

The Spectre of Liability

Myles Allen

Department of Physics, University of Oxford

myles.allen@physics.ox.ac.uk



The innovation challenge

- Current carbon “prices” point to relatively modest, incremental changes in business practices in most sectors.
- Current political climate points to relatively modest, incremental change in carbon prices.
- Are there circumstances where this might change, or
- What is the “worst case” scenario for business?
 - A sudden rush of political enthusiasm for a tighter cap-and-trade regime or...
 - A complete and terminal breakdown of all cap-and-trade regimes.

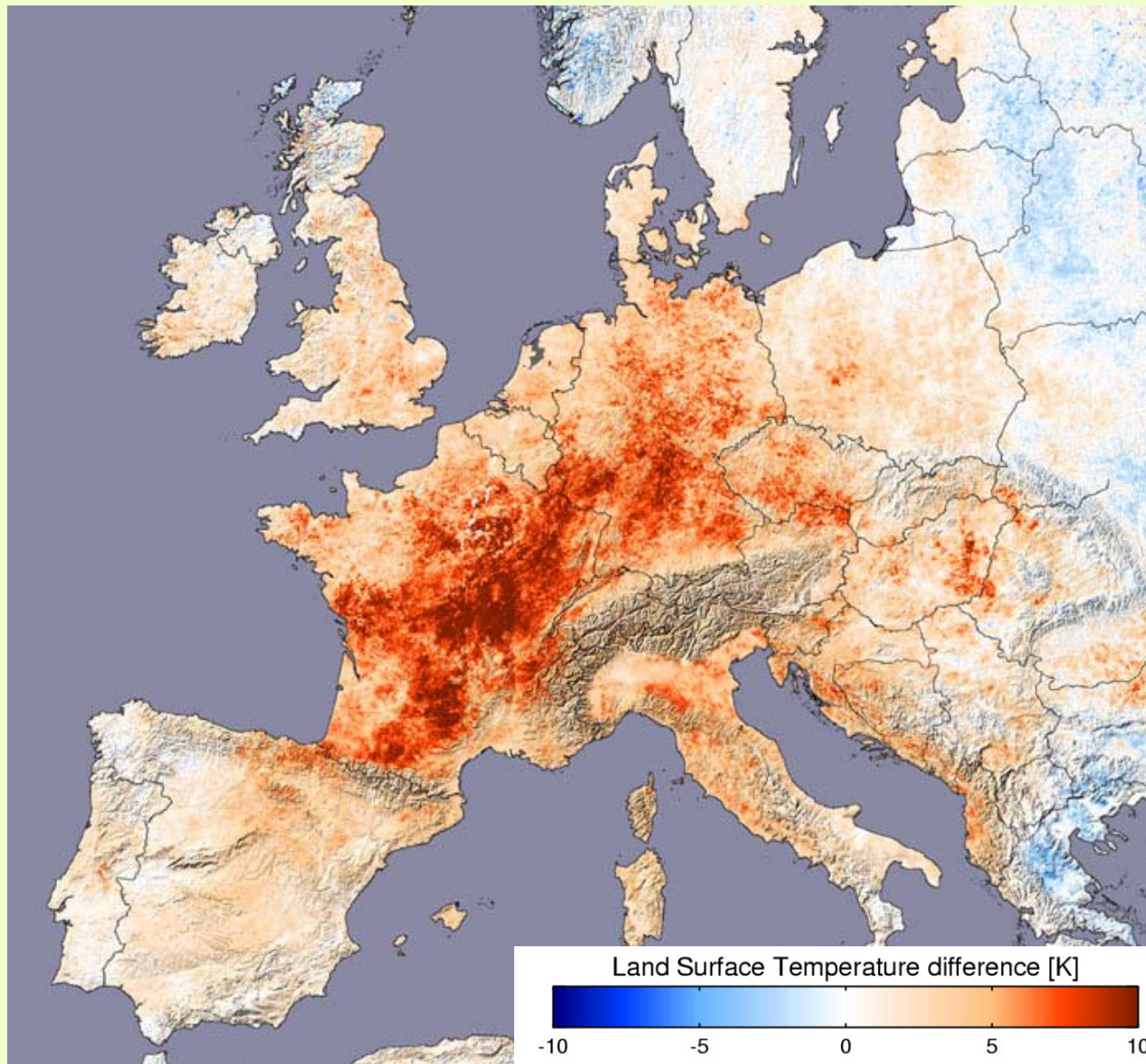


Some things to think about

- **The European heat-wave in August 2003 caused**
 - Over \$12billion in uninsured agricultural losses
 - Over \$1.5billion in forest fire damage
 - An estimated 22,000-35,000 premature deaths Europe-wide
- **Past human influence on climate (primarily carbon dioxide emissions) are estimated to have at least doubled the risk of such an event.**
- **Some 80% of current CO₂ emissions can be traced to products produced, sold or used by ~20 companies.**
- **What if this had been a toxic chemical spill or an unexpected side-effect of a drug...**



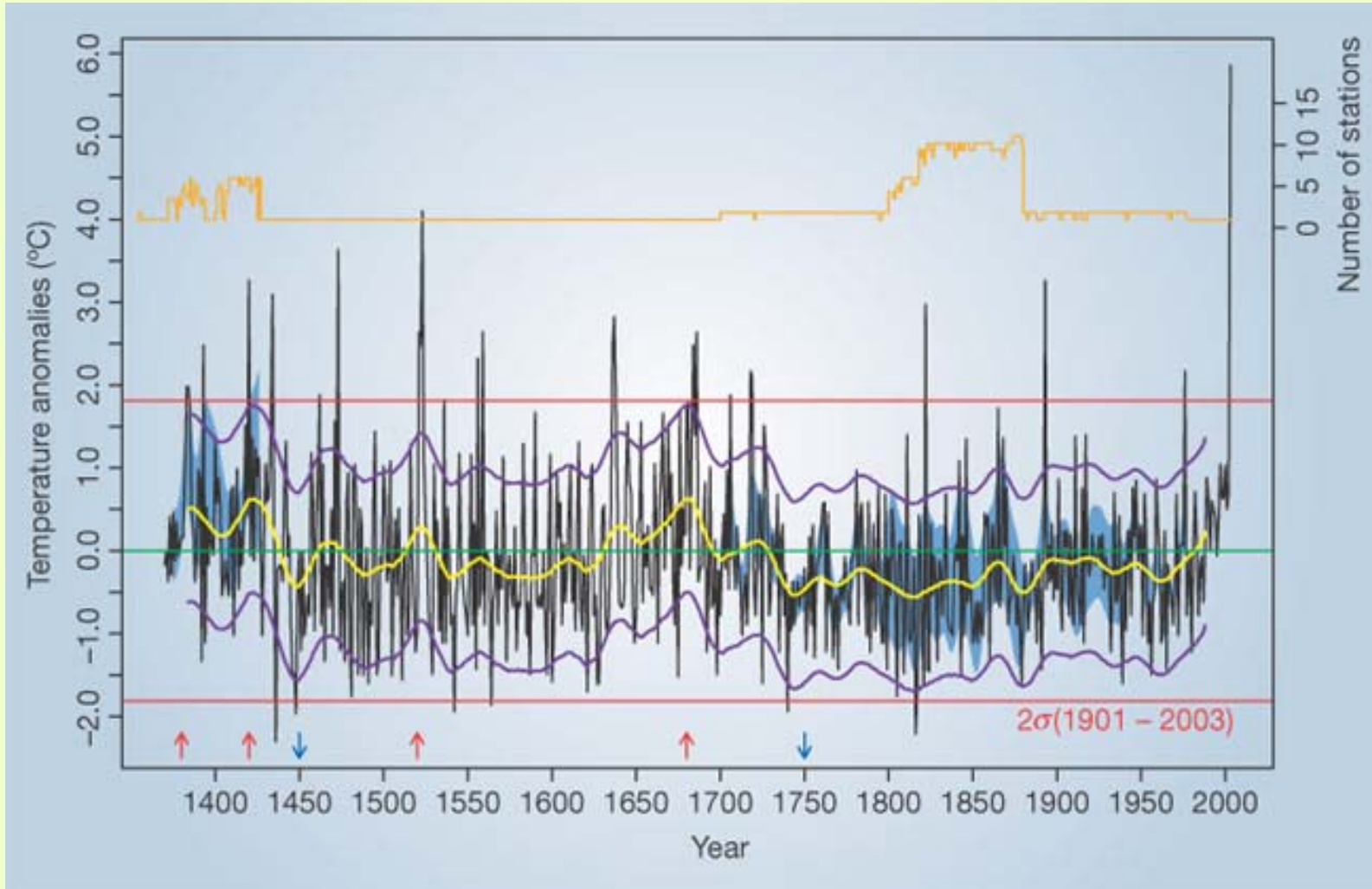
August 2003 temperatures relative to 2000-2004



From NASA's
MODIS - Moderate
Resolution Imaging
Spectrometer,
courtesy of Reto
Stöckli, ETHZ



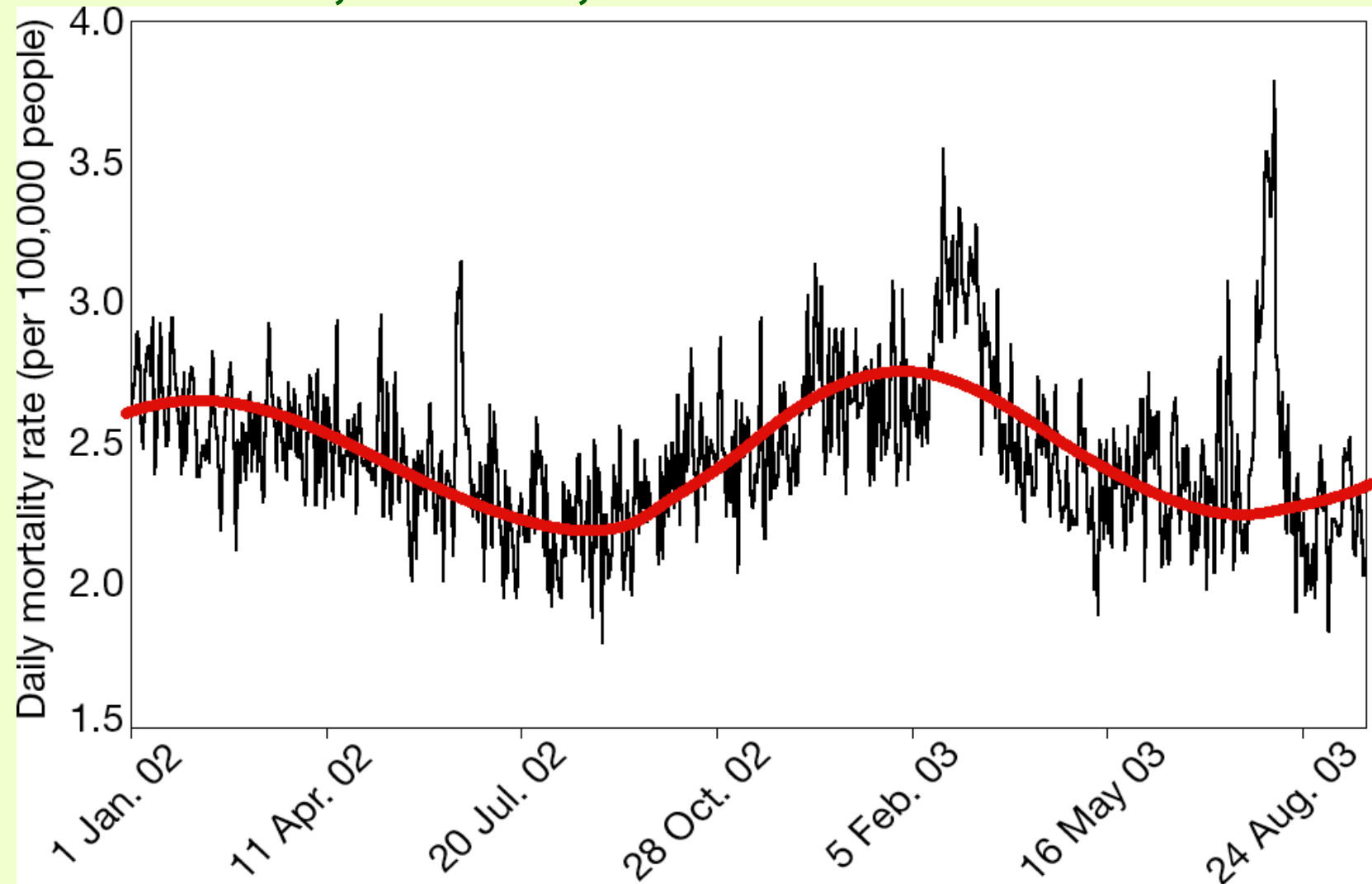
Summer temperatures in Burgundy, reconstructed from grape harvest dates



Source: Chuine et al, *Nature*, 2004



Excess mortality rates in early August 2003 indicate 22,000 - 35,000 heat-related deaths



Daily mortality in Baden-Württemberg
(Schär and Jendritzky, 2004)



climateprediction.net

Oxford University

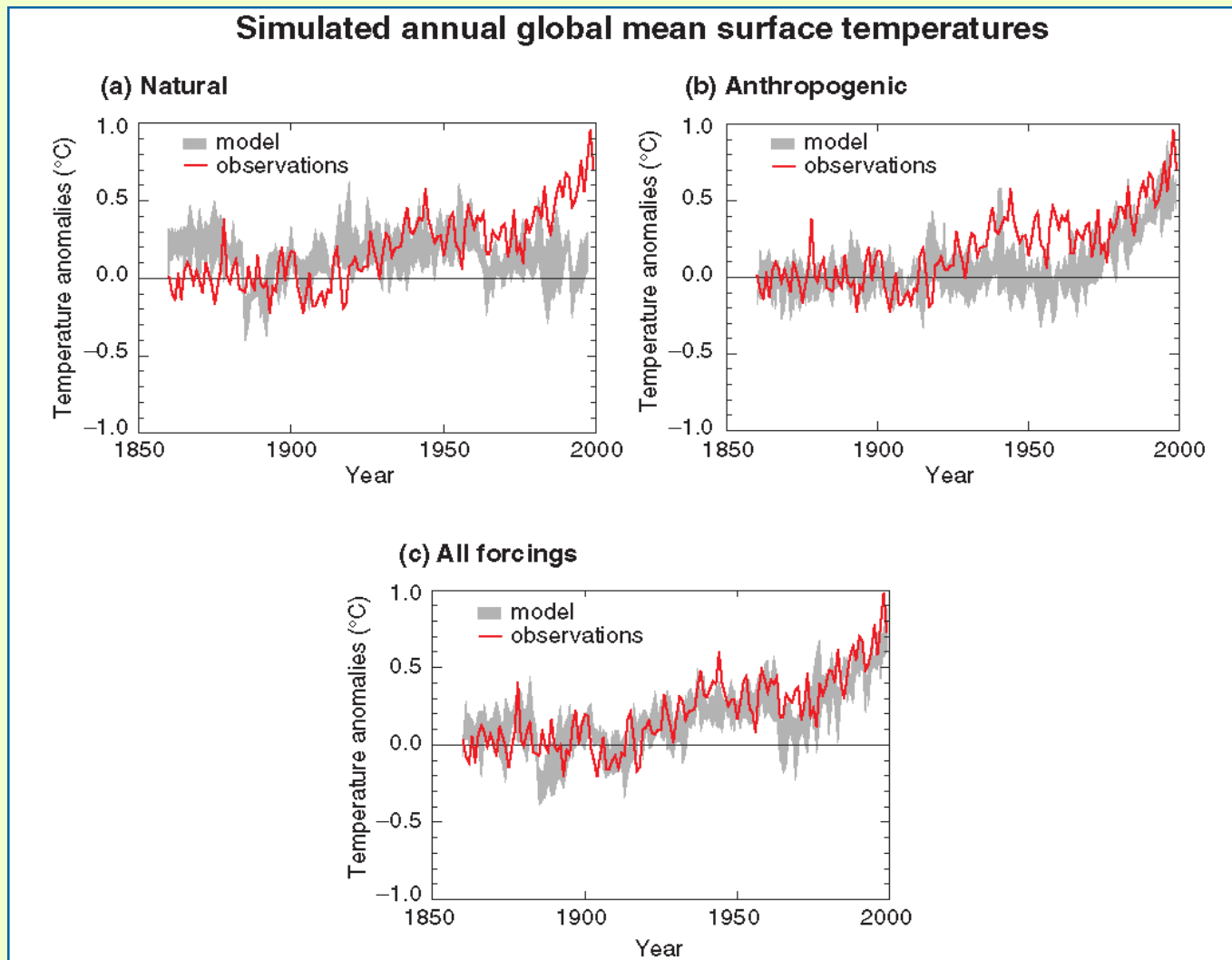


But was anyone “to blame”?

- French medical system response was heavily criticised.
- But, on the evidence of the historical record, this was a 1 in >1,000-year event (safer odds than the Thames Barrier).
- To what extent might this event be blamed on climate change – and thence on greenhouse gas emitters?



“Most of the warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations (IPCC, 2001)”



But a 1-2°C rise in global temperature *itself* hurts nobody: can a link be made to actual damages?

- The immediate cause of the heat-wave was a persistent anti-cyclone over Northwest Europe.
- There is still no evidence that human influence on climate makes such circulation patterns more likely.
- Instead, we ask how human influence on climate has affected the *risk* of such a weather event (however induced) causing such an intense heat-wave?

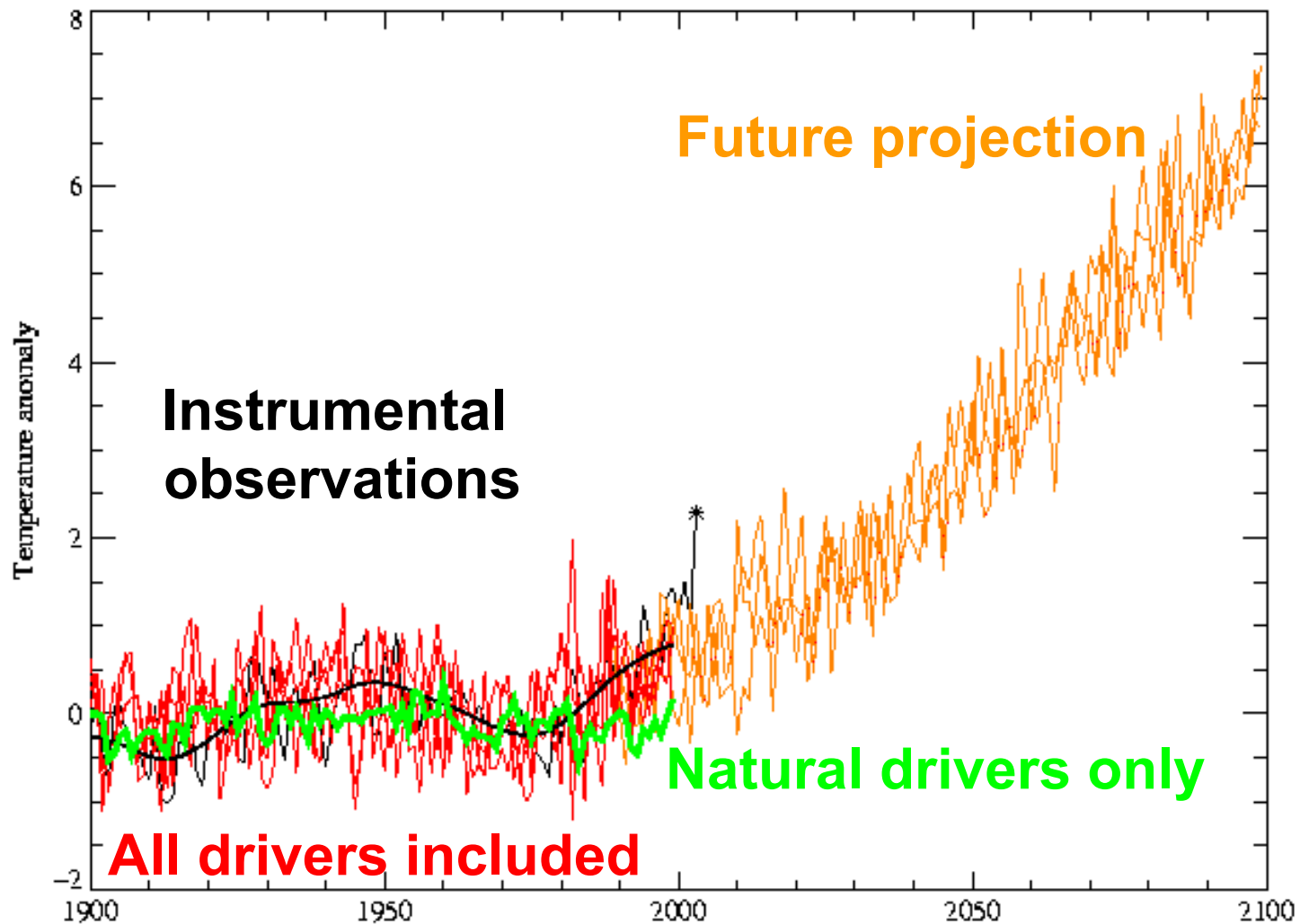


The difference between weather and climate

- Edward Lorenz (1982): “Climate is what you expect, weather is what you get”
- and in the 21st century: “Climate is what you affect, weather is what gets you”
- Climate *means* a comprehensive description of weather risk.
- External factors, like greenhouse gases, can have a perfectly predictable impact on climate (weather risk), even though their impact on actual weather events is unpredictable.



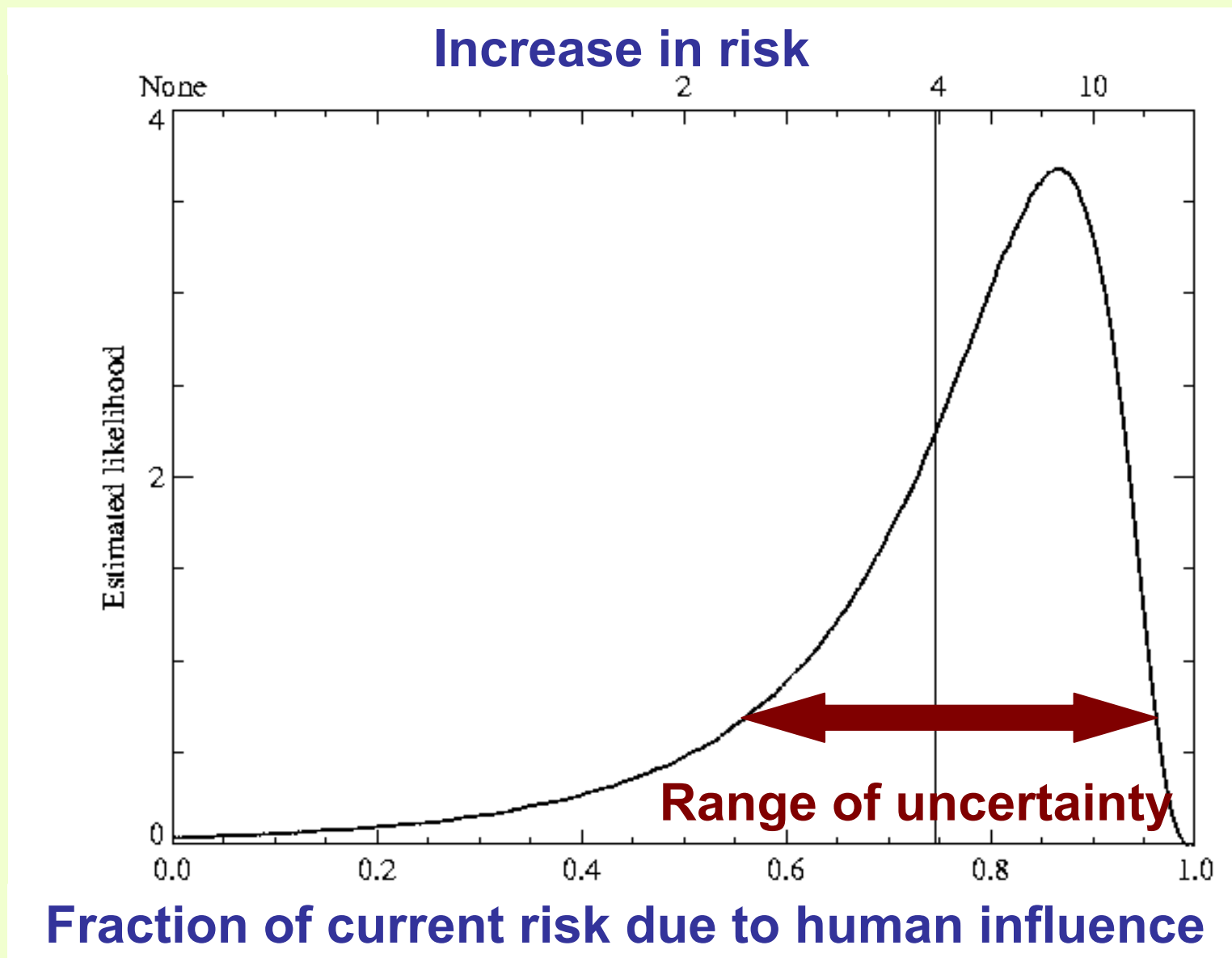
Modelling Southern European area-averaged June-August summer temperatures



(Stott, Stone and Allen, 2004)



Human contribution to the risk of the 2003 heat-wave: loading the weather dice



But what about the washout summer of 2004?

- If you load a dice to double the chance of a six ...
 - ... you quadruple the odds of a double-six, and ...
 - ... you octuple the odds of a treble-six and so on.
-
- A modest background warming has little impact on the odds of a warmer-than-normal summer, but a big impact on the odds of an extreme heat-wave.

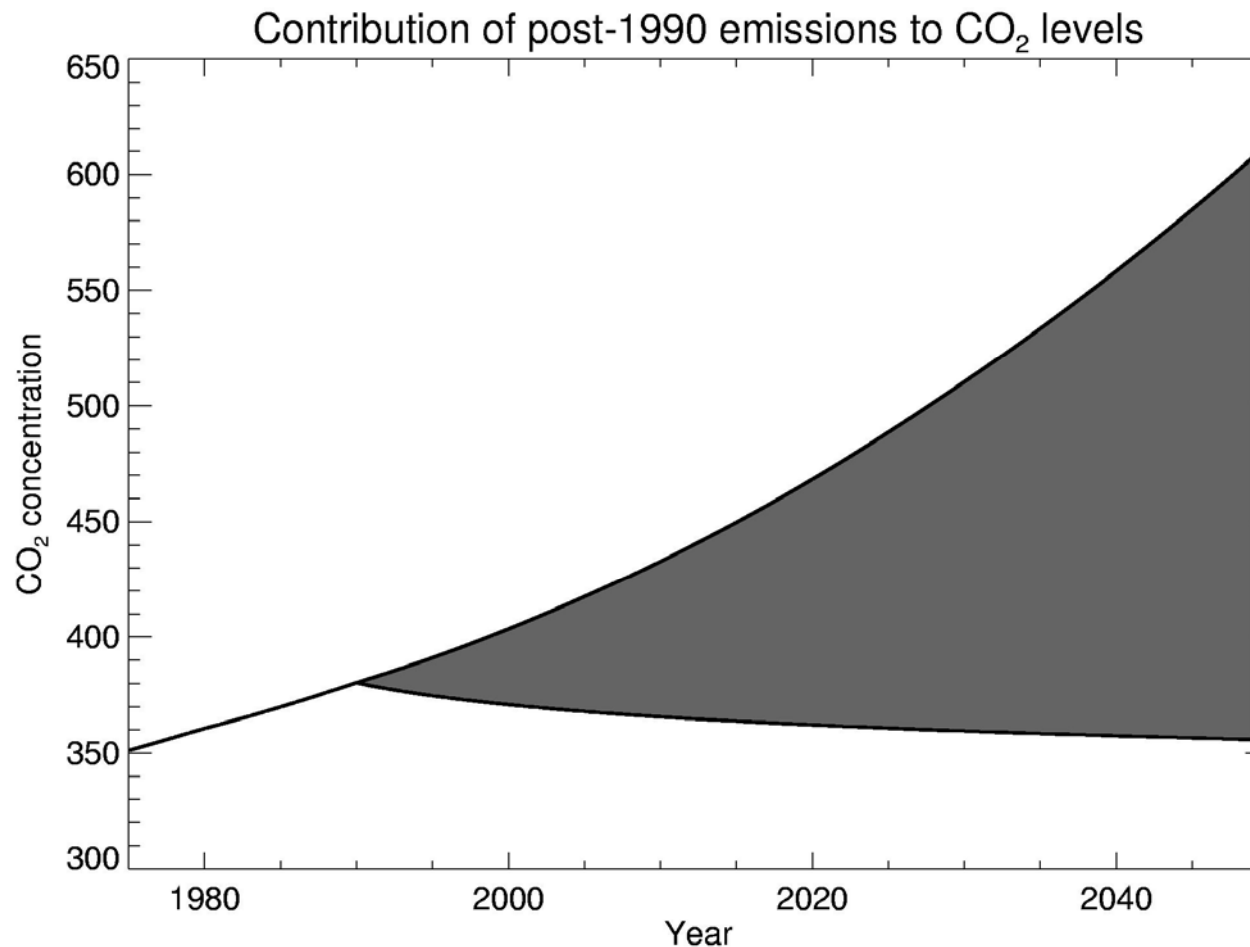


The Spectre of Liability

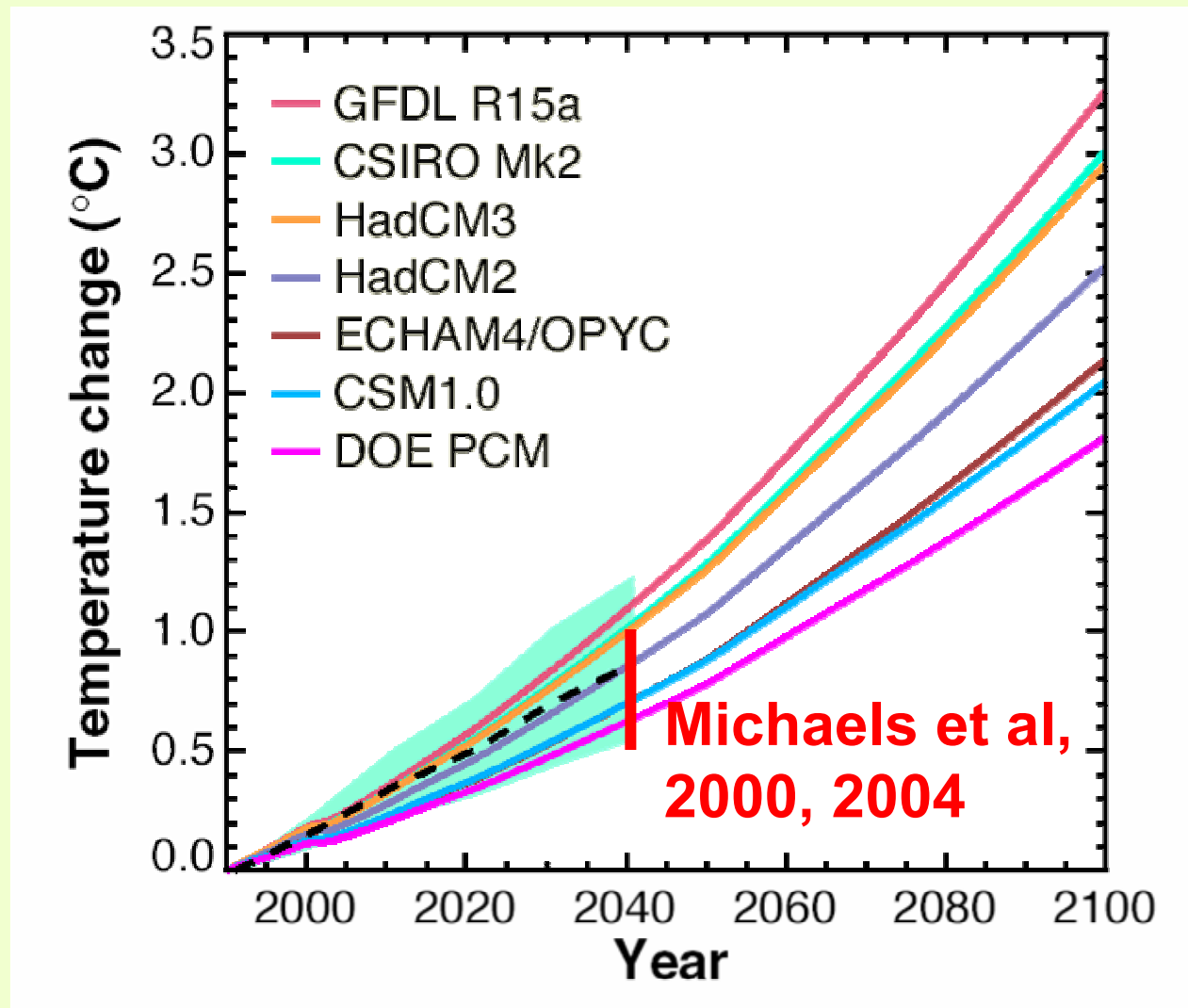
- Modest (0.5°C) background warming substantially increases the risk of extreme high temperatures.
- It is likely (90% confidence) that past human influence on climate was responsible for at least half the risk of the 2003 European summer heat-wave.
- “Plaintiffs ... must show that, more probably than not, their individual injuries were caused by the risk factor in question, as opposed to any other cause. This has sometimes been translated to a requirement of a relative risk of at least two.”
(Grossman, Columbia J. of Env. Law, 2003)



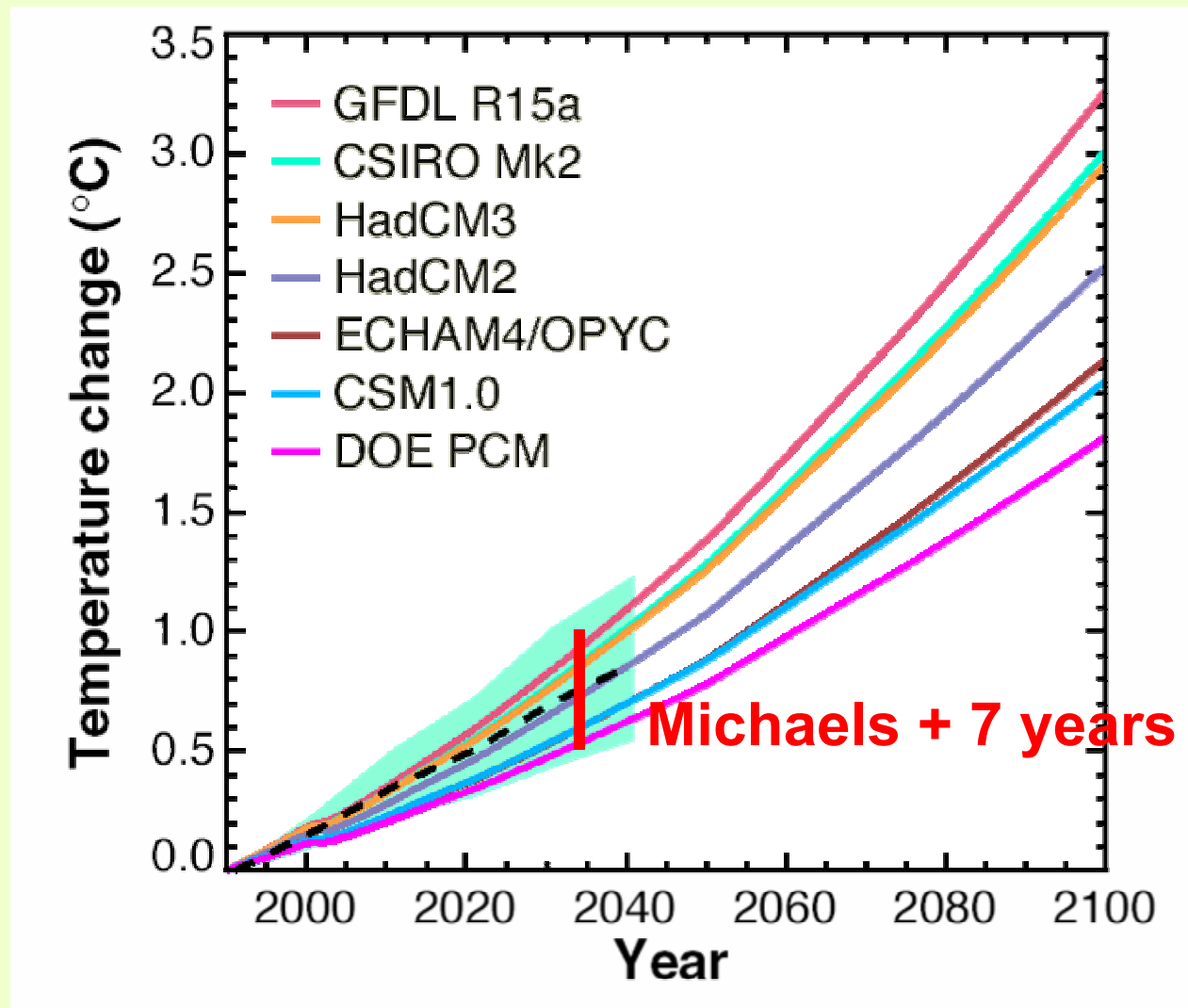
By the 2030s, >50% of anthropogenic GHG loading will be due to post-1990 emissions



And everyone agrees on the response



With only trivial differences



It has already started

- A number of suits have already been filed in the USA, Australia, Germany and Argentina citing (*inter alia*) clean-air, public nuisance and human rights legislation (see www.climatelaw.org for details)
- The fact that emitting CO₂ is perfectly legal appears to be only one factor under consideration.
- Arguments that government regulation of CO₂ pre-empts civil lawsuits also appear moot.

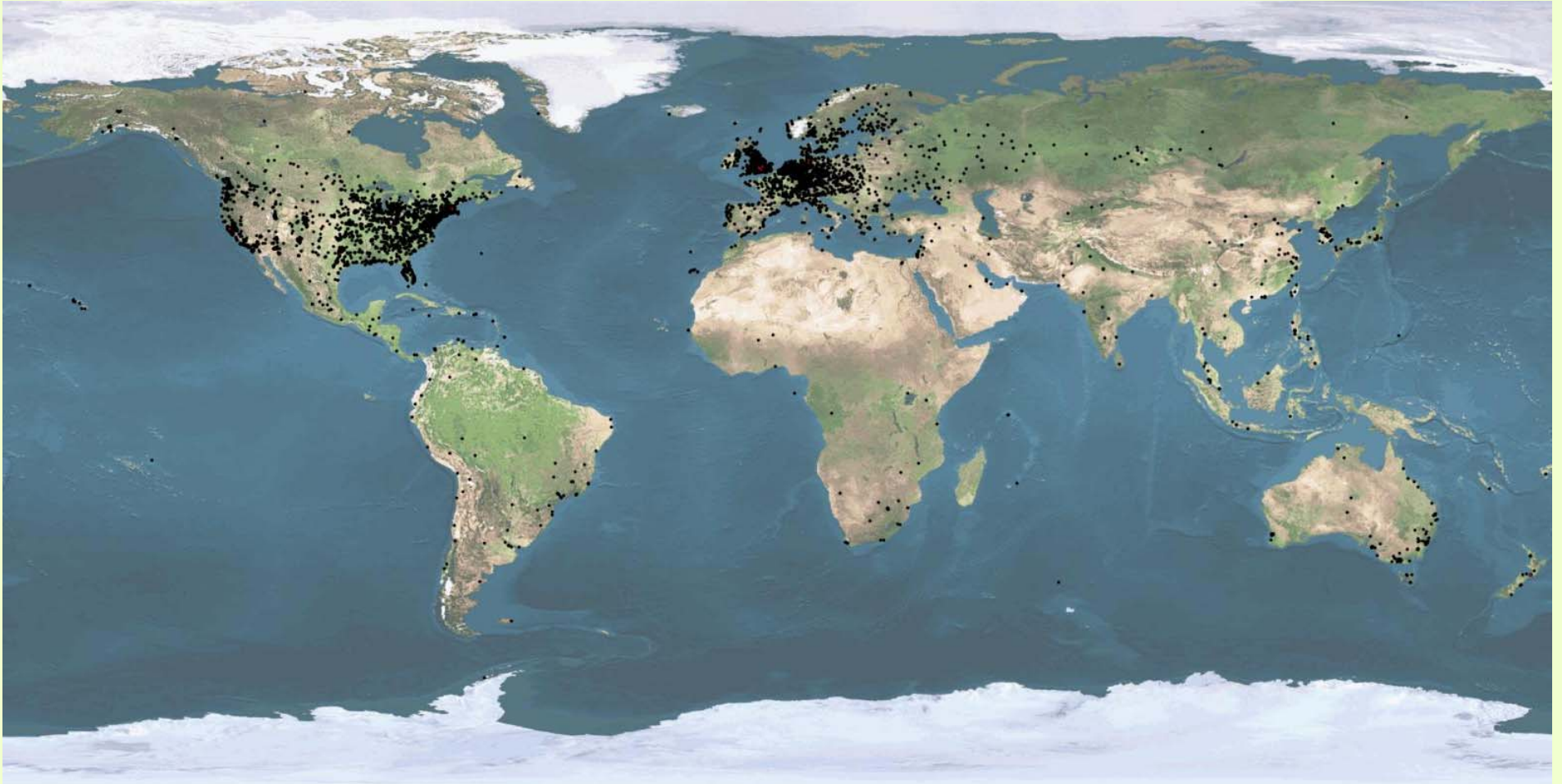


How can companies limit exposure to emissions-related law-suits?

- Record pro-active measures to reduce emissions from the point at which harm became foreseeable. (When is this date? 1896? 1990? Now?)
- Find out the legal status of a carbon emission permit: does the granting agency accept liability for the consequences of that emission?
- Support a broader public and corporate understanding of climate change, its impacts and available adaptation and mitigation strategies.



One idea: sign up to climateprediction.net, the world's largest climate modelling facility



~100,000 volunteers, 130 countries, ~6M model-years

See our stand, and David Stainforth's talk tomorrow

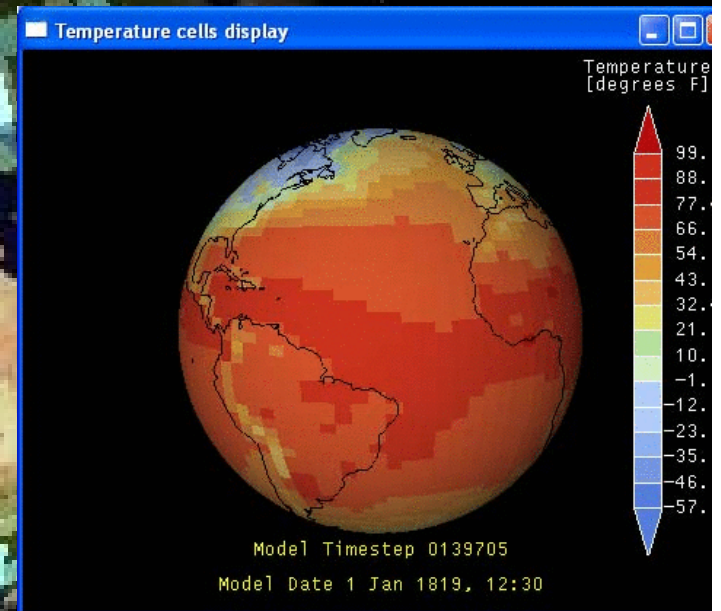


climateprediction.net

Oxford University



Help the public download and run a full 3-D climate model on their personal computers



Model Phase 3, Timestep 0134187

Summary

- The contribution of past greenhouse gas emissions to some of these risks may already exceed 50%, the threshold for civil tort actions.
- Impact liability has always been a taboo subject in the climate change debate: but as the evidence of cause-and-effect accumulates, will it remain so?
- *If* the civil courts are engaged, prepare for innovation to proceed much faster than the present pace of post-Kyoto negotiations indicate.
- And pray for the survival of the Kyoto process.

See: M. R. Allen, “The Spectre of Liability”, in K. Tang (ed.), “Finance of Climate Change”, Risk Books, 2005

