

# CLIMATE CHANGE

Michael Fish



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EFFECTS ON NOTTINGHAM

# IMPORTANT IMPACTS

- Warmer and wetter winters. Less snow and ice
- Hotter and drier summers

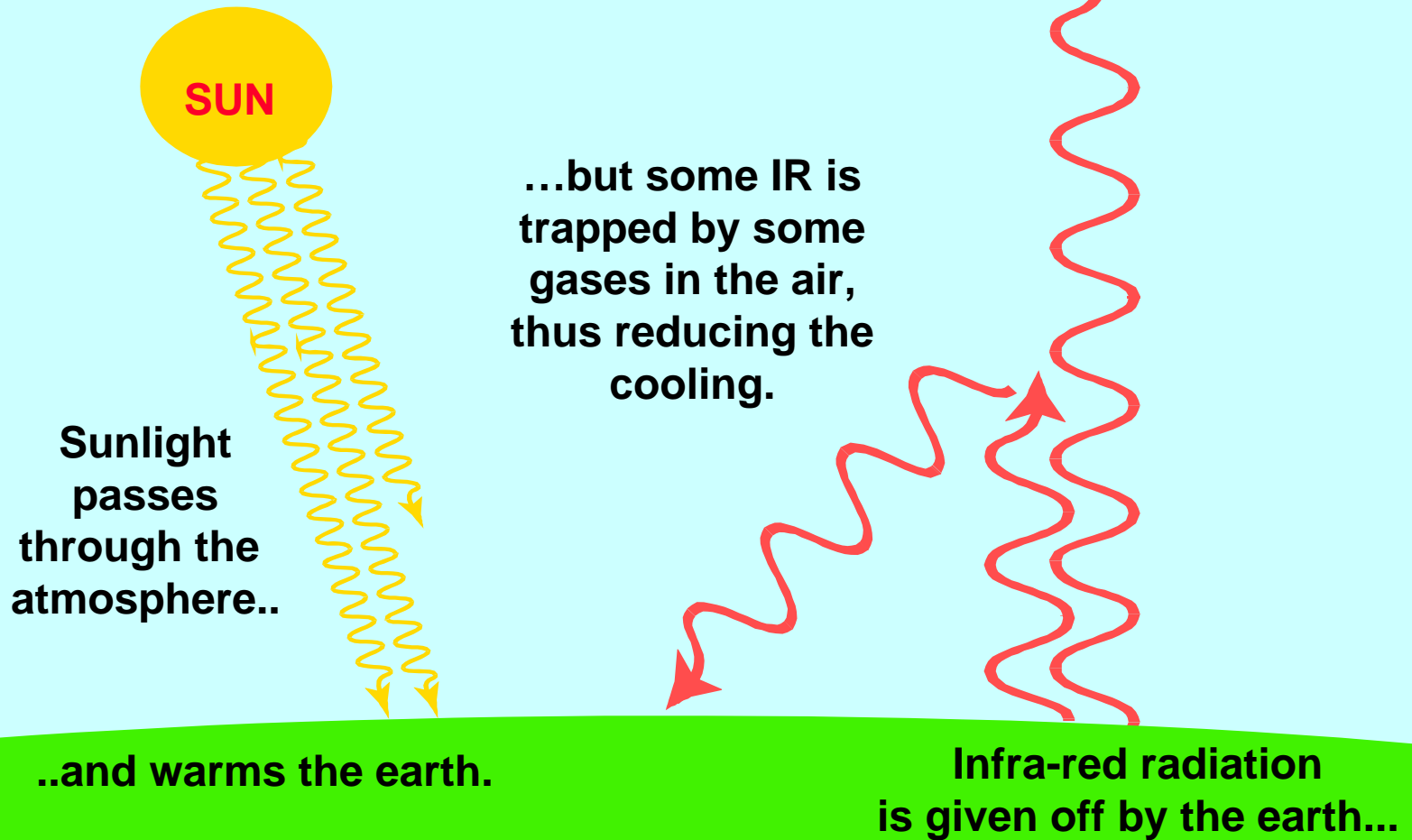
# IMPORTANT IMPACTS

- Damage to environment and local economy
- Disruptions to business and transport
- Changes to lifestyle

# IMPORTANT IMPACTS

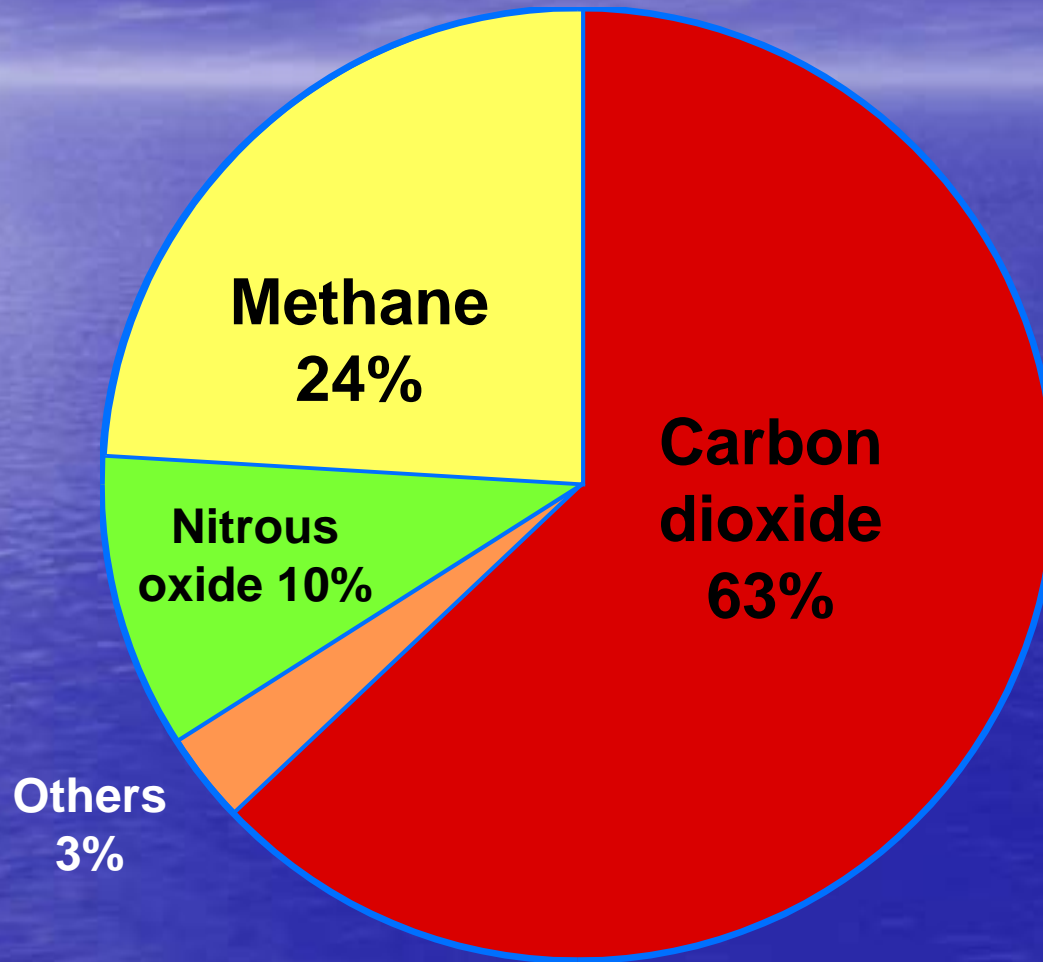
- Problems with water supply
- Increased flood risk
- Heat damage, storm damage, subsidence
- Less electricity demand in winter but more in summer
- New pests and diseases
- Loss of wildlife and habitats

# THE GREENHOUSE EFFECT



# RELATIVE WARMING OF GREENHOUSE GASES

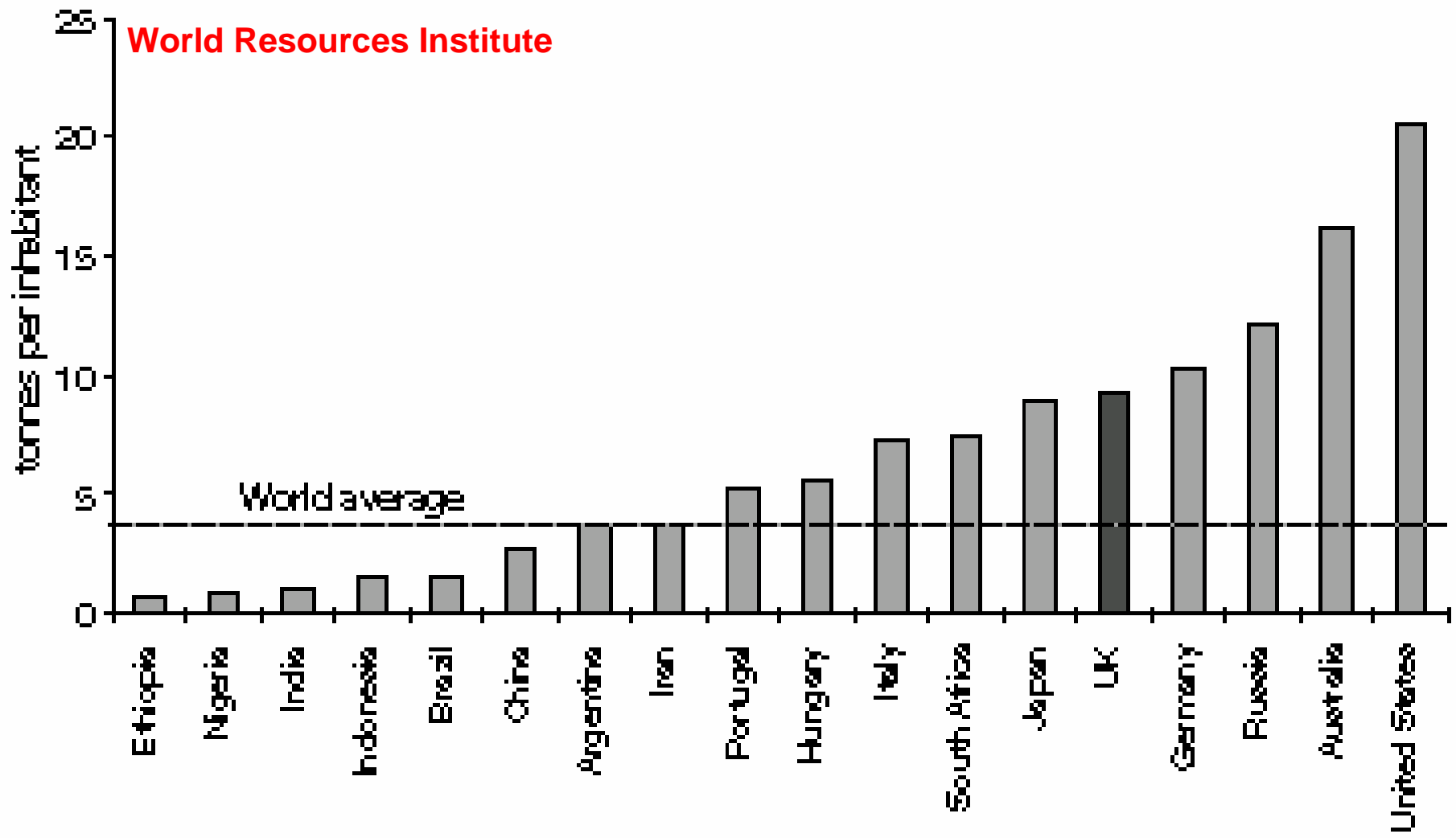
current emissions, effect over next 100 years



# CARBON DIOXIDE (CO<sub>2</sub>)

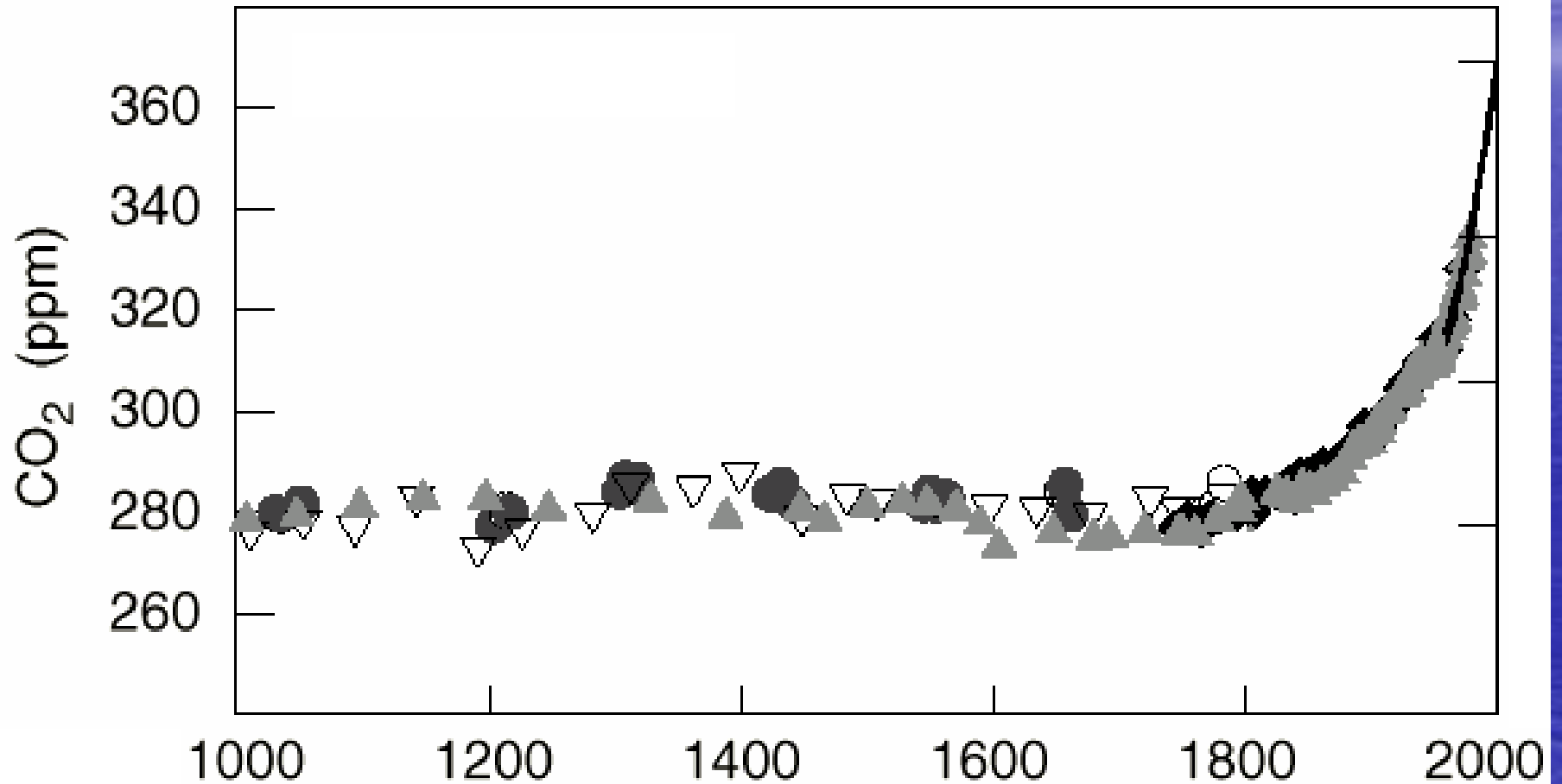
- The most important man-made greenhouse gas
- About half of the CO<sub>2</sub> emitted by Man remains in the atmosphere; remainder absorbed by vegetation and oceans
- CO<sub>2</sub> risen by 1/3 since the industrial revolution
- CO<sub>2</sub> emissions would have to be reduced by about 70% to stabilise climate change

# 1995 PER CAPITA EMISSIONS OF CO<sub>2</sub>



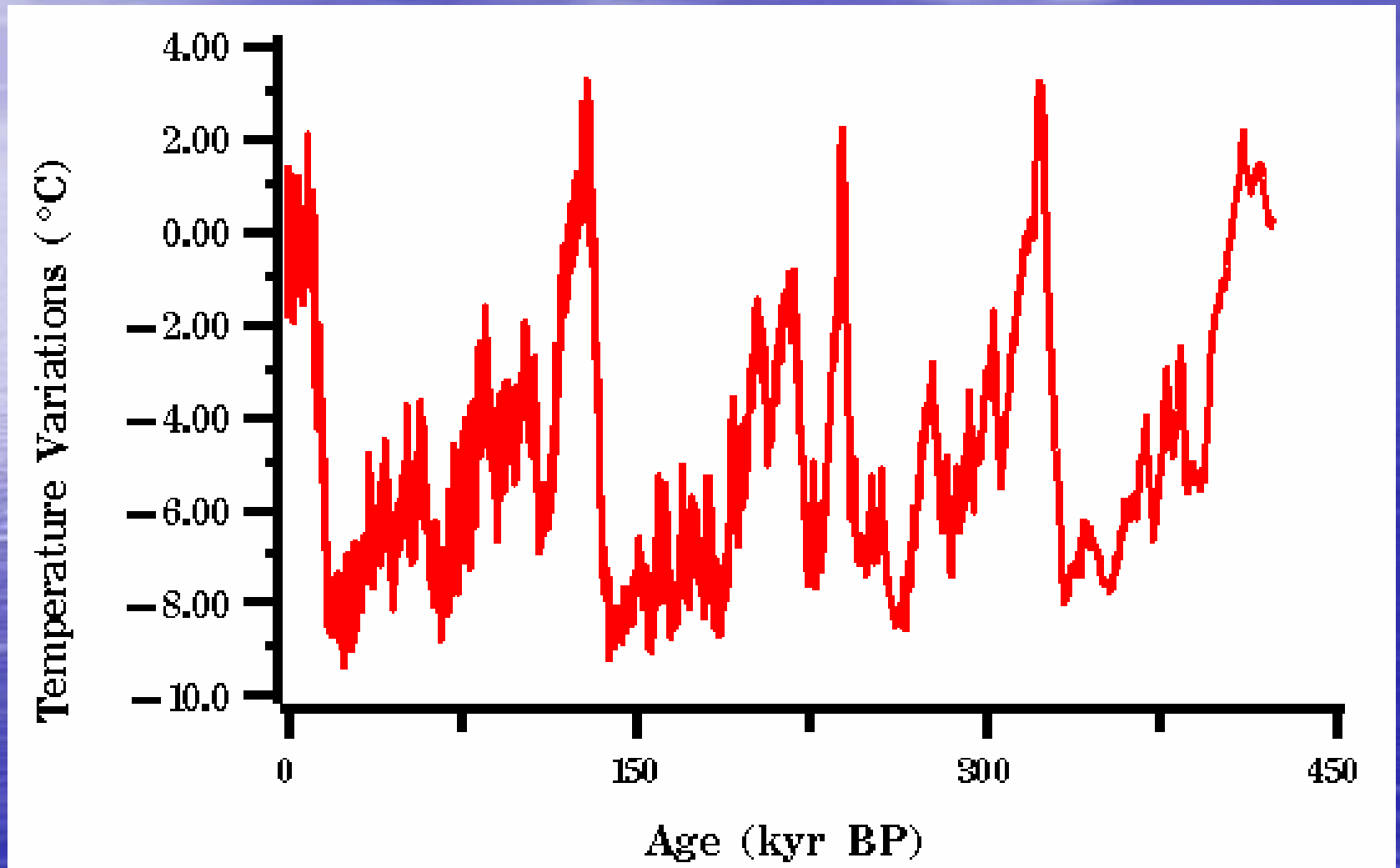
# CARBON DIOXIDE IN THE ATMOSPHERE

has risen by over 30% due to human activities

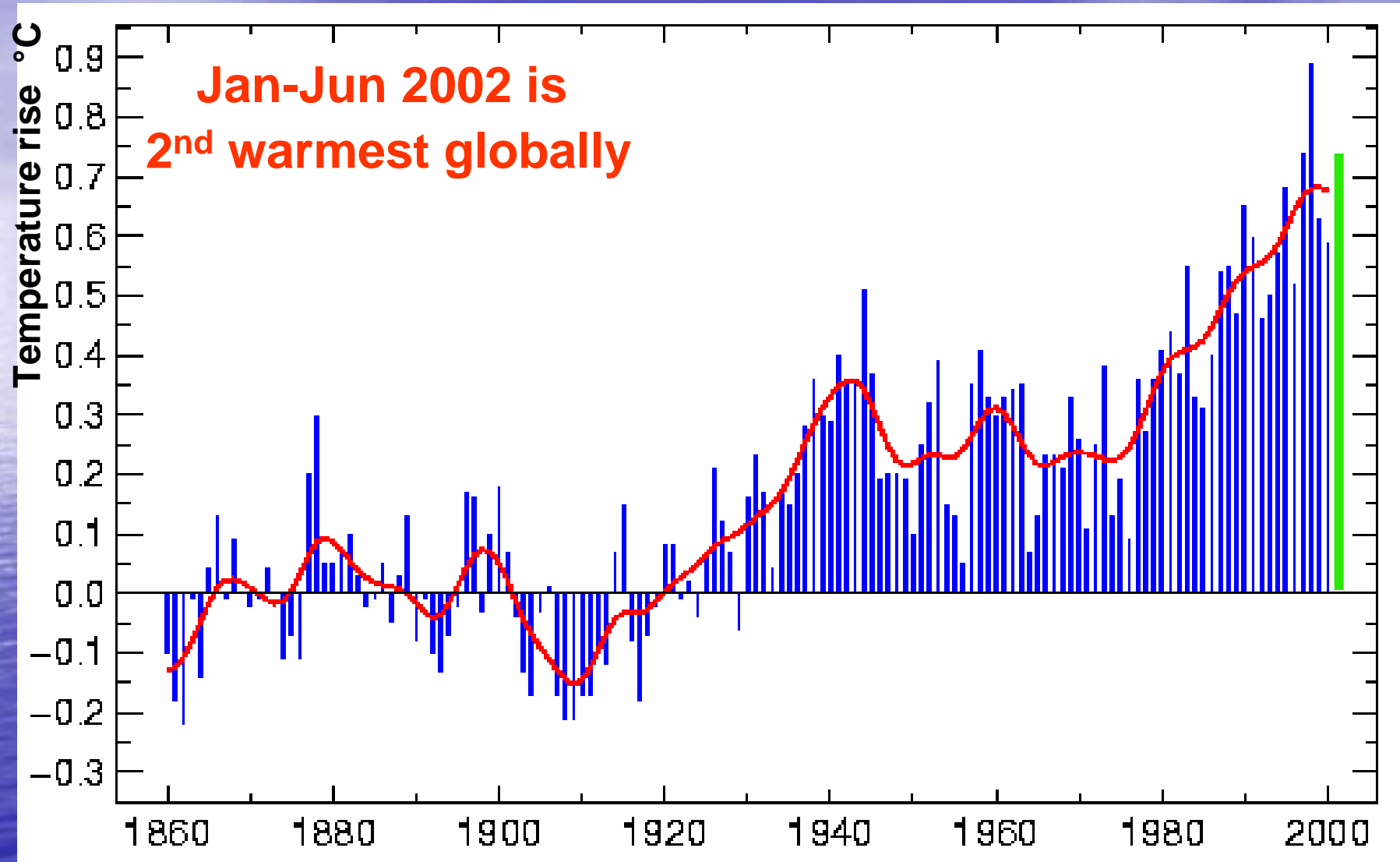


# TEMPERATURES OVER 450,000 YEARS

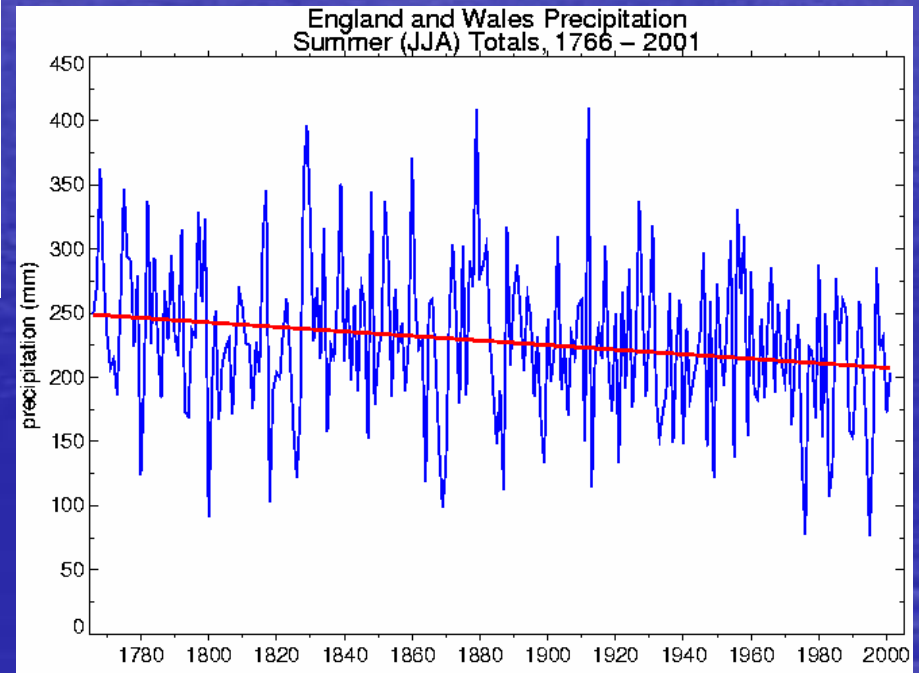
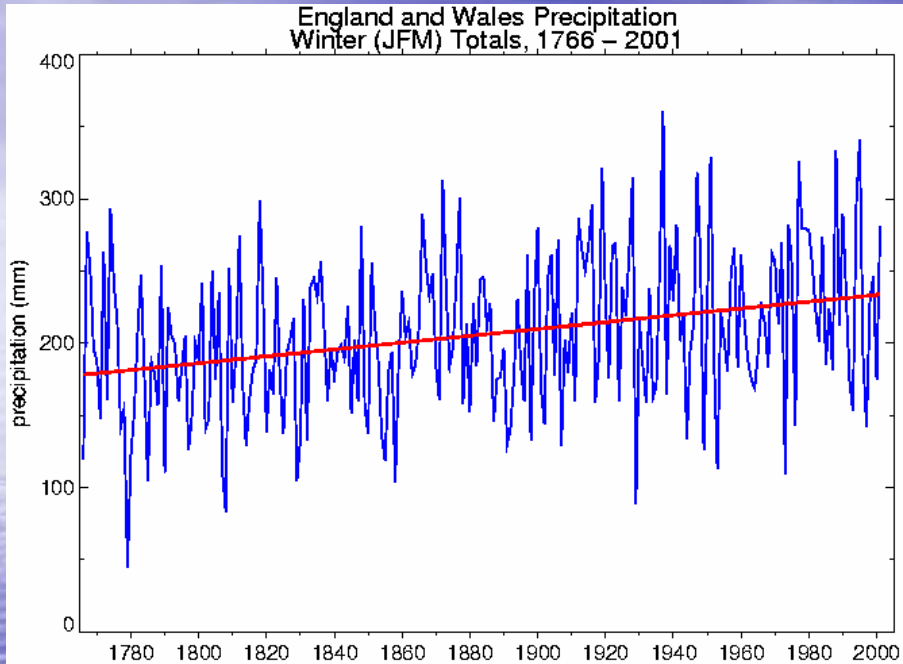
measured in ice cores from Vostok, Antarctica



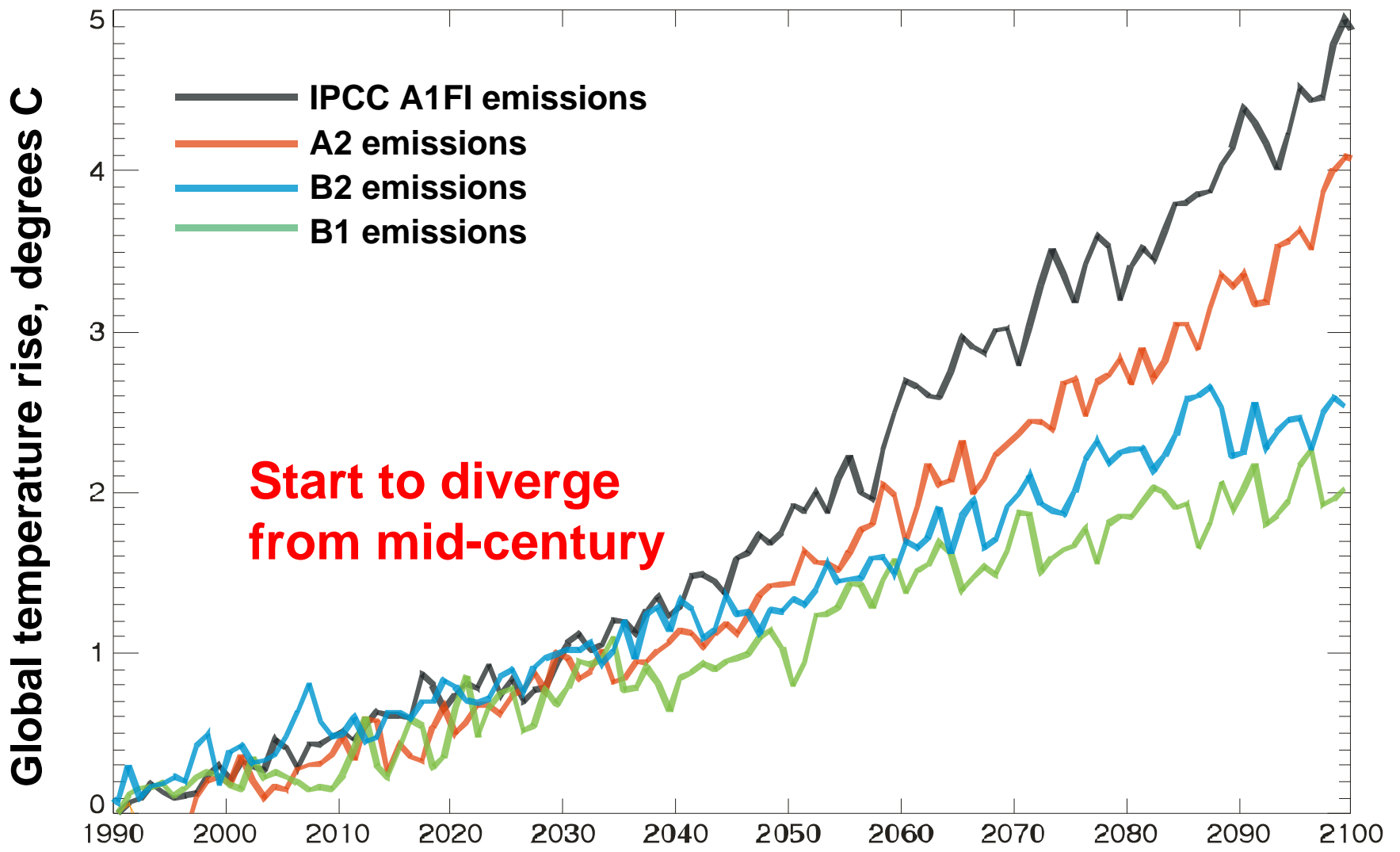
# GLOBAL TEMPERATURES 1860-2001



# ENGLAND & WALES SEASONAL RAINFALL

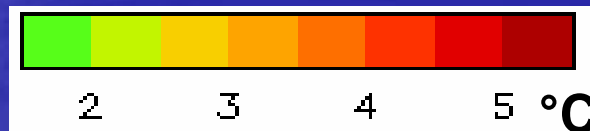
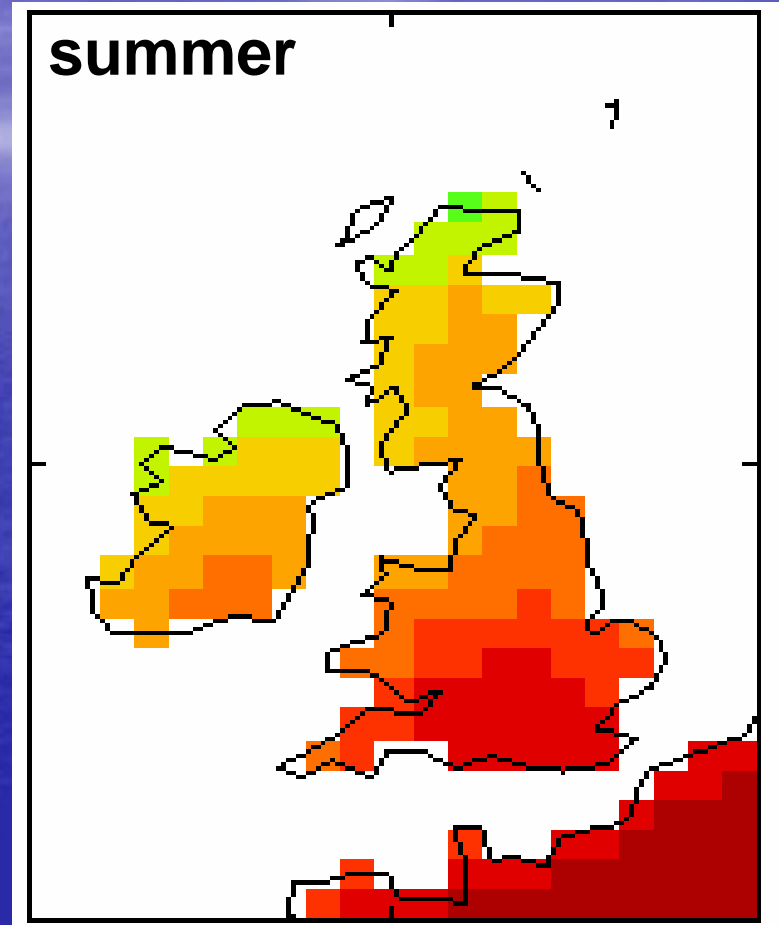
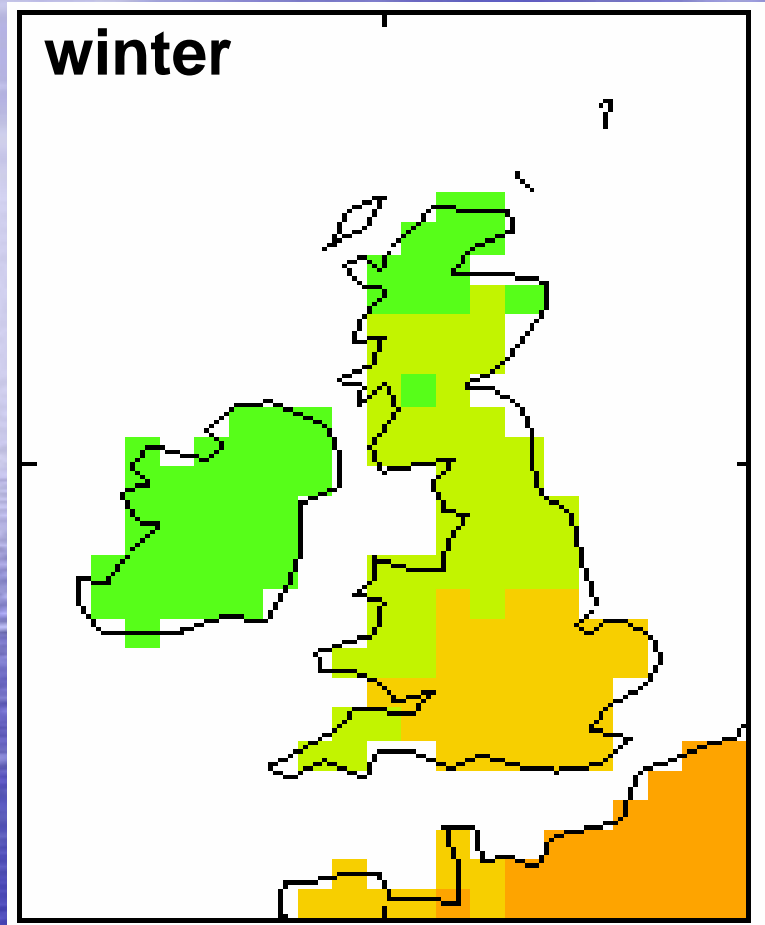


# GLOBAL TEMPERATURE RISE



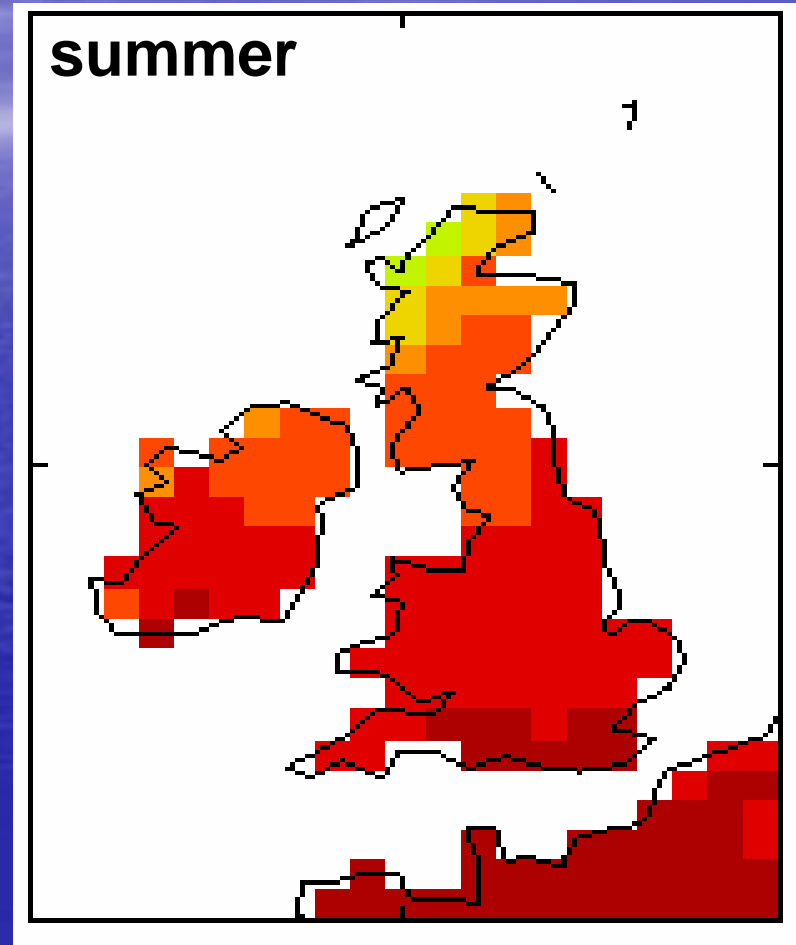
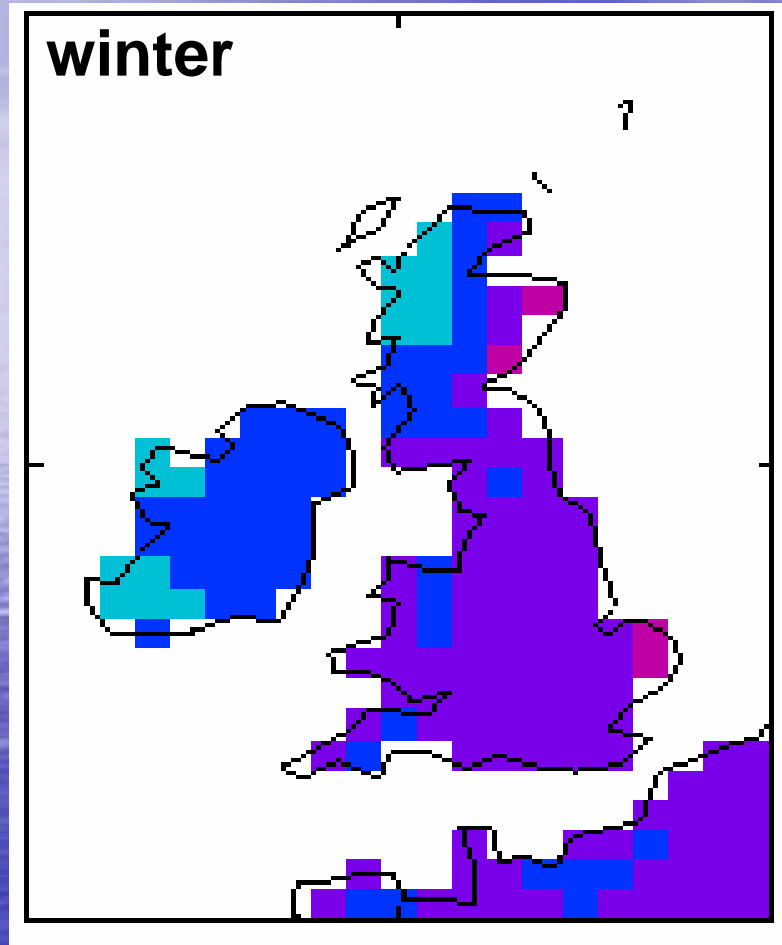
# TEMPERATURE RISE

Medium-high emissions scenario, 2080s



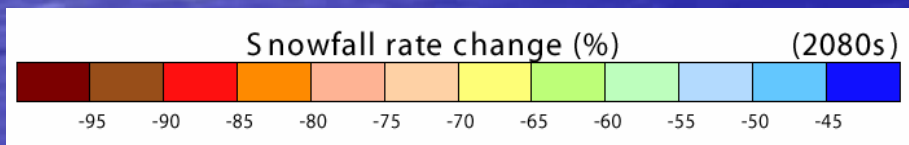
# CHANGE IN PRECIPITATION

Medium-high emissions scenario, 2080s



# CHANGE IN WINTER SNOWFALL RATE

(medium-high emissions,  
2080s)



Hadley Centre

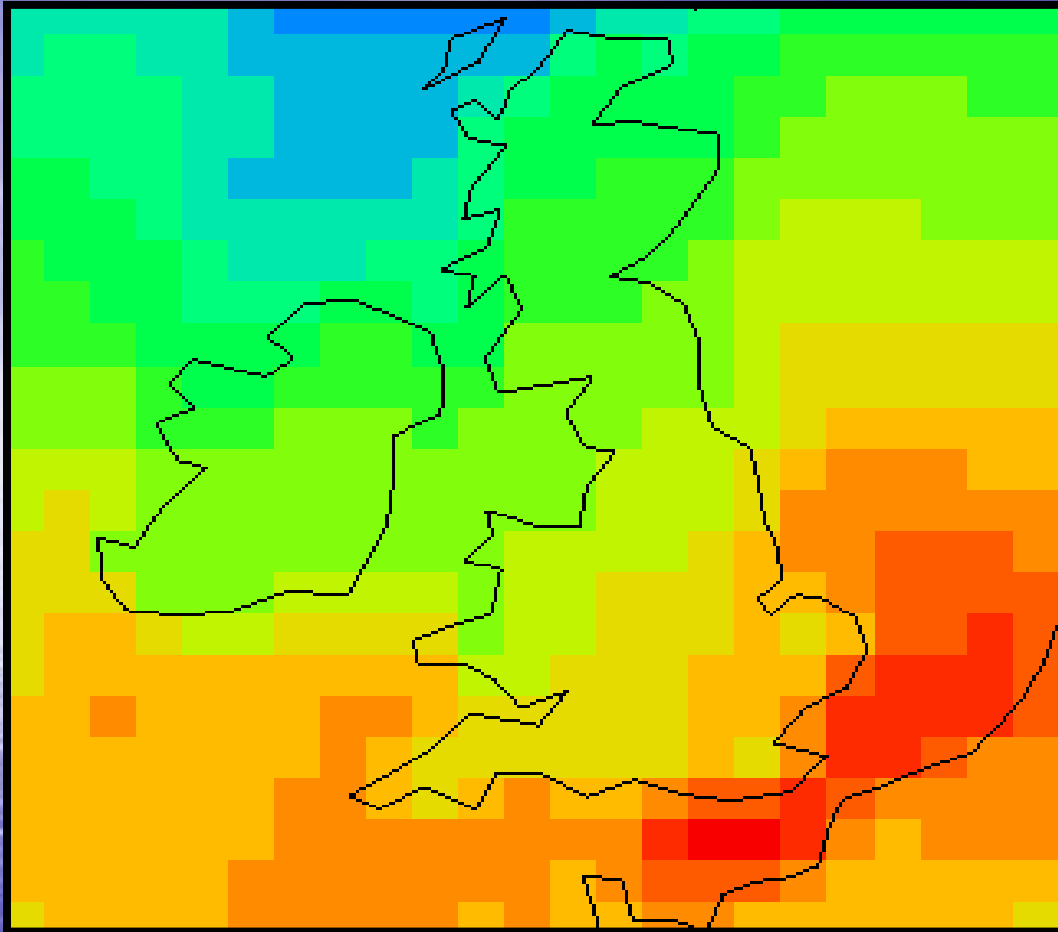
Tyndall<sup>o</sup>Centre  
for Climate Change Research

**DEFRA**  
Department for  
**Environment,**  
**Food & Rural Affairs**

# CHANGE IN MEAN WINTER WIND SPEED

2080s minus  
recent climate

A2 emissions

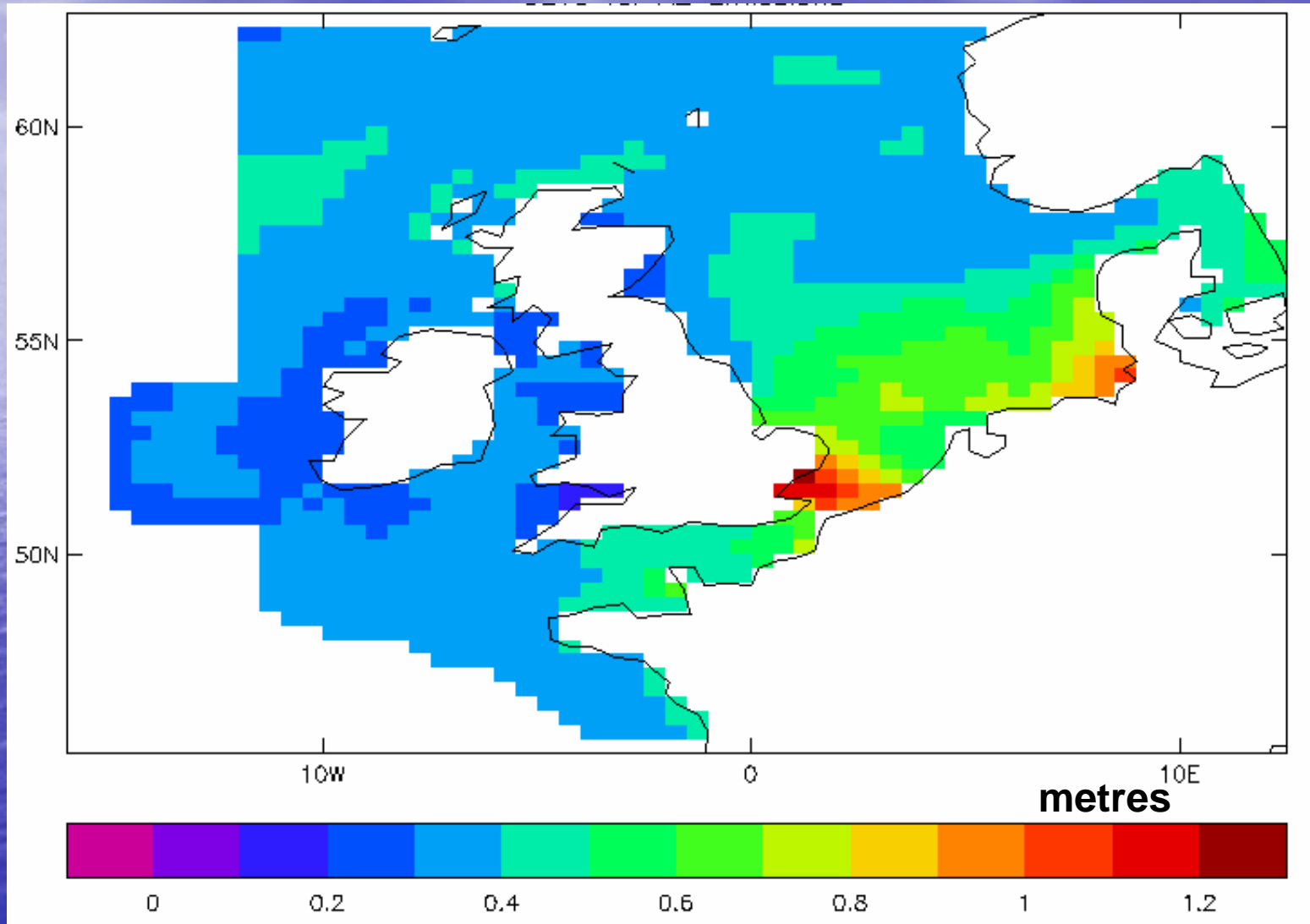


-0.9    -0.6    -0.3    0    0.3    0.6    0.9

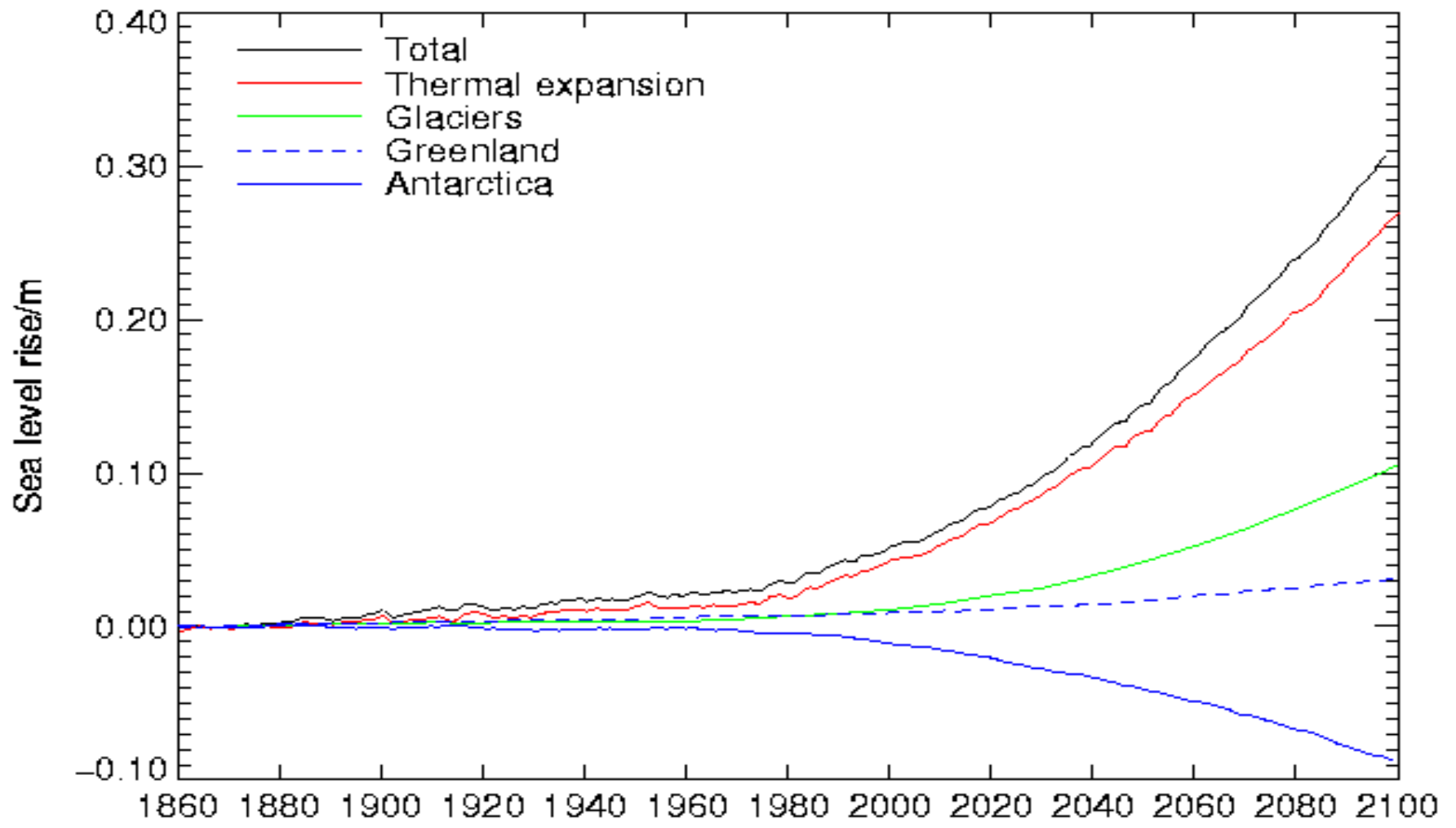
Metres per second

# CHANGE IN STORM SURGE HEIGHT

50yr return period; 2080s A2 emissions



# COMPONENTS OF SEA LEVEL RISE



# IMPACTS ON THE UK

- Coastal flooding from sea-level rise



- River flooding from more heavy rain



events

- Health risks



- Water supply threatened by droughts



- Increased storminess?

# GLOBAL IMPACTS

- Risk of illness
- Risk of flooding
- Change in seasons
- Discomfort
- Greater risk of skin cancer

# GLOBAL IMPACTS

- Tourism major contributor (road transport 50%, air 5%)
- Air travel is 2 or 3 times more polluting
- 594 million travellers in 1996
- 702 million in 2000
- 1018 million by 2010
- 1600 million by 2020!!