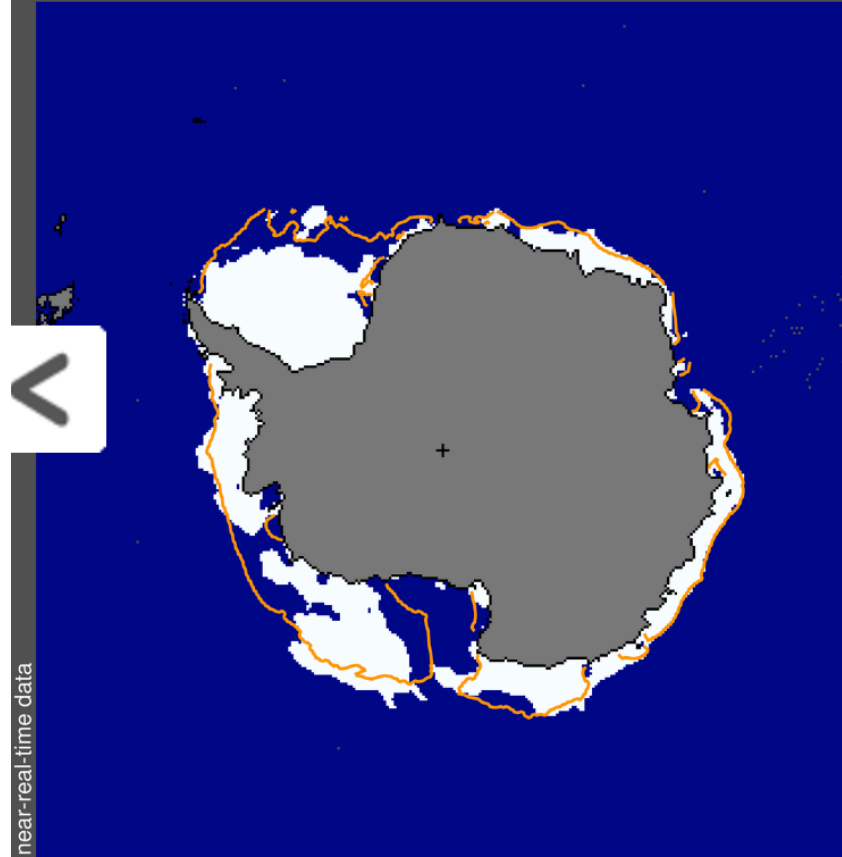
Sep 10  
median extent  
(1981-2010)

Russia

Alaska

Canada

Sea Ice Extent  
01/09/2017

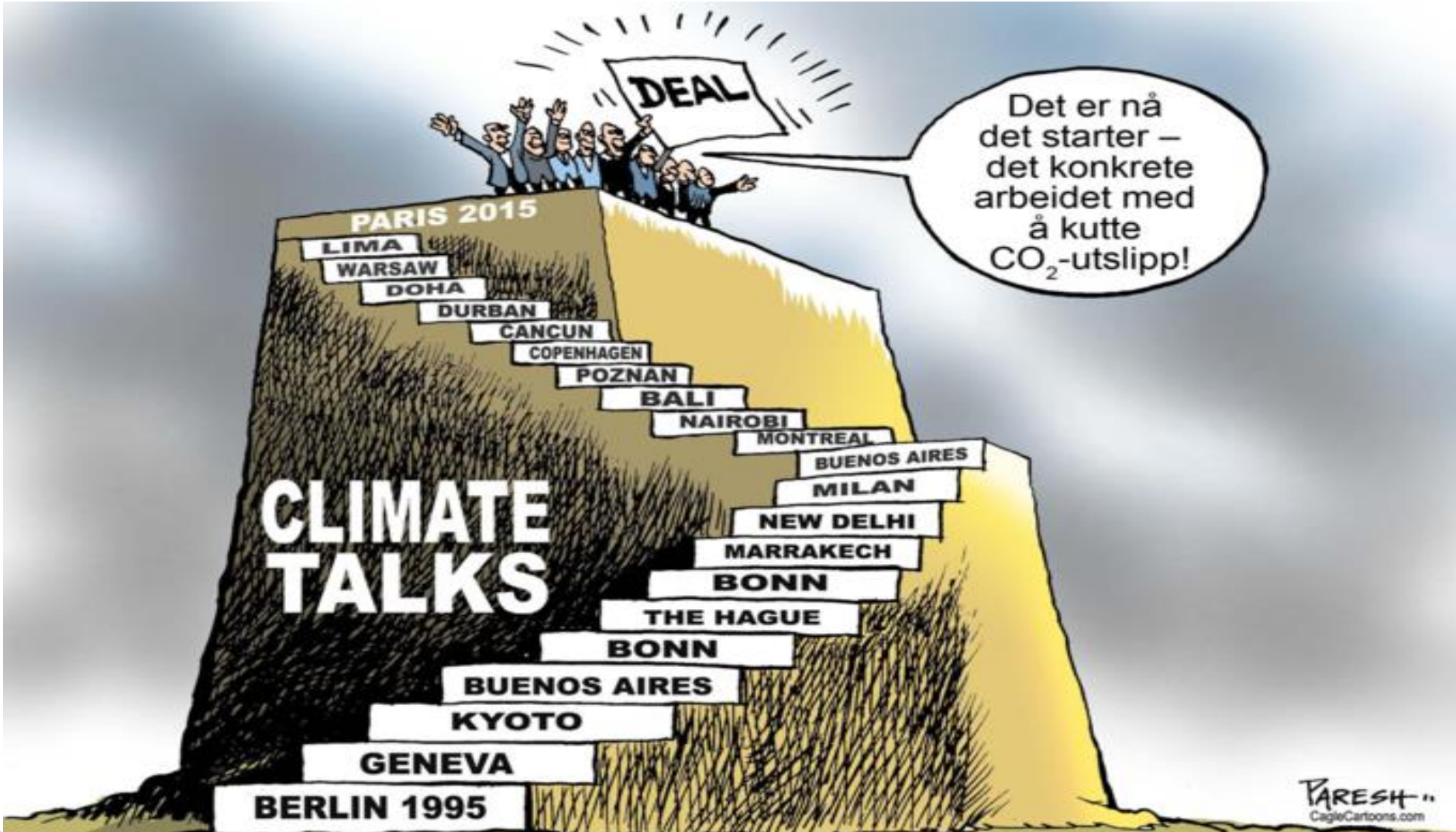


near-real-time data

National Snow and Ice Data Center, Boulder, CO

median  
1981–2010

# The Road to Paris

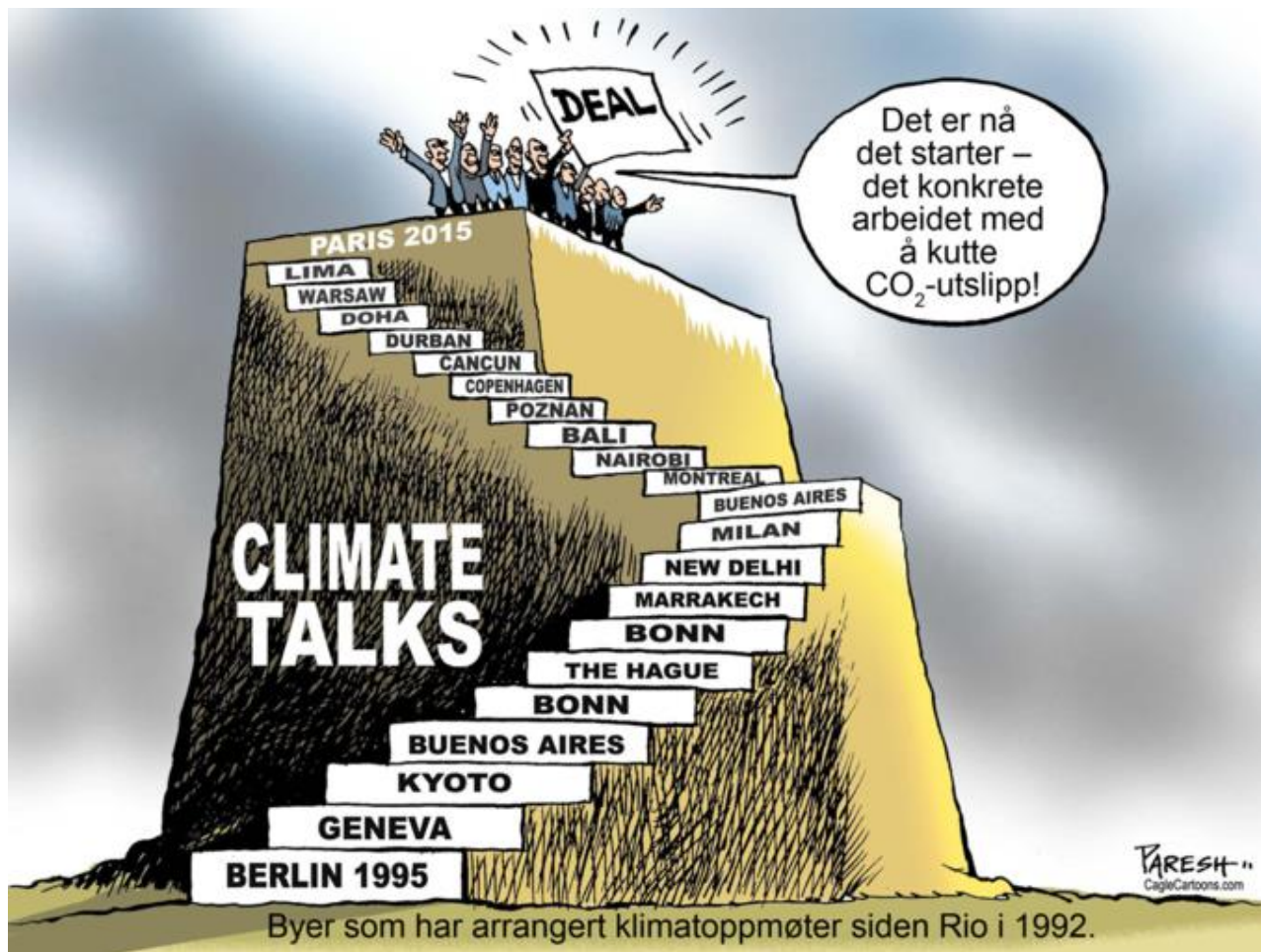


Byer som har arrangert klimatoppmøter siden Rio i 1992.

# Place de la Republique during the Paris meeting

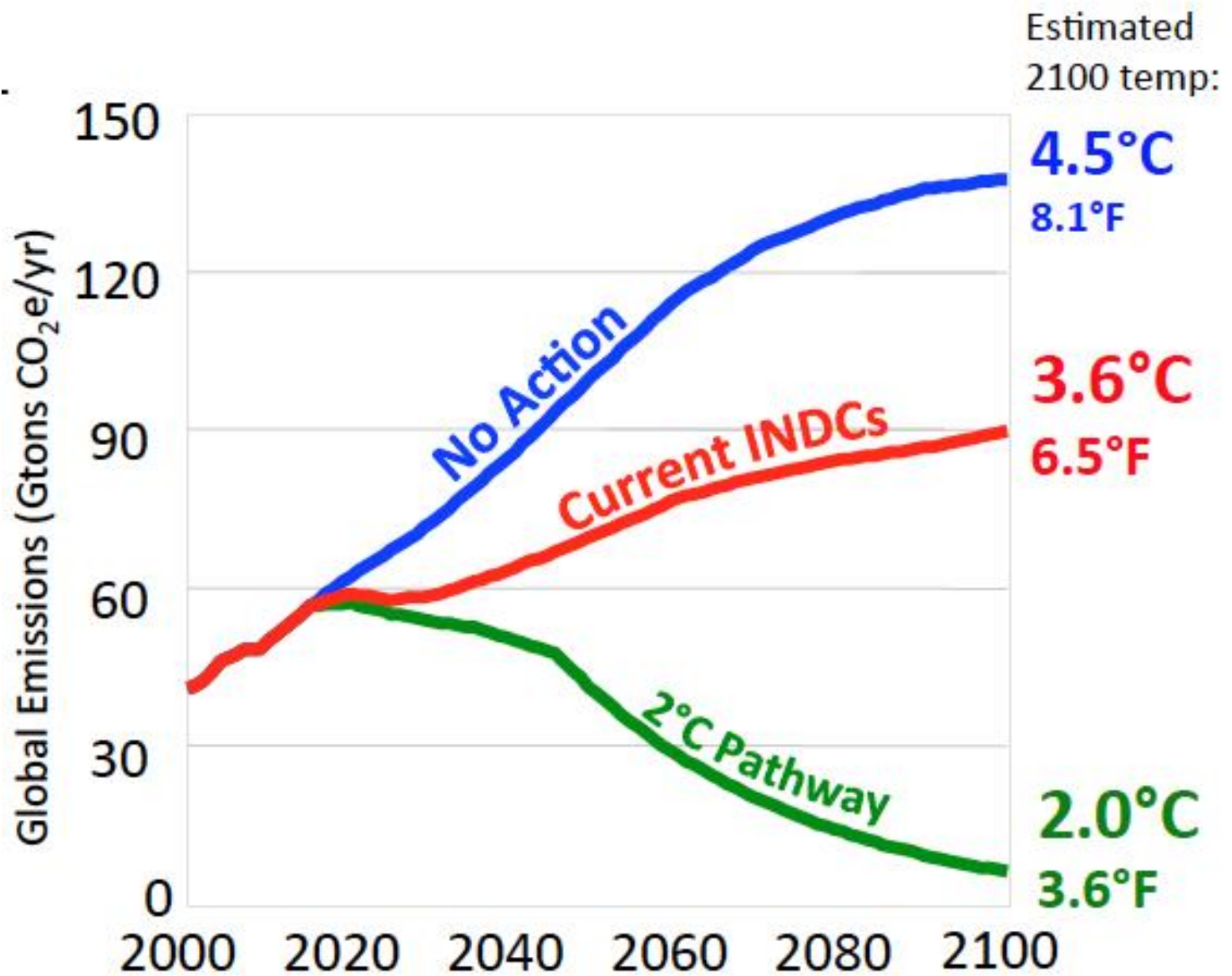




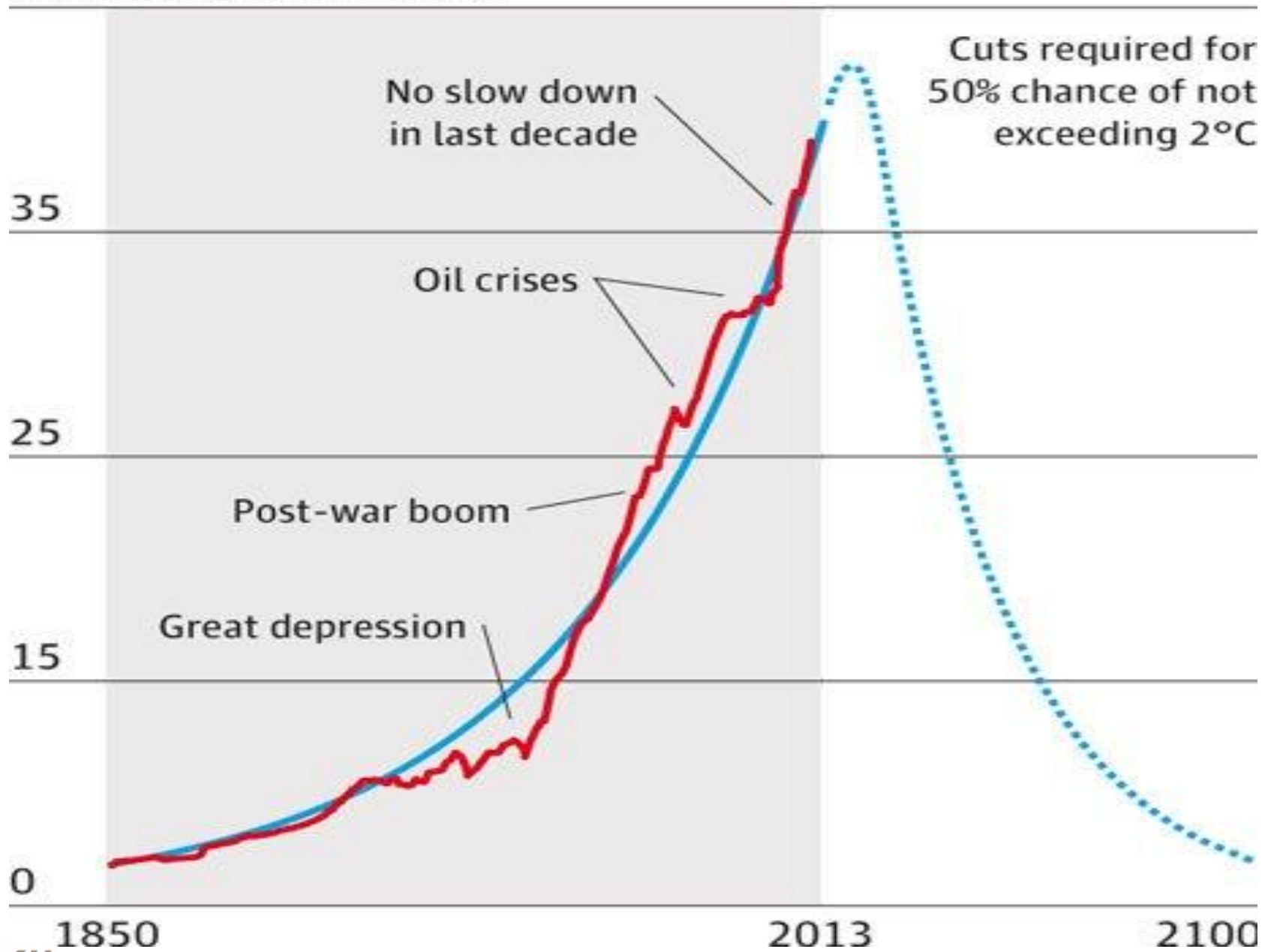


# The Paris Climate Agreement

- Agreed by **195 countries** responsible for almost **100 % of global emissions** in Paris December 2015
- Entered into force November 4 2016 when **55 countries with 55 % of global emissions** have ratified
- Hold the increase in global average temperature to **well below 2 °C** above pre-industrial (1880) levels and pursue efforts to limit the temperature increase to **1.5 °C**
- Provide **100 billion \$ per year** to developing countries for a green shift and climate adaptation by 2020 – more after 2025



# 45 Billion tonnes of CO2



WE SAVED THE WORLD!





*“Yes, the planet got destroyed. But for a beautiful moment  
in time we created a lot of value for shareholders.”*

# The terrifying climate math

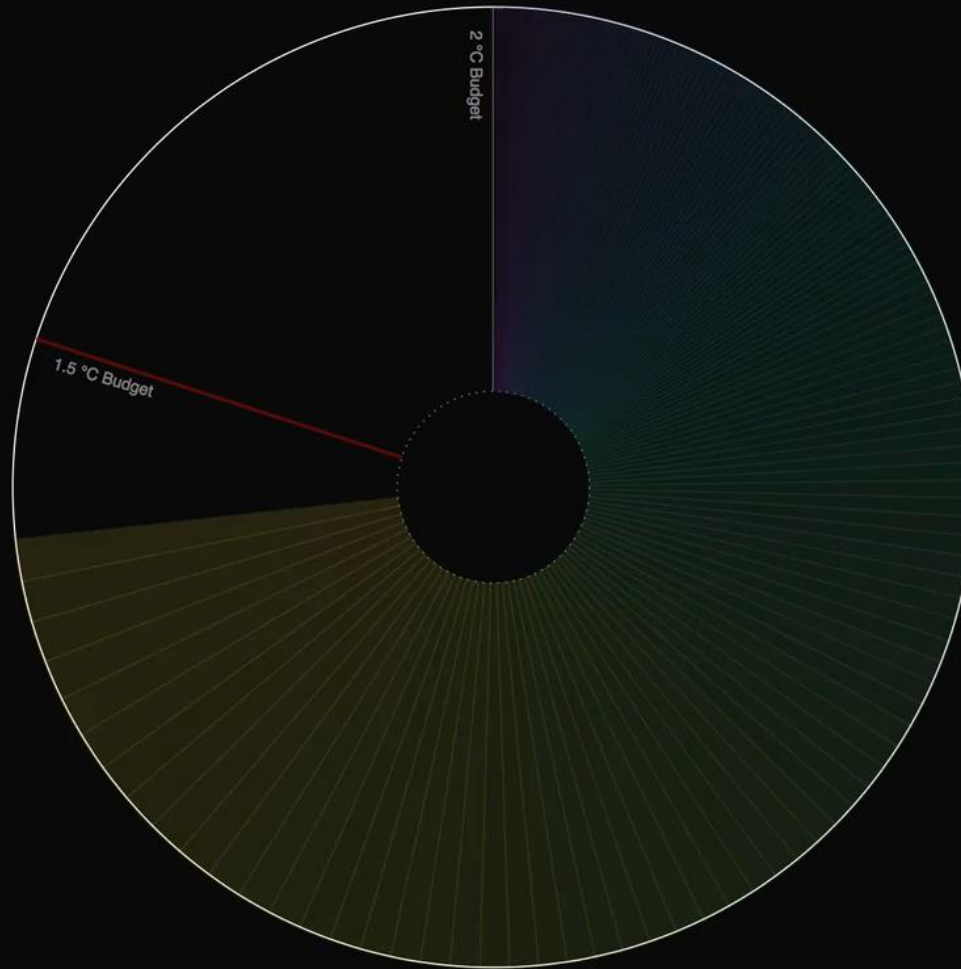
(Bill McKibben, Rolling Stone Magazine - July 20102)

2° Celsius

565 Gigatons

2795 Gigatons

## Carbon Budget



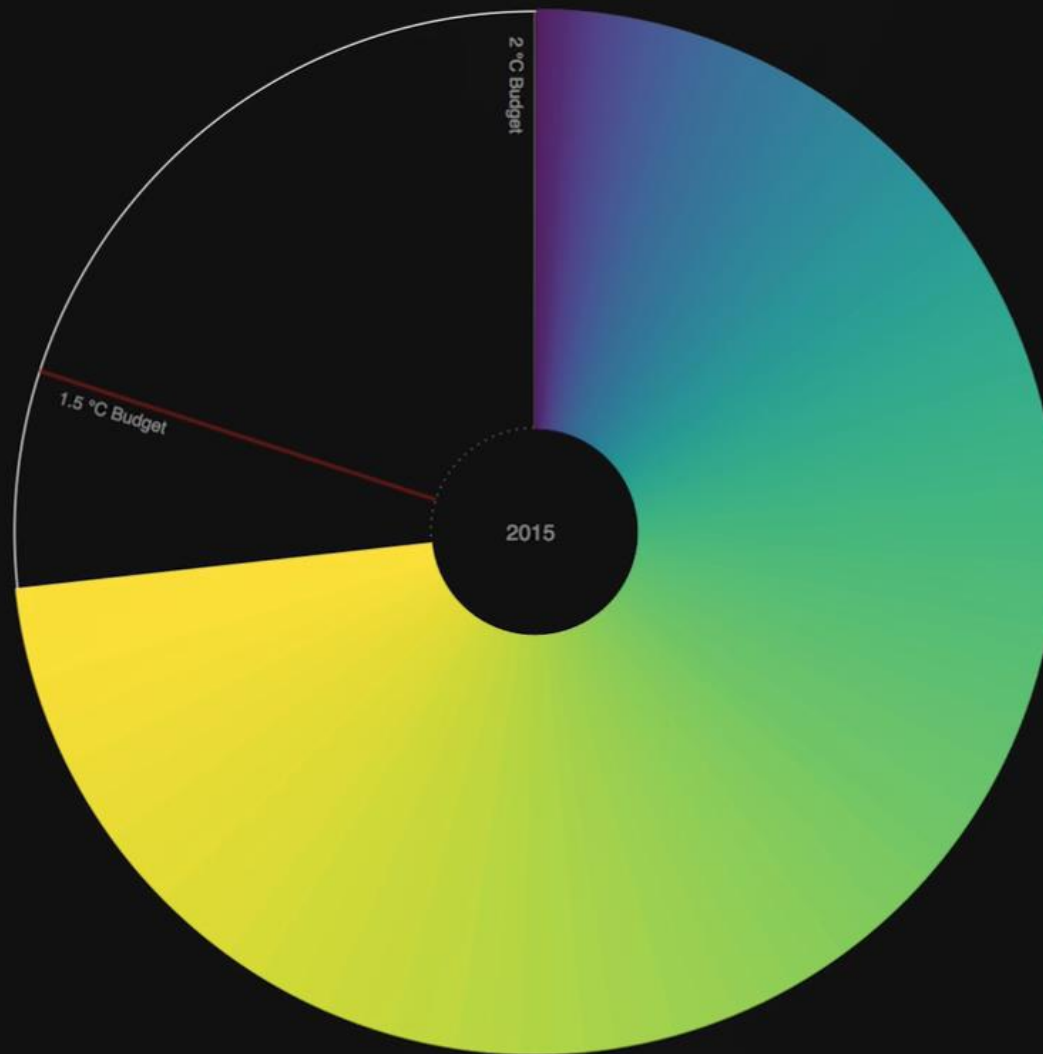
Assuming a Carbon Budget of 400/1000 GtCO<sub>2</sub> from 2011 ([IPCC AR5 Synthesis Report](#))

Data source:

[PRIMAP-hist \(in review\)](#) plus bunkers from [CDIAC](#)

Original Climate Spiral by [Ed Hawkins \(Climate Lab Book\)](#),  
extended with Carbon Budget and Concentration Spiral by  
[Robert Gieseke and Malte Meinshausen](#)  
([PRIMAP Group, Potsdam Institute for Climate Impact Research, Germany &](#)  
[Australian-German Climate & Energy College, The University of Melbourne, Australia](#))  
[Data Processing · Source Code](#)

## Carbon Budget



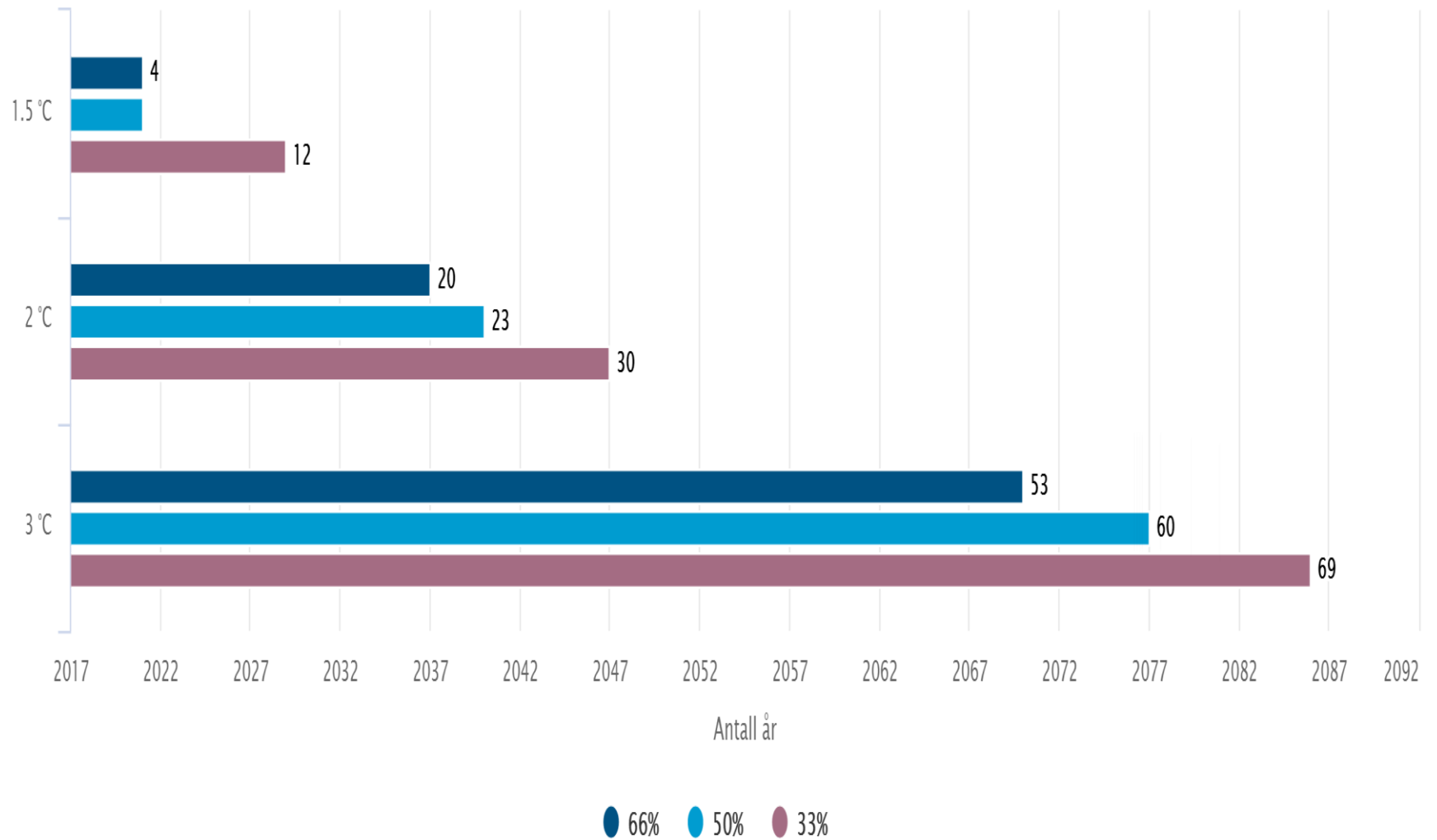
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# Remaining carbon budget



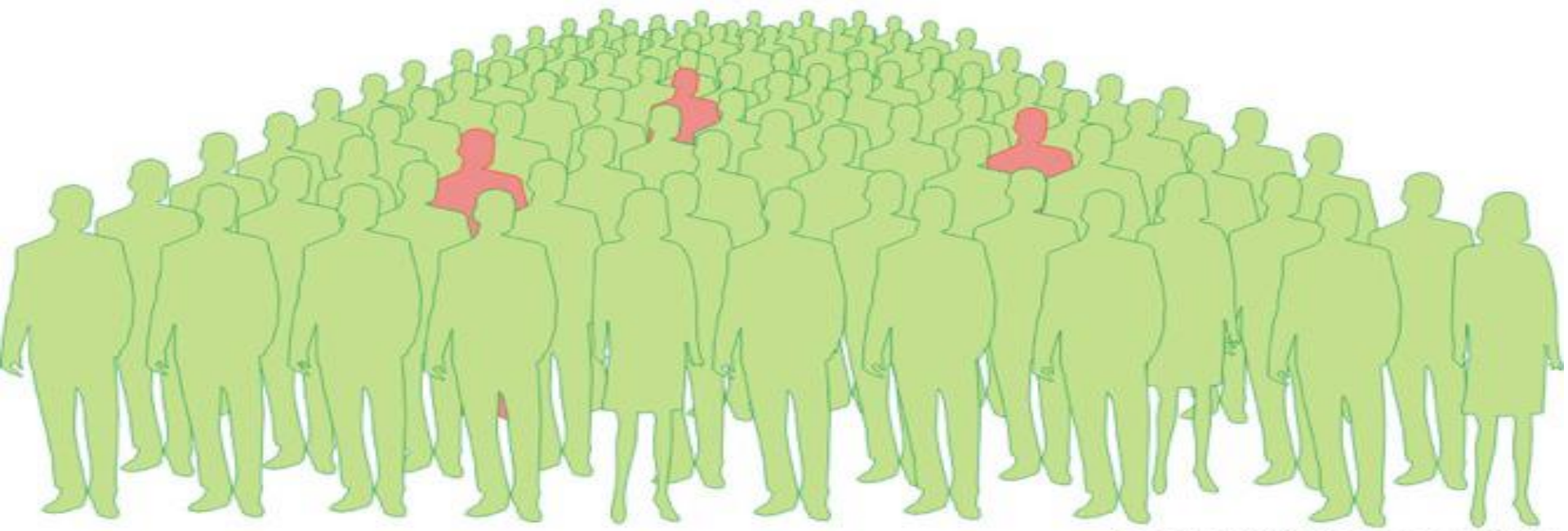
we've GOT  
A PROBLEM



MY SOURCES  
SAY OTHERWISE



97 out of 100 climate experts think humans are changing global temperature



Doran et al 2009, Anderegg et al 2010

# HELP CLOSE THE CONSENSUS GAP

## THE PUBLIC PERCEPTION



## THE SCIENTIFIC AGREEMENT



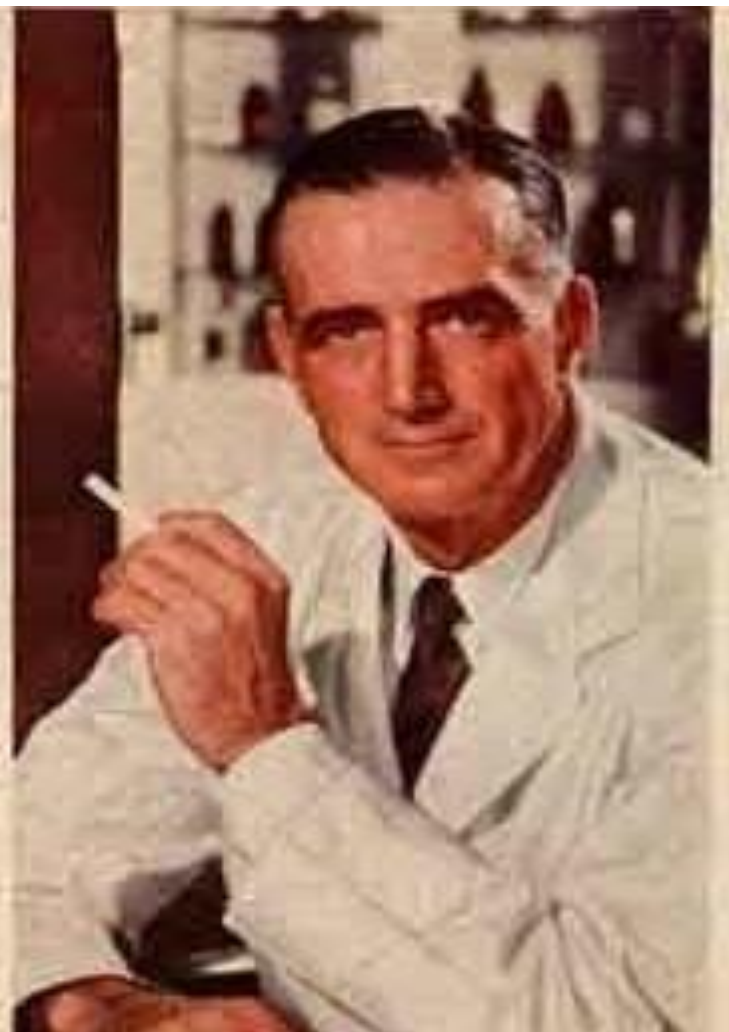
When people don't realize there's a scientific consensus, they're less likely to support climate action. This underscores the importance of closing the consensus gap.

[TheConsensusProject.com](http://TheConsensusProject.com)



*According to repeated nationwide surveys,*

**More Doctors  
Smoke **CAMELS**  
than any other  
cigarette!**



# Lecture III

- The solutions
- The Green Shift and new Green Jobs
- What can you and I do?
- Hurtigruten's CSR policy and plans for low emission cruises