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CLIMATE CHANGE RESEARCH

Fondazione Roma Sapienza

## Le Sfide del XXI secolo: il Clima

# CO<sub>2</sub> unprecedented: Are we losing Paris?

**Thomas Stocker**

Physics Institute  
Oeschger Centre for Climate Research  
University of Bern, Switzerland



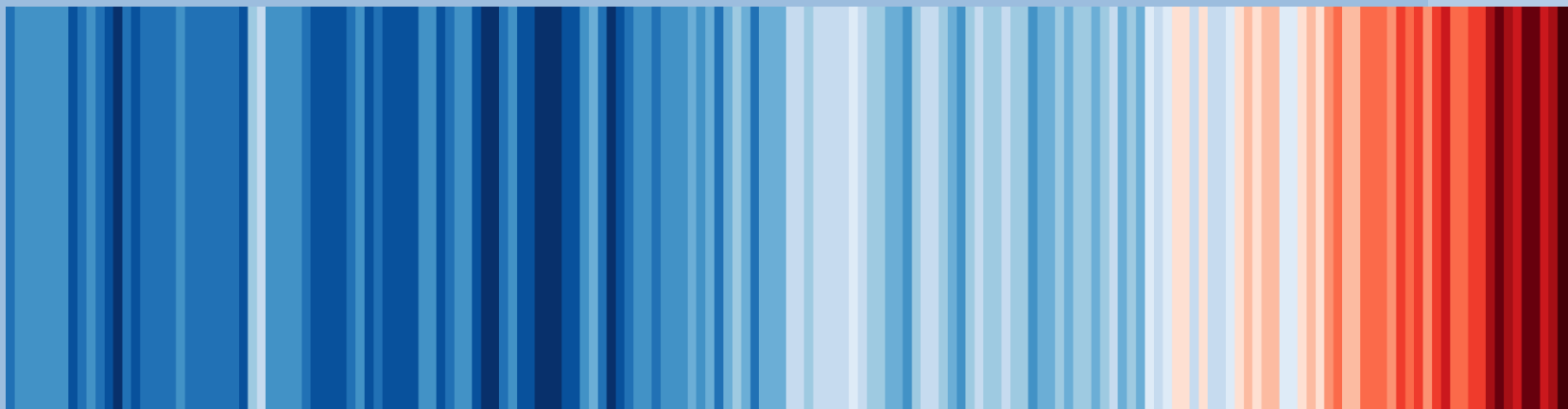
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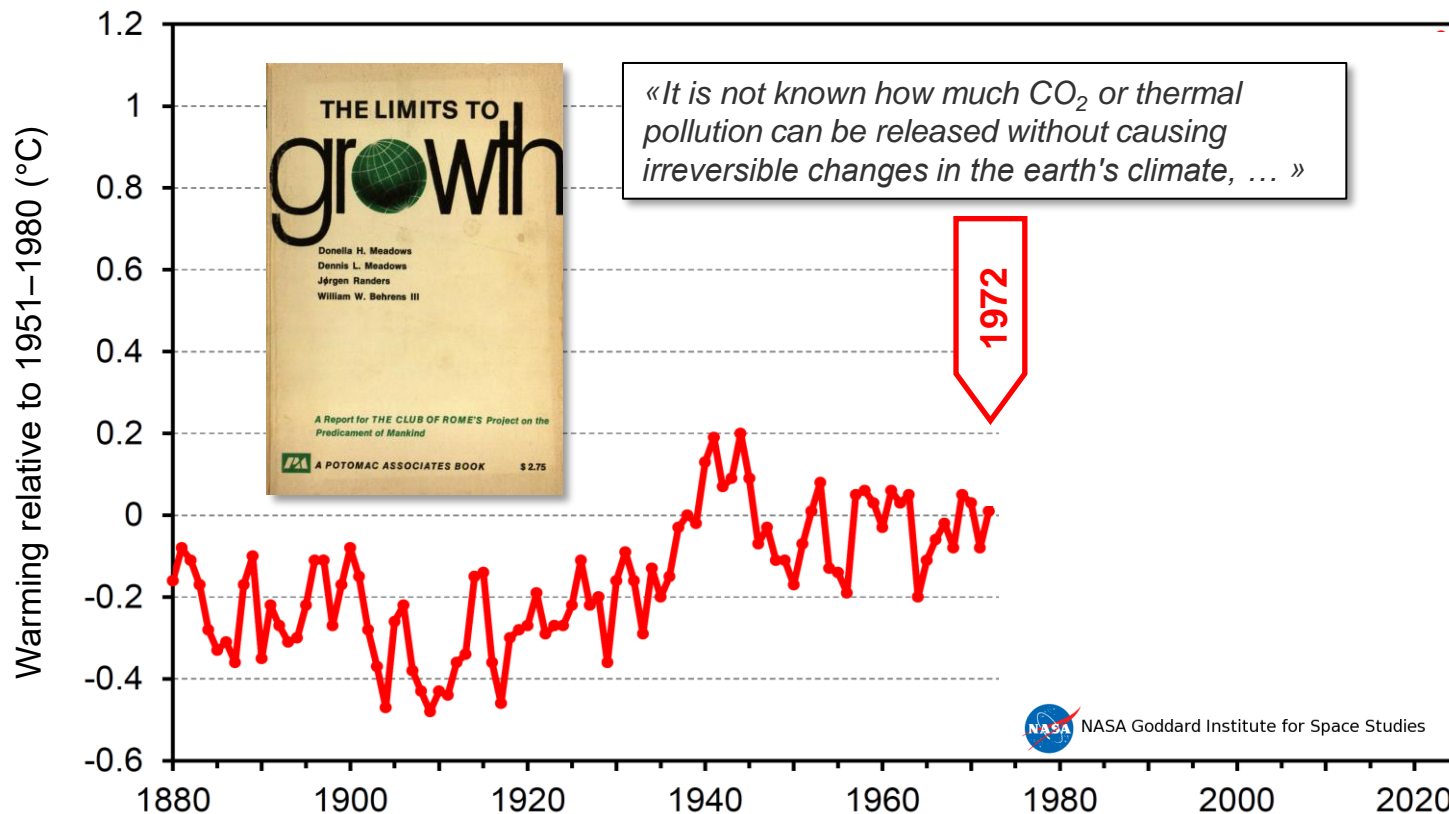
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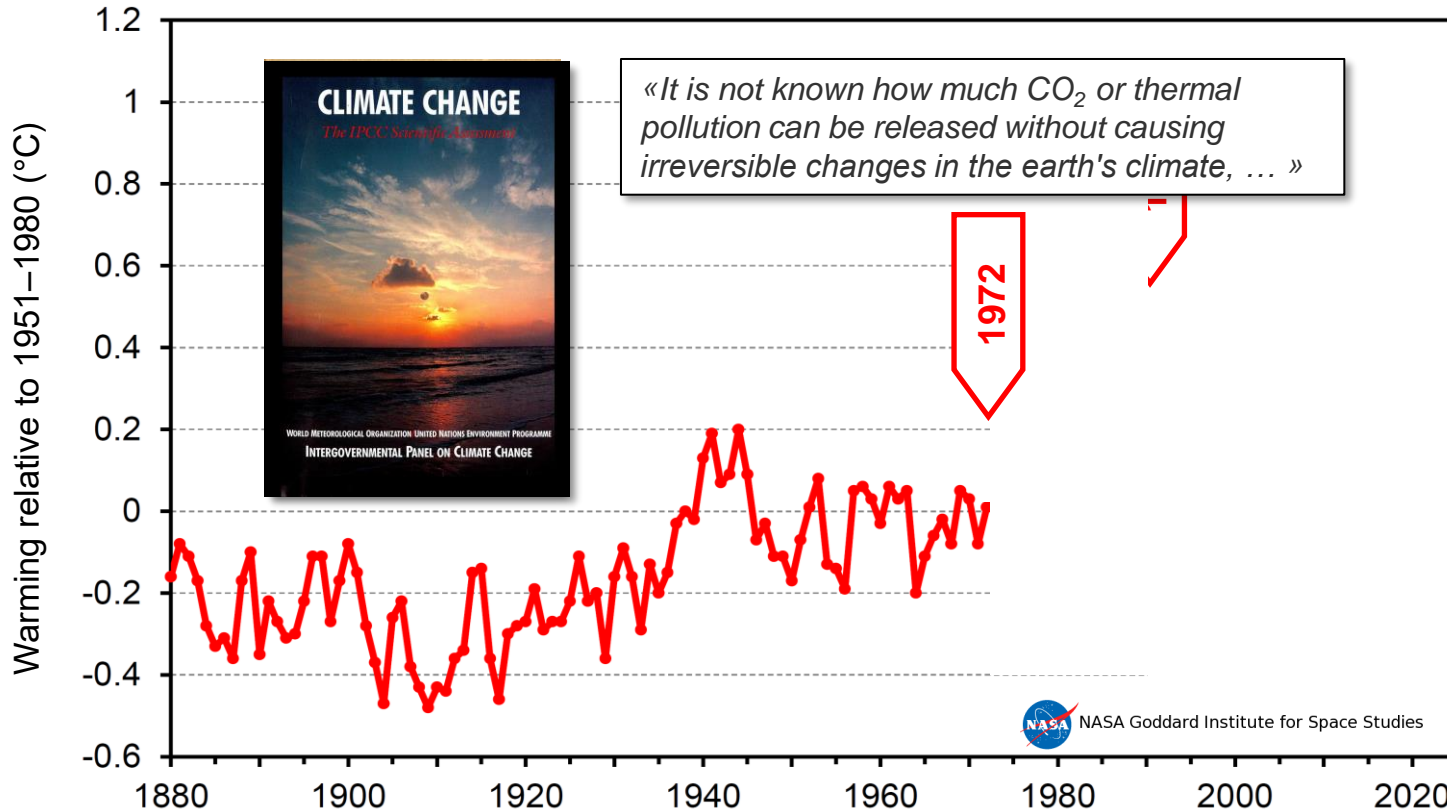
## Le Sfide del XXI secolo: il Clima



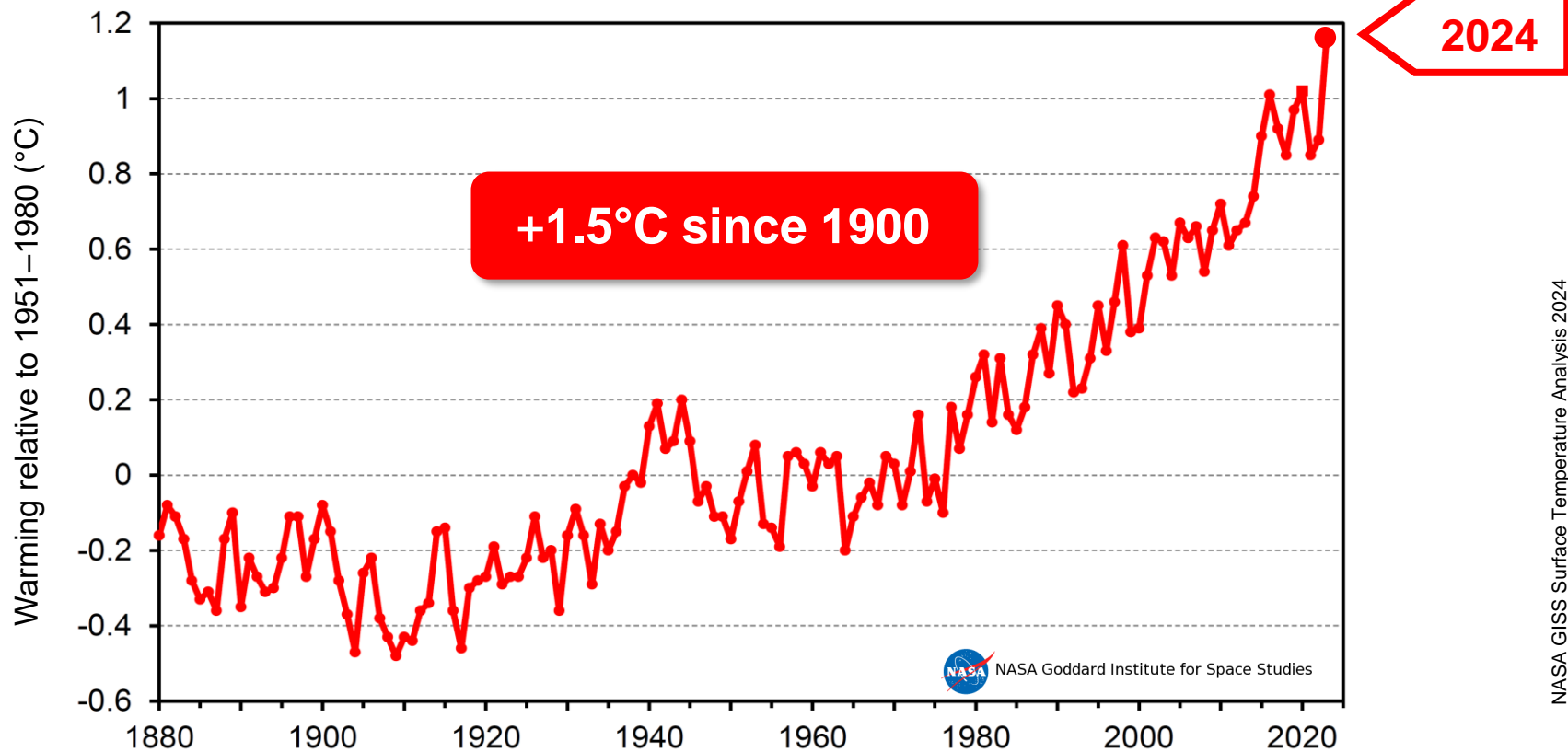
# Measuring the temperature of the planet



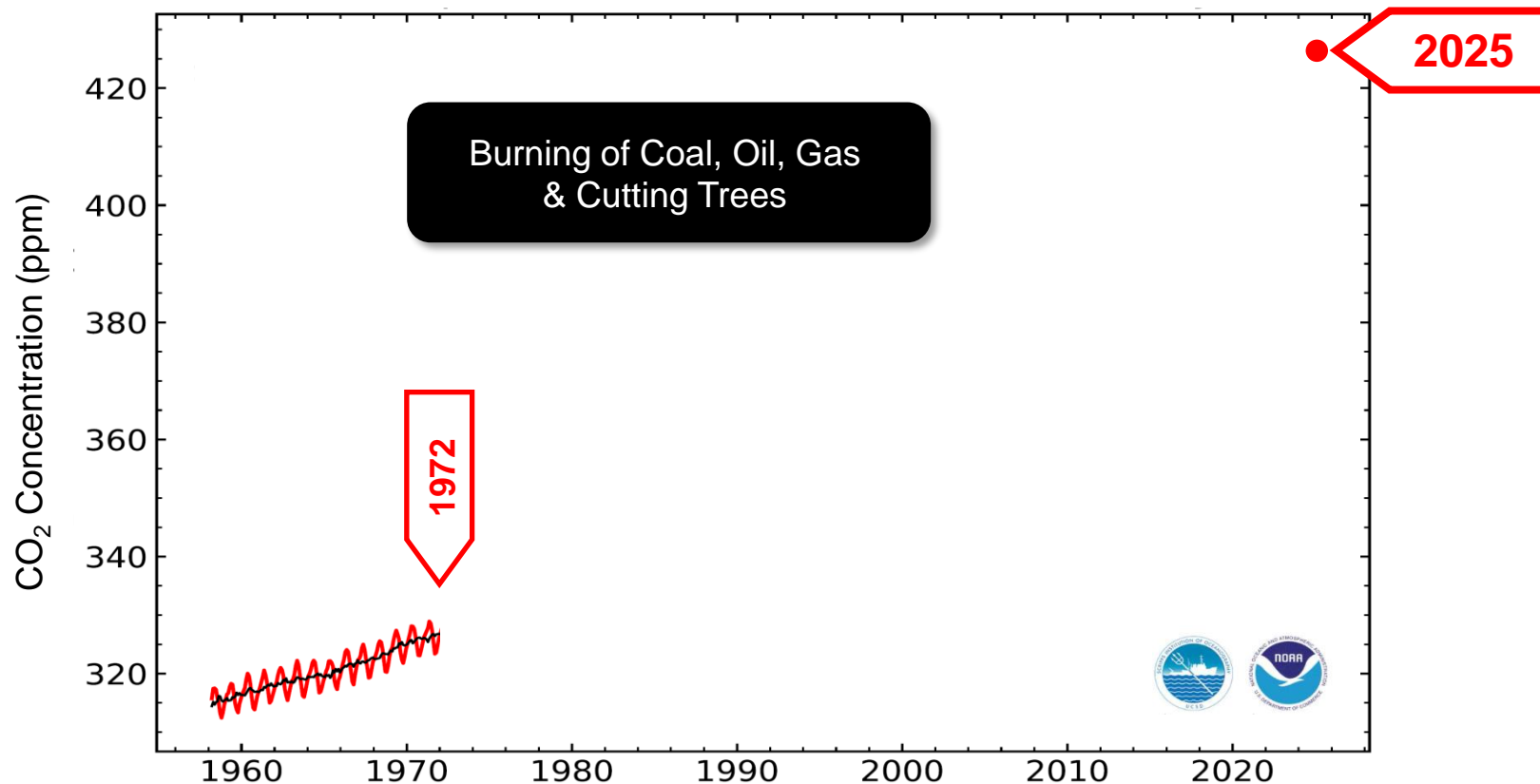
# Measuring the temperature of the planet



# Measuring the temperature of the planet



Warming is caused by increasing atmospheric CO<sub>2</sub>



Find the oldest air on Earth ...



# Find the oldest air on Earth ...

Little Dome Concordia, 3235 m.a.s.l





## Little Dome Concordia, 3235 m.a.s.l



Little Dome Concordia, 3235 m.a.s.l

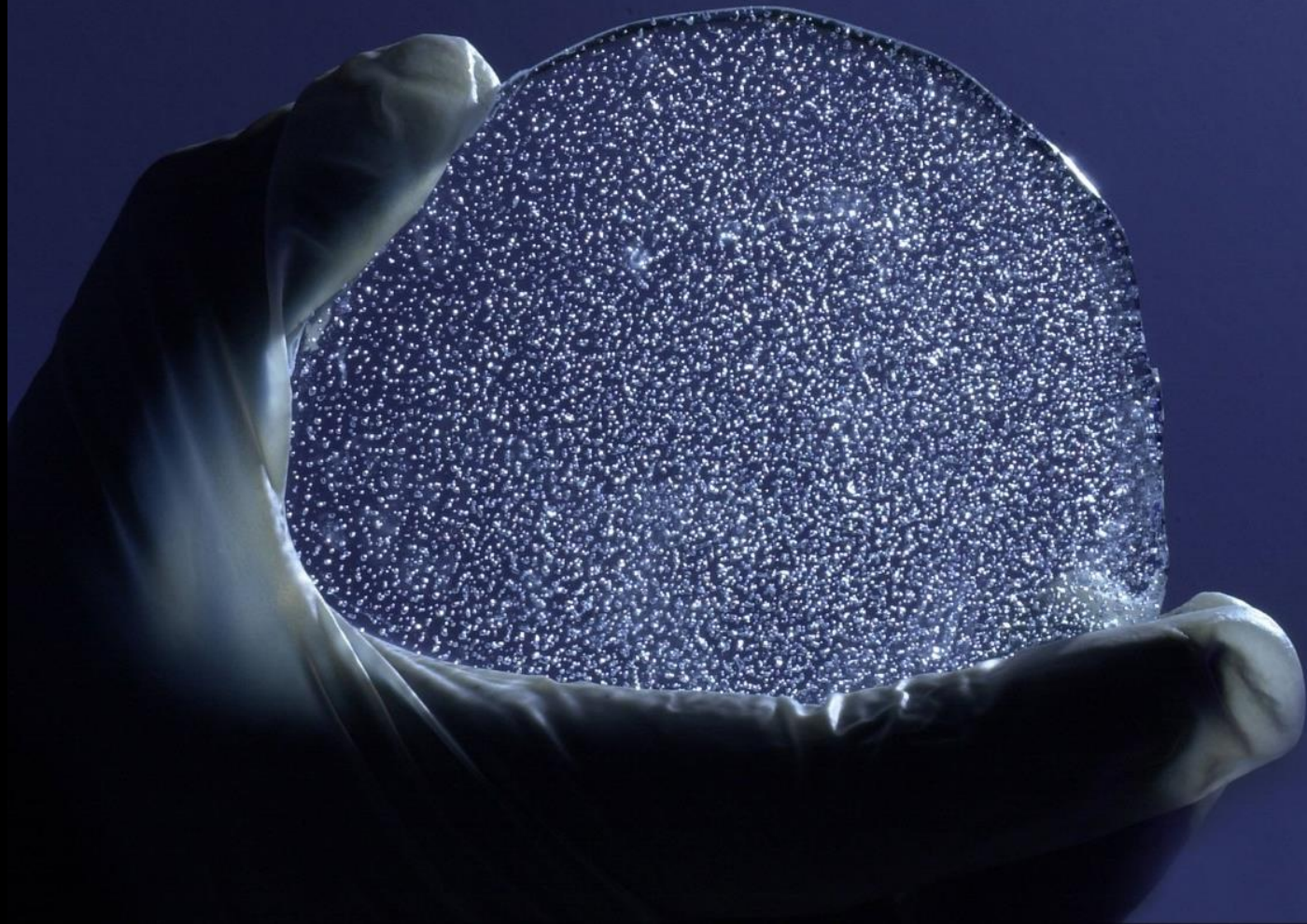


# >1,2 Million years

11. January 2025



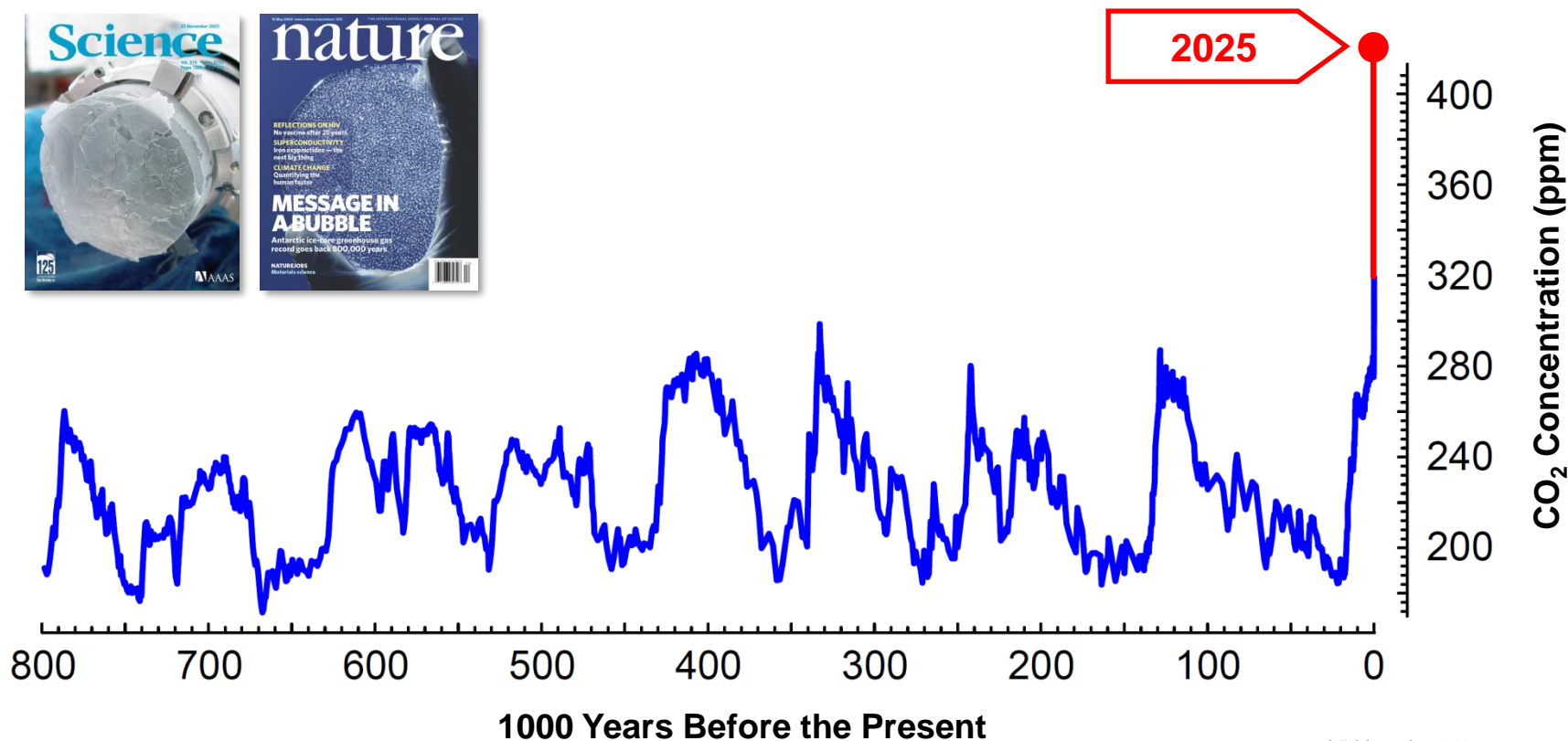
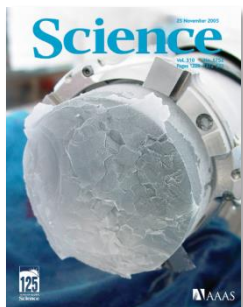




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# Greenhouse gas concentrations are unprecedented



UNFCCC COP16: The Cancun Agreement, December 2010

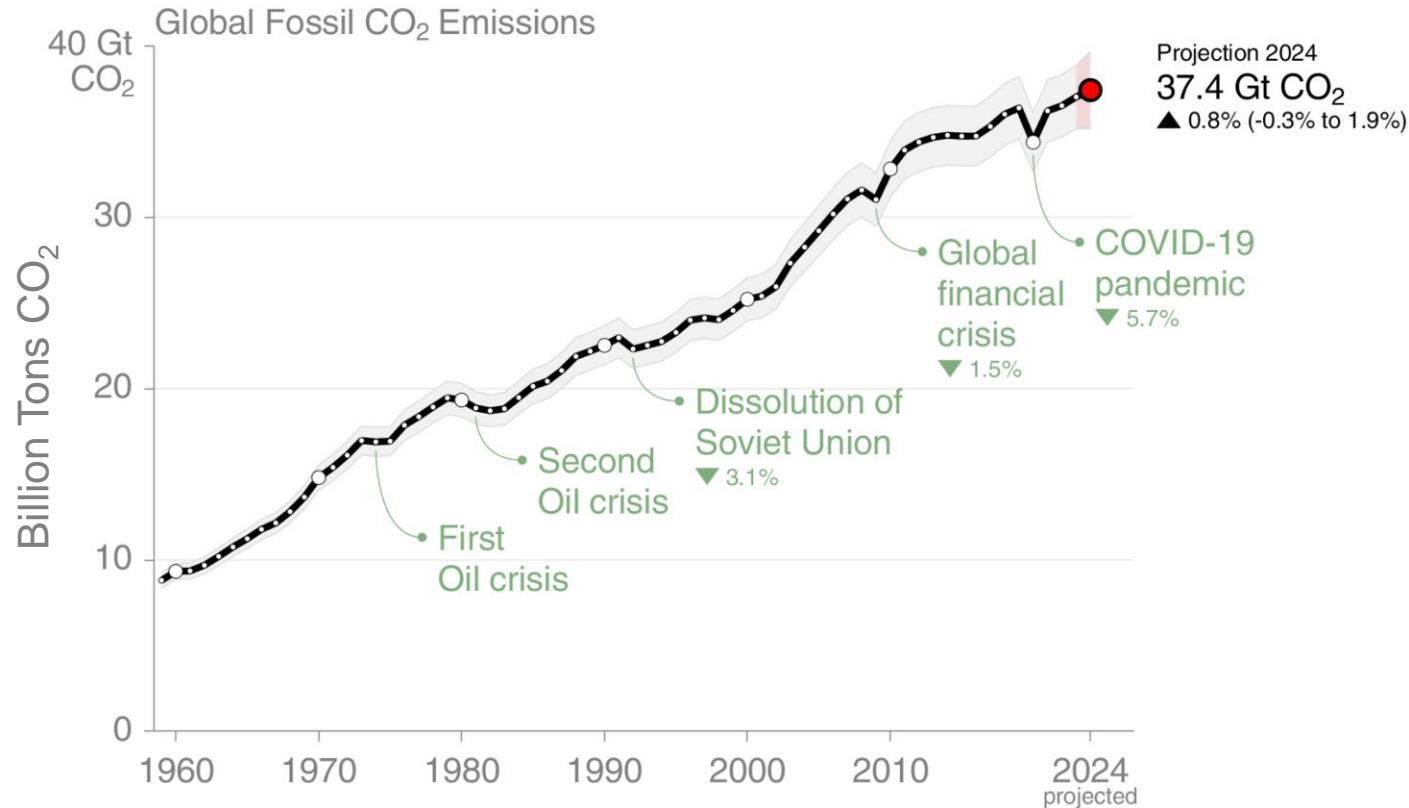
*Climate change is one of the greatest challenges of our time*

UNFCCC COP21: The Paris Agreement, December 2015

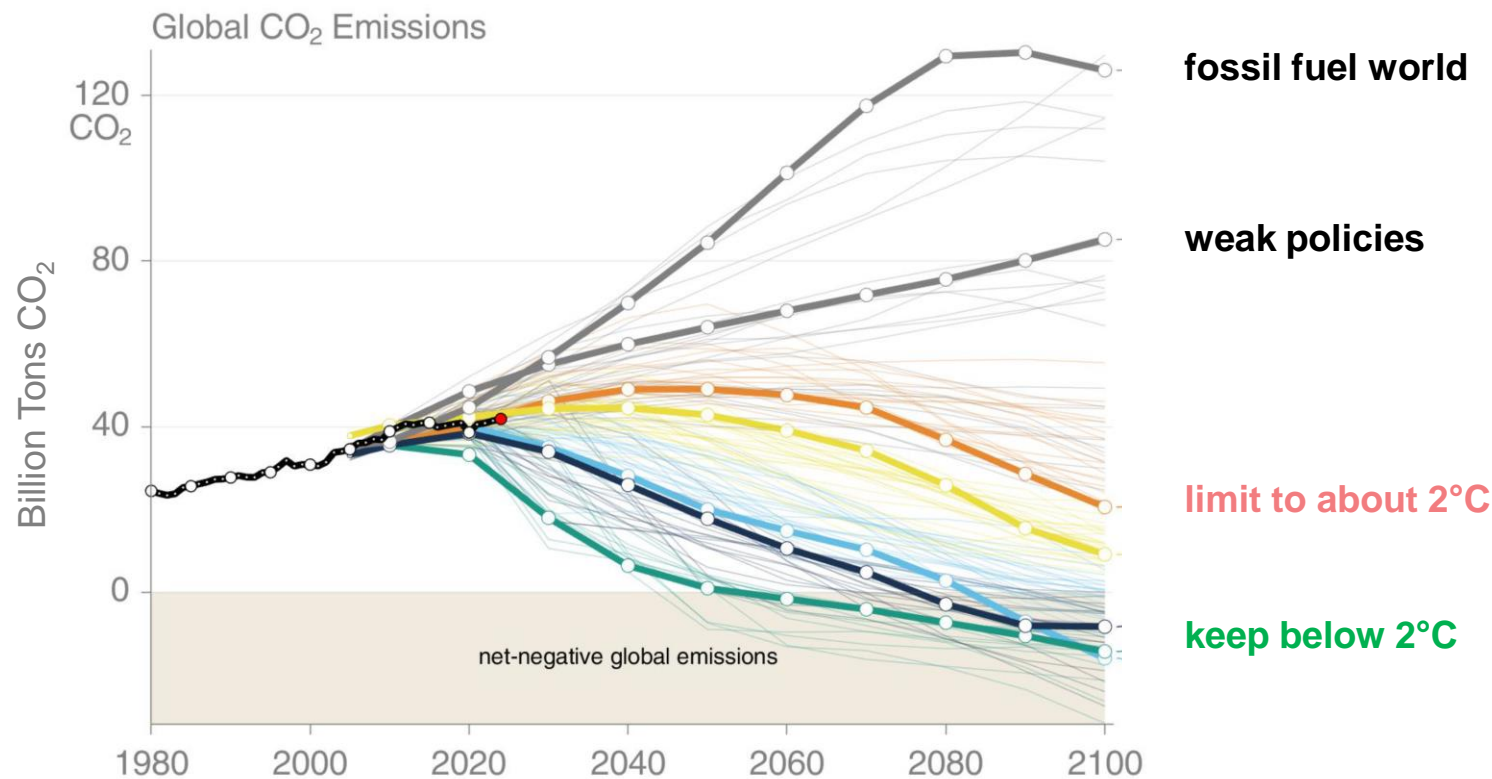
*Holding the increase of global average temperature to well below 2°C above pre-industrial levels and to pursue efforts ...*



# Global CO<sub>2</sub> emissions are increasing unabated



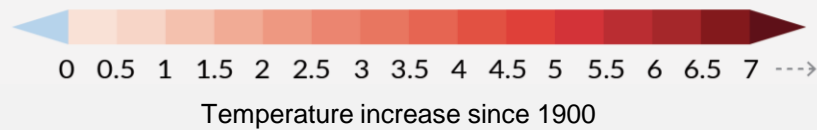
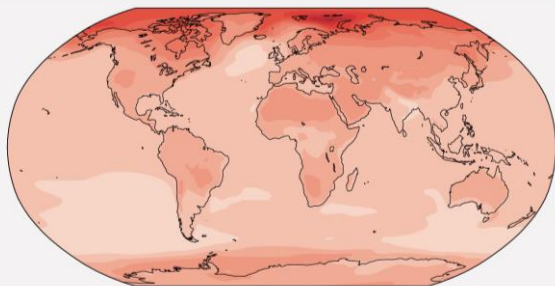
## Global CO<sub>2</sub> emissions: We have a choice





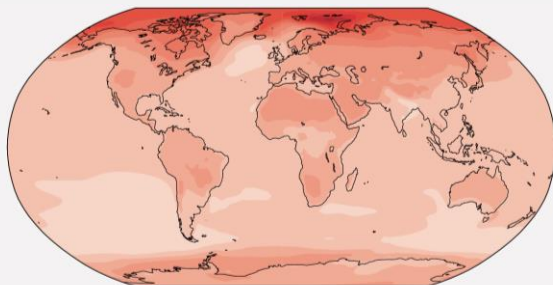
# Global Heating: We have a choice

+1.5 °C

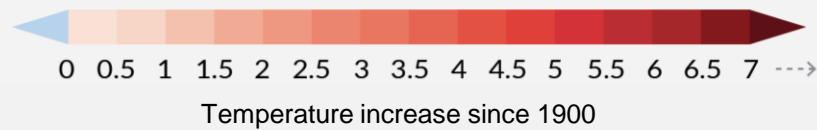
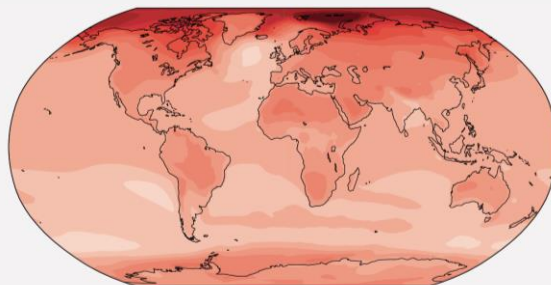


# Global Heating: We have a choice

+1.5 °C

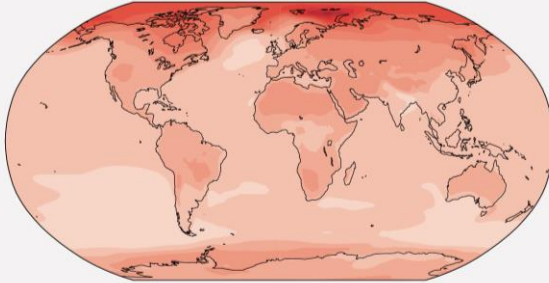


+2 °C

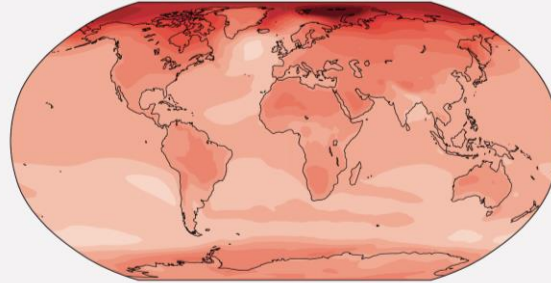


# Global Heating: We have a choice

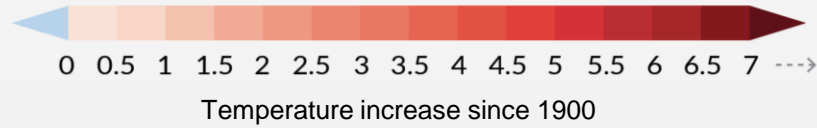
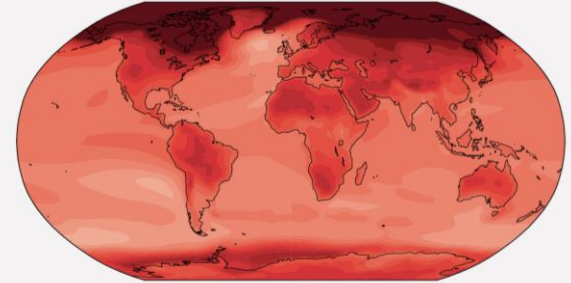
+1.5 °C



+2 °C



+4 °C



### *5 Effects*

### *5 Resources*

Heating:

Health

Precipitation:

Water

Sea level rise :

Land

Land use:

Biodiversity

Climate injustice:

Social stability



0

CO<sub>2</sub> Emissions



0 CO<sub>2</sub> Emissions

# Decarbonization

