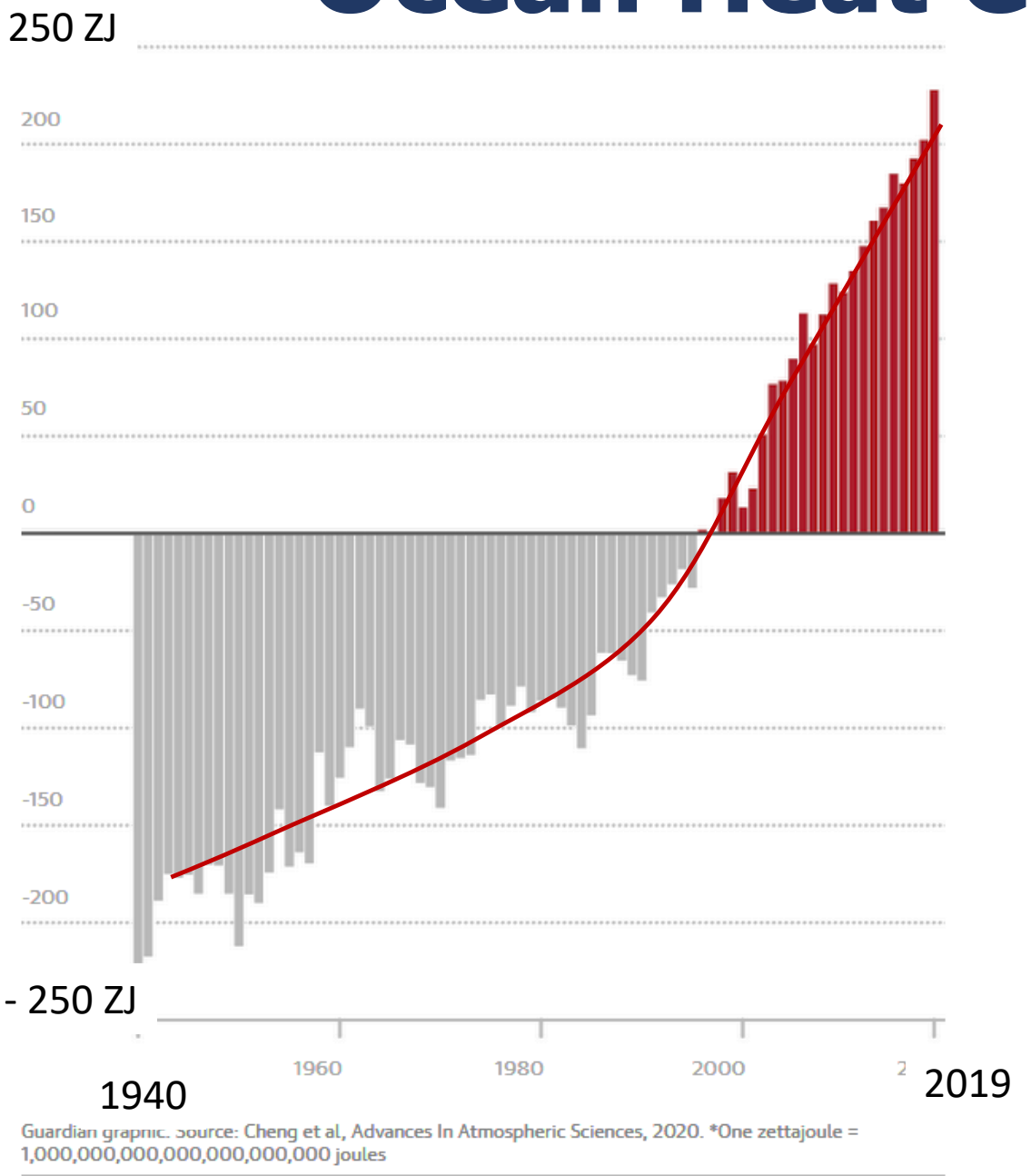
Climate Emergency

A Summary of 2019

- Met Office
  - Highest rainfall in 48hrs 250% of monthly av. (June – Lincs.)
  - Highest Feb. temperature 20.4^{o}C - Manchester
  - Highest Dec. temperature 18.7^{o}C – Sutherland
  - Highest recorded temperature 38.7^{o}C - Cambridgeshire
- PHE Estimated 900 additional deaths due to summer heatwave
- Copernicus (EU weather service)
  - Globally – hottest decade since records began
  - Globally – 1.15^{o}C above pre-industrial levels
- Globally – CO2 reached 415 ppm – the highest for 3 million years

Ocean Heat Content



90% of the heat trapped by Greenhouse gasses are absorbed by the Oceans

Because of its mass provides a more reliable measure than air temperature

2019 warmest year yet by far

Source: Advances in Atmospheric Sciences

Whaley Bridge Dam

Widespread Failures

“Climate change risks are high to very high, with a global mean temperature increase of 4°C … and include severe and widespread impacts on unique systems, substantial species extinction, and large risks to global and regional food security”

International Panel on Climate Change 2018

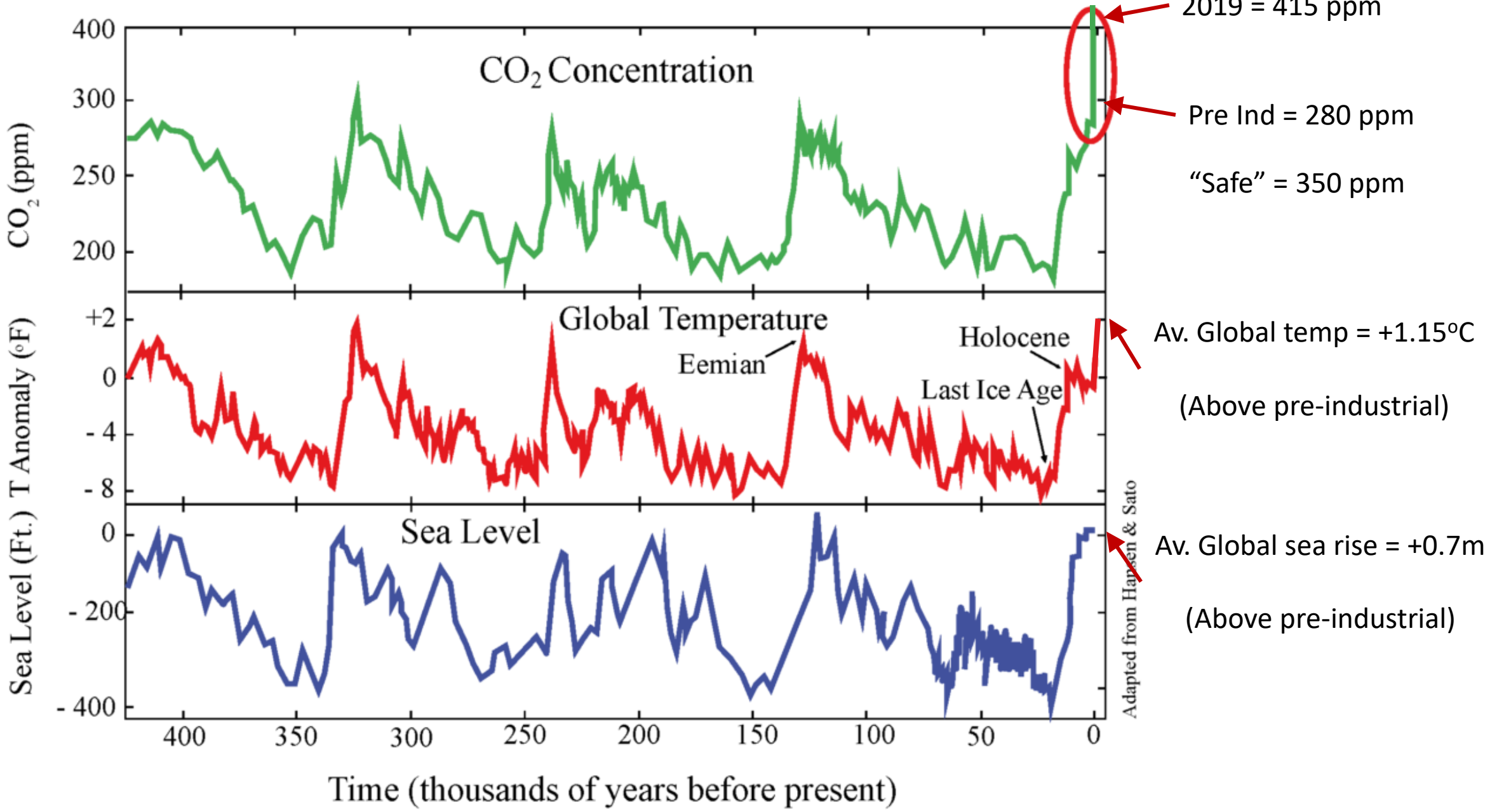
“The global financial system faces an existential threat from climate change and must take urgent steps to reform”

Mark Carney – Bank of England 2019

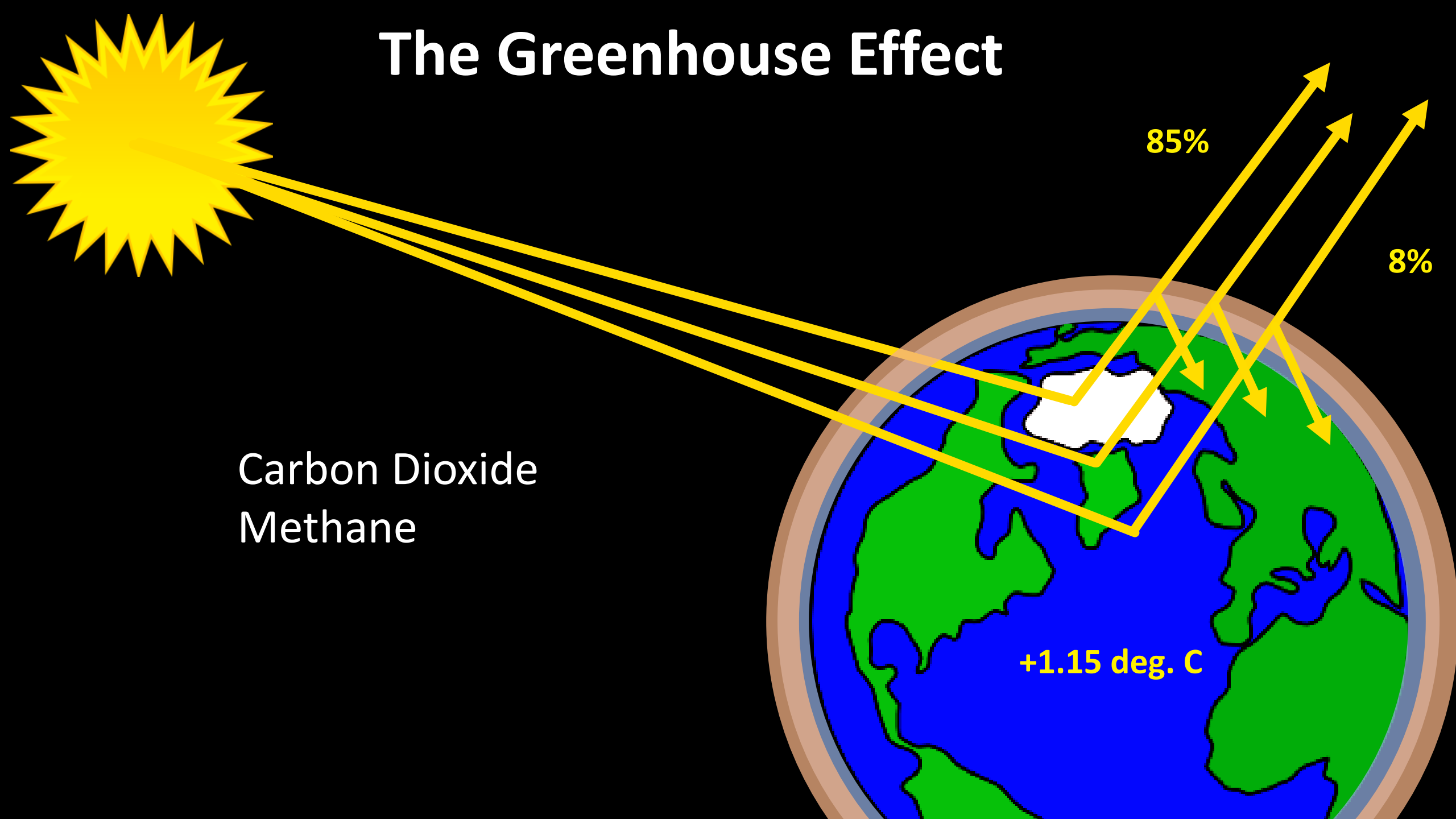
Simon Stevens, the chief executive of NHS England (21 Oct 2019)

“These new figures show air pollution is now causing thousands of strokes, cardiac arrests and asthma attacks, so it’s clear that the climate emergency is in fact also a health emergency”.

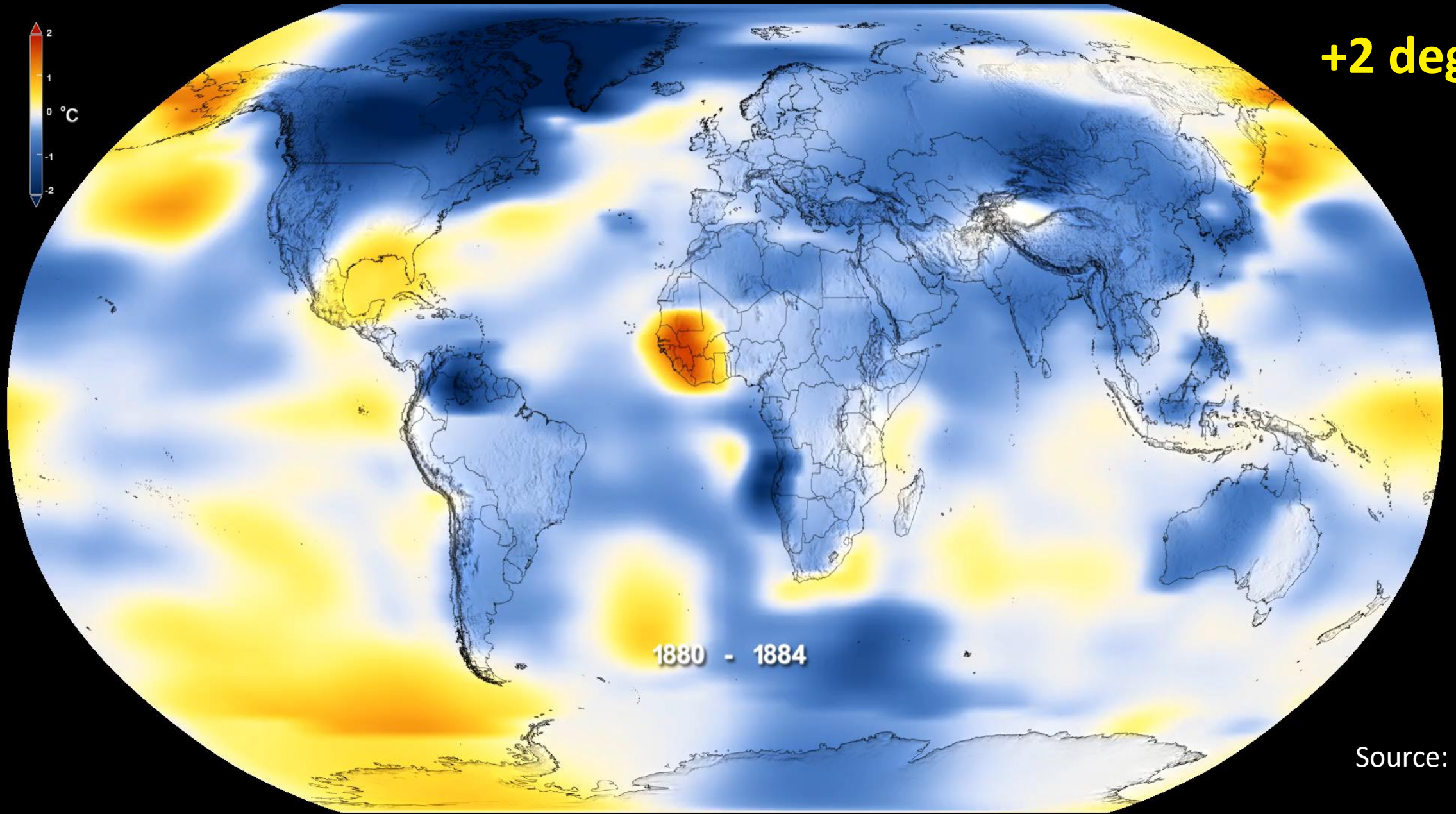
The Problem


2019 = 415 ppm
Pre Ind = 280 ppm
"Safe" = 350 ppm
Av. Global temp = +1.15°C
(Above pre-industrial)
Av. Global sea rise = +0.7m
(Above pre-industrial)
CO2 Concentration
CO2 (ppm)
400
300
250
200
Global Temperature
T Anomaly (°F)
+2
0
- 4
- 8
Eemian
Holocene
Last Ice Age
Sea Level
Sea Level (Ft.)
0
- 200
- 400
400
350
300
250
200
150
100
50
0
Time (thousands of years before present)
Adapted from Hansen & Sato

The Greenhouse Effect



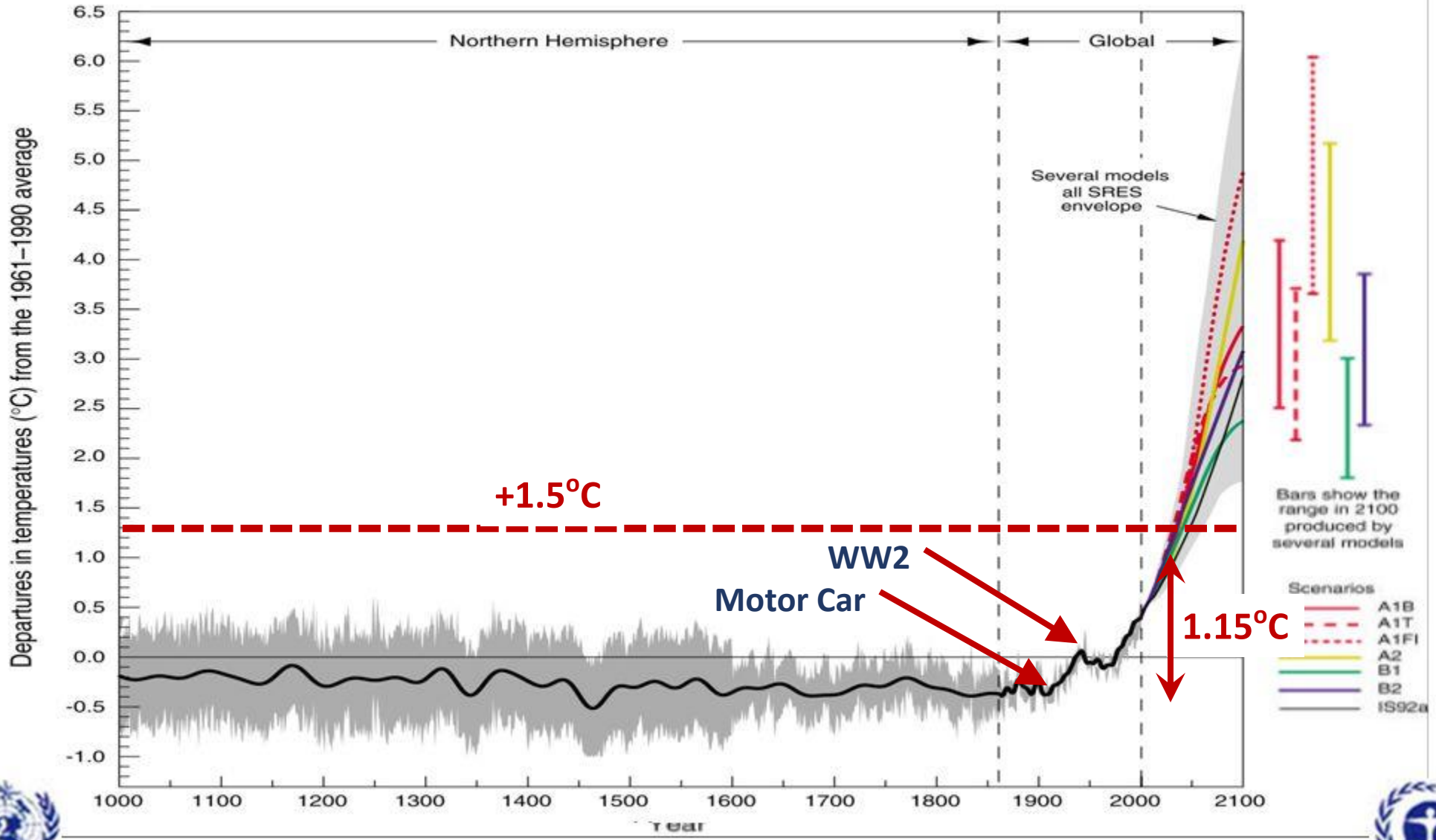
Global Temperature Change 1880 to 2016



+2 deg. C

Source: NASA

Global Mean Temperature Change



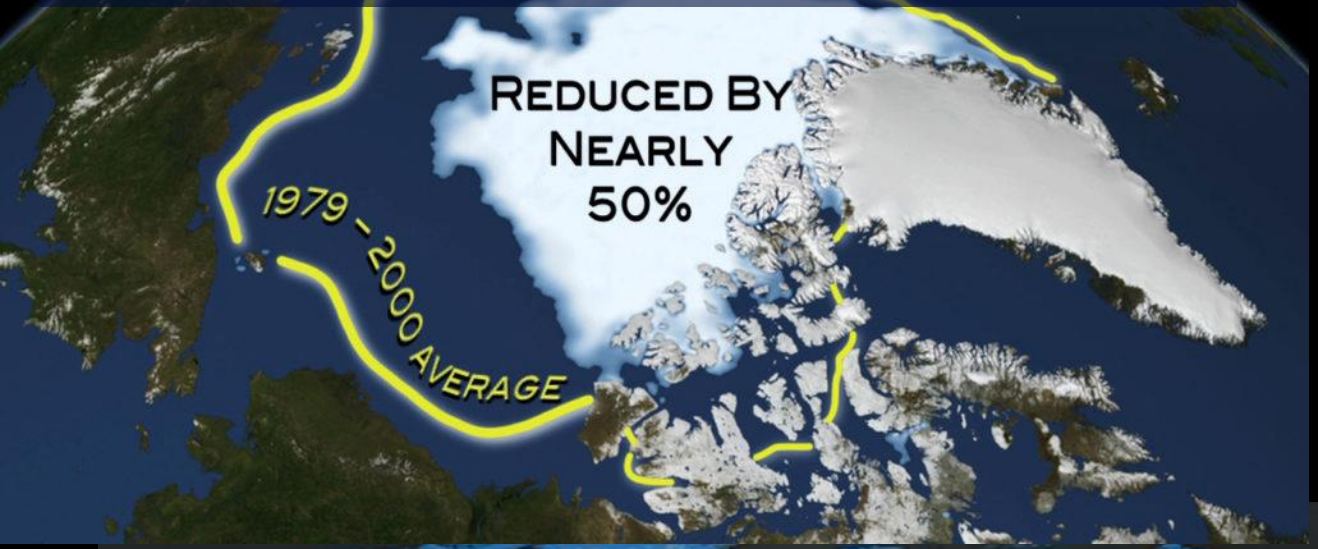
Why is a 1.5ºC rise dangerous?

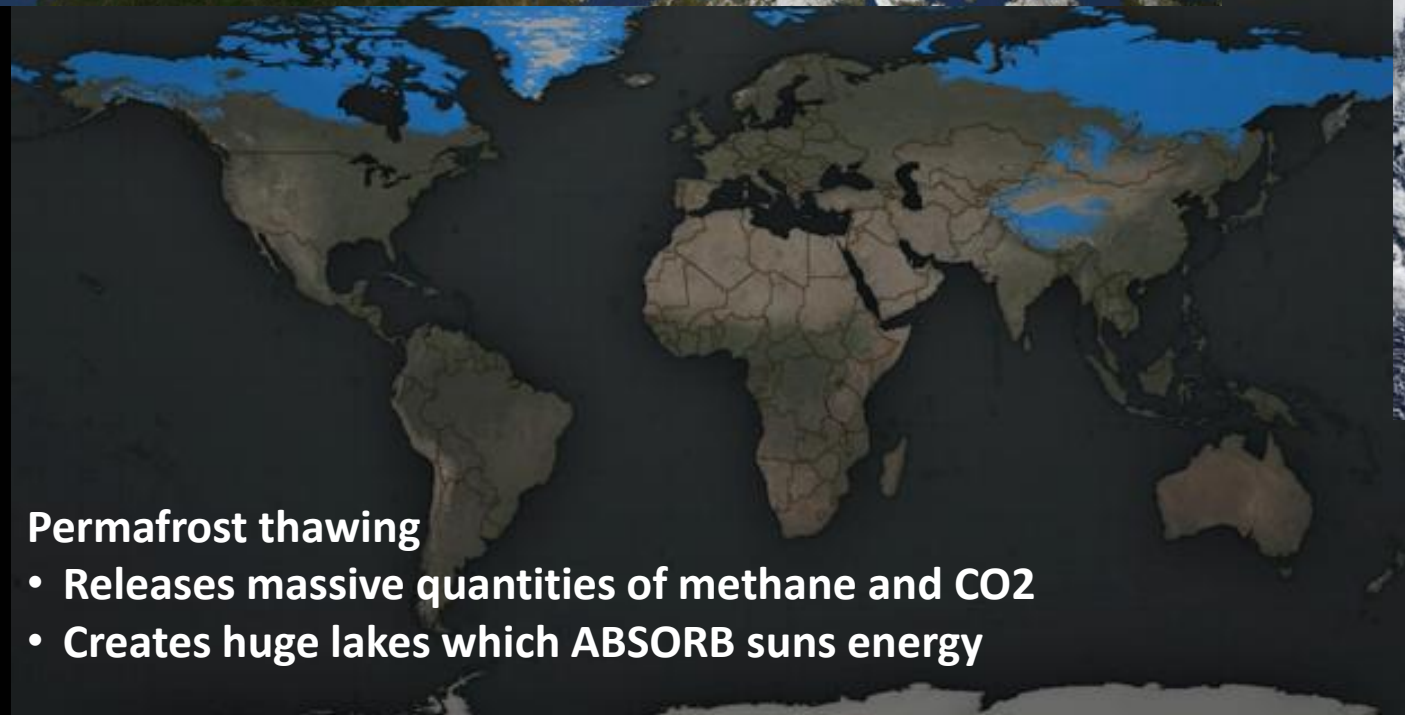
- "Tipping Points" accelerate change:
  - Ice Sheet melts - increased absorption of suns rays
  - Permafrost melts - releases CO_2 and methane (84 x CO_2)
  - Amazon rainforest collapses – biggest land sink of CO_2
- Becomes irreversible:
  - Accelerated loss of food production
  - Equatorial areas become uninhabitable
  - 1,000,000,000 refugees by 2050 (UN)
  - Knock on effects – migration, conflict (i.e. Syrian war)

Tipping Points

Artic Sea Ice melting

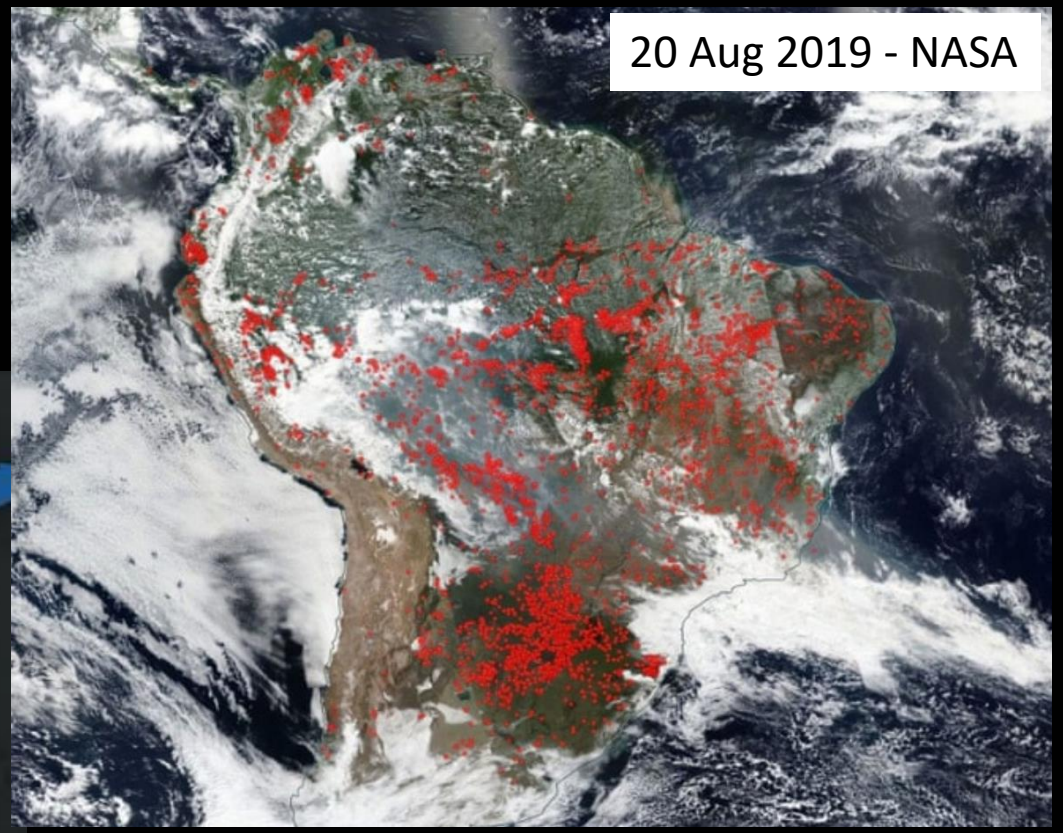
- **Warming sea releases frozen methane from sea bed**
- **Exposed ocean will ABSORB the suns energy**





Permafrost thawing

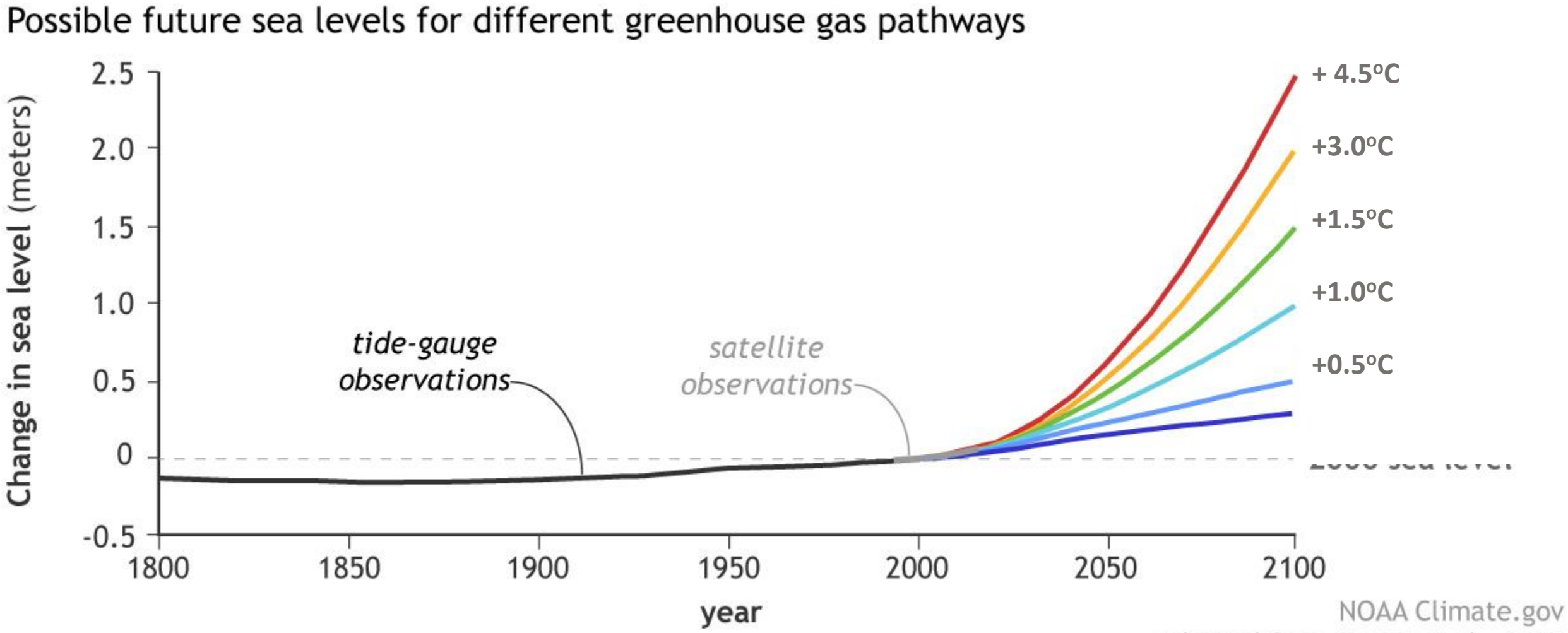
- **Releases massive quantities of methane and CO2**
- **Creates huge lakes which ABSORB suns energy**



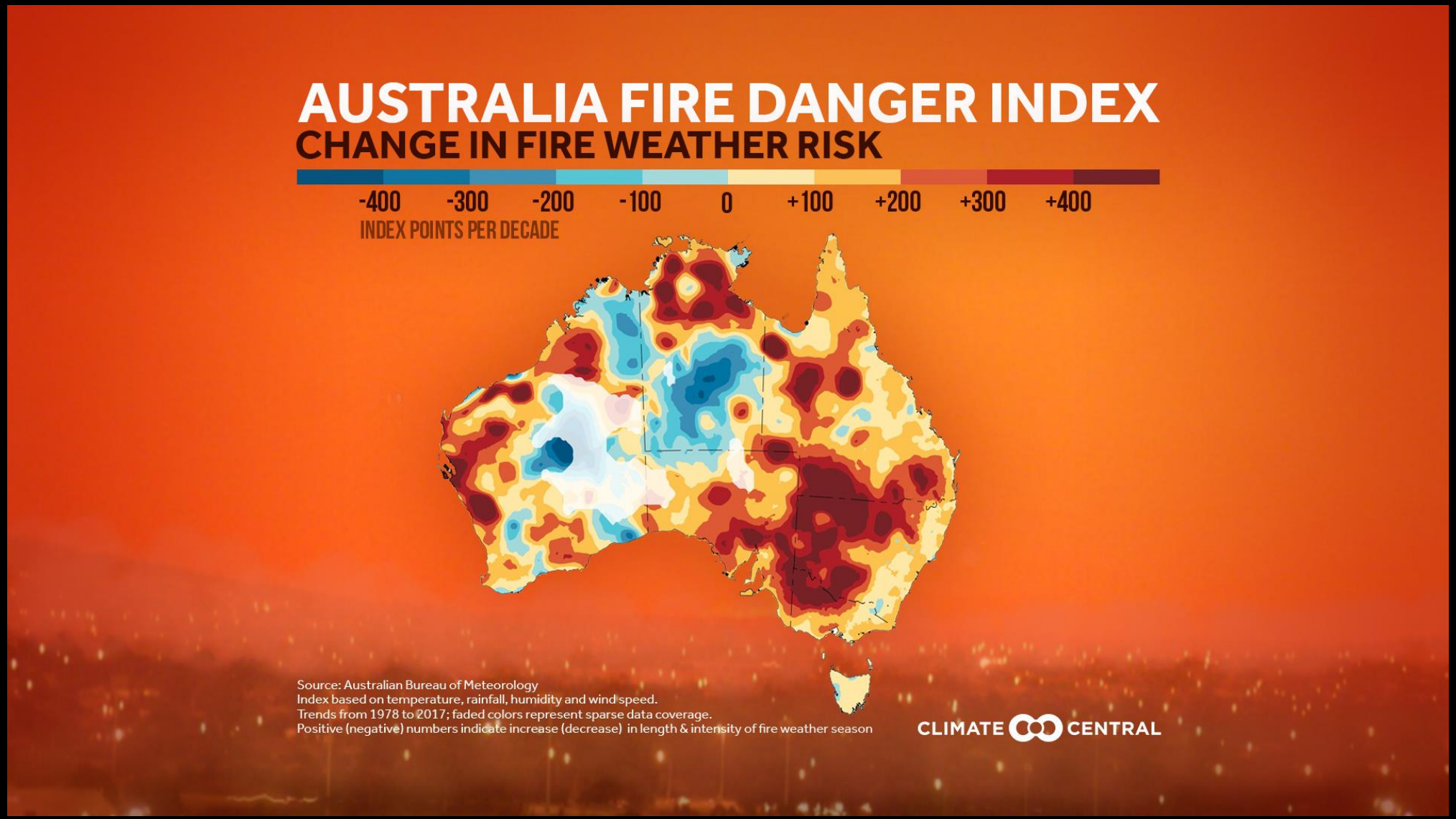
Amazon Rainforest collapse

- The largest land absorber of CO2
- Produces 20% of the worlds Oxygen

Global Sea Level Rise



Impact



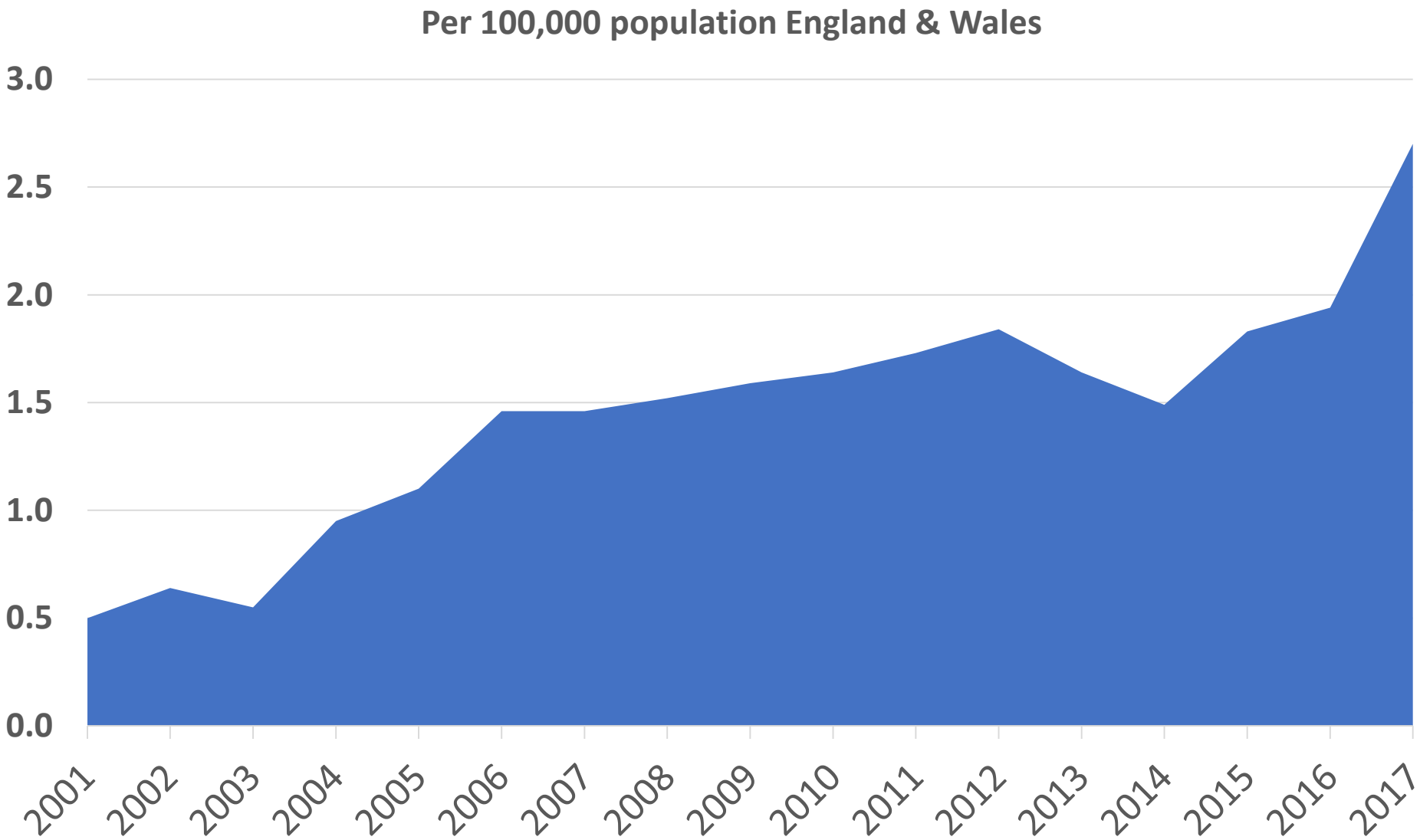
Source: Australian Bureau of Meteorology

Humanitarian disasters will rise to over
200 million people a year
Aid costs will rise to over £20b a year
International Red Cross 2019

UK Climate Change Committee Identifies

Risk	Impact by 2050 (in UK)
to Health from high temperature	There are currently 2,000 deaths a year in the UK due to heat. This number will increase by 257%.
from Flooding	Fatality, accident and mental health (PTSD) will rise by 78%.
to Health and Social Care delivery	Hospitals at risk of flooding increases to 200. Care homes at risk of flooding increases to 1,454.
from Air Quality	Up to 9 million people suffer from asthma and COPD. Particulates (PM10, PM2.5) have a higher health risk at higher temperatures. More work is required to quantify.
from vector borne pathogens	Lyme Disease will increase. It is only a matter of time before infectious mosquitos reach the UK.
poor water quality	Outbreaks of cryptosporidiosis are linked to heavy rainfall. Harmful water phytoplankton is temperature related.

Increase in temperature and humidity increases insect borne disease



Source: PHE

Particulates (Diesel)

Reducing a major contributor to climate change would dramatically reduce:

- 9,000,000 cases of asthma / COPD in the UK
- 40,000 deaths caused by air pollution in the UK every year

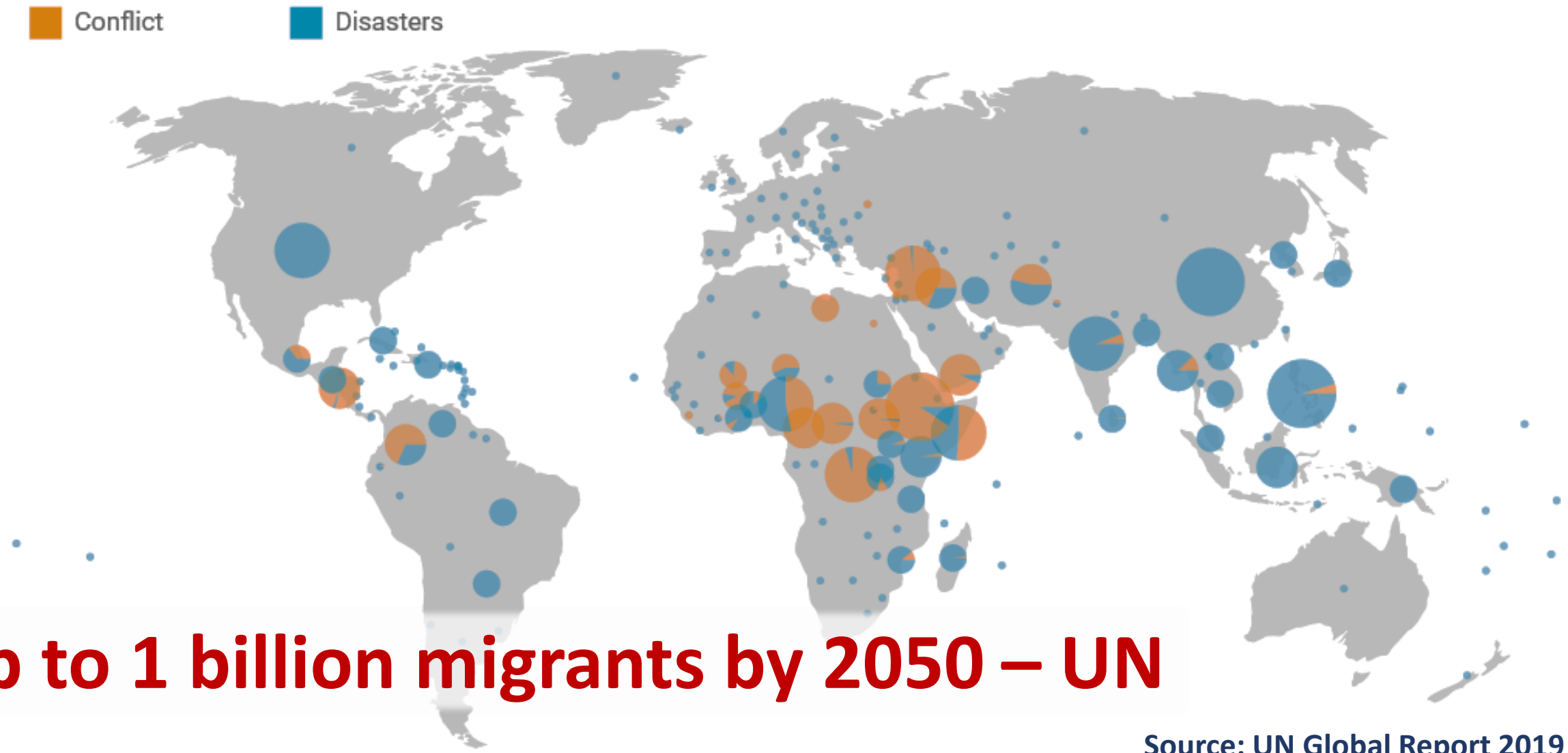
Source - NHS

Displacement

Displacement 2018

17,200,000 - Disasters

10,800,000 - Conflict



Up to 1 billion migrants by 2050 – UN

Source: UN Global Report 2019

What is the response?

- UK Climate Change Act 2008 provides for 80% CO_2reduction by 2050
  - Reviewed and restated every five years by UK Committee on Climate Change
- Paris Climate Agreement (2016) committed all nations to:
  - Keeping a global temperature rise to below 2^{o}C and pursue efforts to limit it to 1.5^{o}C
- IPCC Report 2018 (International Panel on Climate Change)
  - We have until 2030 to halve our carbon emissions
  - We have until 2050 to cease / mitigate them altogether
- Theresa May Act - Jun 2019
  - 100% reduction by 2050
  - Excludes Shipping, Aviation, Imports and Permits “Carbon Credits”
- Currently Government is not taking enough action

Zero Carbon Target

The IPCC

- has set a target for the UK to be Zero-Carbon by 2045

The UK Government

- has set a target to be Zero-Carbon by 2050

Cheshire West and Chester Council

- has set a target to be Zero-Carbon by 2030

Cheshire West and Chester Council

- is asking all organisations to become Zero-Carbon before 2045

NHS

Generates 42.5 million tons of CO2 every year

This is 5.4% of the annual emissions for the UK

In addition 5% of all journeys are health related.

In total the NHS is responsible for 7% of UK annual emissions

- about **600,000** cases of asthma / COPD
- about **2,800** deaths

On 26 June 2019 BMA declared

“a climate emergency and campaign for carbon neutrality by 2030”

Carbon Awards

- Carbon Literacy rolled out to all staff 20 points
- Business purchases all energy from renewable sources 10 points
- Business promotes active travel for staff 10 points
- Low carbon working operational (electric vehicles/video conf.) 10 points
- Policies in place and working to reduce carbon in procurement 10 points
- For establishments with canteens, meat free three days a week 10 points
- Carbon Footprint measured, plan to be carbon neutral in place and monitored annually 2030 = 30 points, 2040 = 20 points, 2050 = 10 points

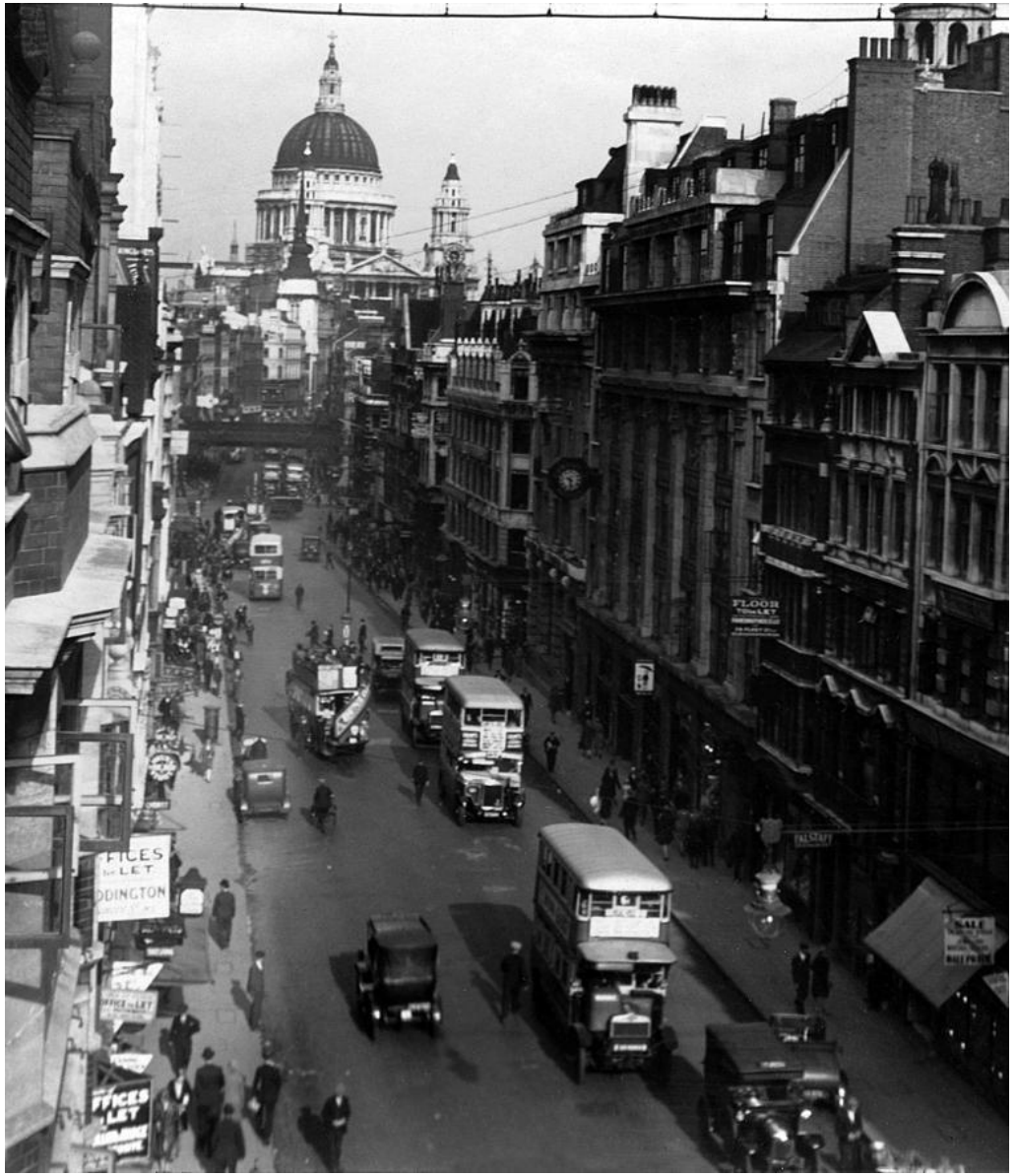
Gold award 90 or over points

Silver award 60 or over points

Bronze award 30 or over points.

Change can happen

1905



1925

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Greggs

Greggs to pay workers £7m bonus after vegan sausage roll success

Bakery chain's 25,000 employees will receive up to £300 in this month's pay packet

Sarah Butler

@whatbutlersaw

Wed 8 Jan 2020 08.12 GMT

3,071

▲ Greggs has more than 2,000 outlets around the UK. Photograph: Pat Tuson/Alamy Stock Photo

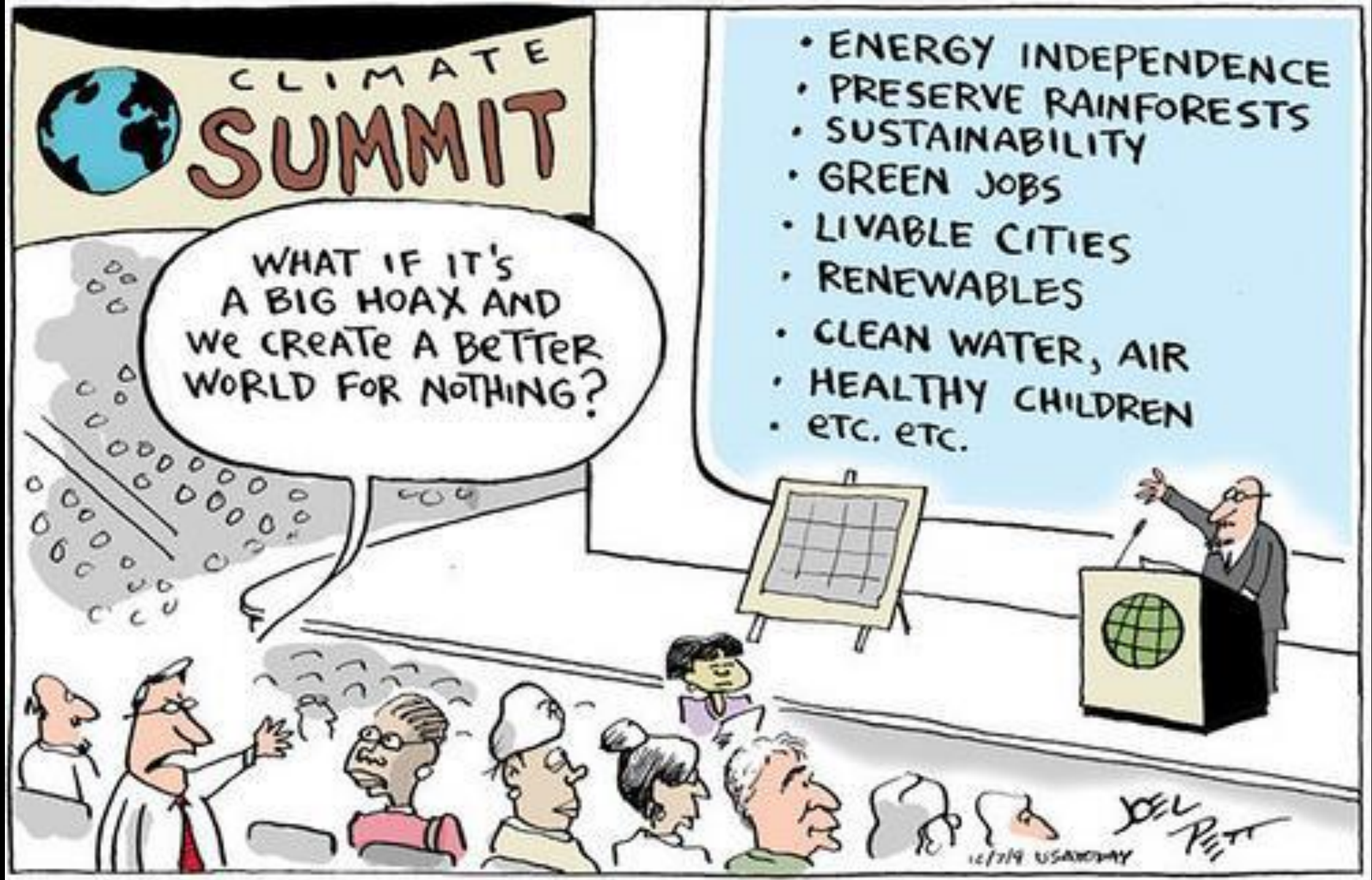
Employees at Greggs are being rewarded with a £7m special bonus after the hugely successful launch of the bakery chain's vegan sausage roll last year boosted sales and profits.

Discussion / Actions

What can you organisation do?

- Nominate a Carbon Champion / Roll out Carbon Literacy
- Develop a plan to be carbon neutral ASAP before 2045
- Switch to a renewable energy supplier - QWest
- Develop and launch a carbon recognition scheme
- Engage and motivate your staff on the carbon challenge
- ??

Zero Carbon 2045
= 15% Carbon reduction every year


CLIMATE
SUMMIT
WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?
• ENERGY INDEPENDENCE
• PRESERVE RAINFORESTS
• SUSTAINABILITY
• GREEN JOBS
• LIVABLE CITIES
• RENEWABLES
• CLEAN WATER, AIR
• HEALTHY CHILDREN
• ETC. ETC.
JOEL PETT

Carbon Literacy

General Resources

- International Panel on Climate Change IPCC
- Climate Change Committee CCC
- NASA / NOAA NASA NOAA
- Tyndall Centre Tyndall Centre
- Climate Central Climate Central
- Carbon Brief Carbon Brief
- Greenpeace Greenpeace
- World Wildlife Fund WWF

Technical Resources

• Climate Change	The Climate Group
• Renewable Energy	RE100
• Carbon Footprinting	Greenstone GHG Protocol Scatter
• Climate Change Training	Carbon Literacy Training

BEIS / DEFRA: Guidance on how to measure and report Greenhouse Gas Emissions

Emission-releasing activity	Source of information
Electricity use	Total kilowatt hours used from electricity bills
Natural gas use	Total kilowatt hours used from gas bills
Water supply	Total water supplied in cubic metres (m^3) from water bill
Water treatment	Total water treated in cubic metres (m^3) from water bill
Fuel used in company owned vehicles	Litres of fuel purchased from invoices and receipts (more accurate); or Vehicle mileage from vehicle log books/odometers (less accurate)
Employee passenger travel	Employee receipts for details of travel, and Use distance calculation websites to obtain flight, rail and road distances
Waste disposal/recycling	Tonnes of waste-to-landfill and recycled from waste collection provider

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- ?