

The CC quiz



Biking



Body



Planet



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Rules of the CC quiz

- CC stands for Climate Change (;
- You will get 10 slides with statements which can be right or wrong.
- After each slide the correct answer is given with a bit of explanation.
- Count your correct answers. You'll get a mark on 10.
- If you have any questions or comments about the content, please contact me: werner@bikingbodyplanet.com
- Success!



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Statement 1

Greenhouse gases partly reflect the infrared radiation from the earth's surface back to earth.



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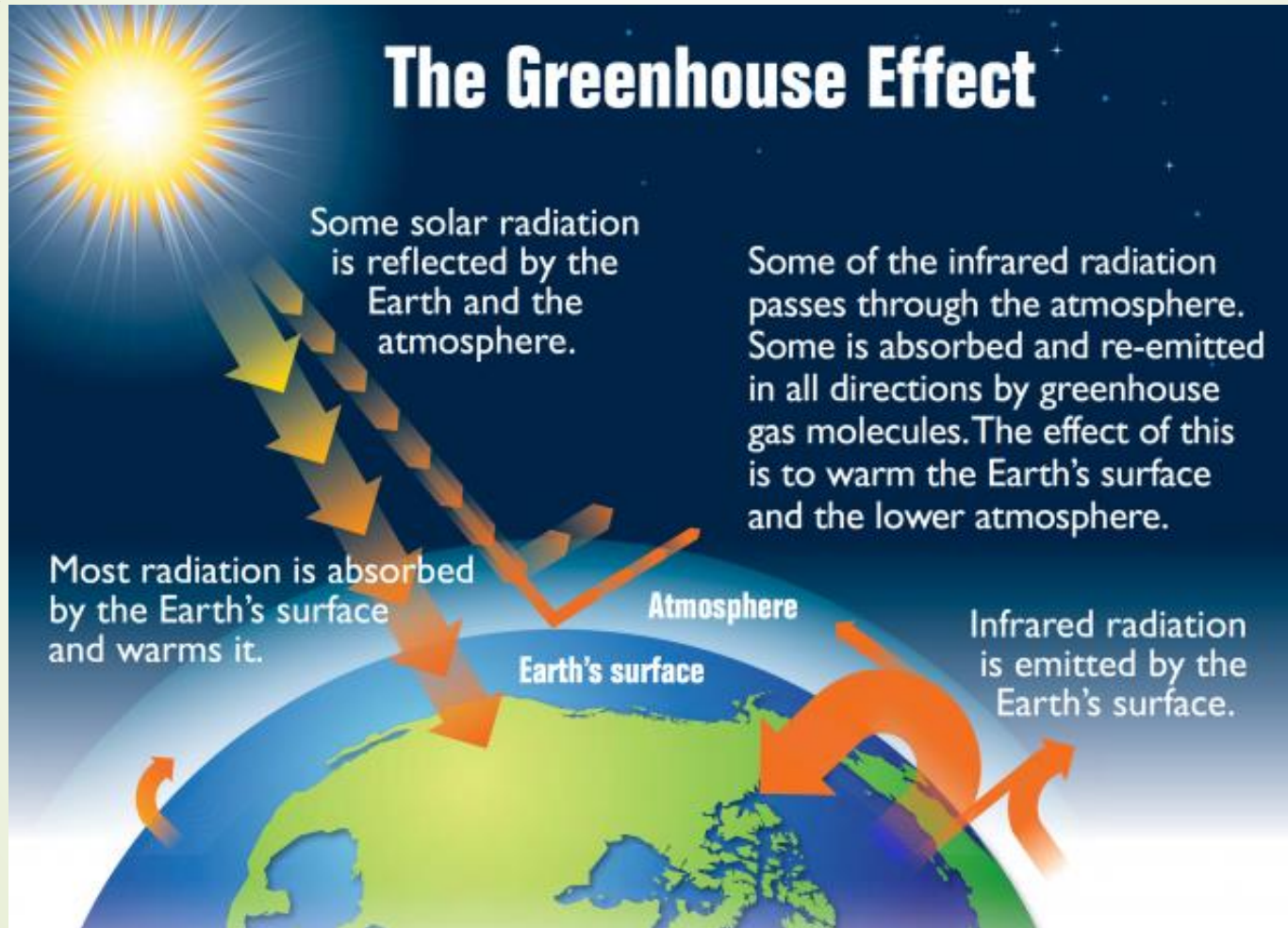


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Right!



Source: EPA



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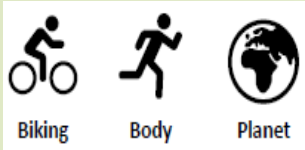
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Statement 2

Without greenhouse gases it would be on average 30°C colder on earth.



Right!

It is important to make a distinction between

➤ **Natural greenhouse effect**

- Caused by volcanos, decomposition of organic material,...
- Made life on earth possible (without these greenhouse gases earth would be an ice planet)



➤ **Enhanced greenhouse effect**

- Caused by man
- Responsible for current global warming





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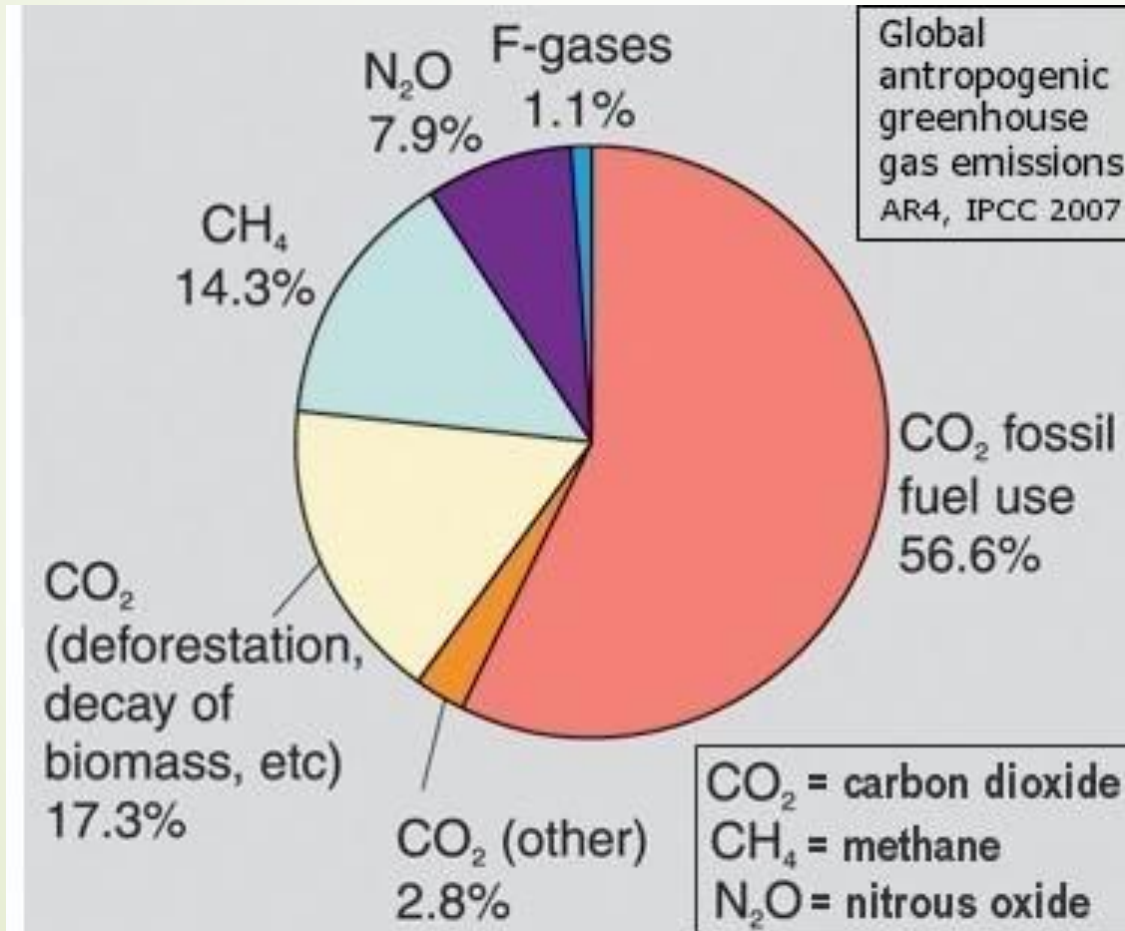
Statement 3

CO is the main anthropogenic
(= caused by man) greenhouse
gas.



Wrong!

CO is not a greenhouse gas, CO₂ is!





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Statement 4

The anthropogenic CO₂-emissions are responsible for the hole in the ozone layer.



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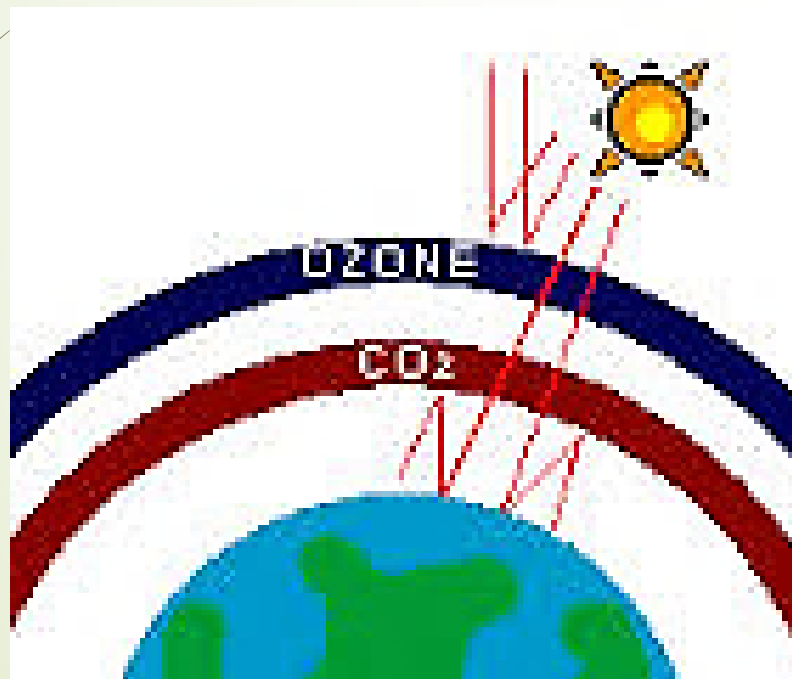
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Wrong!

The hole in the ozone layer is caused by CFCs (Chlorofluorocarbons) and other ozone-depleting substances. They have been phased out since the Montreal Protocol in 1987. Since then the hole in the ozone layer is gradually recovering.





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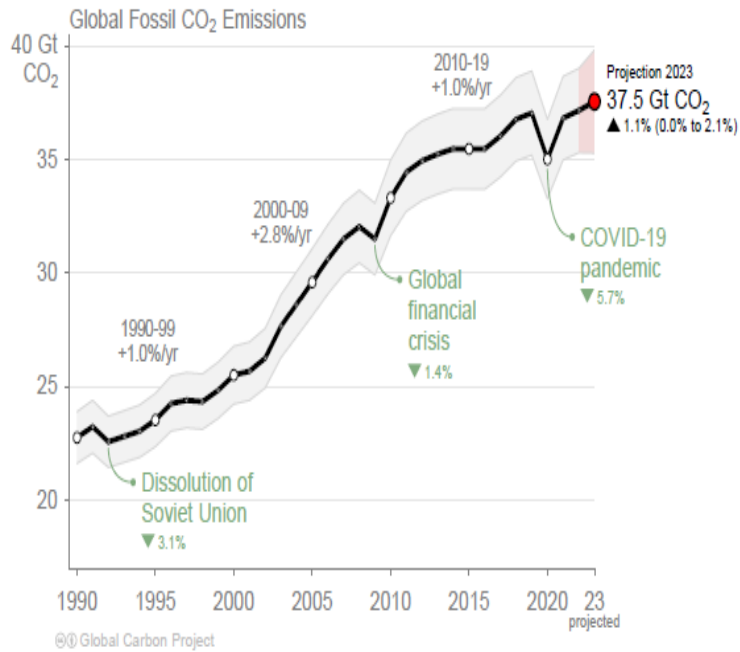
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Statement 5

The anthropogenic global CO₂-emissions are decreasing since 2020 (Covid-19 pandemic).

Wrong!

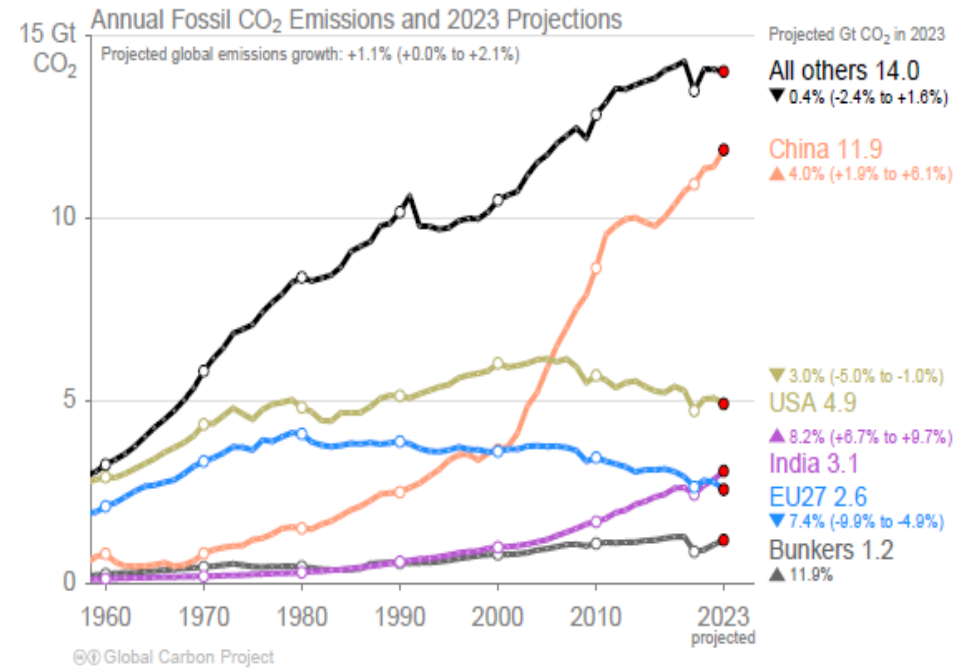
Global fossil CO₂ emissions: 37.1 ± 2 GtCO₂ in 2022, 63% over 1990
 ● Projection for 2023: 37.5 ± 2 GtCO₂, 1.1% [0.0% to +2.1%] higher than 2022



Uncertainty is ±5% for one standard deviation (IPCC "likely" range)

When including cement carbonation, the 2022 and 2023 estimates amount to 36.4 ± 2 GtCO₂ and 36.8 ± 2 GtCO₂ respectively
 The 2023 projection is based on preliminary data and modelling.
 Source: [Friedlingstein et al 2023](#); [Global Carbon Project 2023](#)

There are sharp contrasts between the projected emissions changes for the top emitters



The 2023 projections are based on preliminary data and modelling.
 'Bunkers' are fossil fuels (oil) used for shipping and aviation in international territory
 Source: [Friedlingstein et al 2023](#); [Global Carbon Project 2023](#)



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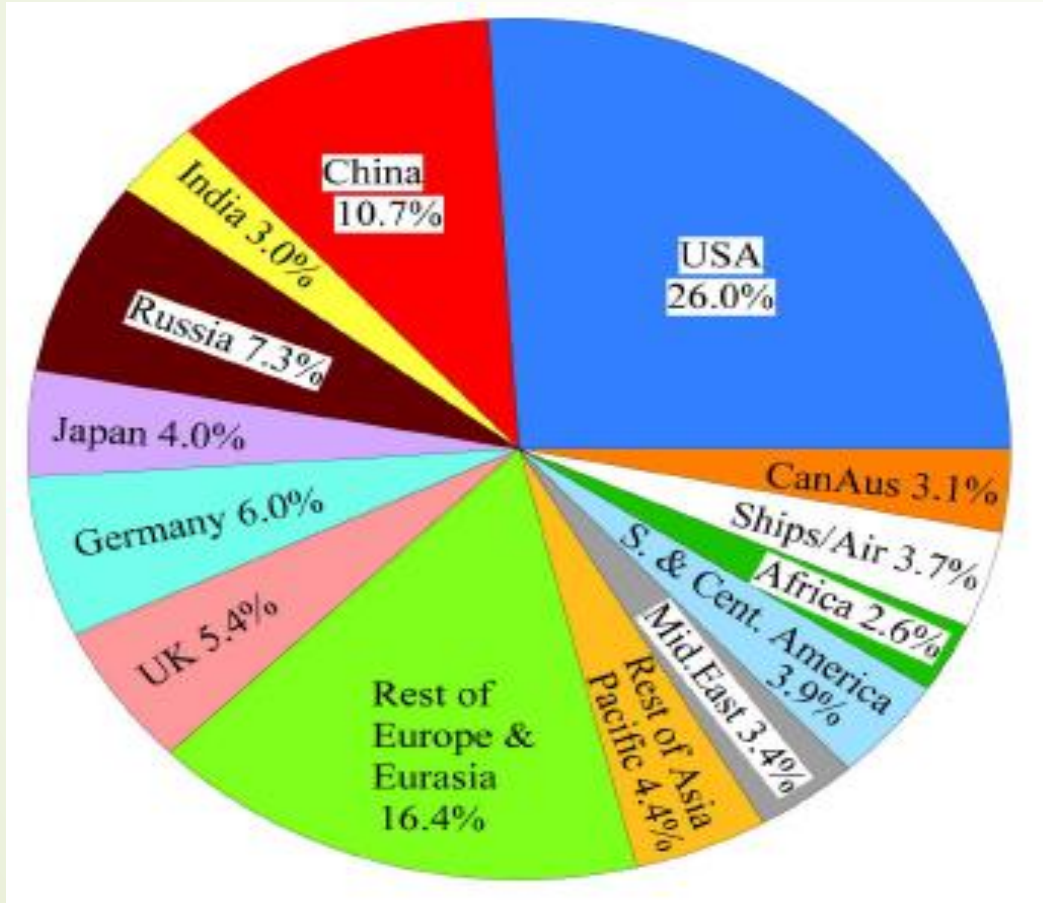
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Statement 6

China and other emerging economies are the main culprits of current climate change.

Wrong!

Cumulative CO2-emissions 1750-2012



Source: Assessing dangerous climate change 2013



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Statement 7

About half of the anthropogenic CO₂ emissions are recovered by forests and oceans.



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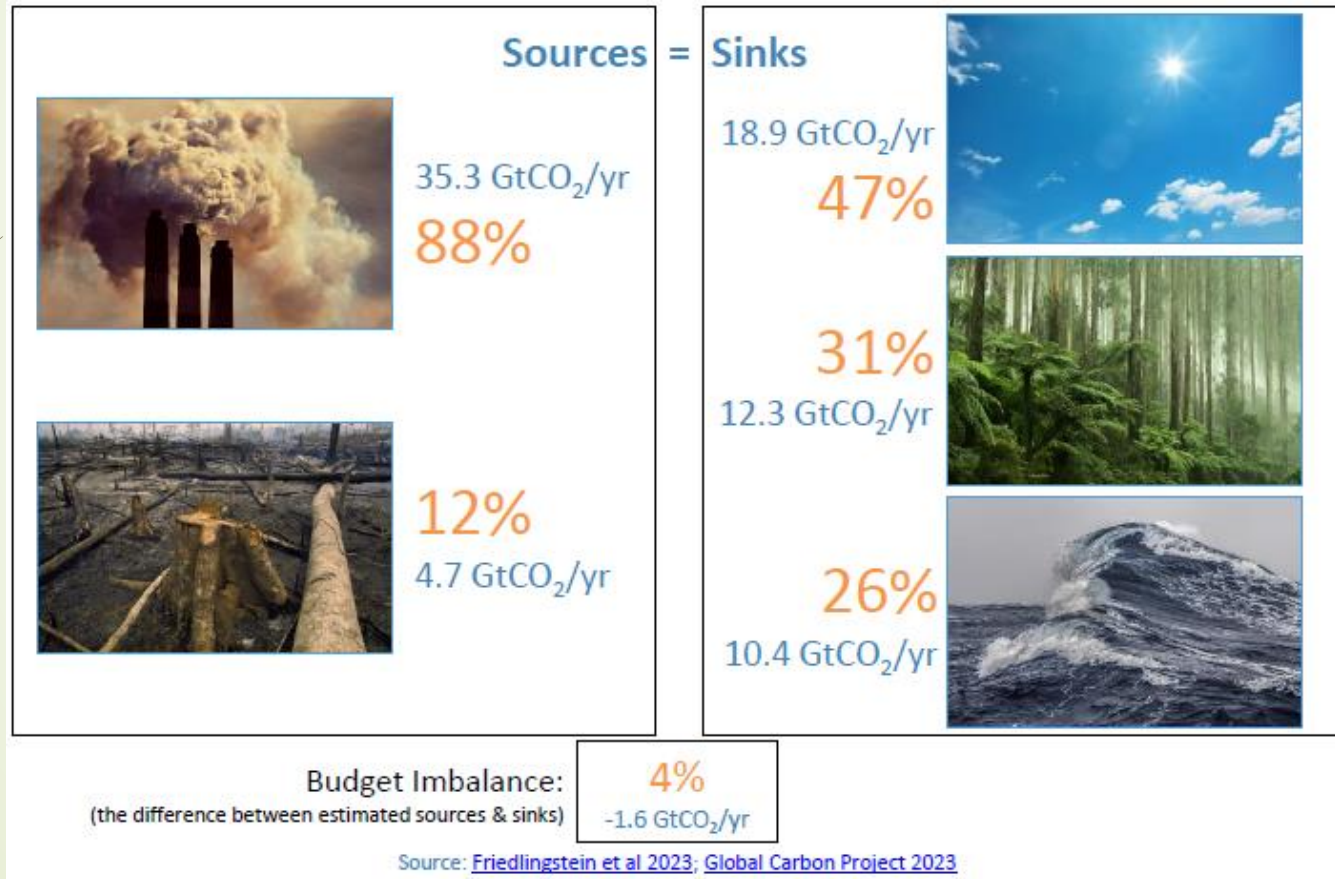
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Right!

The fate of anthropogenic CO2 emissions (2012-2022)





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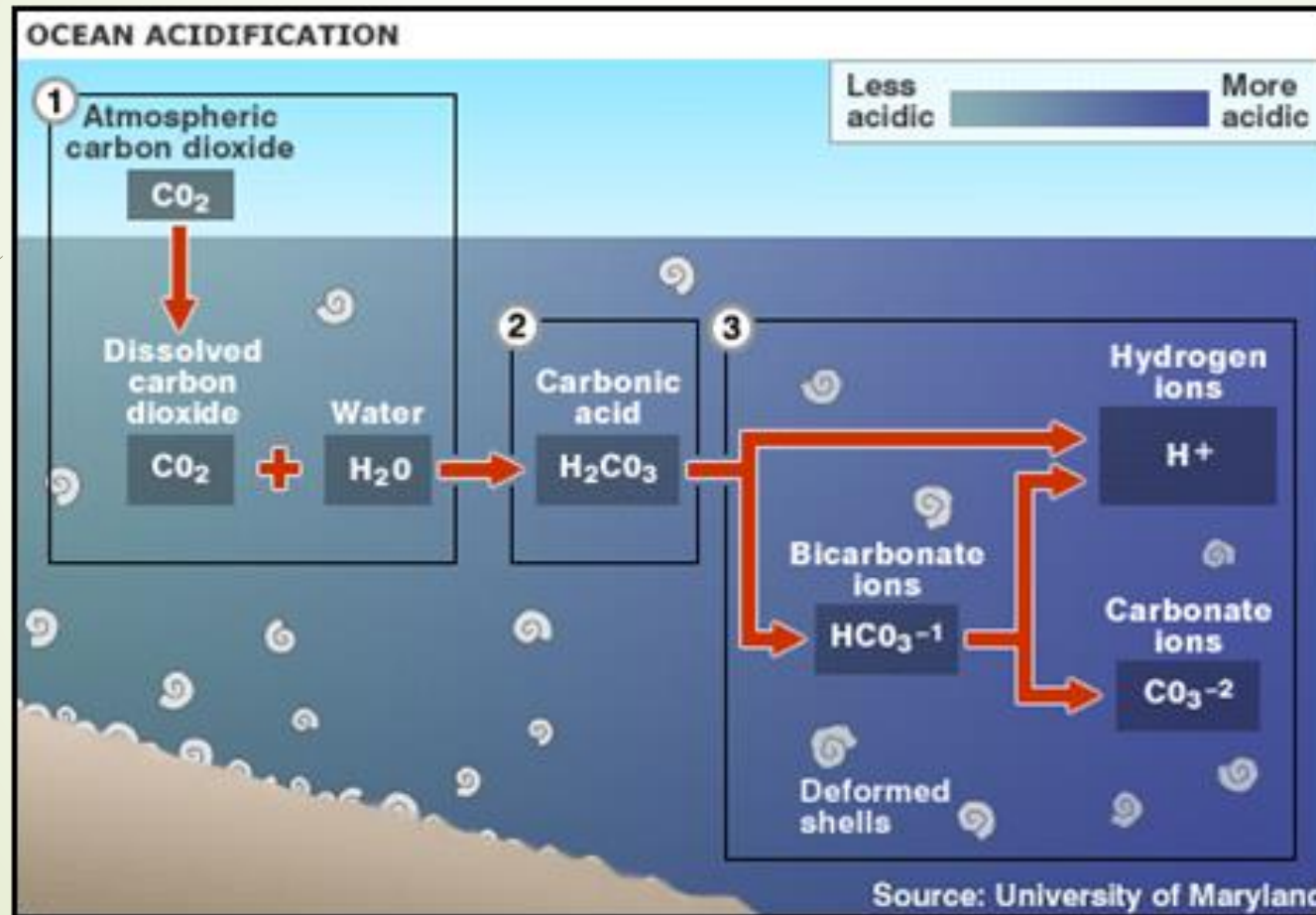
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The excess CO₂ uptake by the oceans causes them to become more acidic...

“The evil twin of CC”

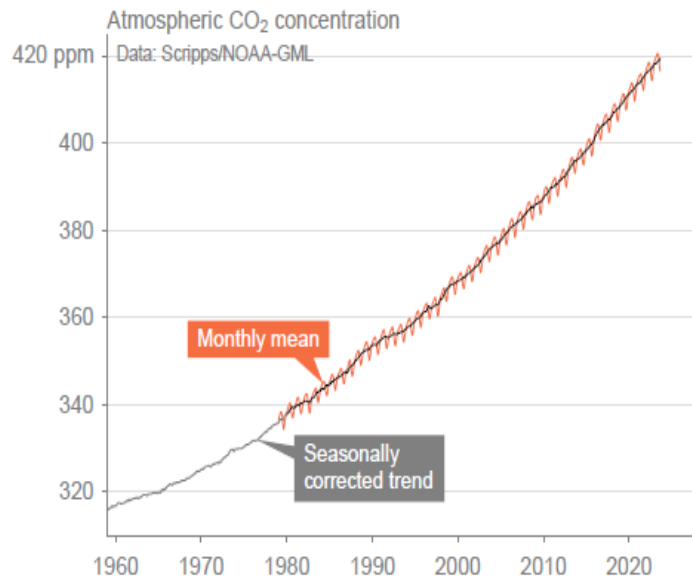




Going back to the atmosphere we see that CO₂-concentrations are rising..

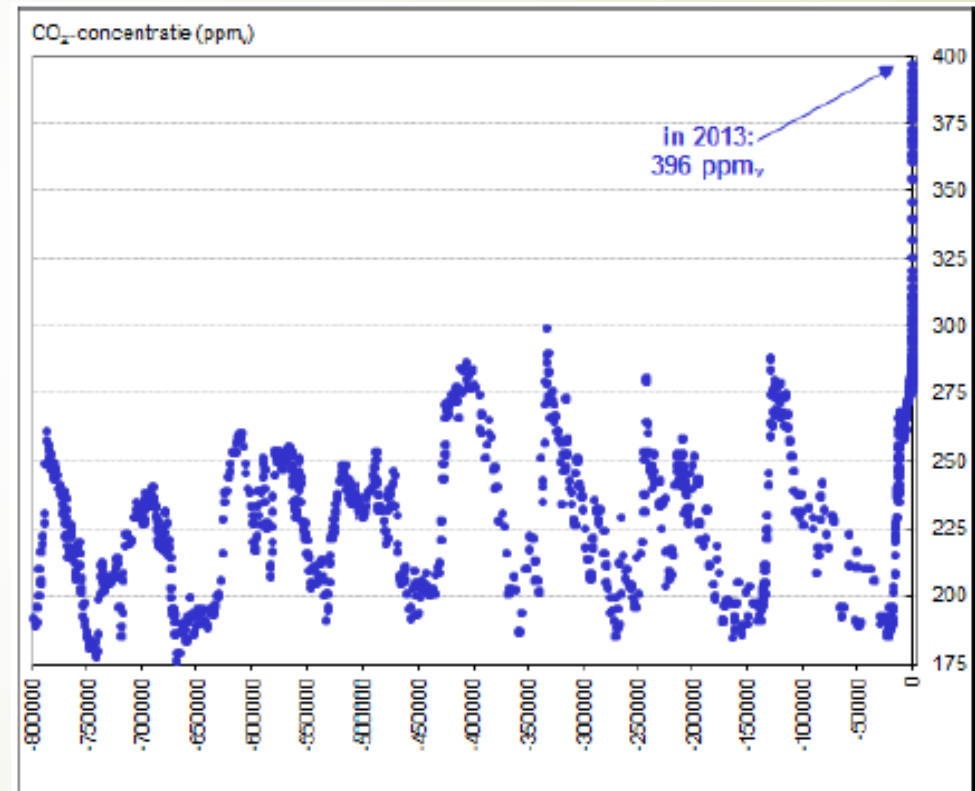
...in a short time span

The global CO₂ concentration increased from ~277 ppm in 1750 to 419.3 ppm in 2023 (up 51%)



© Global Carbon Project
Globally averaged surface atmospheric CO₂ concentration. Data from: NOAA-GML after 1980; the Scripps Institution of Oceanography before 1980
Source: [NOAA-GML](#); [Scripps Institution of Oceanography](#); [Friedlingstein et al 2023](#); [Global Carbon Project 2023](#)

...in a longer time perspective



Source: www.milieurapport.be (MIRA/VMM)



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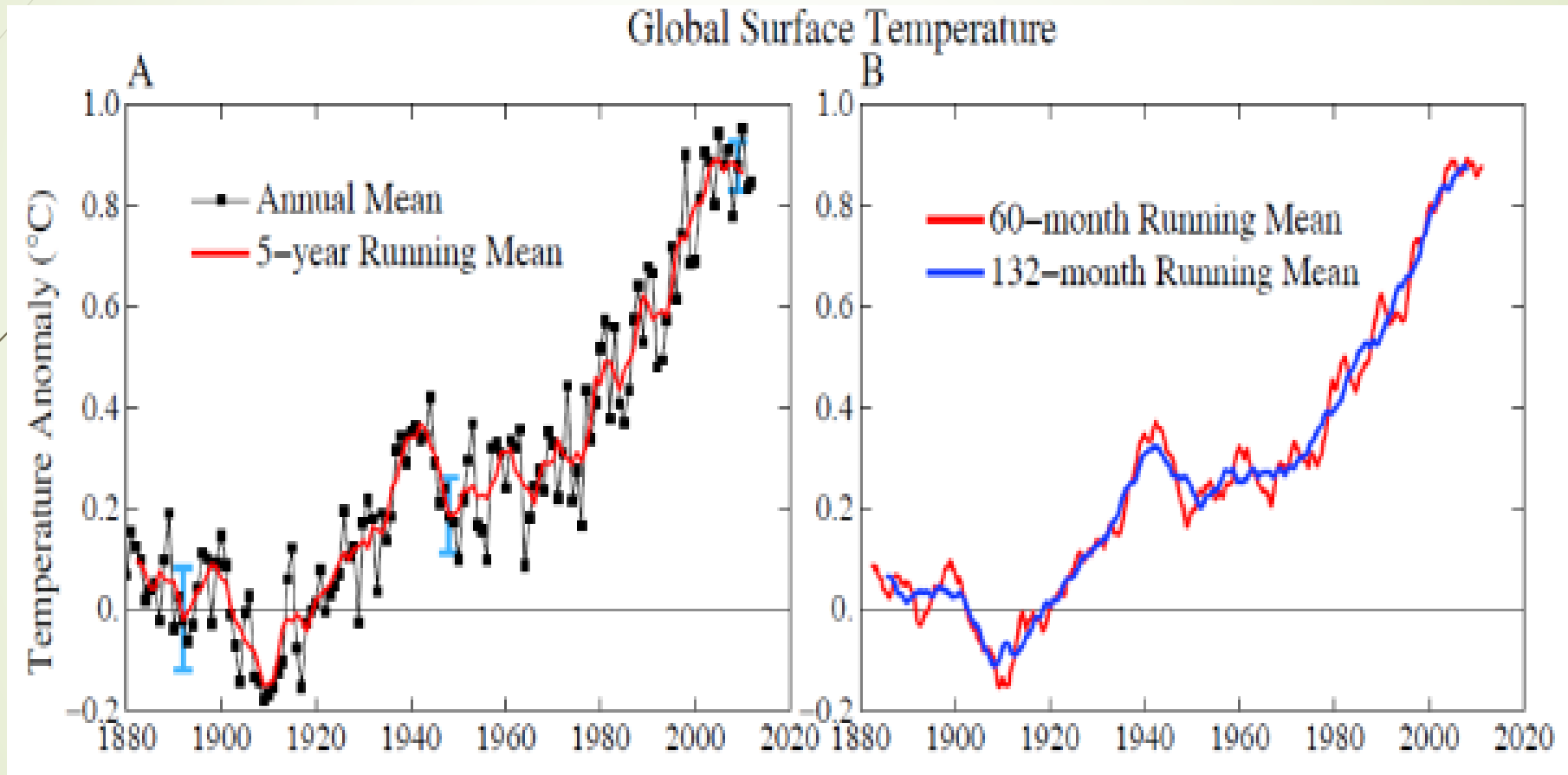
Statement 8

In the period 2005-2015 global average temperature was $\pm 0,8^{\circ}\text{C}$ higher than in the beginning of the industrial period (1850-1899).



Right!

We are currently (2020) already above 1°C global warming above pre-industrial levels.





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Statement 9

Anthropogenic emissions of greenhouse gases are the main cause of current global warming.



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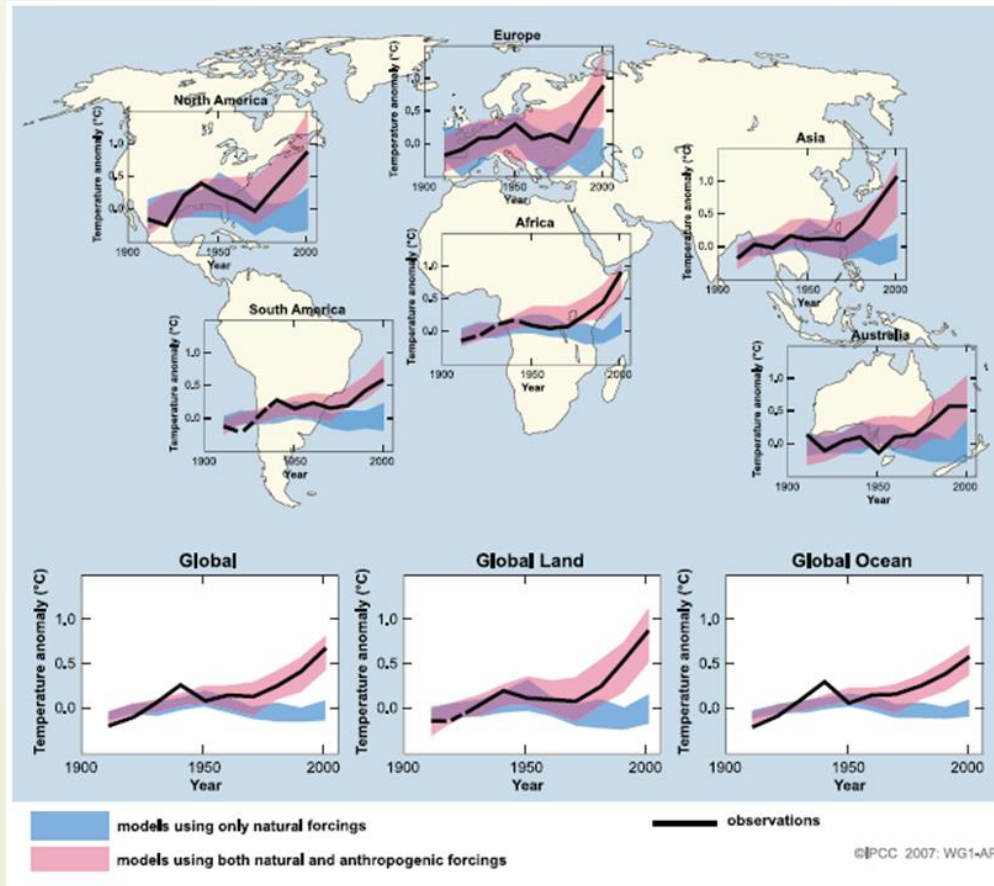
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Right!

Computer models using both natural and anthropogenic forcings perfectly simulate real temperature observations, models using only natural forcings don't. This is clear evidence that current climate change is man-made.

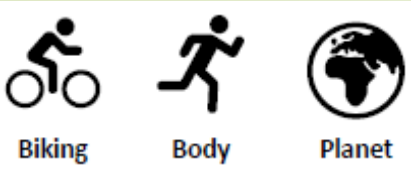


Source: AR4, IPCC 2007



Statement 10

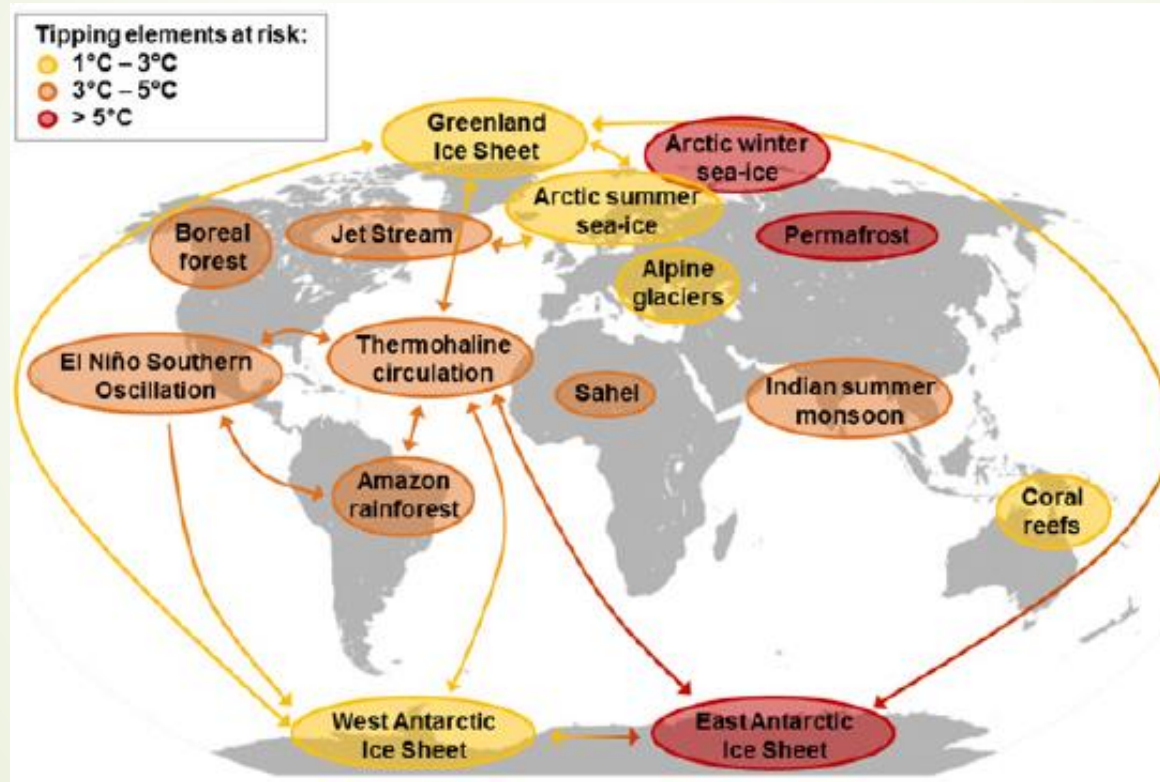
In the convention of Paris (2015) the COP agreed upon a limitation of global warming to max. 3° C in comparison with pre-industrial levels.



Wrong!

It is max. 2°C. Above that limit chances are high that certain tipping points will fall..

In fact some of them are already falling by now (Greenland ice sheet, Arctic summer sea ice,...).



Source: Trajectories of the Earth System in the Anthropocene, Steffen et al, 2018