

C20: World Cities Climate Change Summit

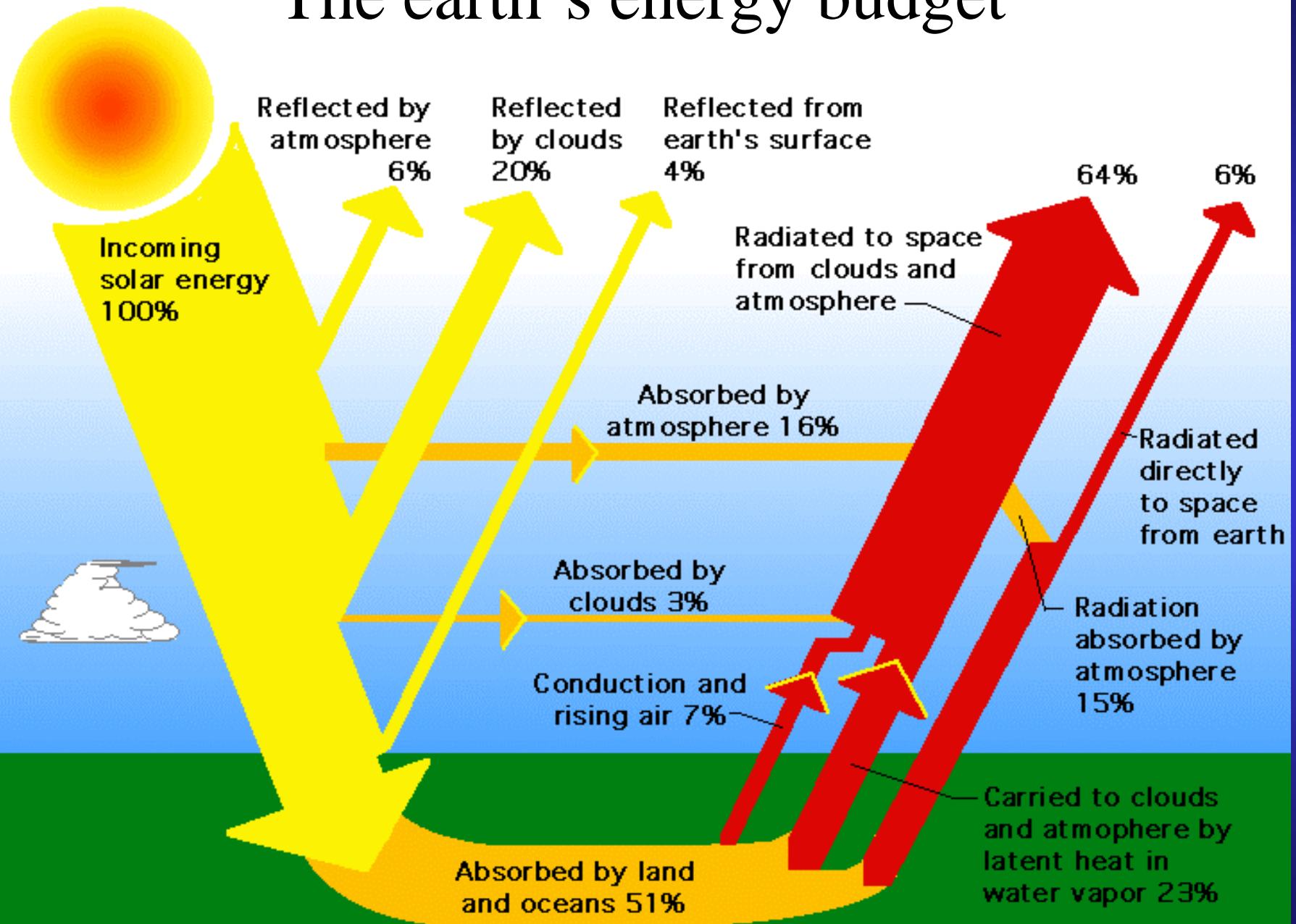
The science of climate change:
adapt, mitigate or ignore?

Sir David King

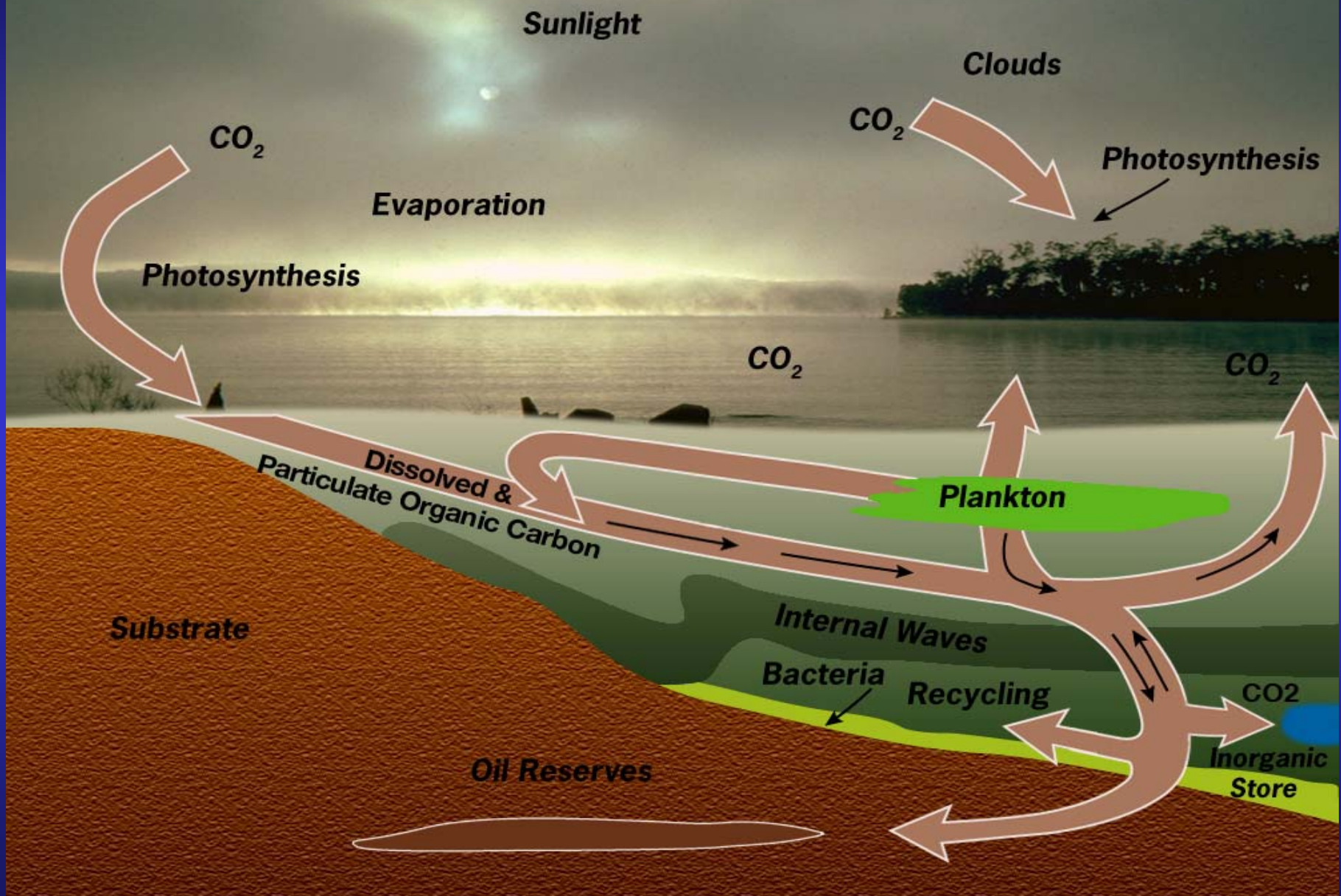
Chief Scientific Adviser to HM
Government

05th October 2005

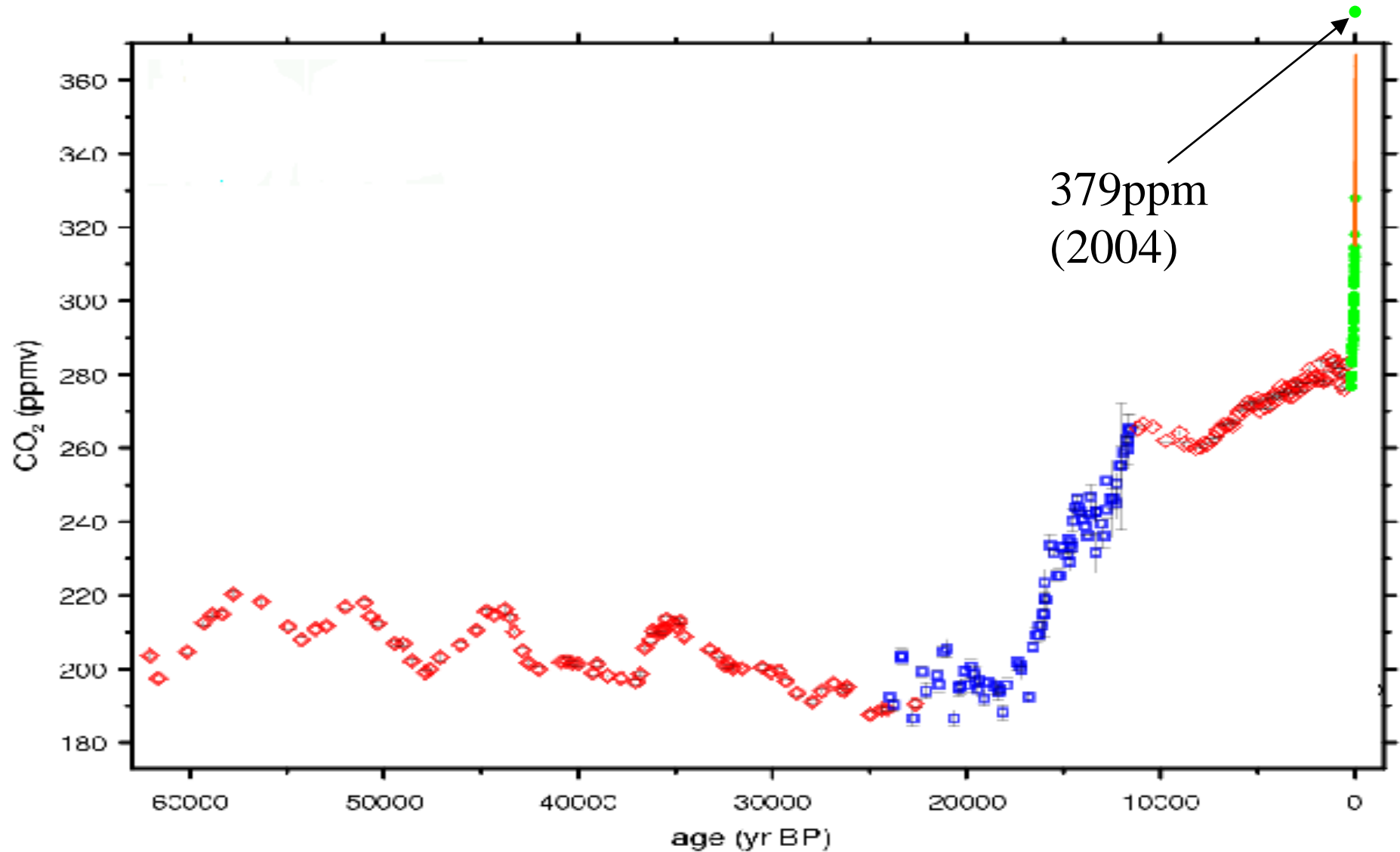
The earth's energy budget



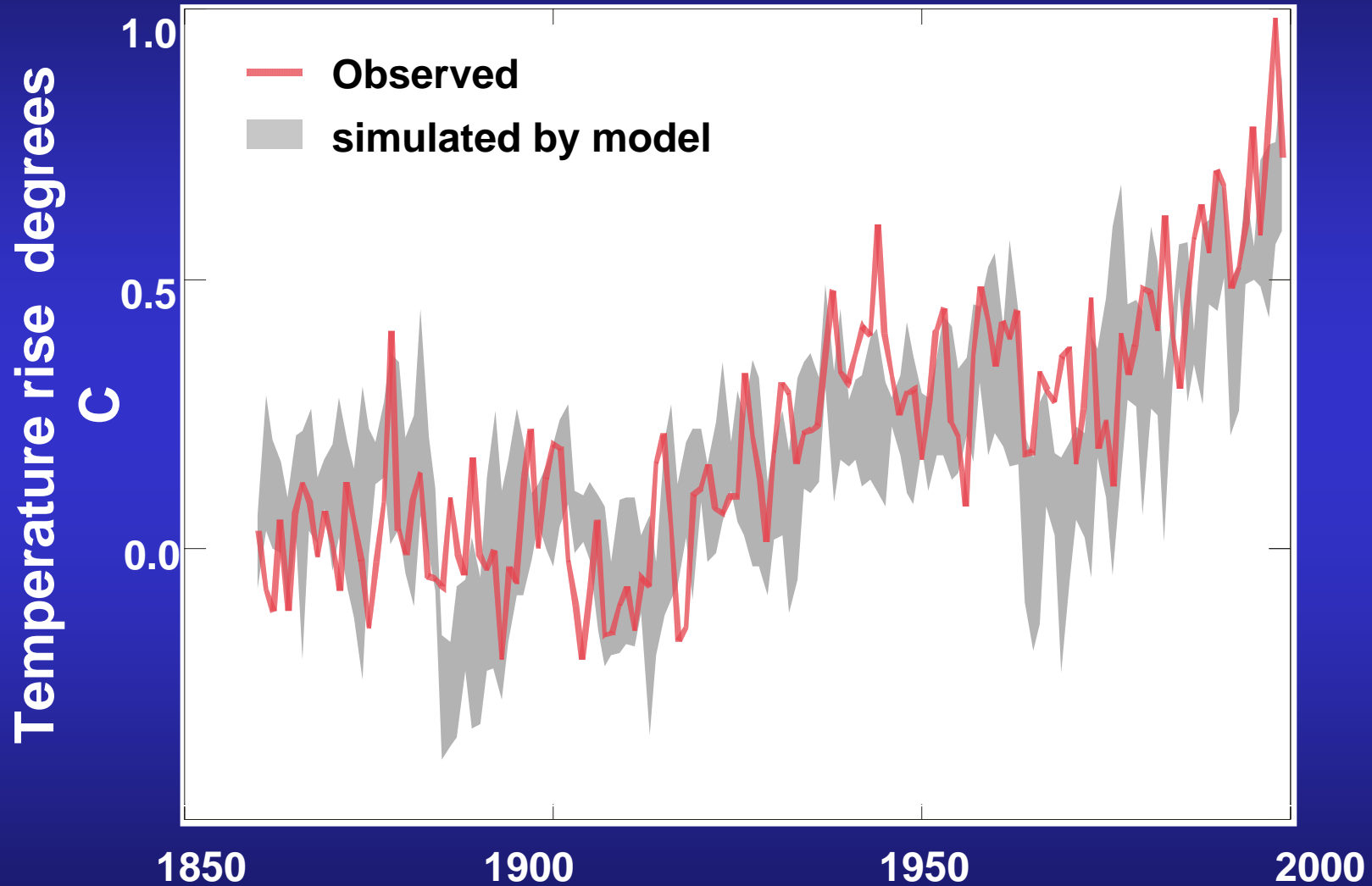
Carbon cycles



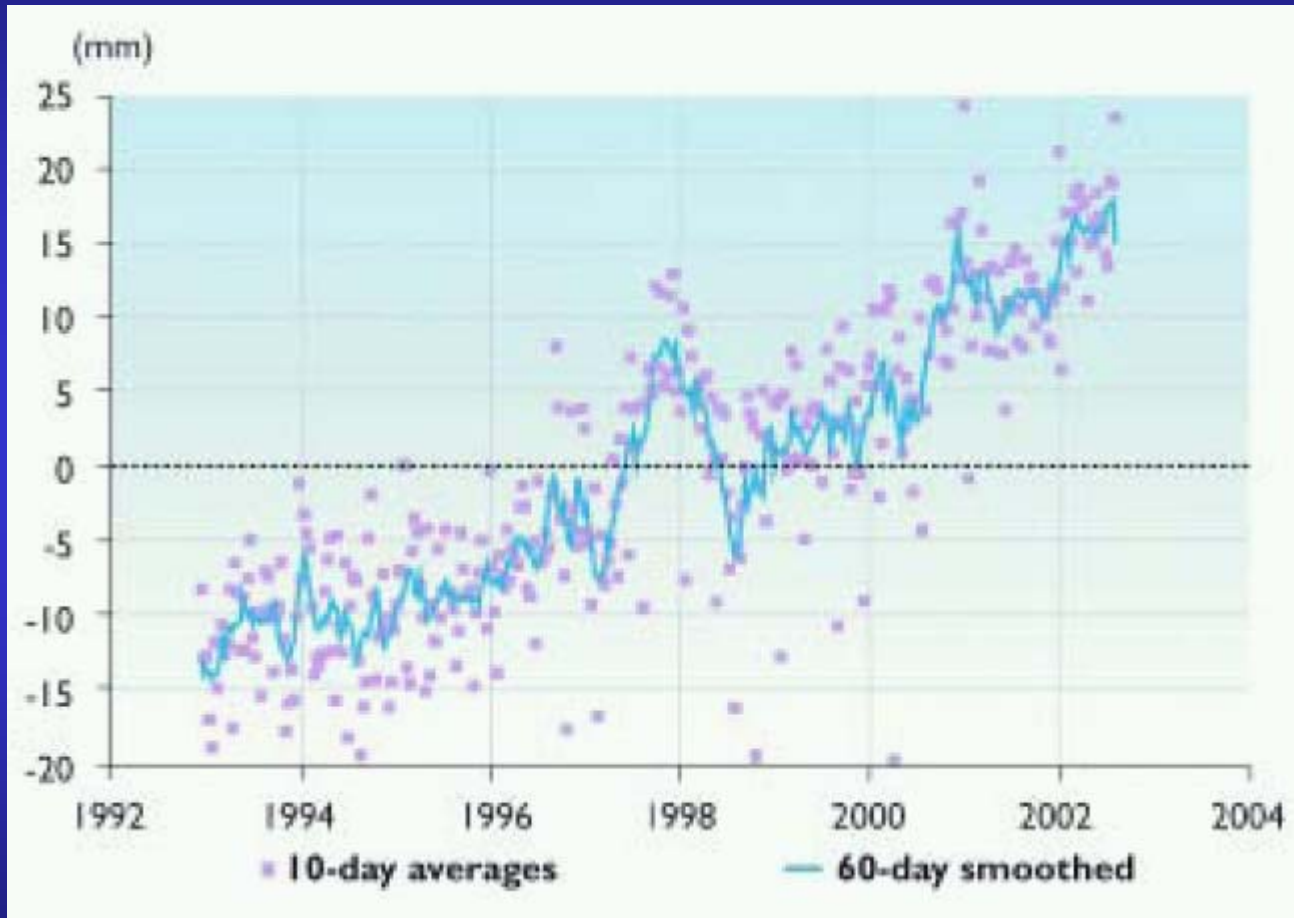
Carbon dioxide levels over the last 60,000 years



Simulated global warming



Observed Global Sea Level Rise

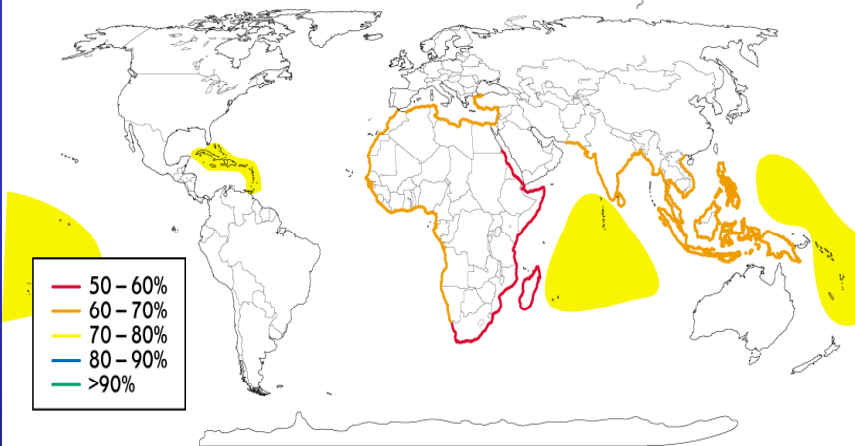


These data, from a satellite launched in 1992, show the rise in global average sea level over the last decade

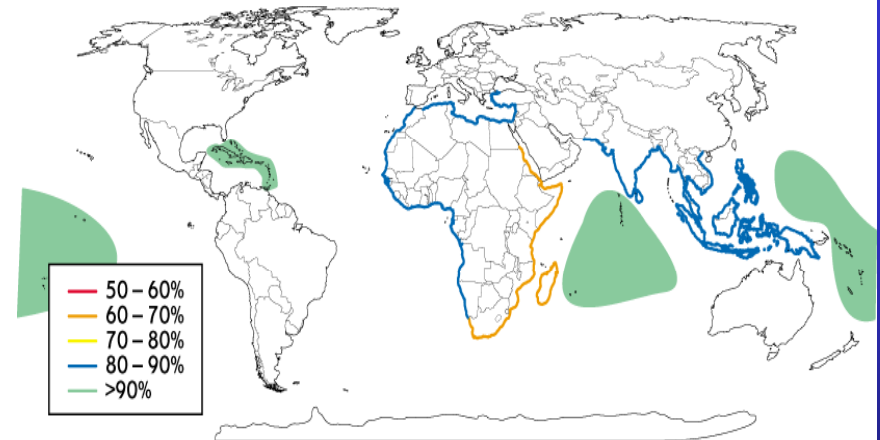
Annual Number of People Flooded



Change from the present day to the 2080s: unmitigated emissions



Stabilisation at 750 ppm

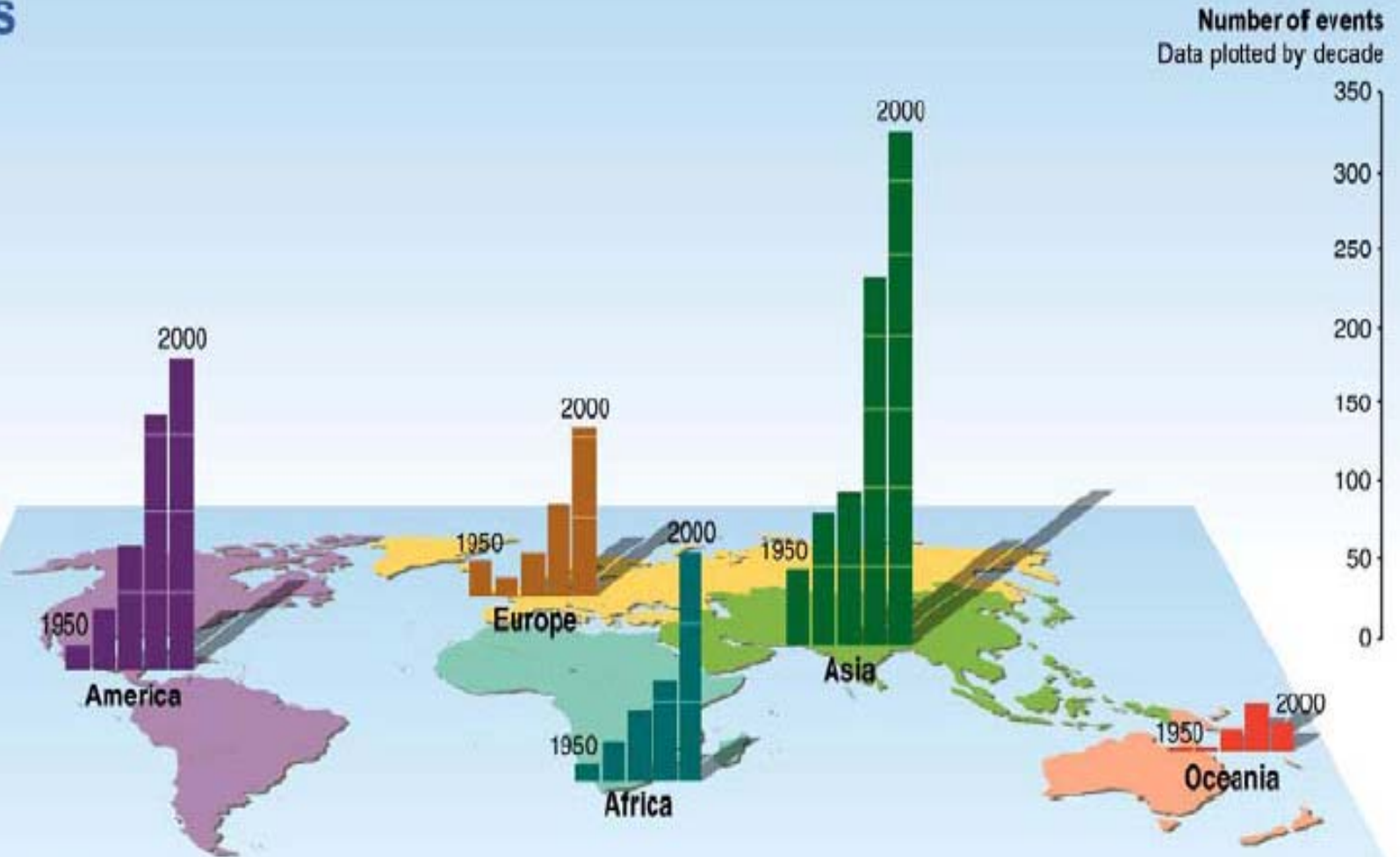


Stabilisation at 550 ppm

Reduction in change due to mitigated emissions scenarios

Number of floods events by continent and decade since 1950

Floods



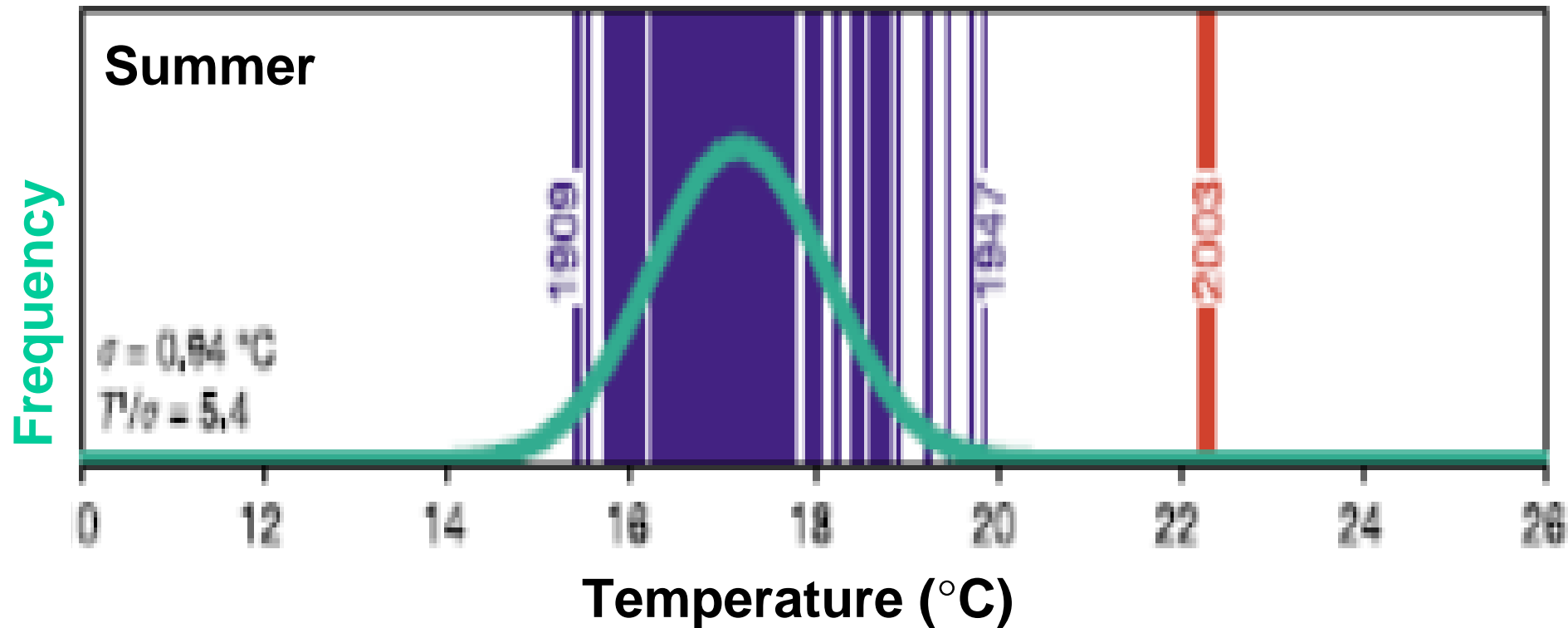
The direct impacts of extreme weather events ...

- European heatwave 2003
 - ~30,000 deaths
 - \$13.5bn direct costs
- European floods 2002
 - 37 deaths
 - \$16bn direct costs
- UK floods, autumn 2000
 - Insurance pay-out \$ 1.8bn

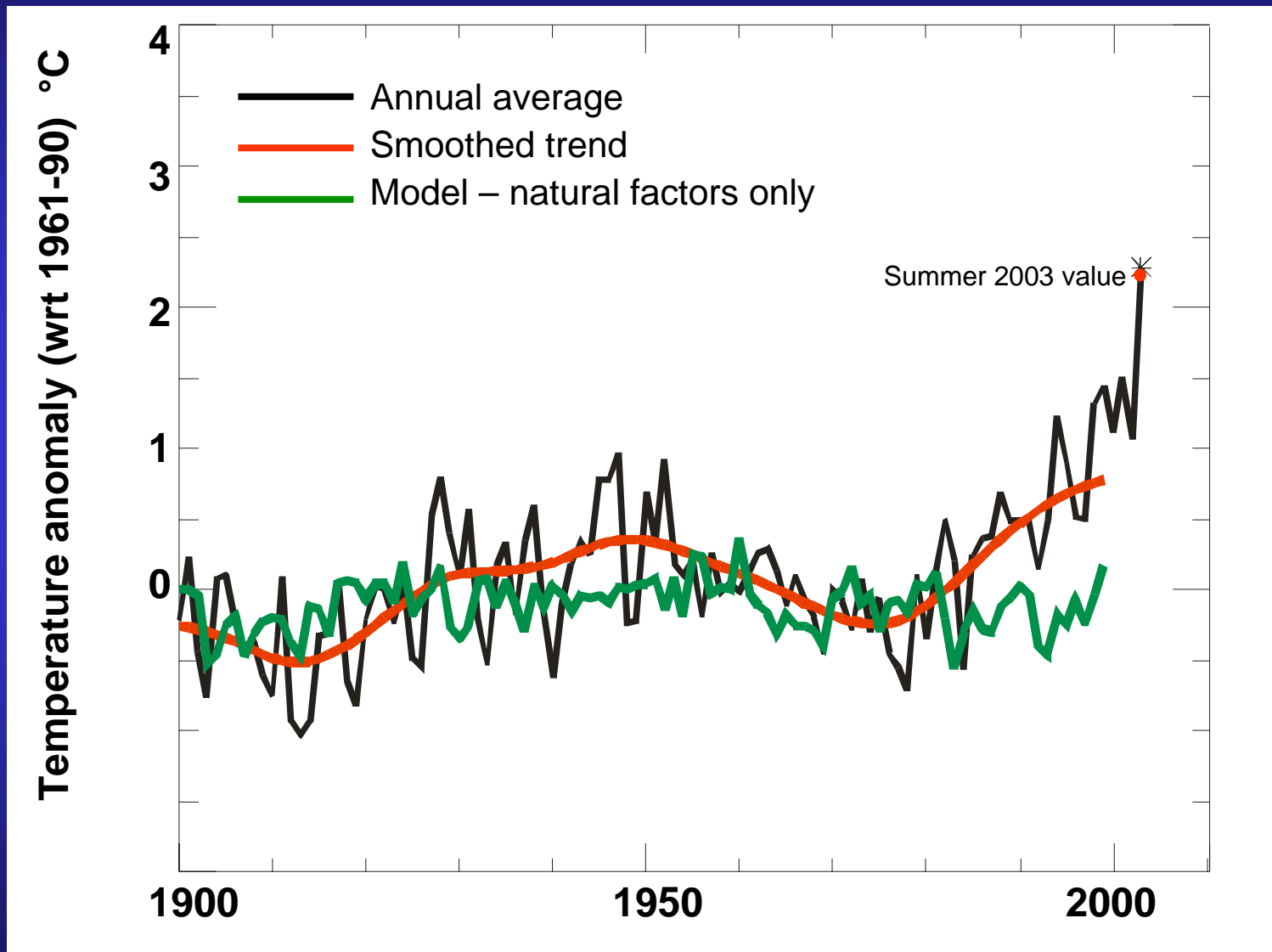


The Summer of 2003

Distribution of seasonal summer temperatures 1864-2003

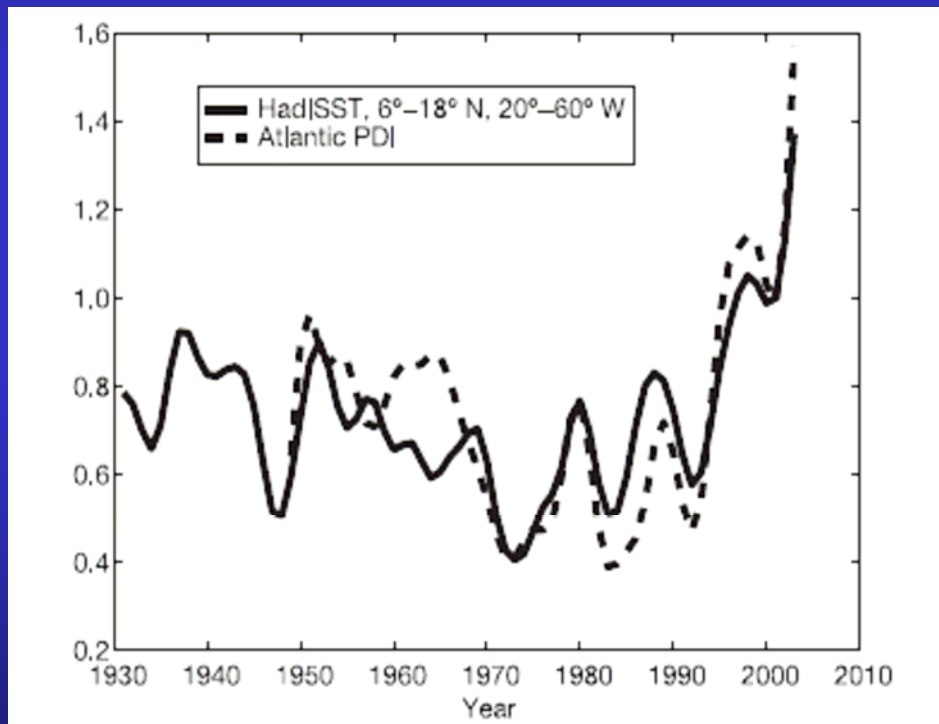


Annual European summer temperatures

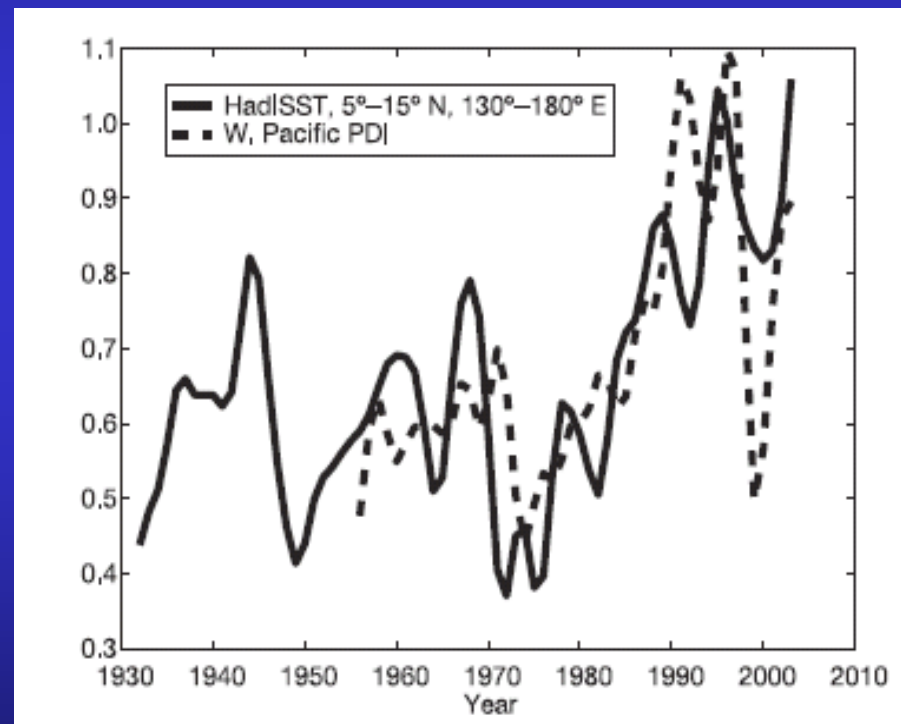


Increasing destructiveness of tropical cyclones over the past 30 years

North Atlantic



North Pacific



Adapt and mitigate

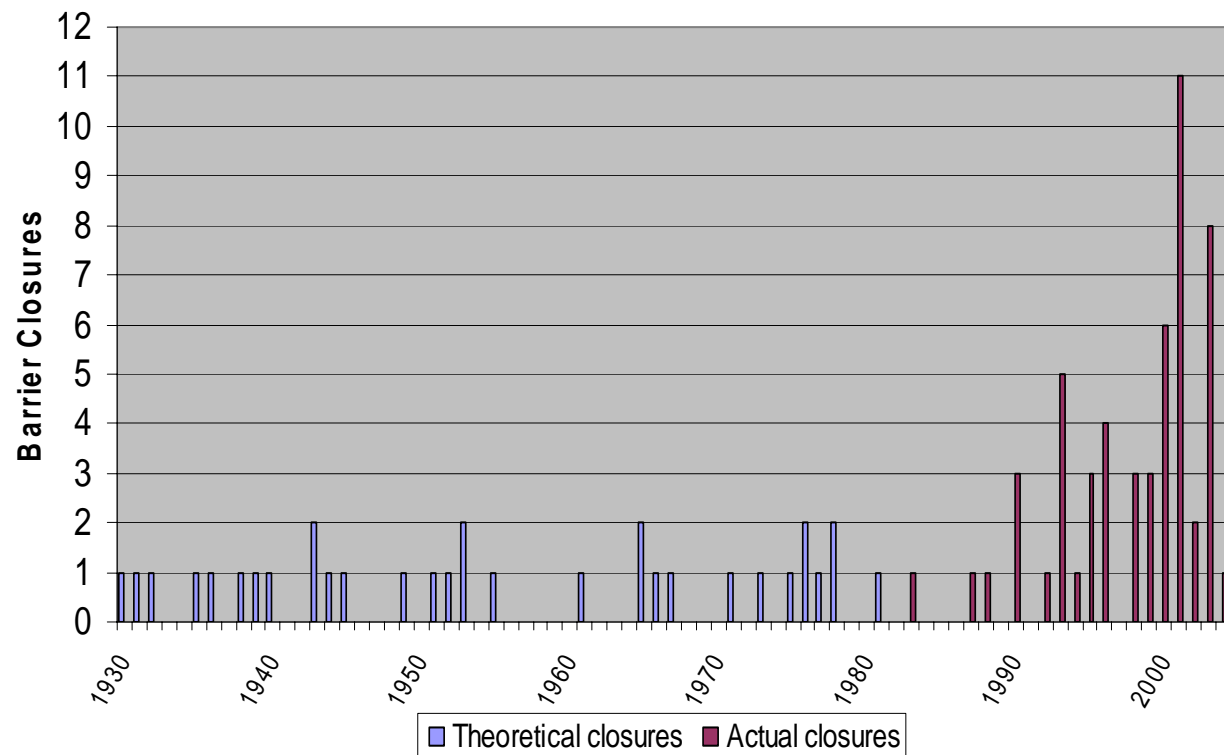
- Adapt
 - manage the risks country by country
- Mitigate
 - Energy efficiency
 - Low carbon energy sources
 - Emissions trading
 - Global action

The Thames Barrier



Source: Highway57

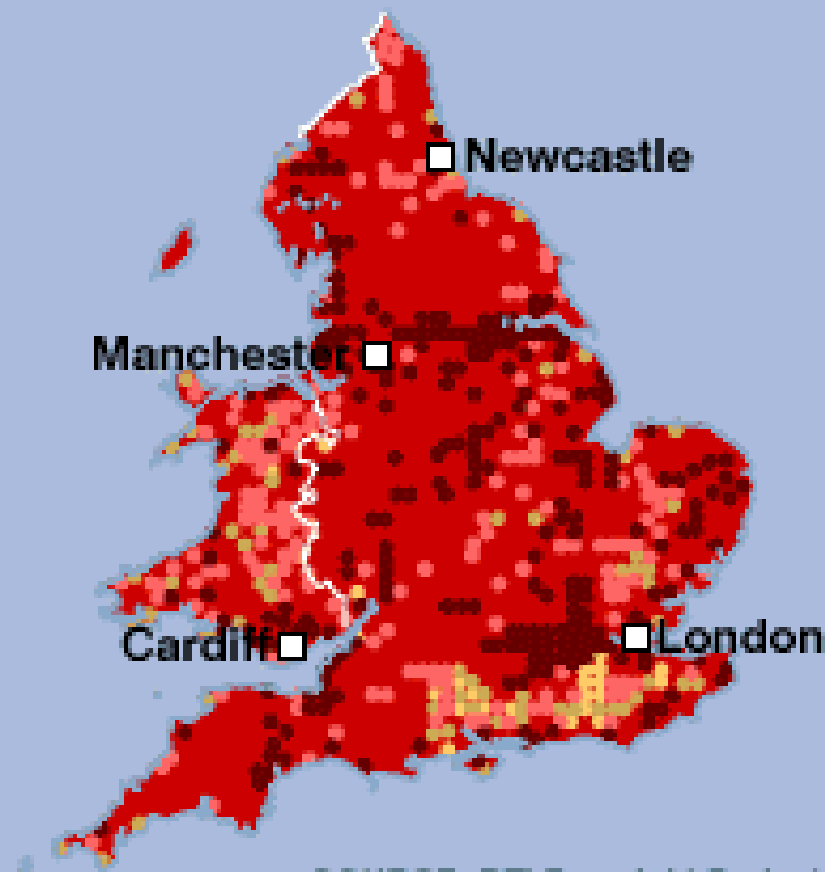
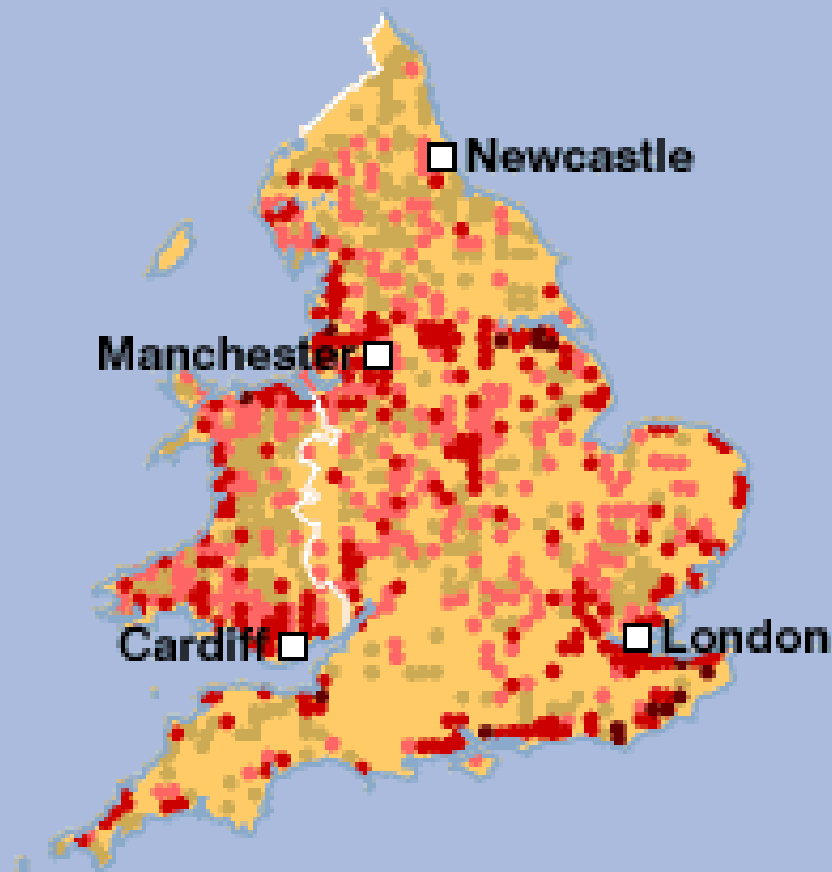
Thames Barrier closures 1982-2004



Possible flooding in the UK by 2080s

Best case scenario

Worst case scenario



SOURCE: DTI Foresight Project

Change in risk of flooding damage (from 2004)

- Decrease
- Negligible
- Low increase
- Medium increase
- High increase

What we need to do

- We must adapt in preparation for the significant changes ahead and manage the risks
- And we have to actively mitigate against the production of greenhouse gases by switching to low carbon energy sources
- Promote better energy efficiency in the domestic sector
- Improve energy efficiency through building regulations



Businesses that have tackled emissions voluntarily

HSBC

- In 2004 became the first bank in the world to become carbon neutral

IBM

- Reduced greenhouse emissions by 66% from 1990 levels

BP

- Introduced an internal emissions trading scheme, costing \$20m to implement; saved company over \$650m during a three year period

The future

- Climate change will impact on all our lives, culturally, socially, economically and physically
- Mitigate and adaptation
- Act locally – think globally
- Action is affordable, inaction is not