

Climate change: facts and myths

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Moderation: Prof. Lars-Erik Cederman, ETH Zürich

This debate about climate change was held on the "Day of Teaching" under the umbrella of the 150-years ETH celebration. The purpose of the event was to demonstrate the pedagogical value of public debates in academic life. We have chosen to organize a debate on climate change because it is a topic that is not only scientifically contested but also of profound societal relevance.

ETH Zürich, Switzerland, <http://www.ethz.ch>

Tag der Lehre / Day of Teaching
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Climate Change: Facts and Myths

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**Fact: we understand most of what is going on,
and enough to know what to do about it**

- Climate change is predictable.
- Our current models are up to the job of predicting it.
- We understand current trends surprisingly well.
- The most serious impacts of climate change are also predictable and surprisingly well understood.
- The Big Myth: climate change is Your Fault, and solving it requires You to Mend Your Ways.

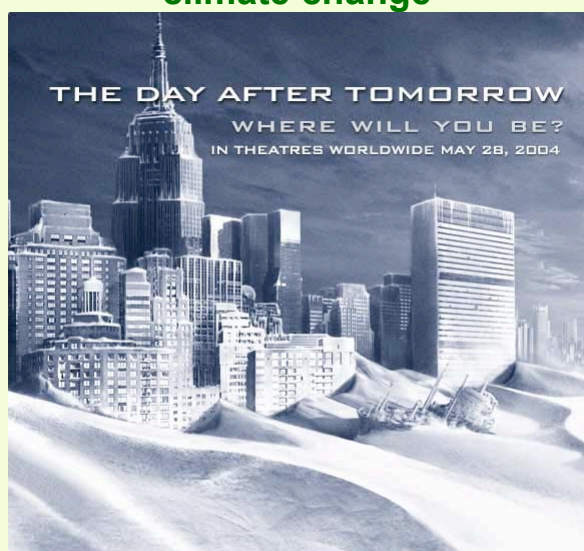


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**Myth 1: this is why we should be worried about
climate change**



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Fact 1: this is why I am worried about climate change



Photo: Dave Mitchell

South Oxford on January 5th, 2003



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Fact 1: this is why you should be worried about climate change



Brig, 1993: will climate change affect the risk of flash flooding in the Alps?

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Myth 2: pre-20th-century climate fluctuations might have been larger than previously thought, so the present trend is nothing to worry about



Luke Clenell

Frost fair on the Thames, 1814

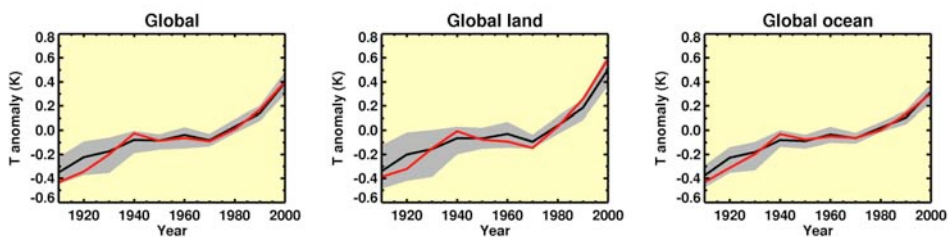


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Fact 2: most of the recent warming is due to the increase in greenhouse gases. What happened before 1900 has no impact on this conclusion.



Simulated and observed global, global-land & global-ocean surface temperature changes over the 20th century (range of current models)



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Myth 3: modelling climate change is only for experts, who fix results to show what they want.



The Earth Simulator, Japan

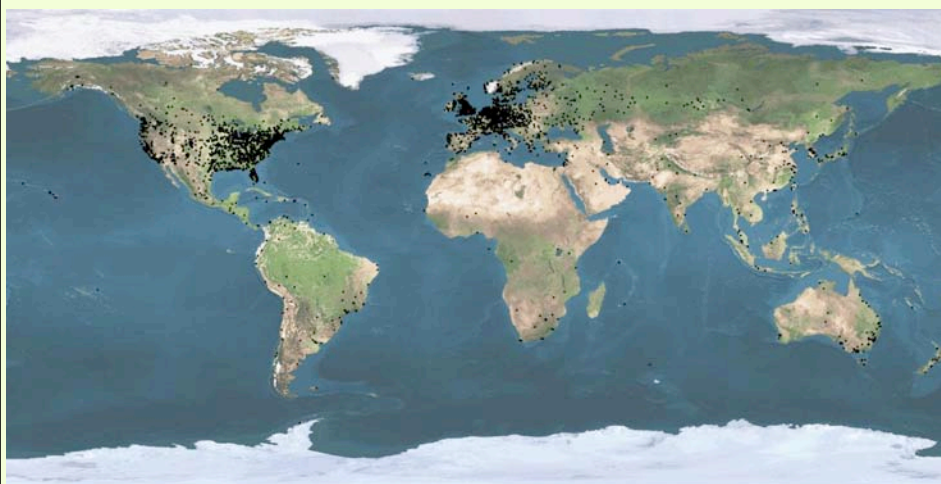


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Fact 3: anyone can get involved in modelling climate change, and we explore many possibilities



Climateprediction.net: the world's largest climate modelling facility, quantifying uncertainty in climate predictions

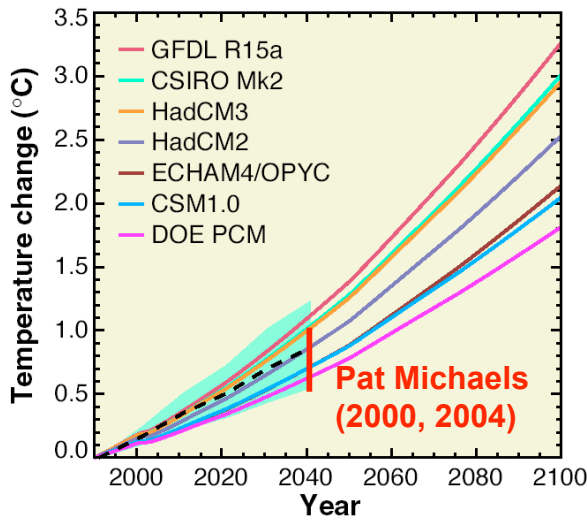


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Myth 4: scientists agree that climate change is happening, but not on the rate of future warming



Climate response to the IS92a scenario of future emissions, predicted by 2001 IPCC models and by Patrick Michaels, a prominent critic of the IPCC

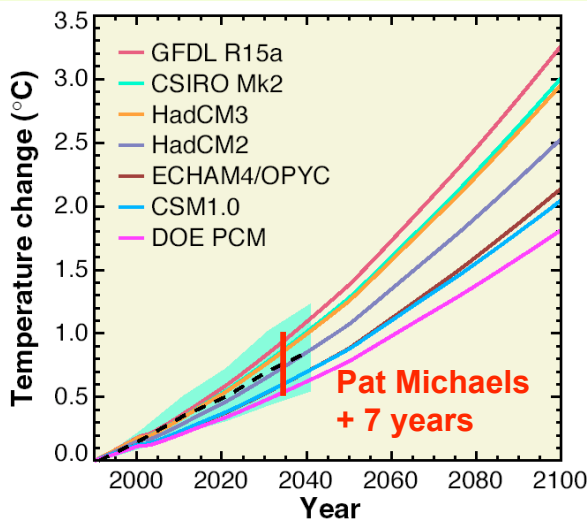


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Fact 4: future warming is uncertain, but scientists agree on the range for a given GHG scenario



Climate response to the IS92a scenario of future emissions, predicted by 2001 IPCC models and by Patrick Michaels, a prominent critic of the IPCC



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Myth 5: you're only personally at risk from climate change if you live in the tropics or Arctic

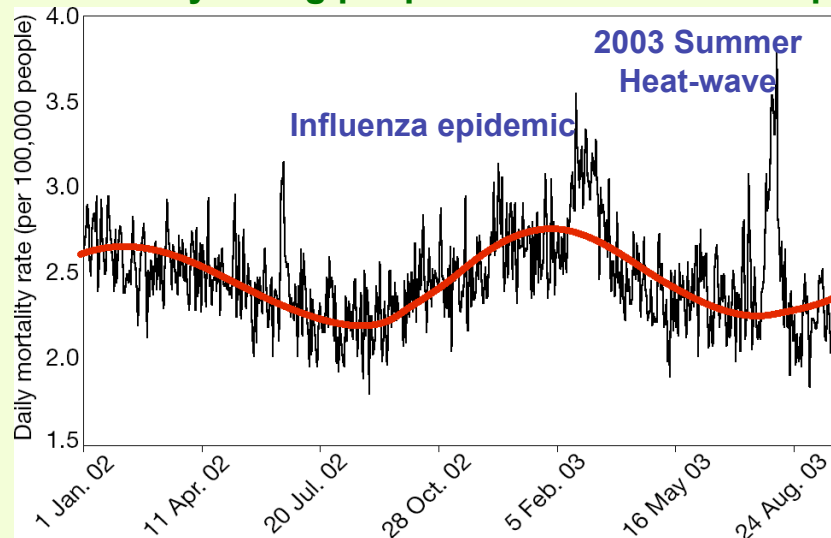


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Fact 5: events made more likely by climate change are already killing people in the heart of Europe



Daily mortality in Baden-Württemberg, Germany

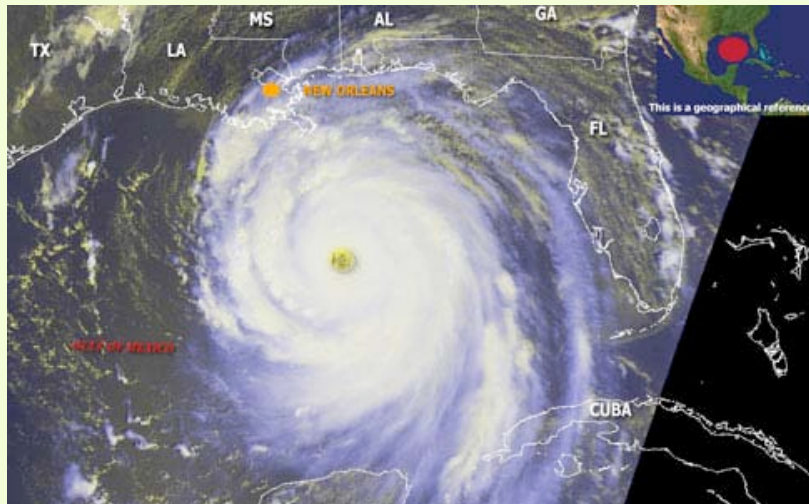
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Schär & Jendritzky, 2004

Myth 6a: climate change caused Hurricane Katerina

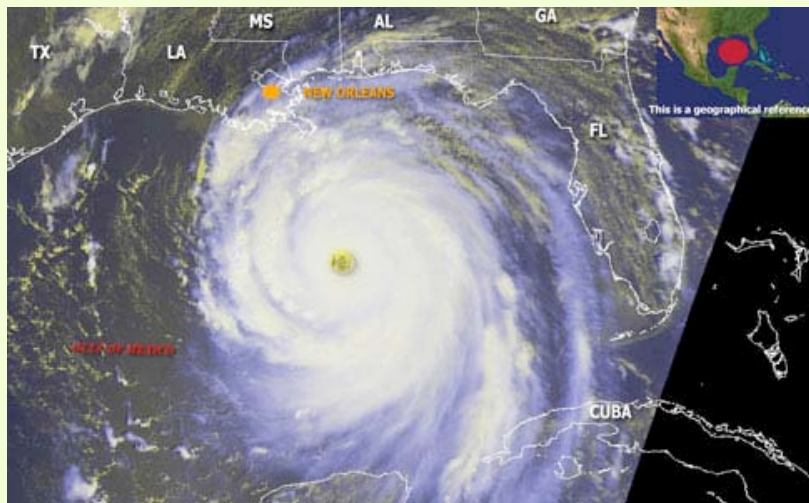


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Myth 6b: climate change did not cause Hurricane Katerina

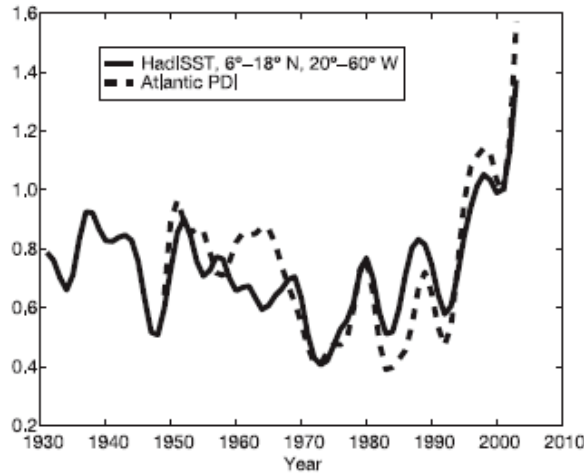


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Fact 6: climate change may well have increased the risk of Hurricane Katerina, we don't yet know how much, and we're working on it...



Atlantic Hurricane Power Dissipation compared with September sea surface temperatures
Emanuel, 2005

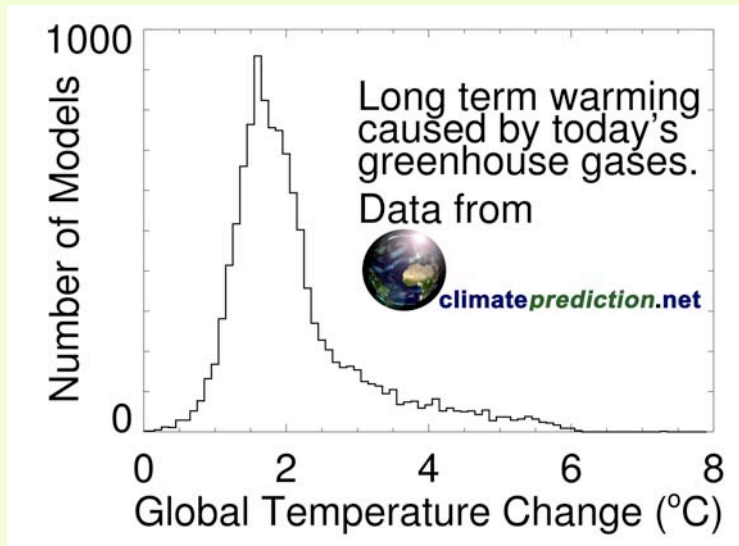


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Myth 7: if we stop greenhouse gas levels rising soon, we'll be OK

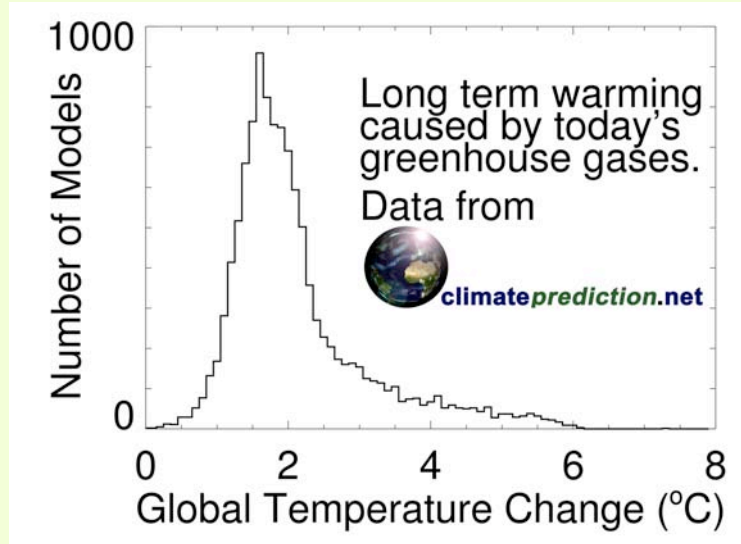


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Fact 7: even today's levels of greenhouse gases may be enough to cause dangerous warming



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Myth 8: “Solving climate change requires a fundamental change in the way we live and interact with each other and the world”

- This is the Big Myth: Everyone wants it to be true.
- Environmentalists want us to believe we need to change the way we live.
- Fossil fuel companies want us to fear the solution will hurt (so we put it off as long as possible).
- Anti-Capitalists want us to believe it is Proof of the Failure of Capitalism.
- The strange thing is, it isn't true.

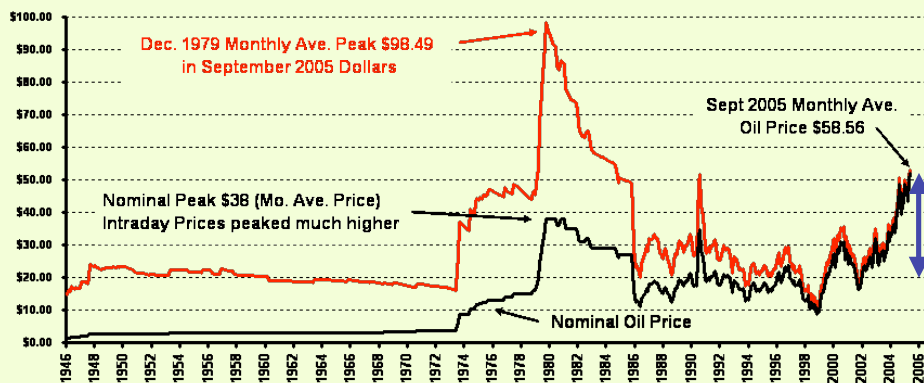


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Fact 8: we can afford to pay a lot more for fossil fuels than it costs to dig them up



Nominal and Inflation-Adjusted Oil Prices 1946-2005

A problem, or an opportunity?

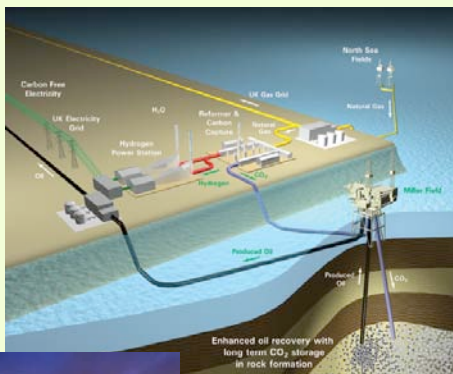


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Fact 8: fossil fuels are so useful, so profitable, that we can afford to use them sustainably



Carbon capture and storage projects:
In Salah Gas Field, Algeria, and North Sea

- With the combined profit and taxes you pay on petrol...
- ...existing technologies could be used to capture the carbon dioxide generated by burning that petrol and bury it back underground...
- ...and the oil company would still make money.
- We still have a problem: but is it the problem you thought we had?



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A final thought...



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**We didn't save the Ozone Layer by using
less deodorant.**



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