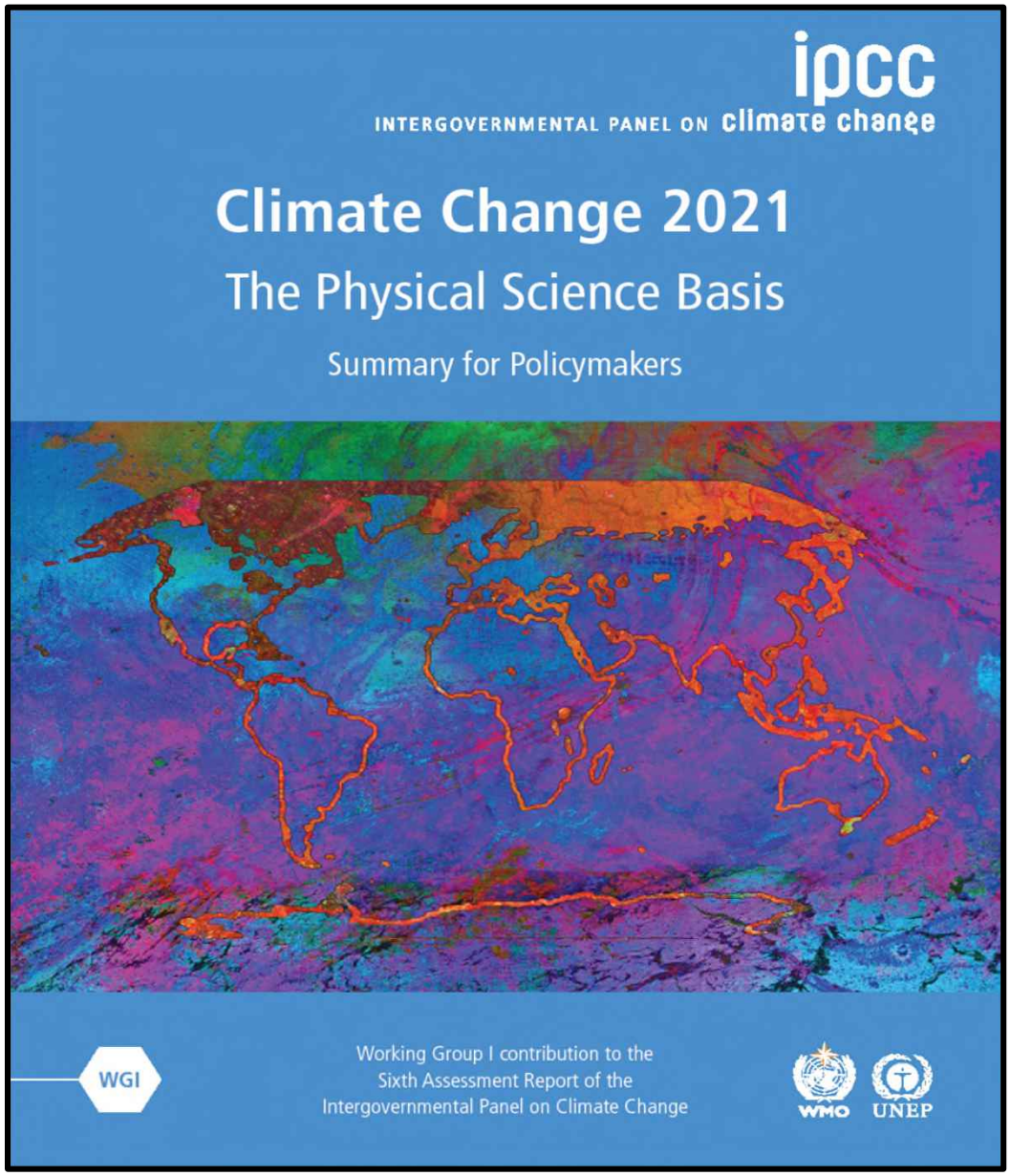


Climate change

and

the key role of grey literature

in the required policy making

Gerard van der Steenhoven

University of Twente & Interior Ministry

25th International Conference on Grey Literature

Amsterdam, November 13th , 2023

Climate change & role of grey literature

1. Climate change – an introduction
2. Consequence of climate change
3. The role of grey literature
   - IPCC – how it works
   - Climate scenarios (incl. example NL)
4. Climate policy measures
5. Concluding remarks

The summer of 2023

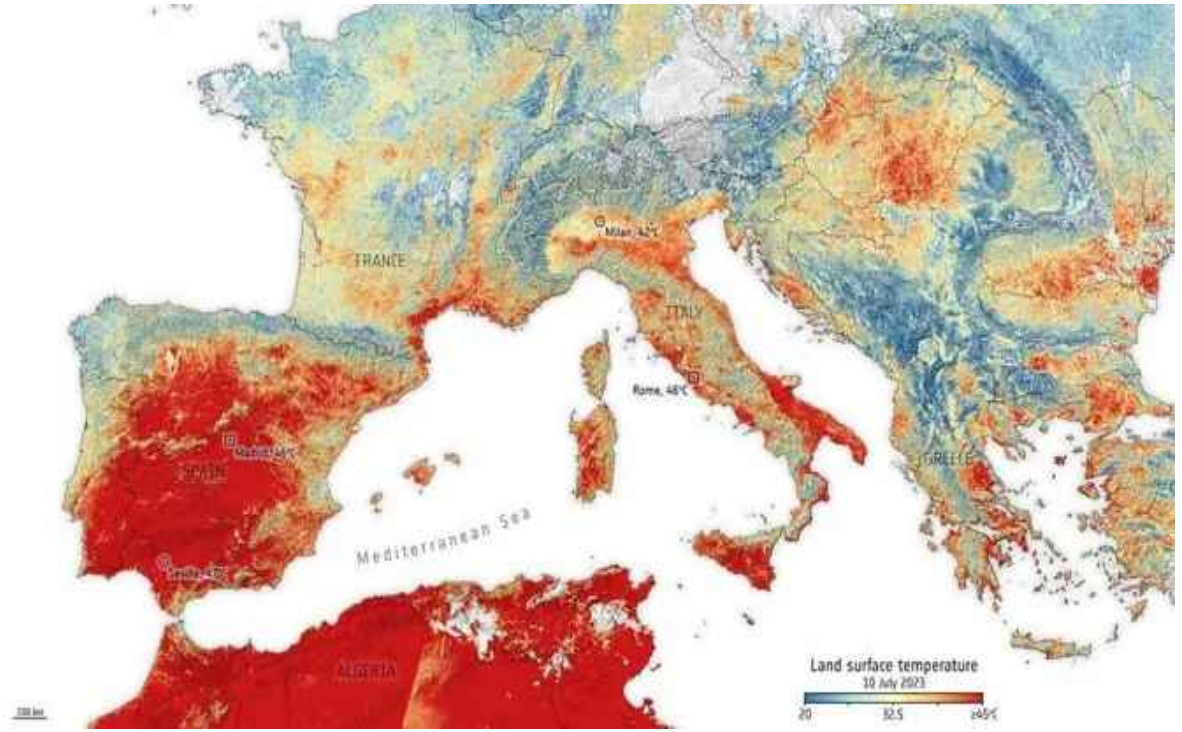
Canadian wildfires fueled by climate change. Likelihood increased by factor 7. (dd 22 Aug 2023)

Medicane *Daniel* hit Libia. Likelihood increased by factor <2 due to climate change. (dd 10 Sep 2023)

Weather extremes in Europe

Floods in Slovenia & Carinthia, 6 Aug 2023

Heat waves in Spain & Italy, 10 July 2023



The summer of 2022

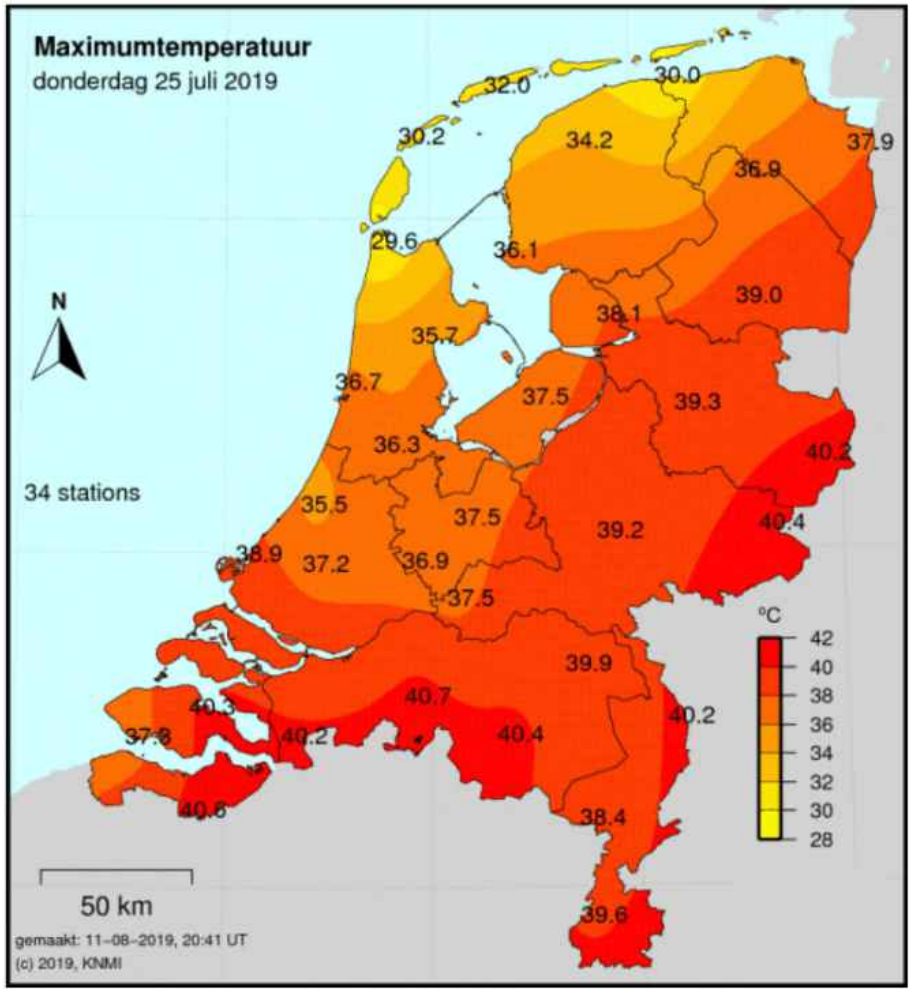
Amara lake, Roemenia

Lesbos ilsand, Greece

Karachi, Pakistan

Do extremes intensify?

Temperatures > 40°C, 25 July 2019



Eifel, Ardennen & Limburg flood, 2021

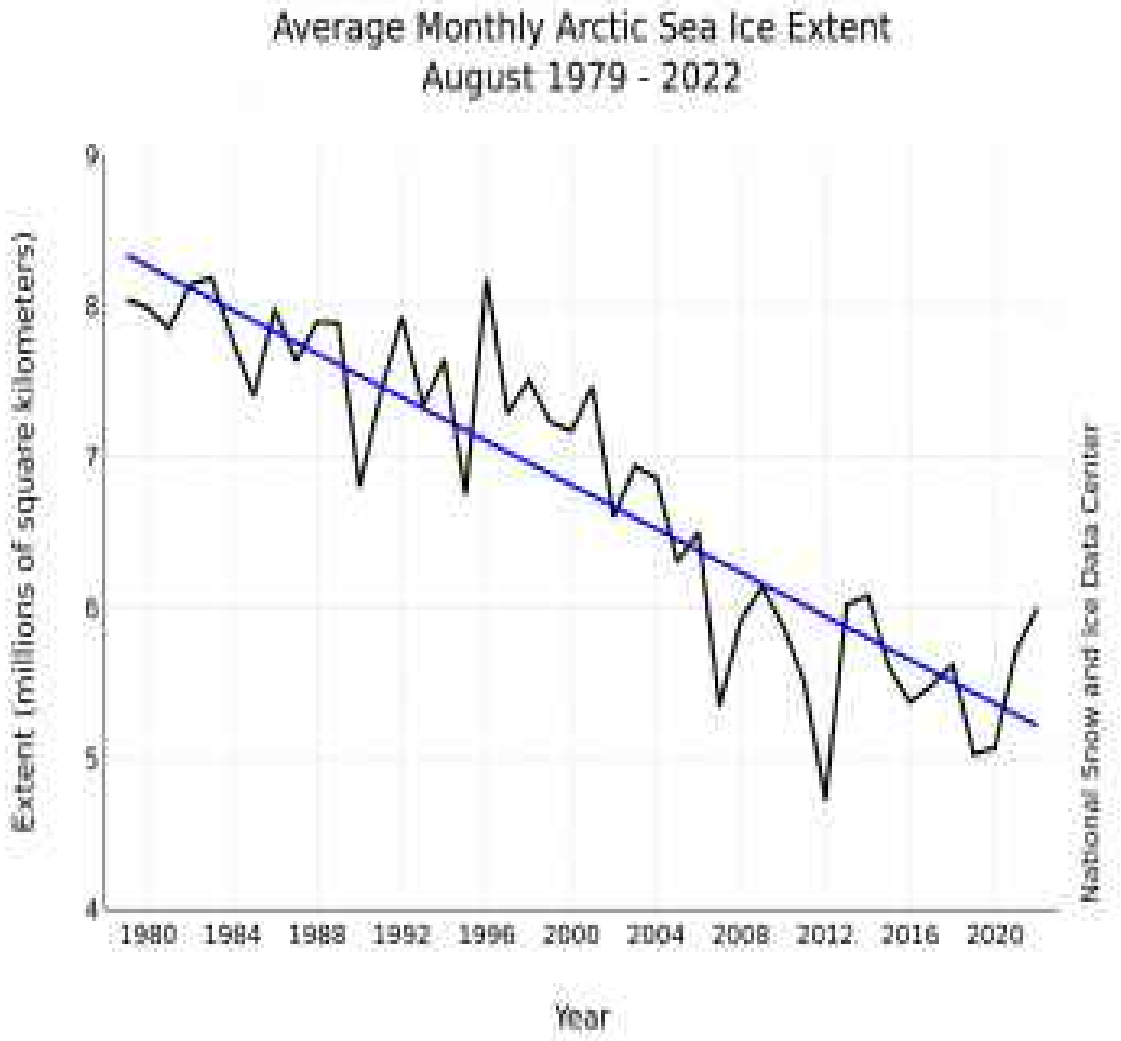
Decrease in biodiversity

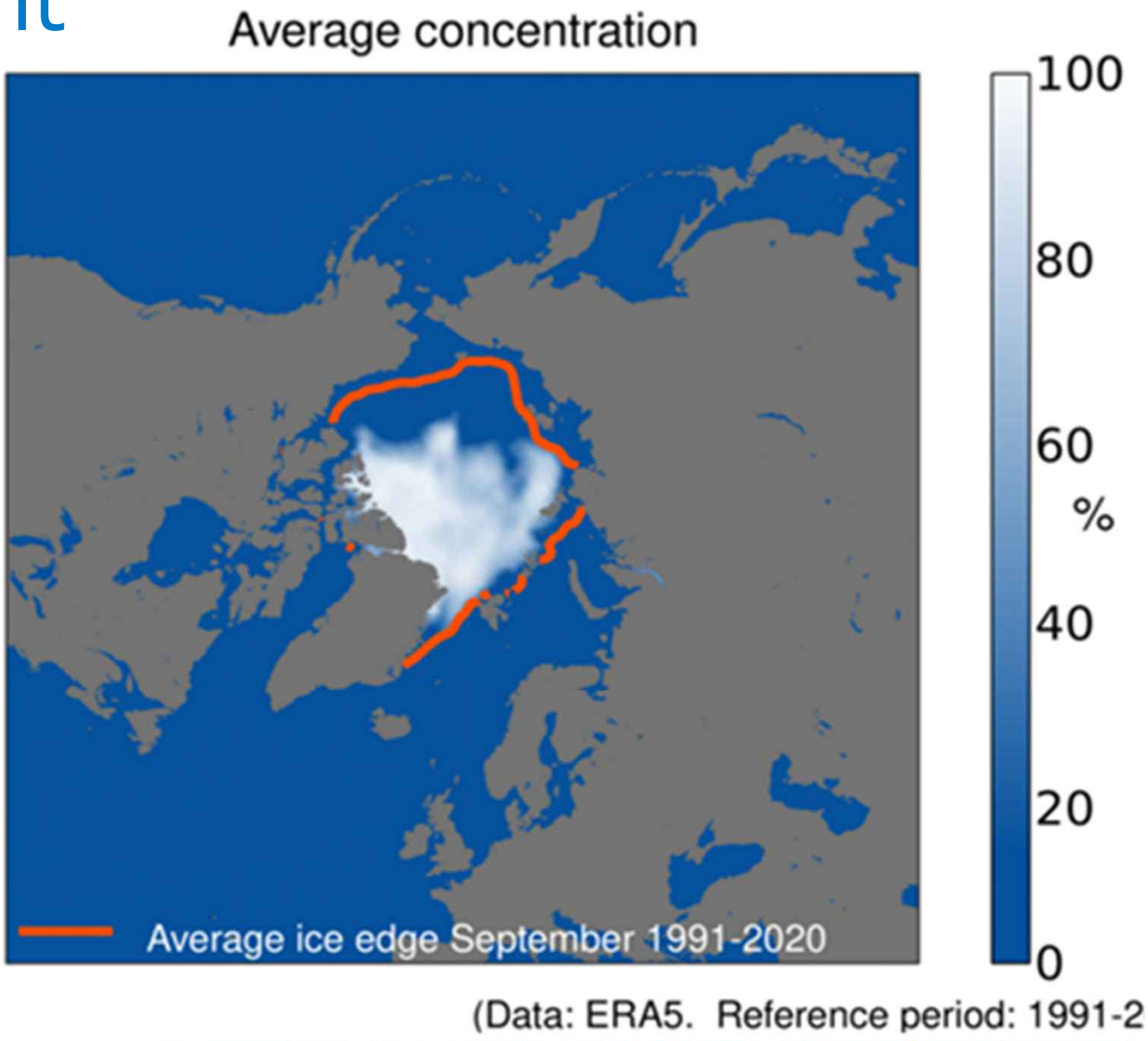
Financieel Dagblad, 29 Oct 2022: Since 1970 the global populations of fish, birds, mammals, amphibians and reptiles have decreased with – on average – 69% afgenomen.
Source: *Living Planet Report 2022*

1. Climate change:

a short introduction

North-pole sea ice extent





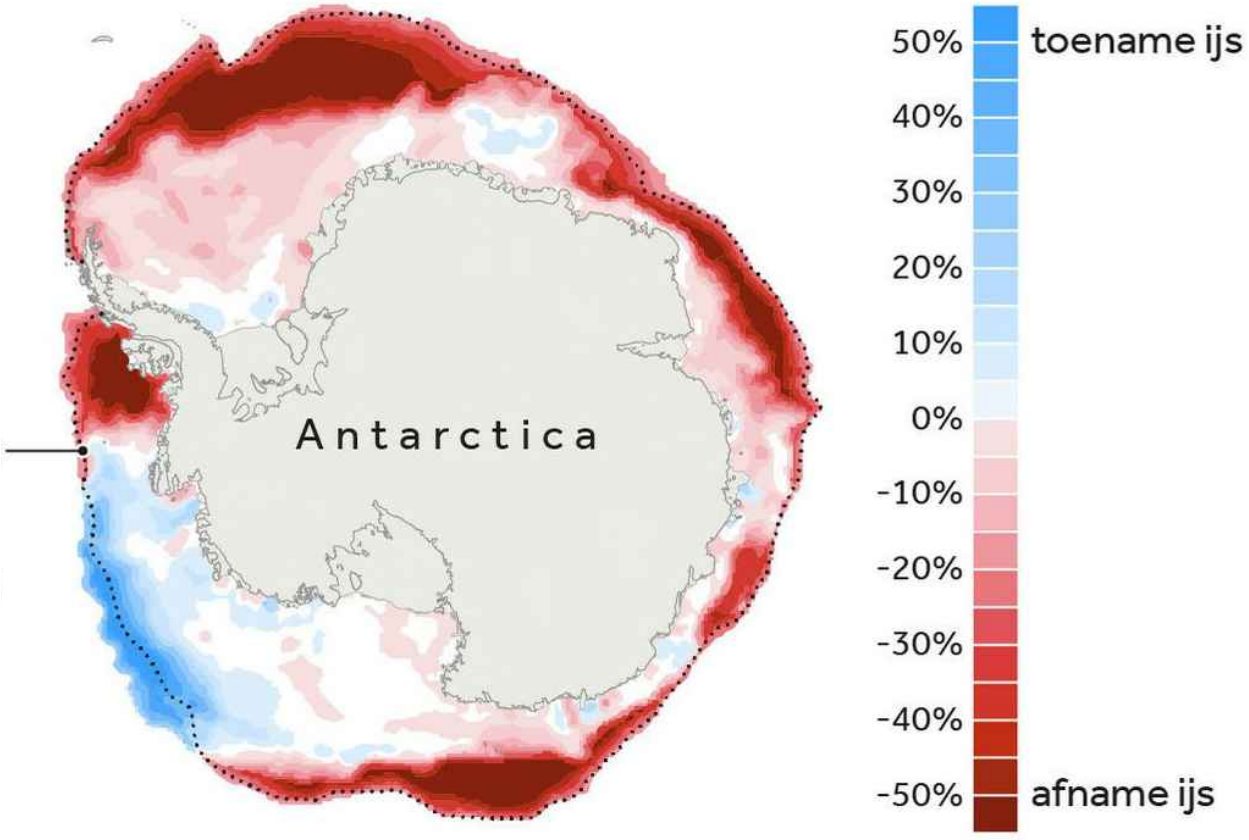
(Data: ERA5. Reference period: 1991-2

Antarctica

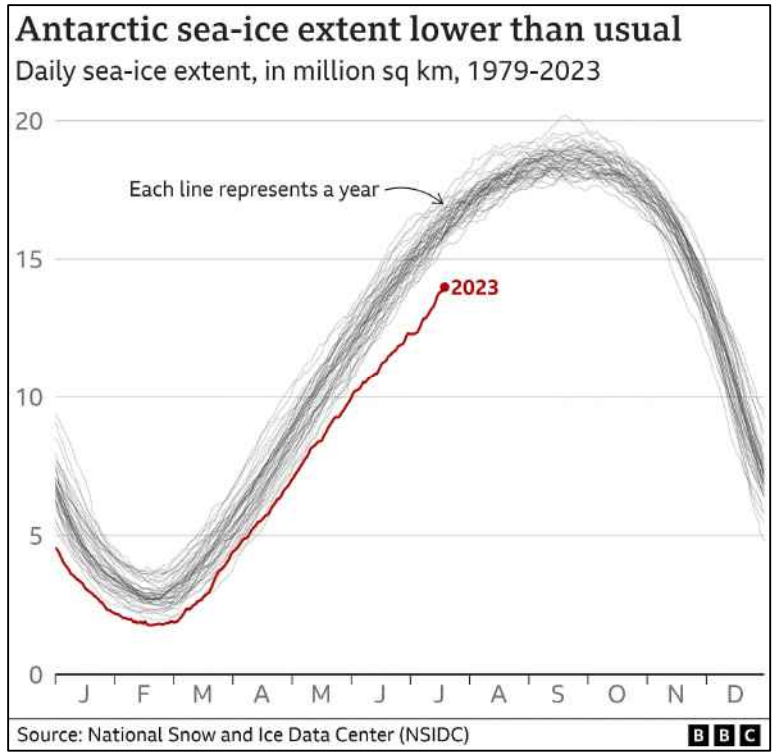
Sea ice extent around Antarctica in the month of June as compared to multi-annual average

Average sea ice extent 1981-2010

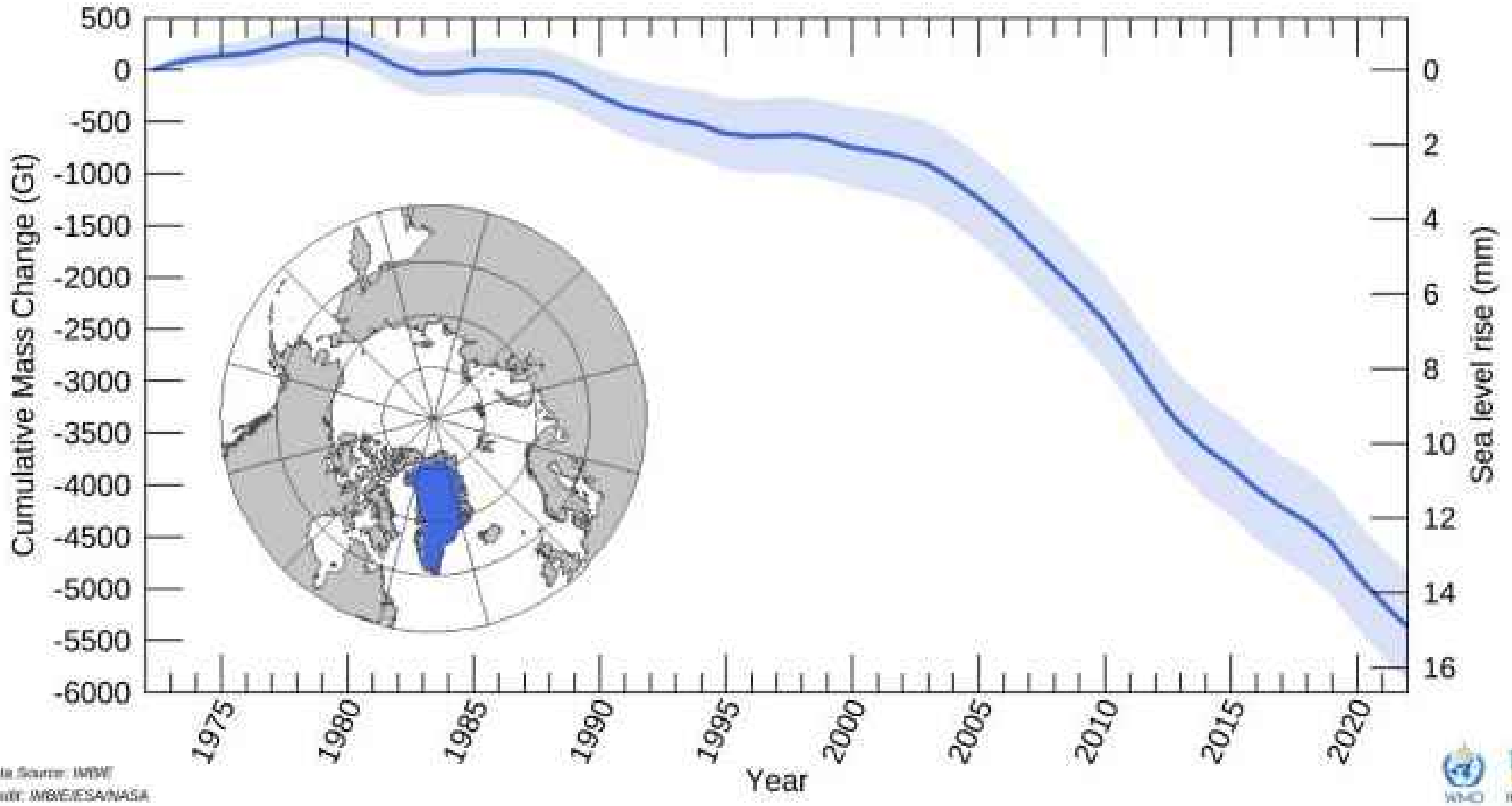
Total deficit: 1,9 mln km^2



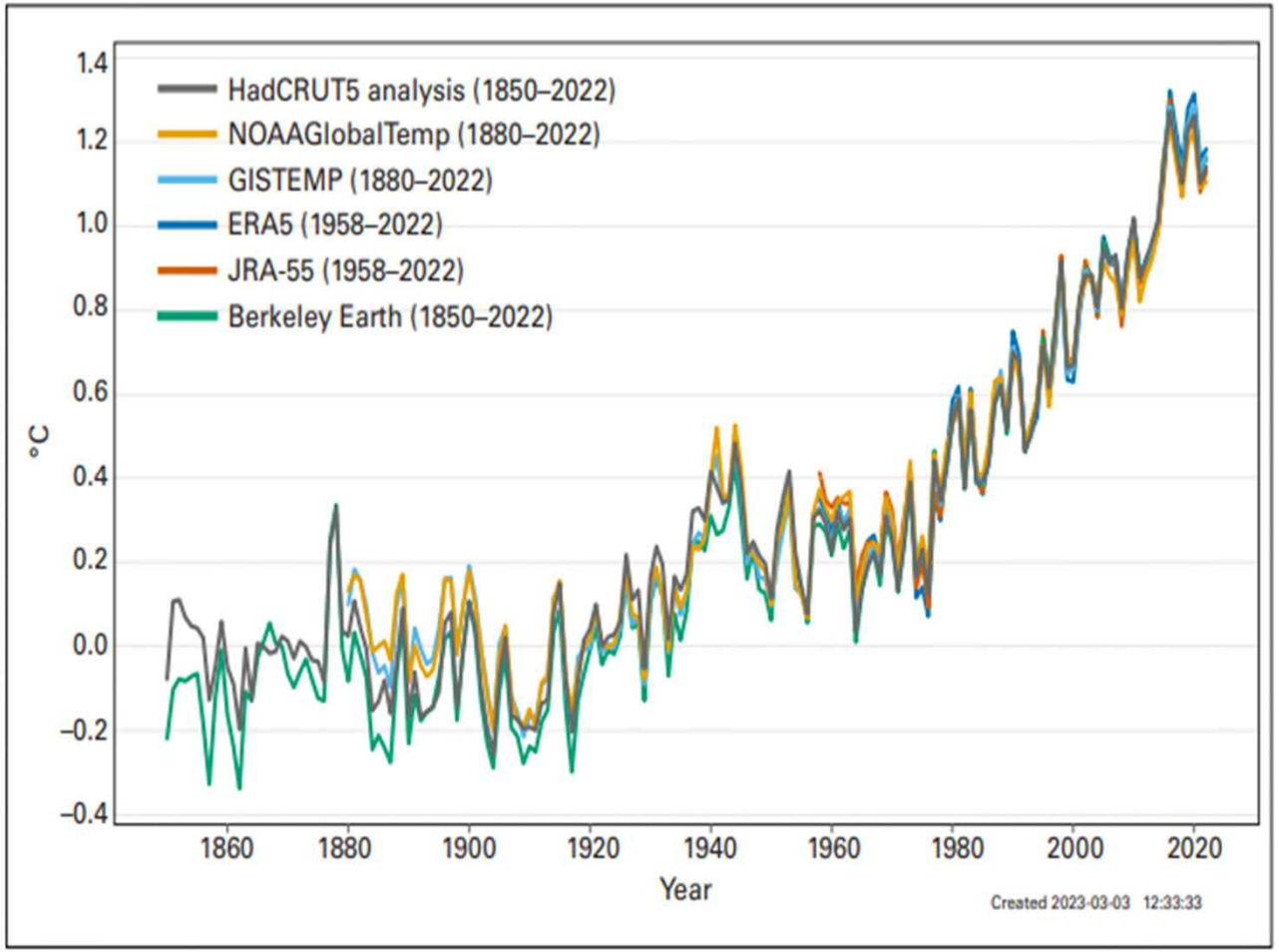
bron: National Snow and Ice Data Center

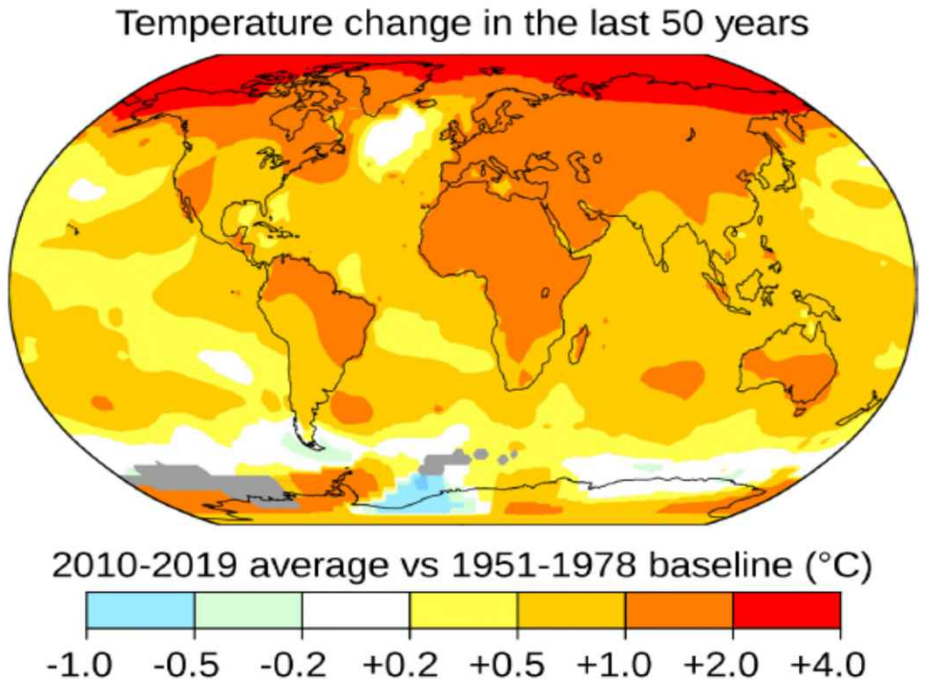


Mass balance of the Greenland Ice Sheet



Global warming

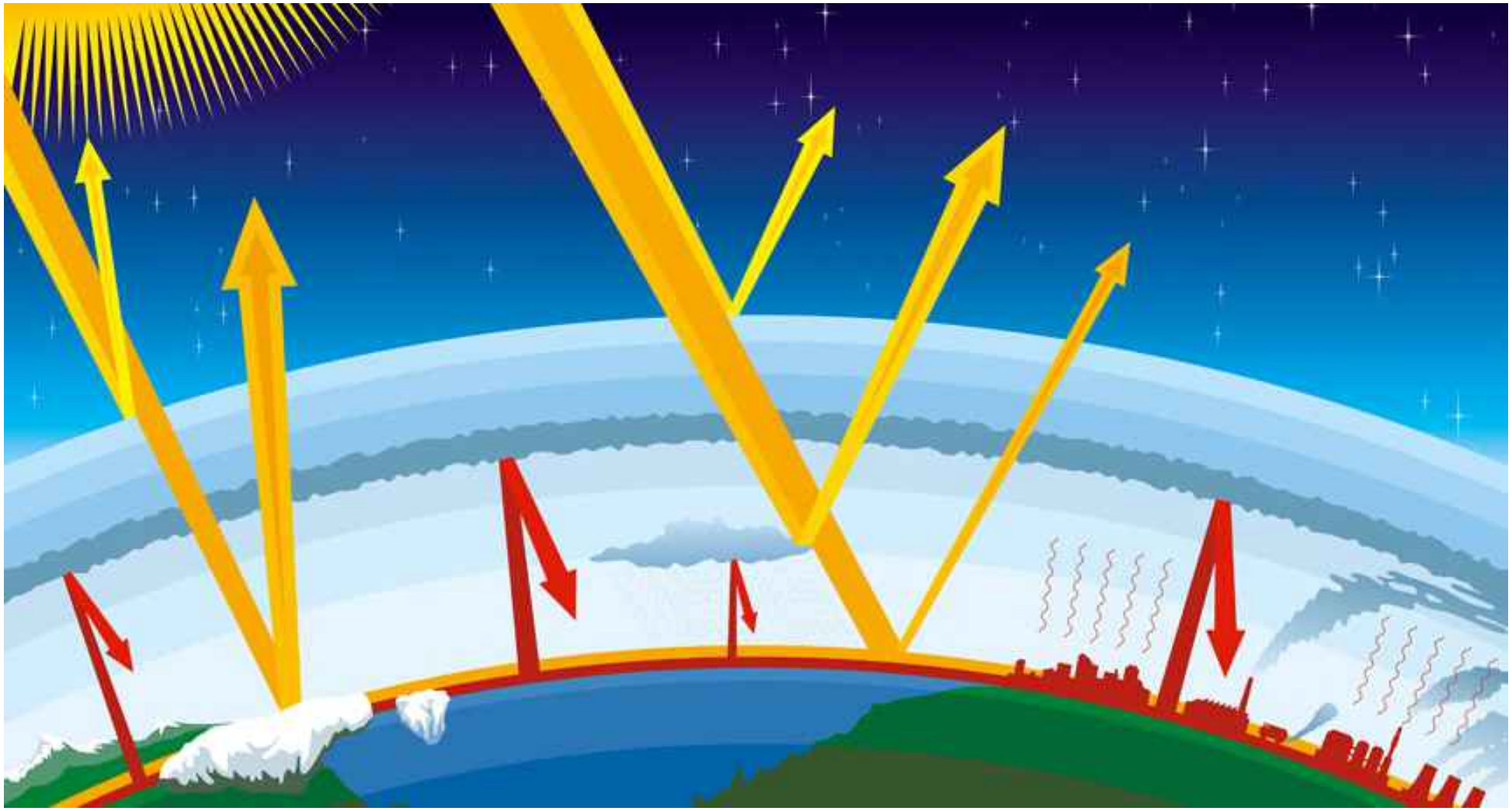




WMO Climate Report:

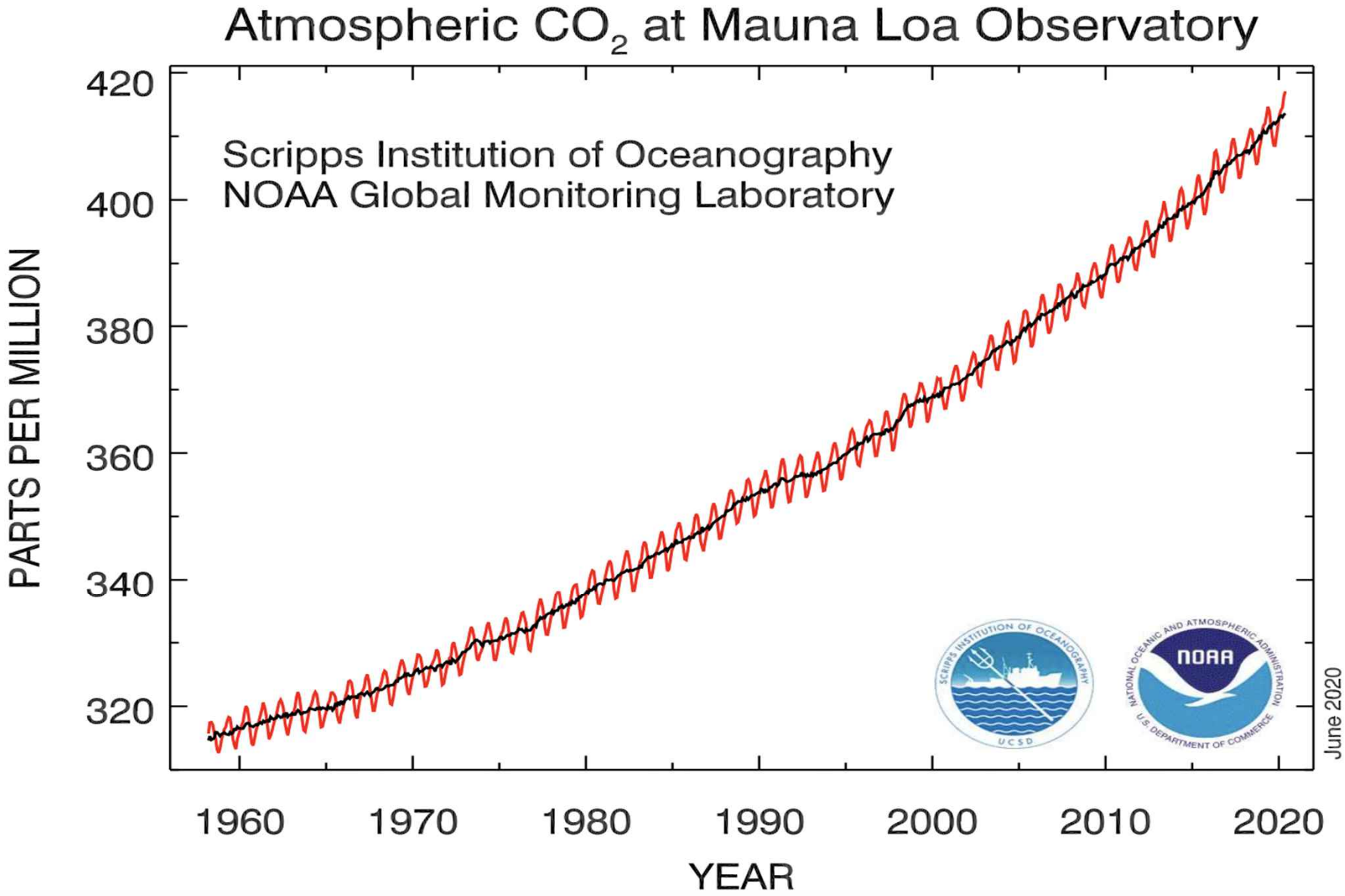
$T_{2022} = T_{1850} + 1.15^{o}C$

Greenhouse Effect

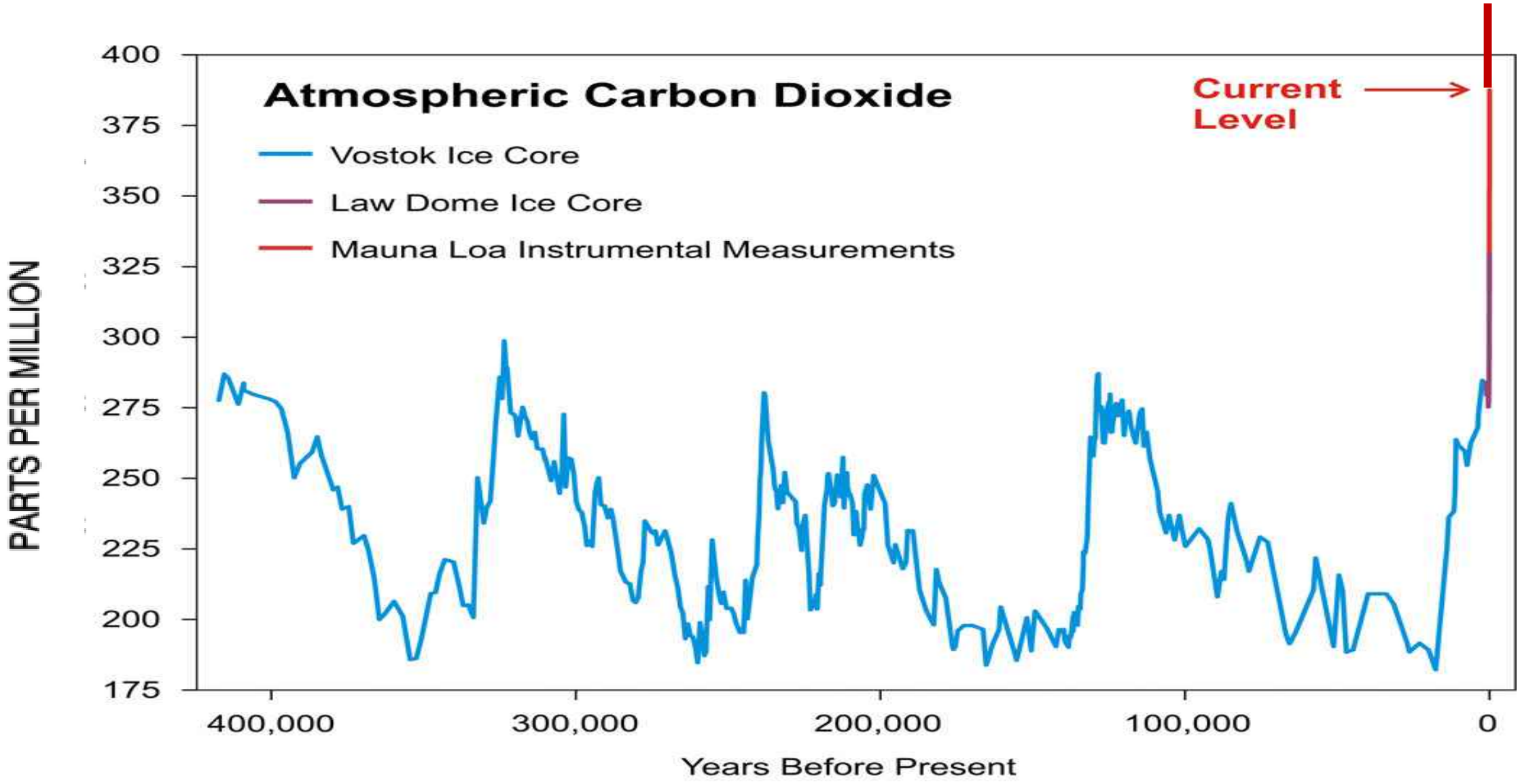


Increase of CO_2 levels

Increased CO_2 levels



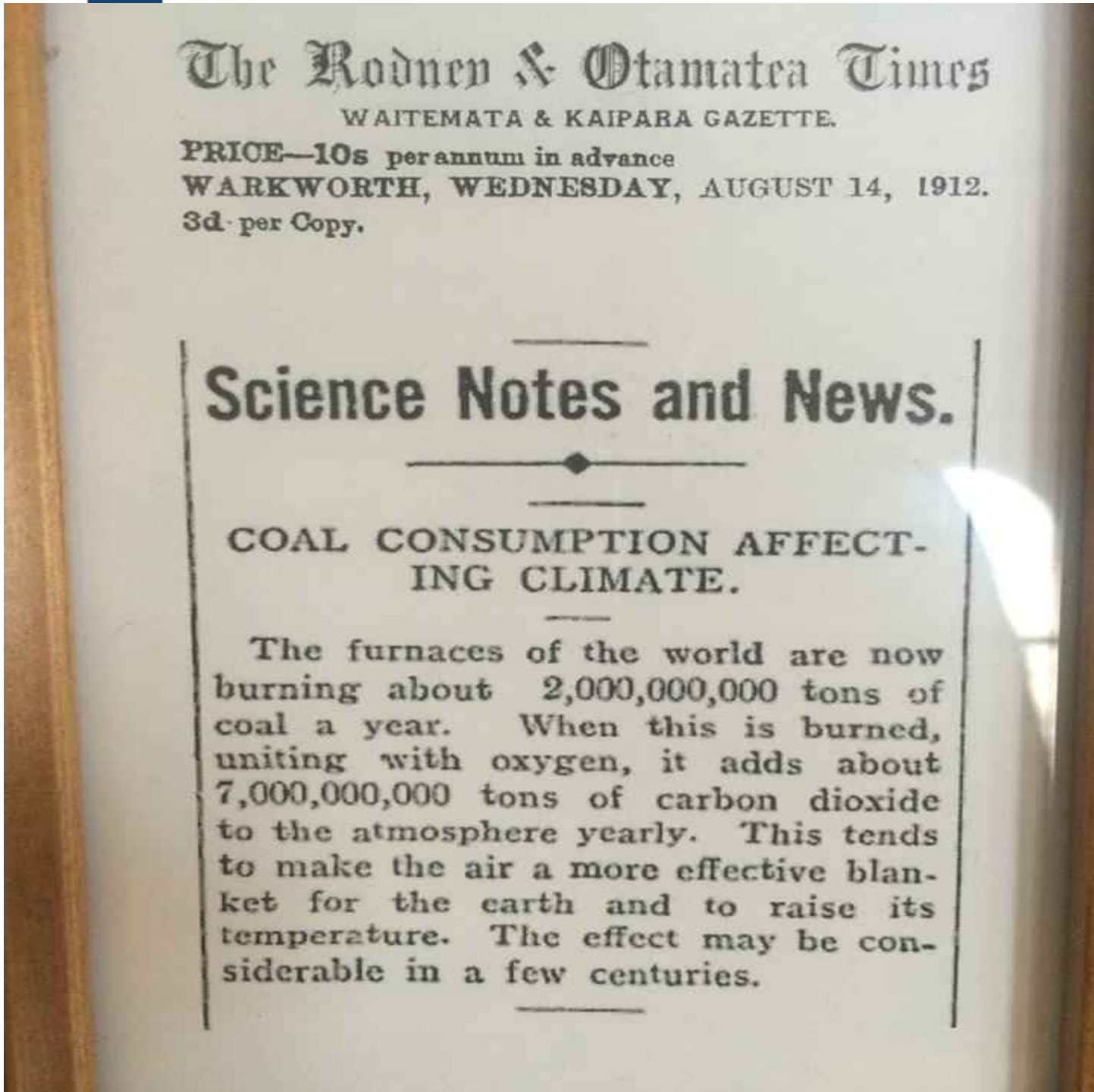
Pre-historical CO_2 levels



New Zealand 1912

New Zealand newspaper,

14 August 1912.



The Rodney & Otamatea Times
WAITEMATA & KAIPARA GAZETTE.
PRICE—10s per annum in advance
WARKWORTH, WEDNESDAY, AUGUST 14, 1912.
3d per Copy.

Science Notes and News.

COAL CONSUMPTION AFFECTING CLIMATE.

The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.

2. Consequences of climate change

Large world-wide risks

Heat

Every year more and more people are affected by heat waves

Water scarsity

At 2°C global warming there is 20% less fresh water available in regions depending on melt water

Food security

Food security is under pressure in more and more regions worldwide

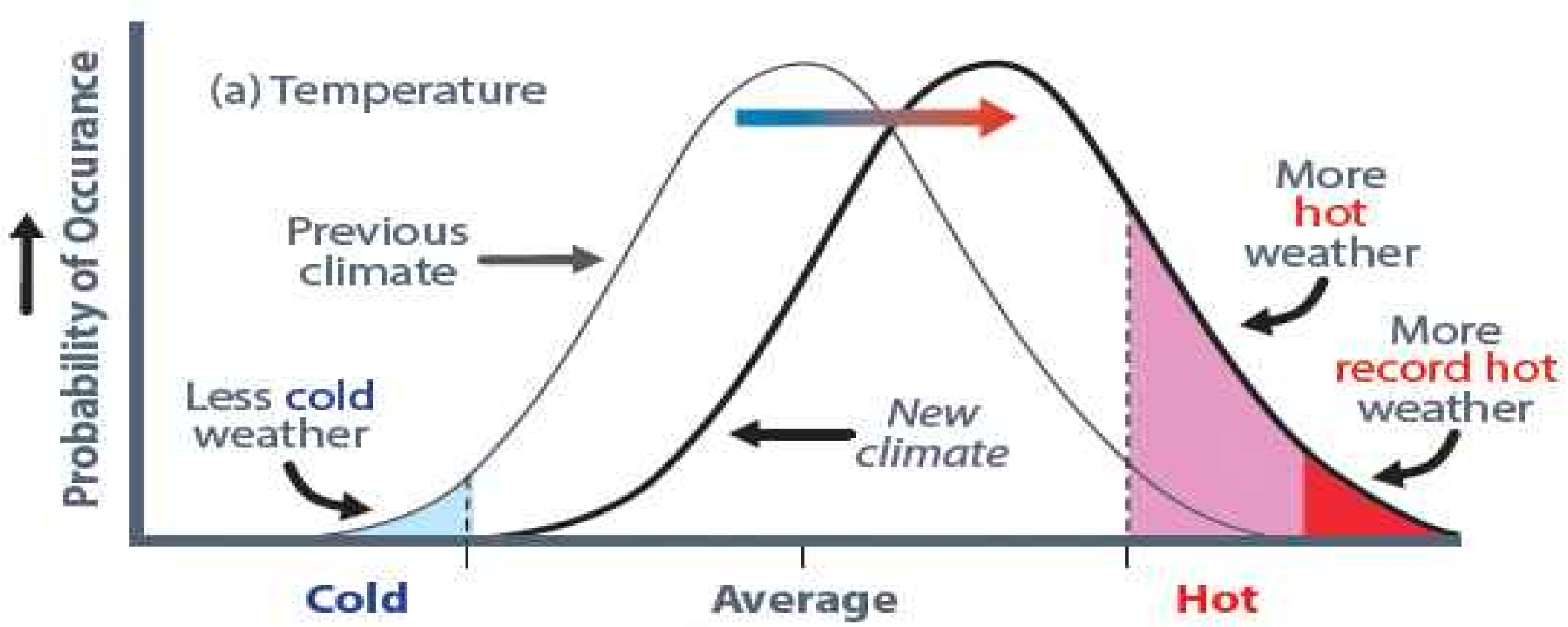
Sea level rise

Roughly 1 billion peope living in sea-side cities or on islands are hit by sea-level rise in 2050

More extreme weather

Extreme weather & climate change

Climate = average weather over 30 year

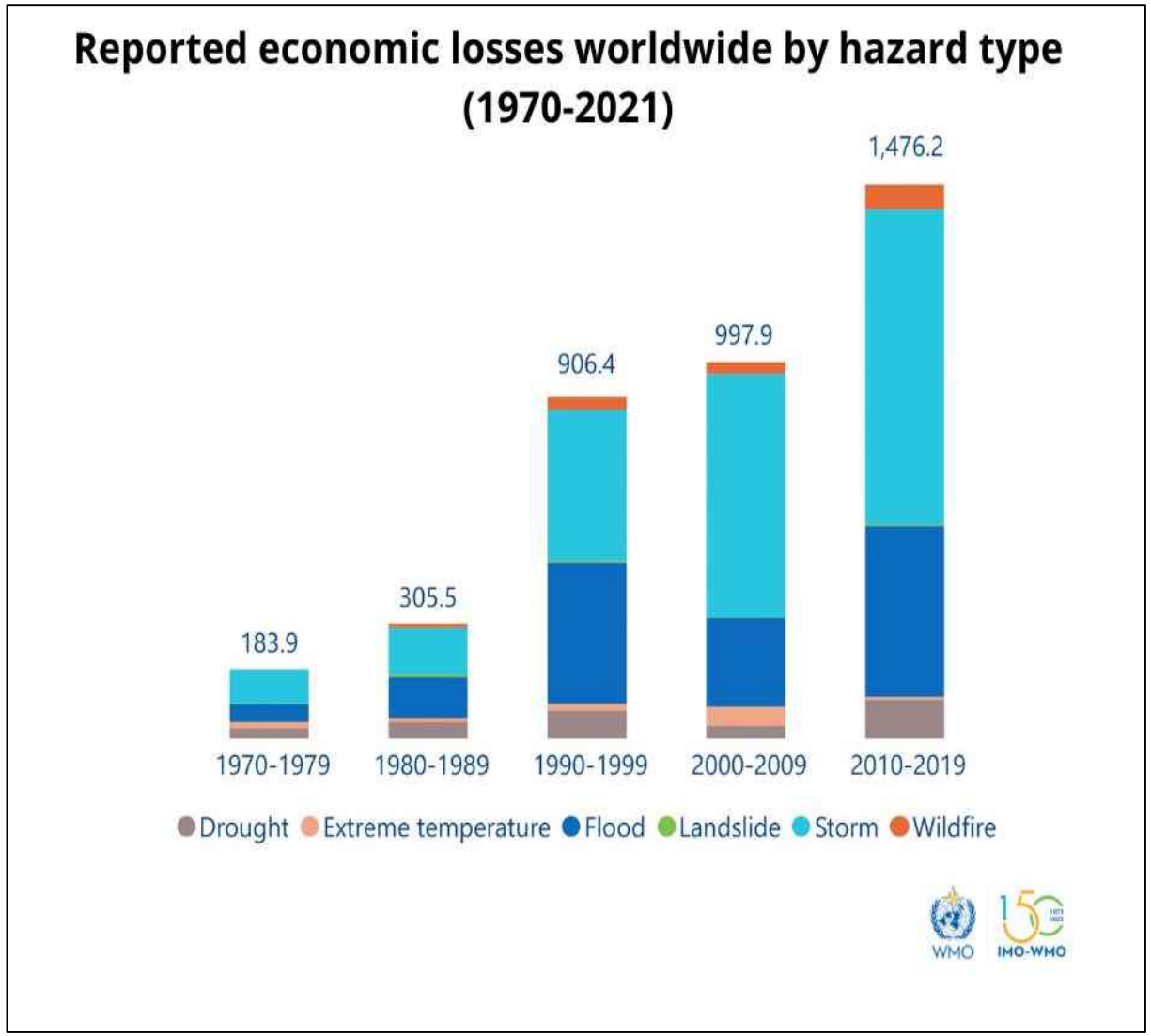


Impact climate change

Cumulative impact 1970-2021:

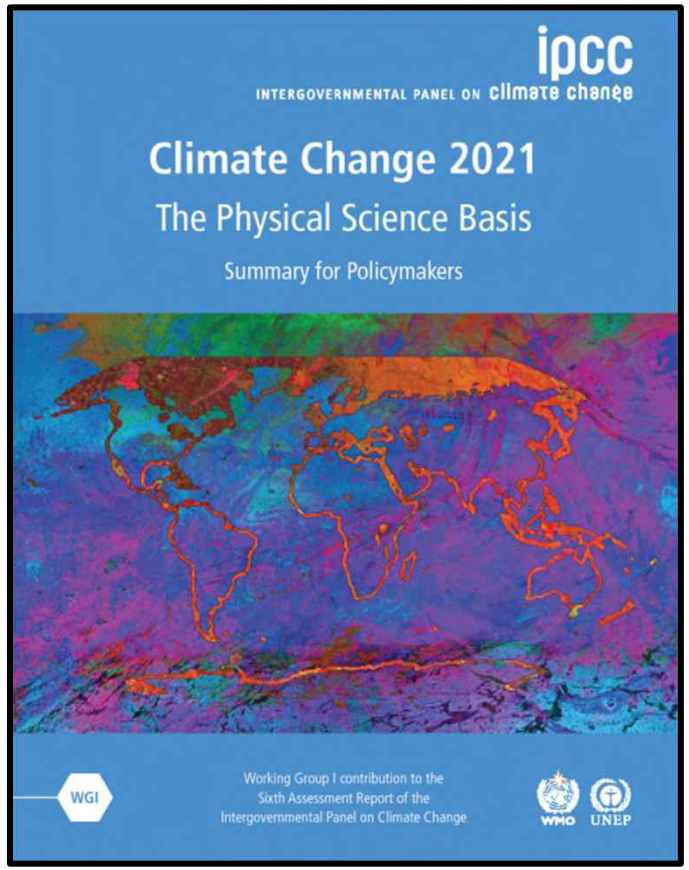
- 11.778 recorded disasters
- > 2 million deaths
- US$ 4.3 trillion economic loss
- (Would have been more without the development of *disaster risk management systems* such as *Early Warning Systems.)*

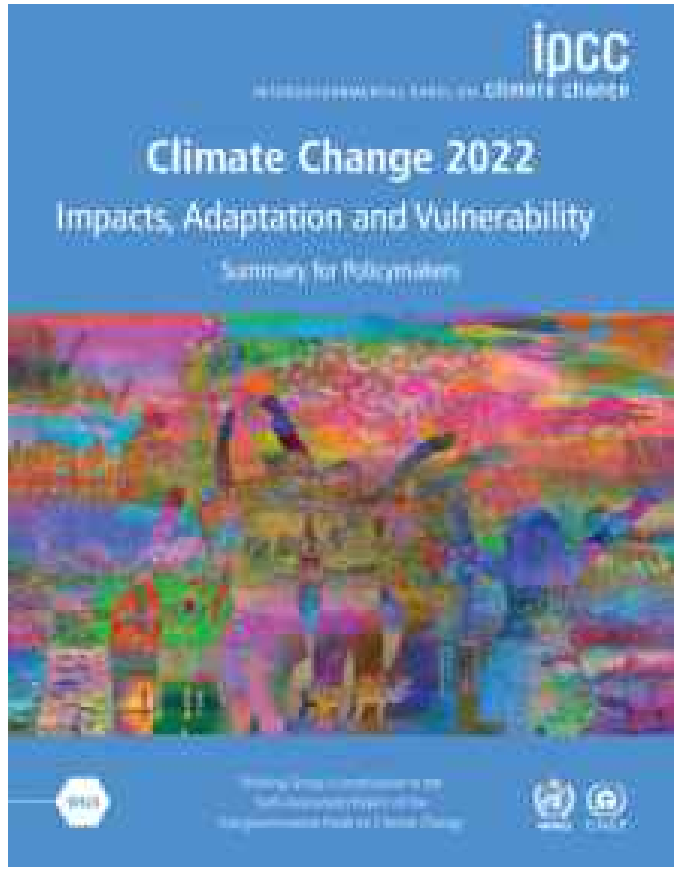
Ref.: WMO report April 2023

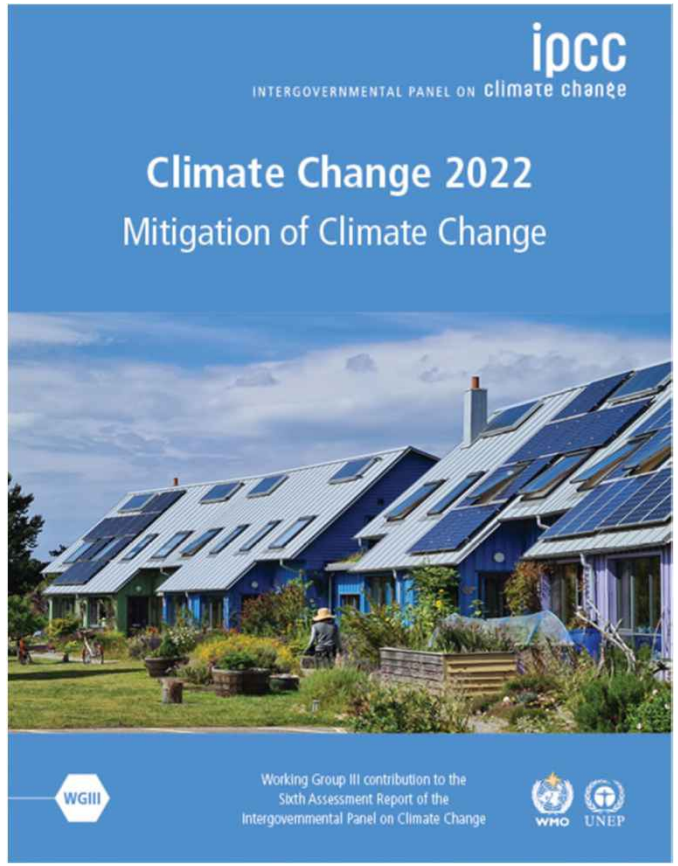


3. The role of grey literature

Grey Literature & Climate Science







About 100 authors assess and summarize recently published (peer-reviewed) papers on climate science.

Who initiated IPCC?

United Nations

United Nations Framework Convention on Climate Change

Afspraken over handelen op klimaat:

- Kyoto Protocol (1997)
- Parijsakkoord (2015)

WORLD METEOROLOGICAL ORGANIZATION

National weather services

UN environment programme

Montreal Protocol

CFK's and HFK's.

ipcc

INTERGOVERNMENTAL PANEL ON climate change

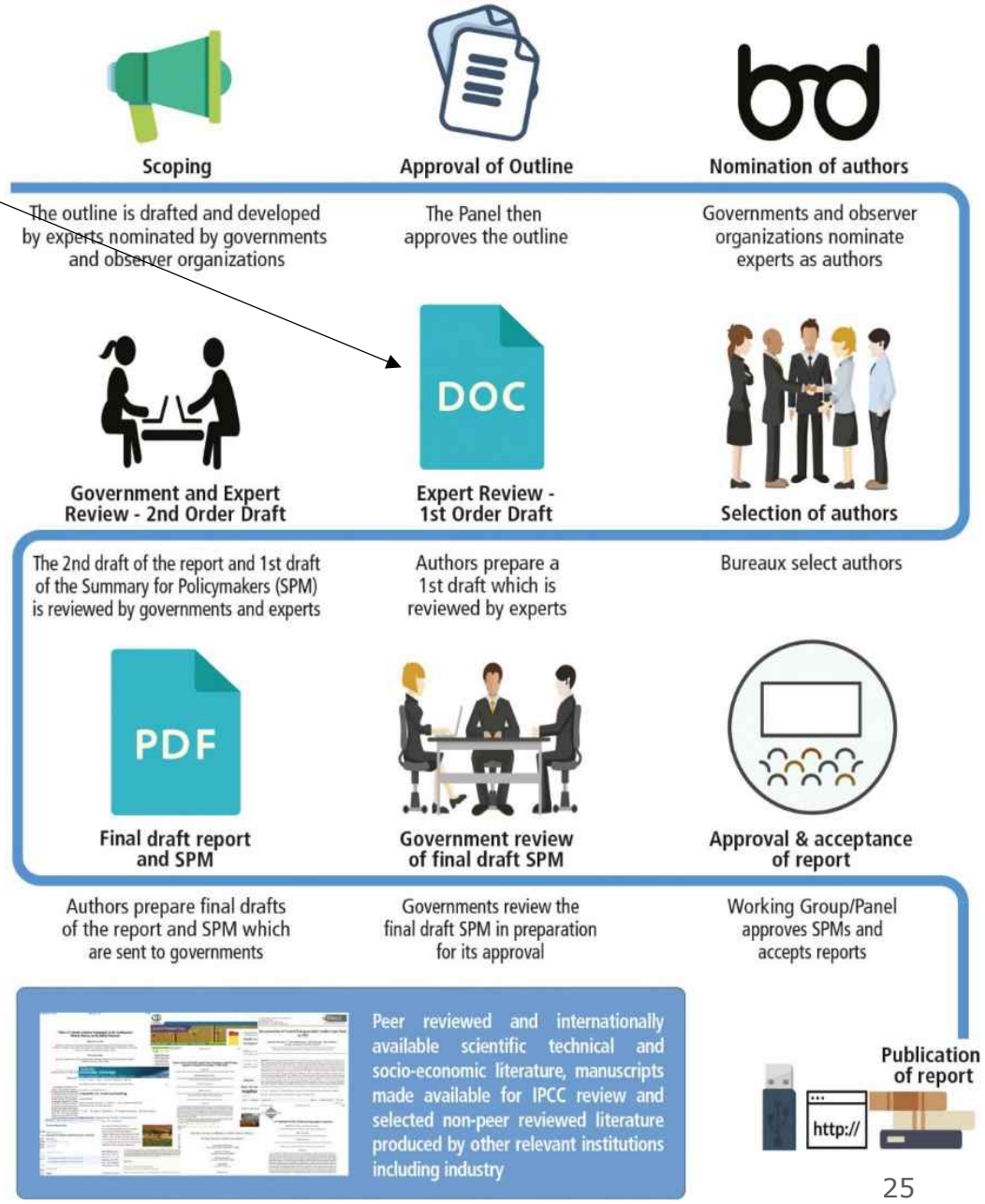
WMO UNEP

Scientific assessment

The IPCC process

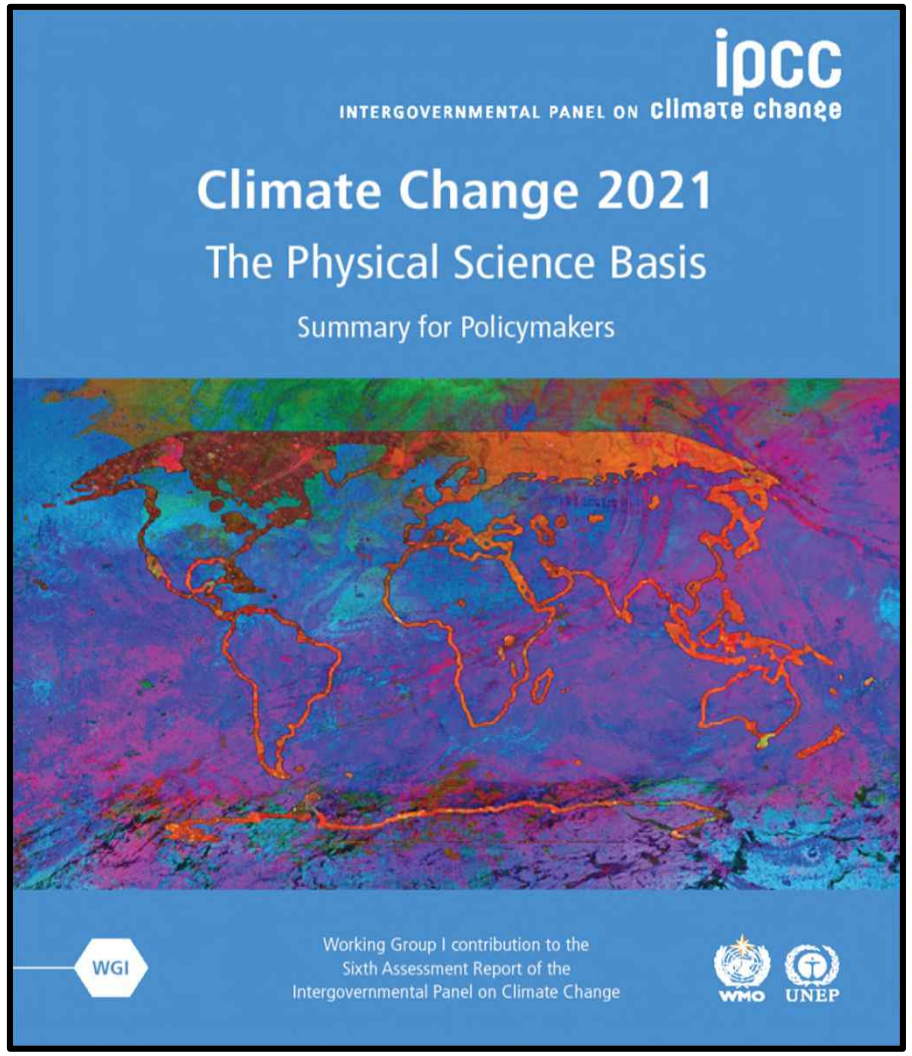
- IPCC does <u>not</u> carry out research
- It provides an assessment of the current literature on climate issues.
- <u>It is policy relevant, not policy prescriptive.</u>
- Governments influence contents (subject list), select authors, review *Summary for Policy Makers* and accept texts (but scientists can veto changes that are at odds with scientific knowledge & data.)

Typ. 3000 – 4000 comments




Jim Skea
Co-Chair WG III
f the IPCC and

IPCC rapports since ‘90

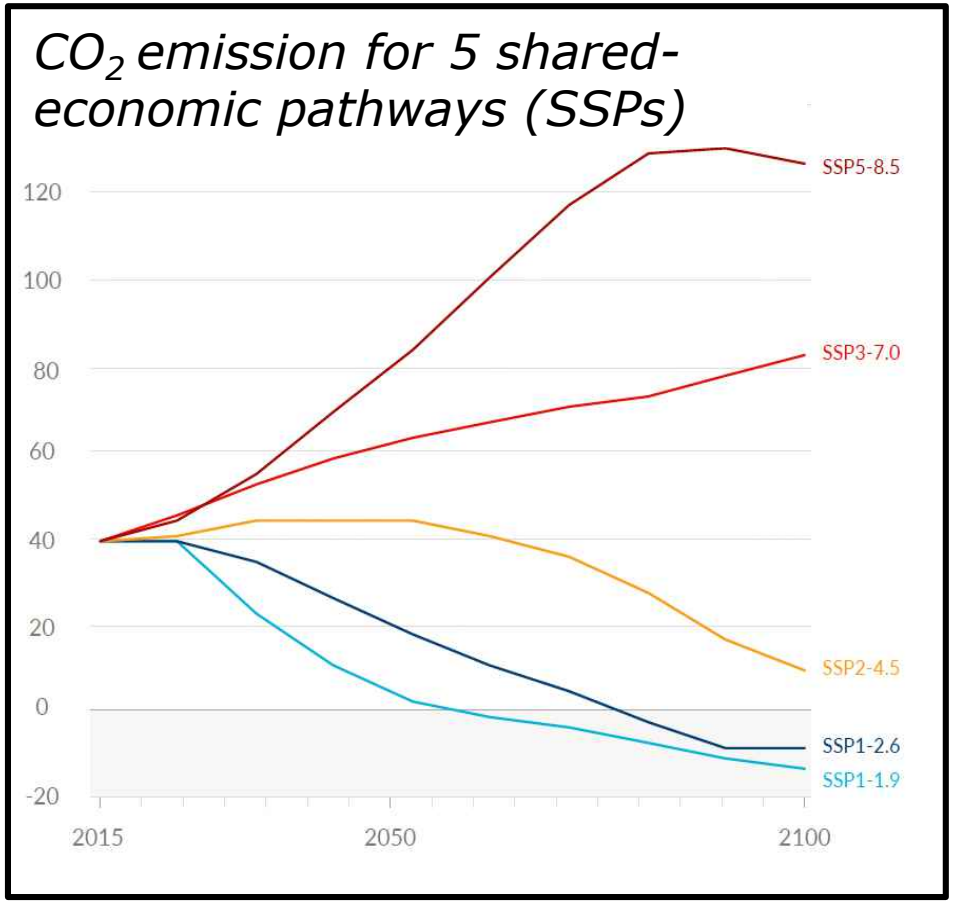


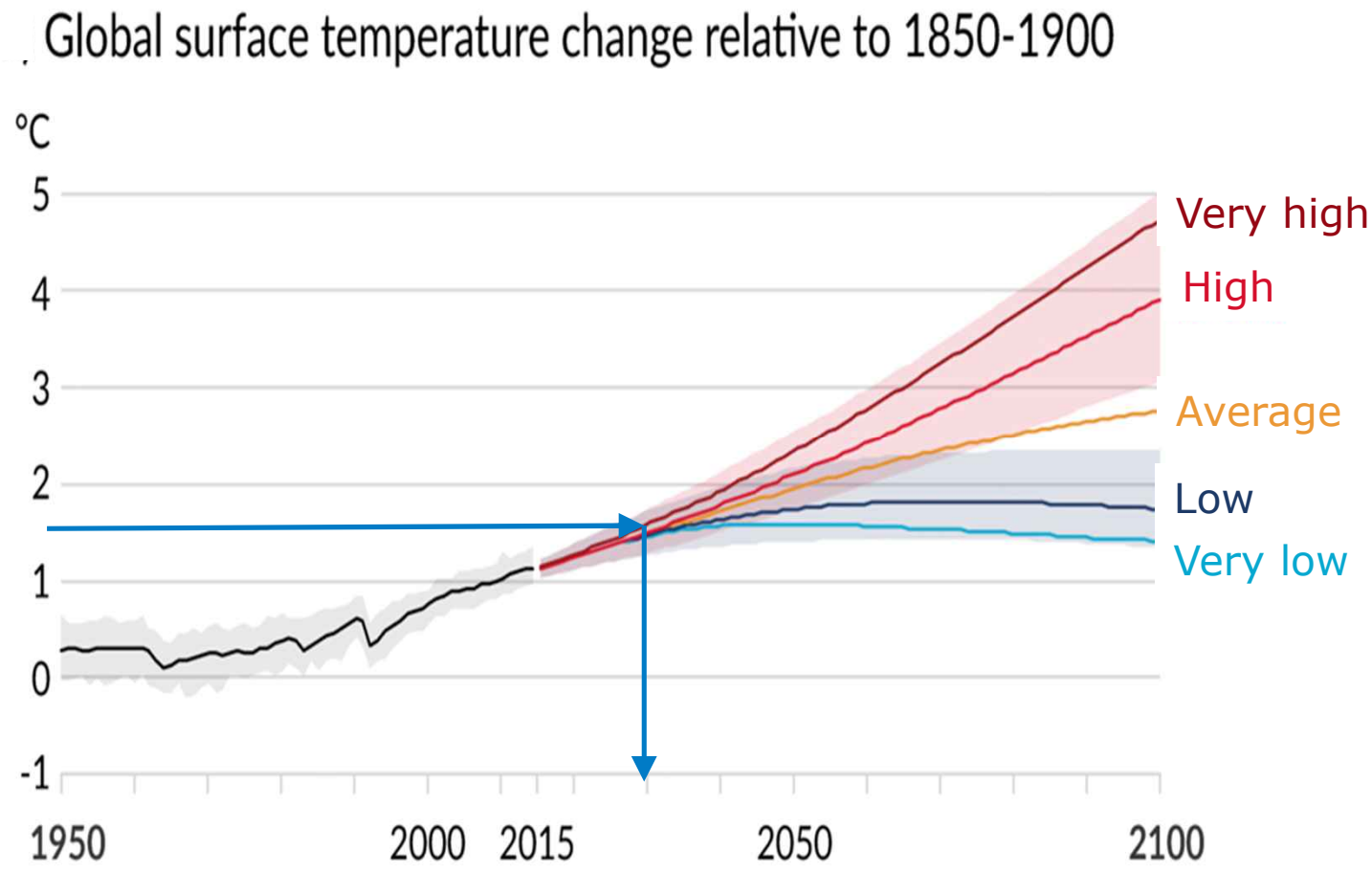
- AR1 (’90): “humankind is **capable** of raising the […] temperature”
- AR2 (’95): “evidence suggests **discernible human influence**”
- AR3 (’01): “most warming is **likely** due to greenhouse gases”
- AR4 (’07): “**very likely** due to anthropogenic greenhouse gases”
- AR5 (’13): “**extremely likely** that human influence […] dominant cause”
- AR6 (’21): “**unequivocal** that human influence has warmed atmosphere”

Climate scenarios

The climate future

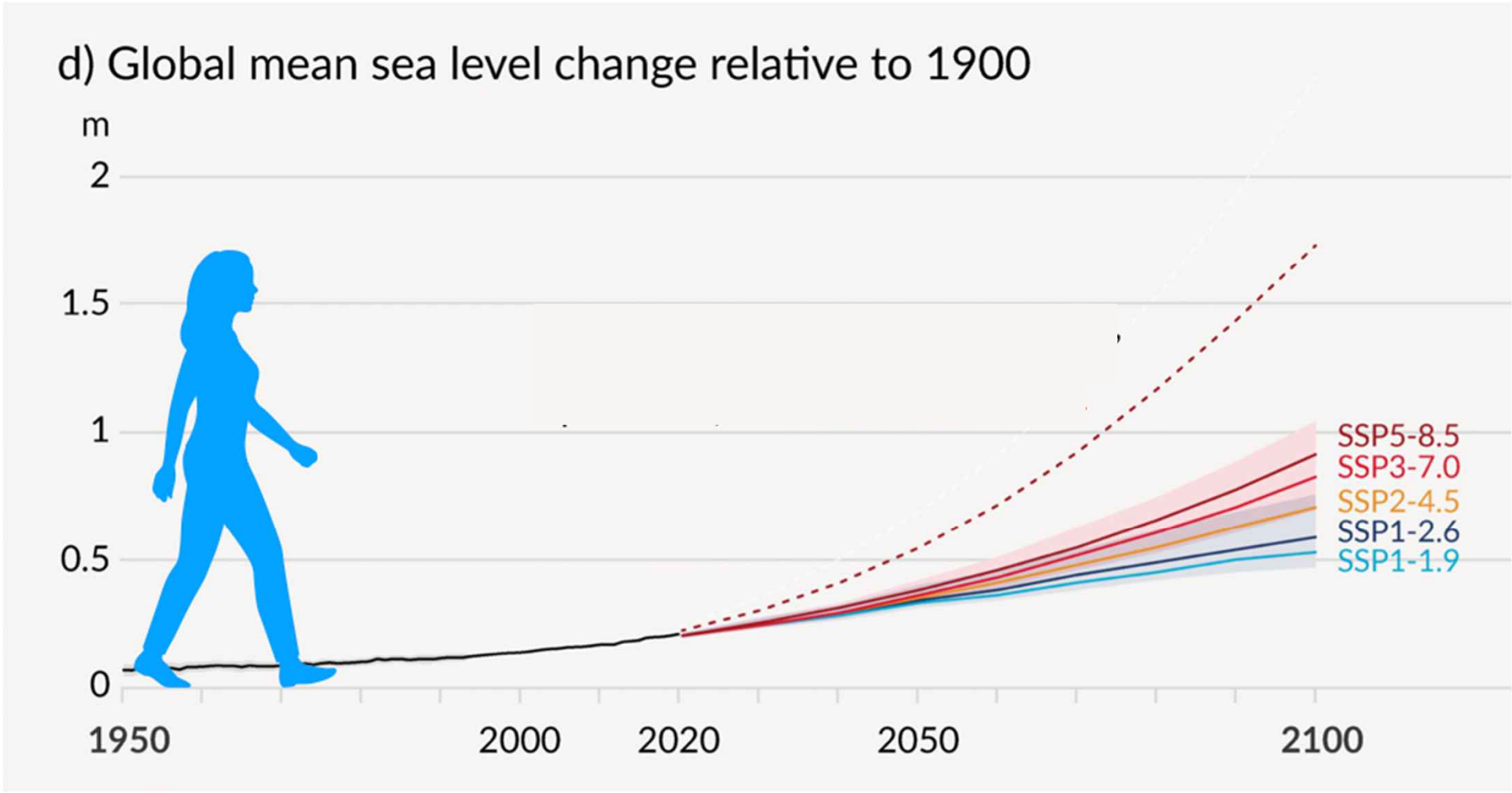
Development of CO_2 emissions

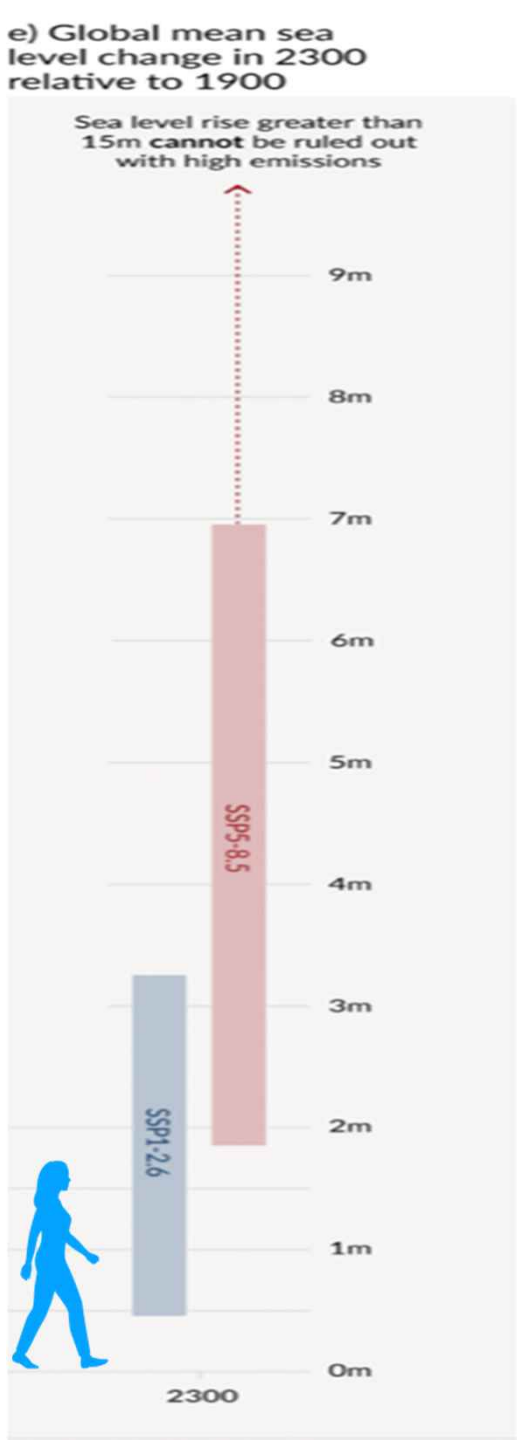




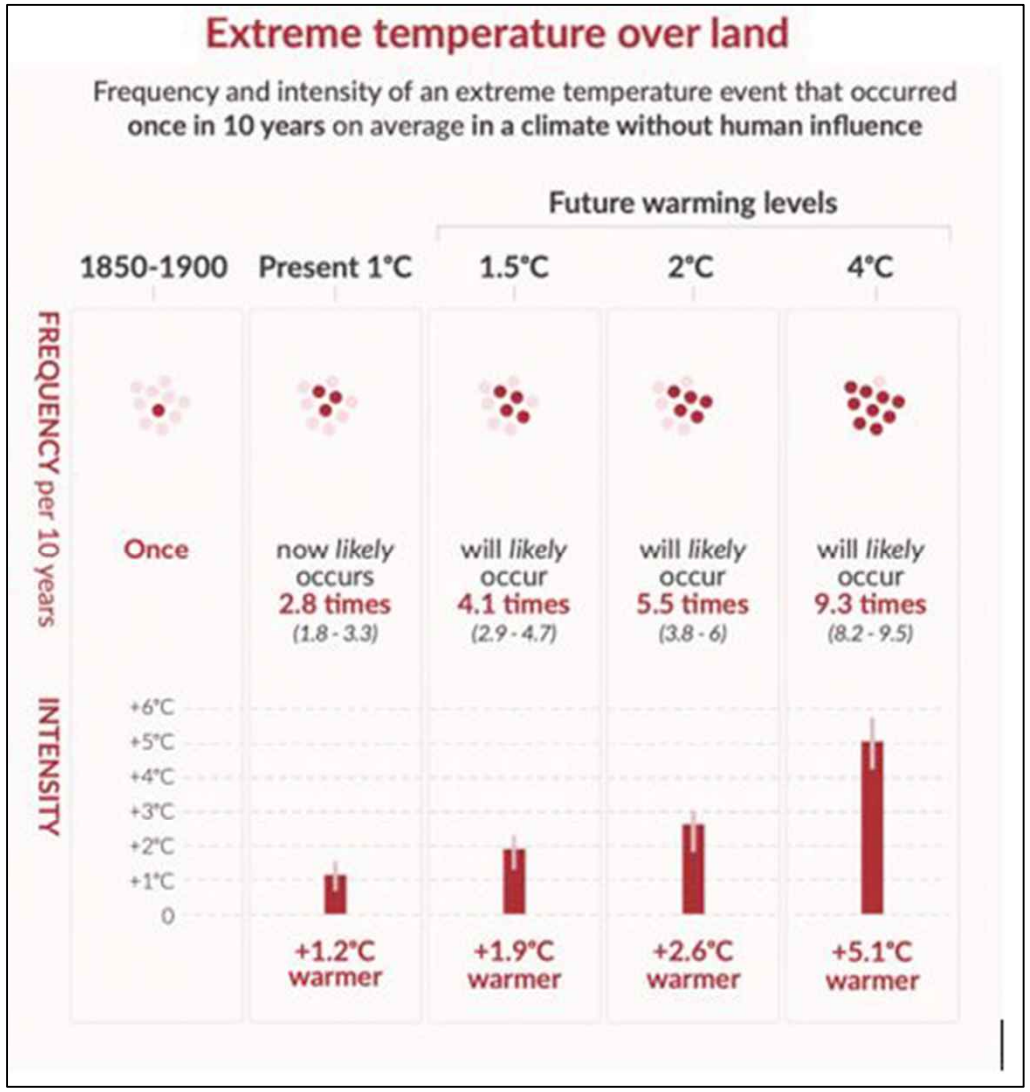
1.5°C limit reached
in about 10 years

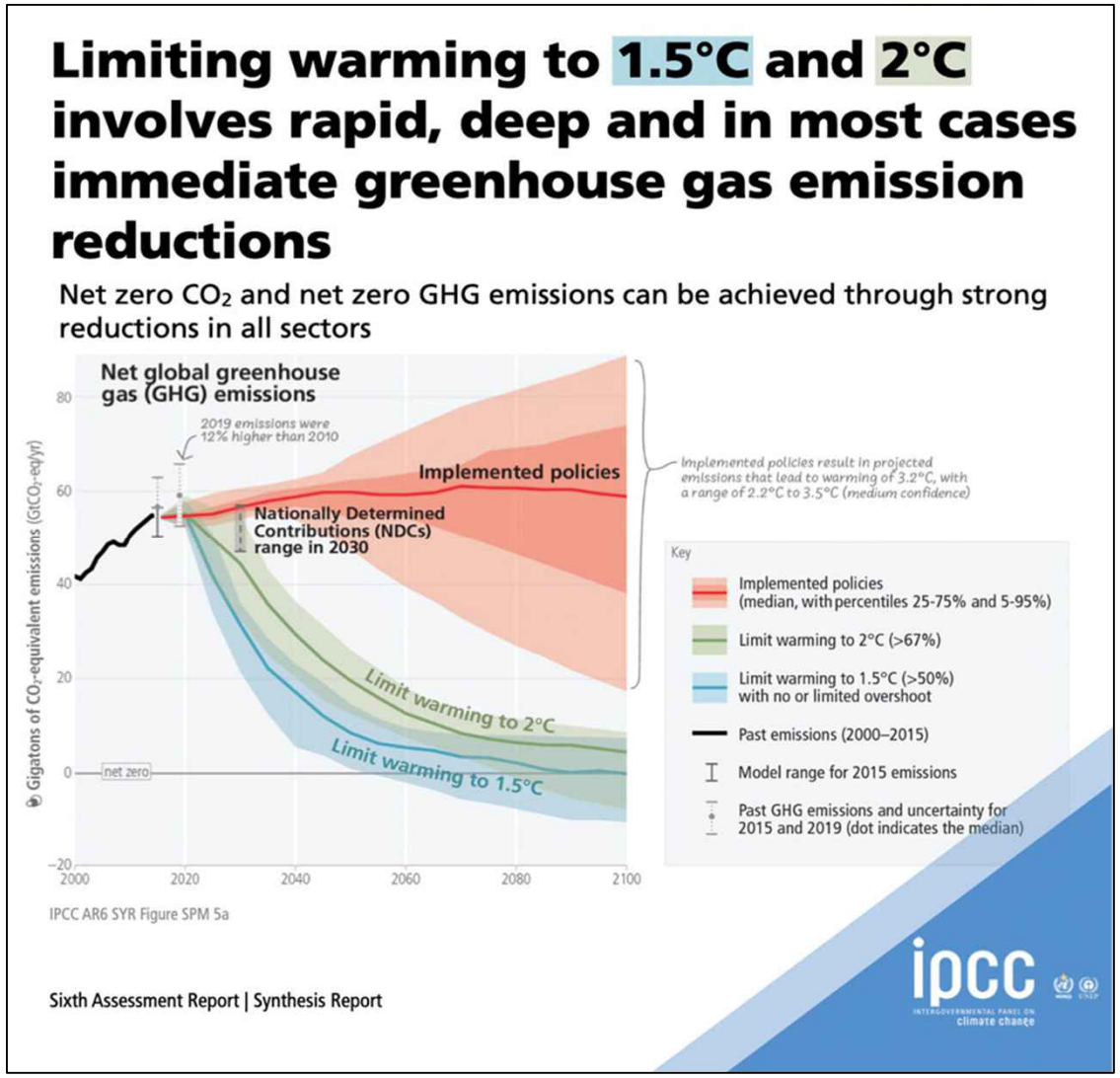
Sea level rise scenarios





Heat wave scenarios





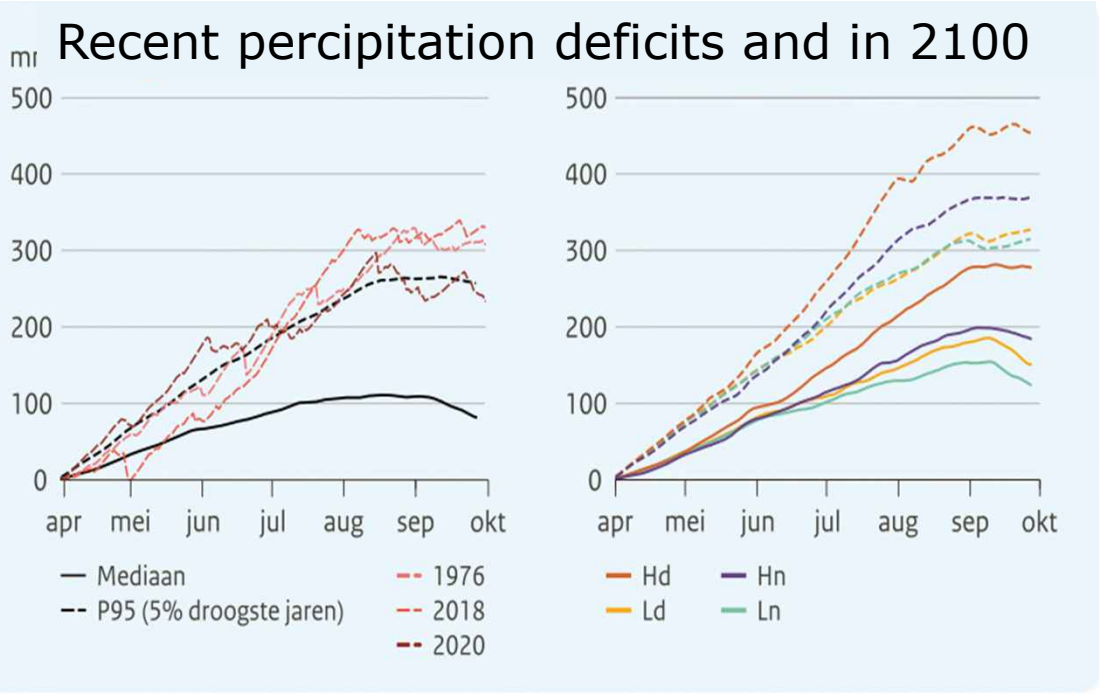
Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

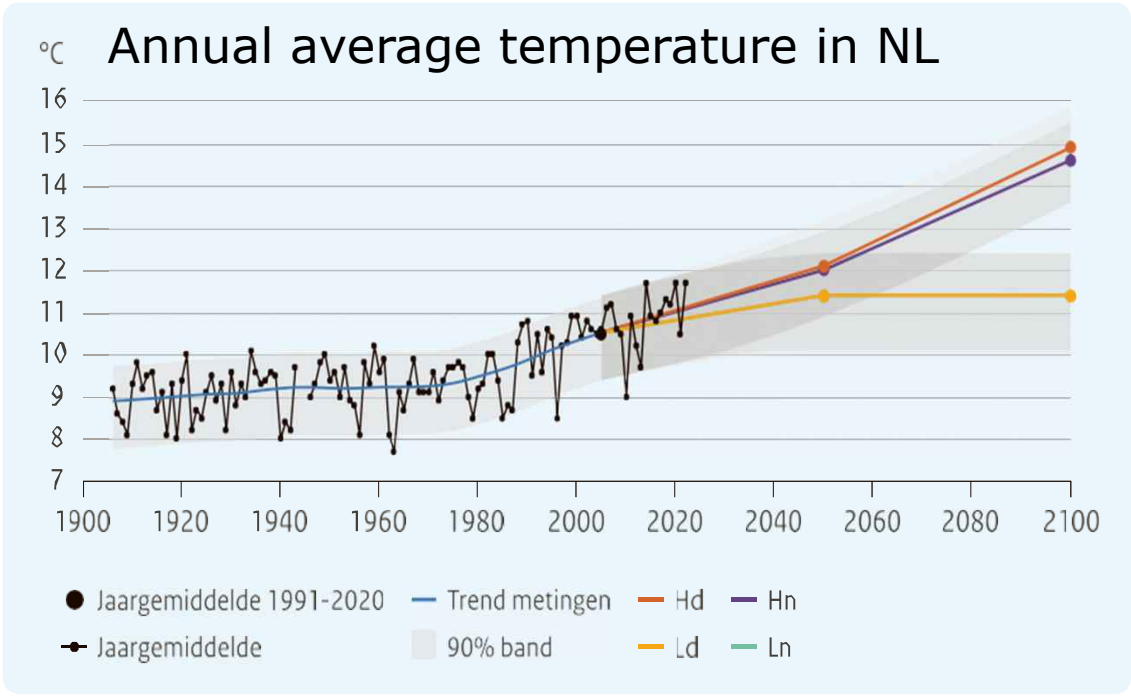
KNMI'23
klimaatscenario's

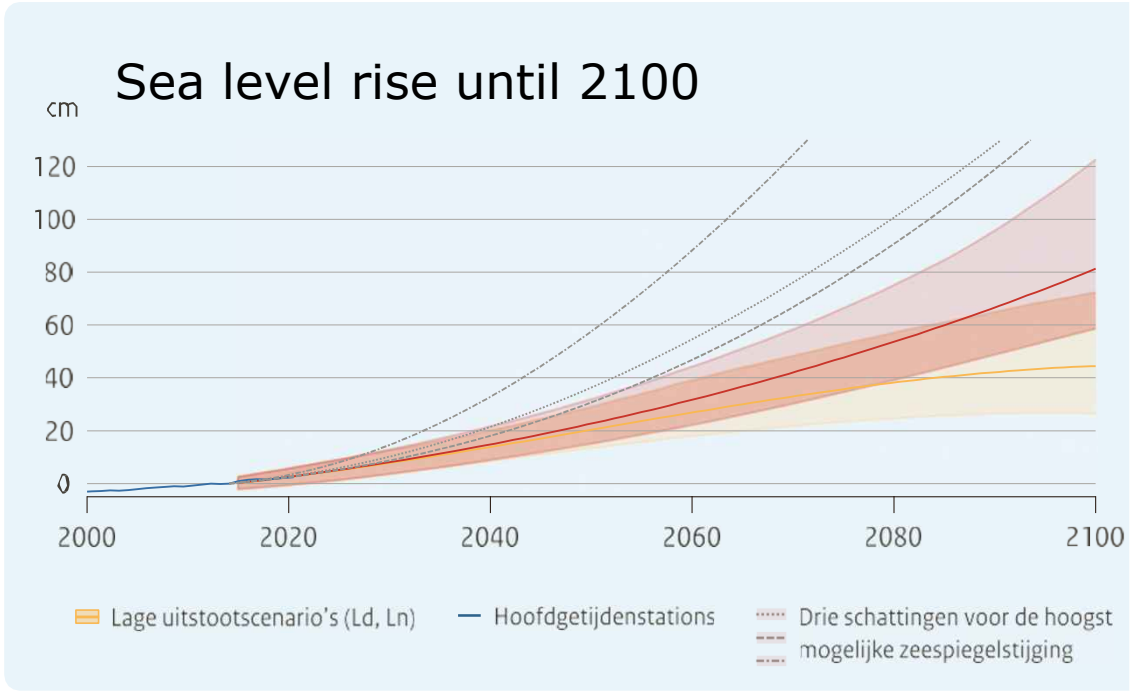
voor Nederland

KNMI Climate scenarios

1. High CO_2 emissions + dry (HD)
2. High CO_2 emissions + wet (HN)
3. Low CO_2 emissions + dry (LD)
4. Low CO_2 emissions + wet (LN)







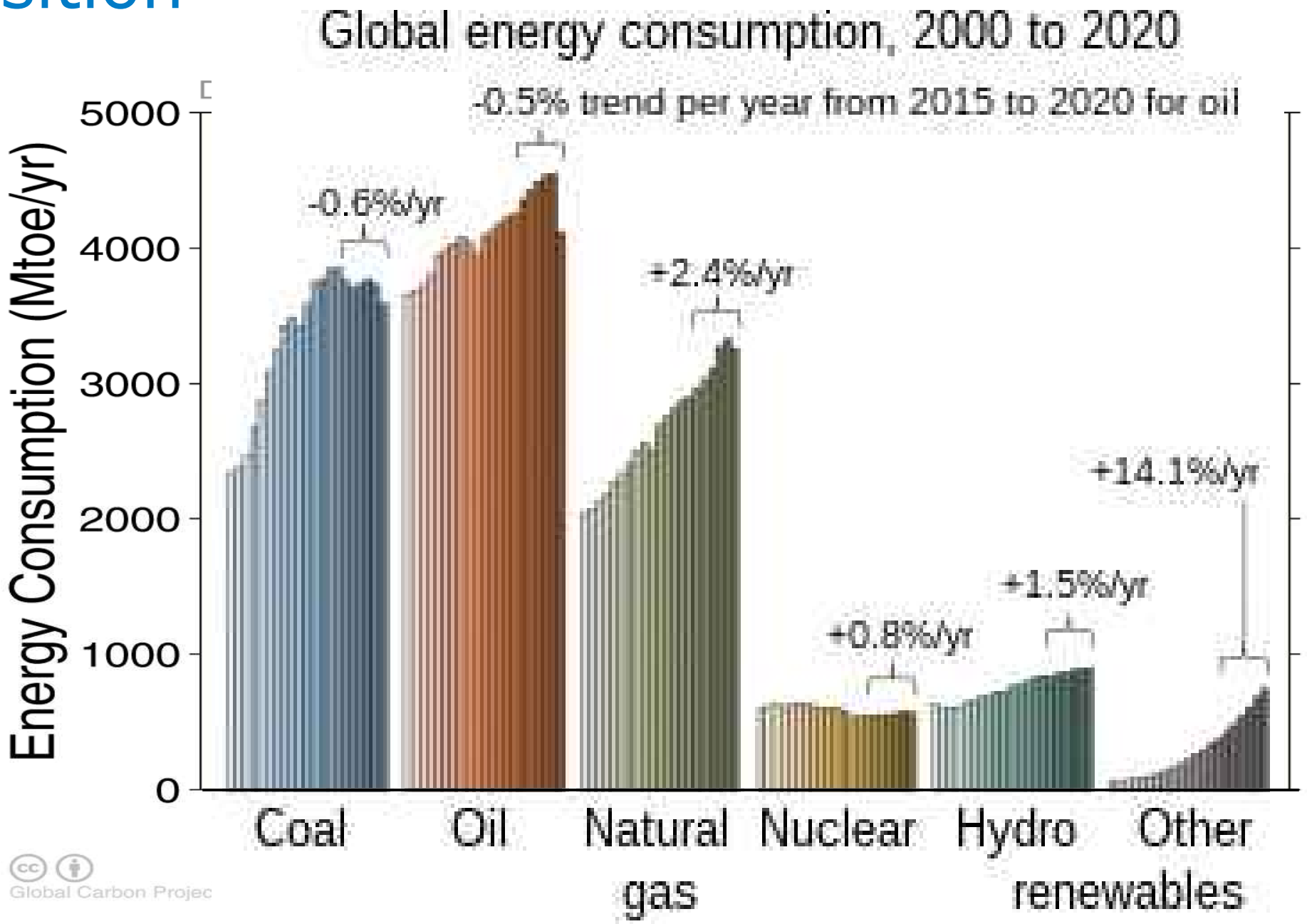
4. Climate policy measures

Paris Climate Agreement (December 2015)

"..*strengthen the global response to climate change by keeping the global temperature rise well below 2 °C …*"

Energy transition

Worldwide energy consumption from 2000 to 2020.



Climate policy measures

- NL: Rutte IV cabinet

  2030: 60% CO_2 reduction

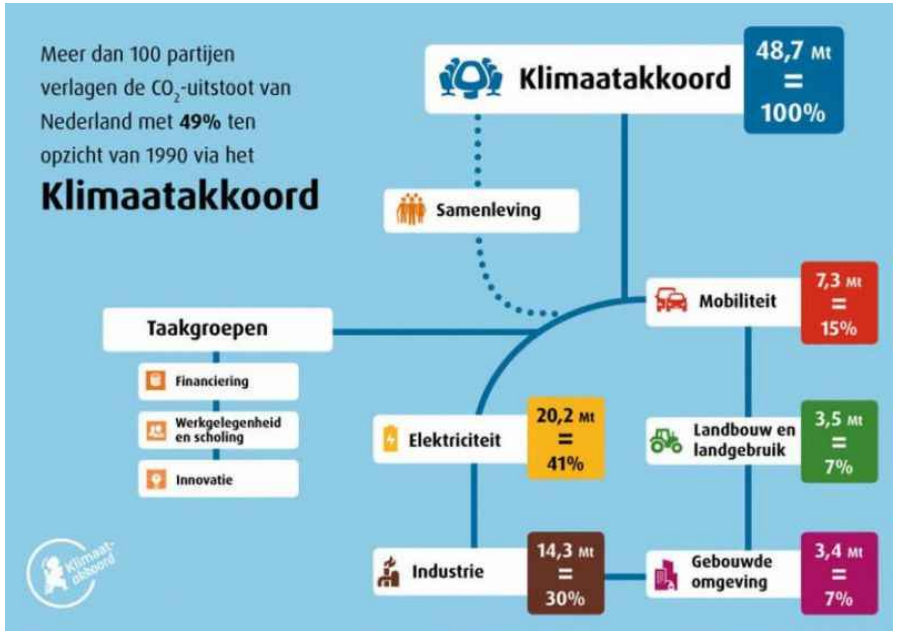
  2050: 100% CO_2 reduction &

  klimaatneutrality

- EC: Von der Leyen commission

  55% CO_2 reduction in 2030

  100% CO_2 reduction in 2050



Impact Grey Literature

- Montreal protocol – ozone layer (1988)
- Climate agreement (2015)
- Sustainable development goals (2015)

- Kunming-M Biodiversity Framework (2022)

5. Concluding remarks

In conclusion…

- Thank you!
  - ➢ Please continue your great work!
  - ➢ It should be known more widely!
- Change the world and start yourself!