Risks to Humanity from Climate Change – and the Opportunities from Managing the Risks

Foreign & Commonwealth Office

Sir David King
Foreign Secretary's Special Representative for Climate Change

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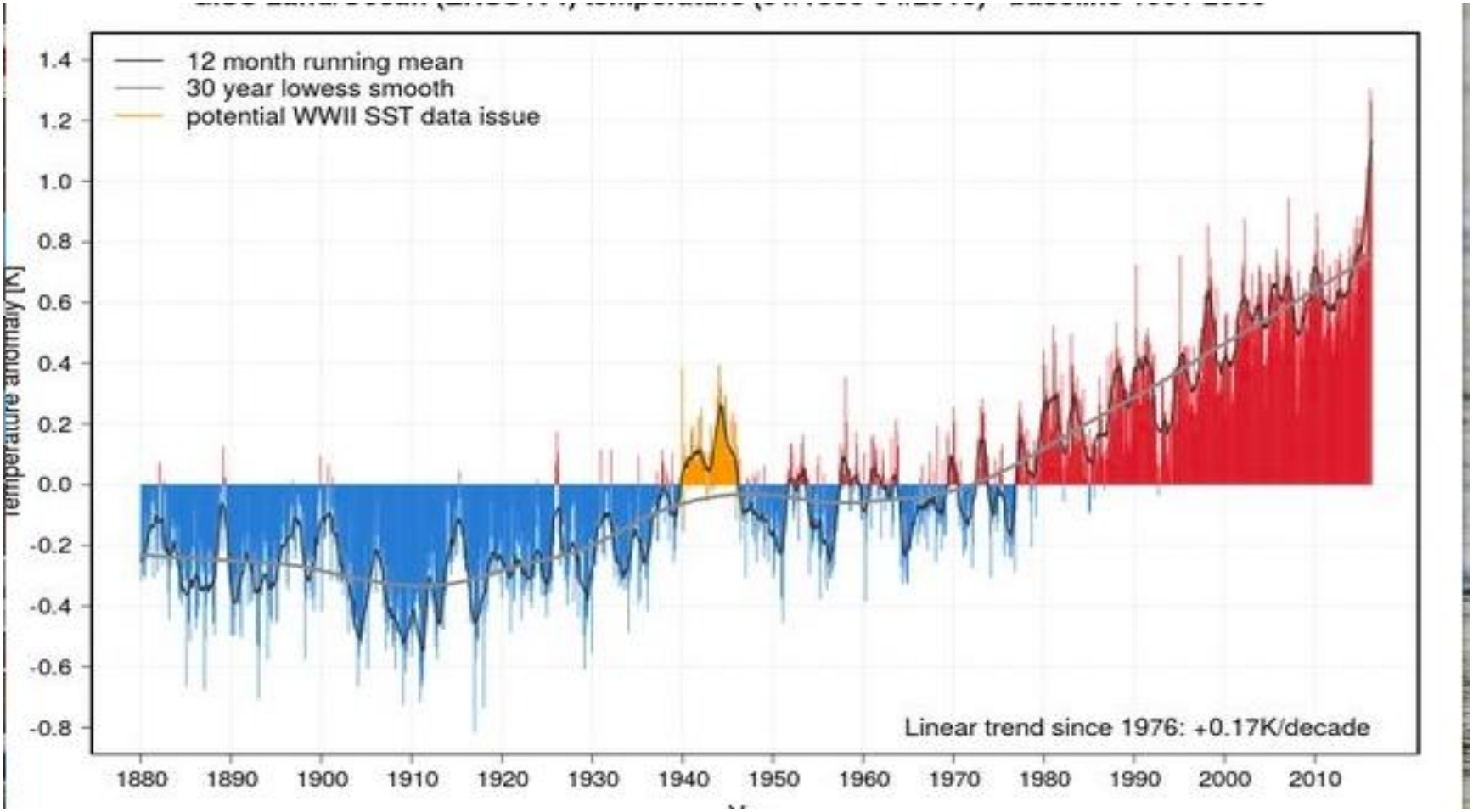

Climate change: the science

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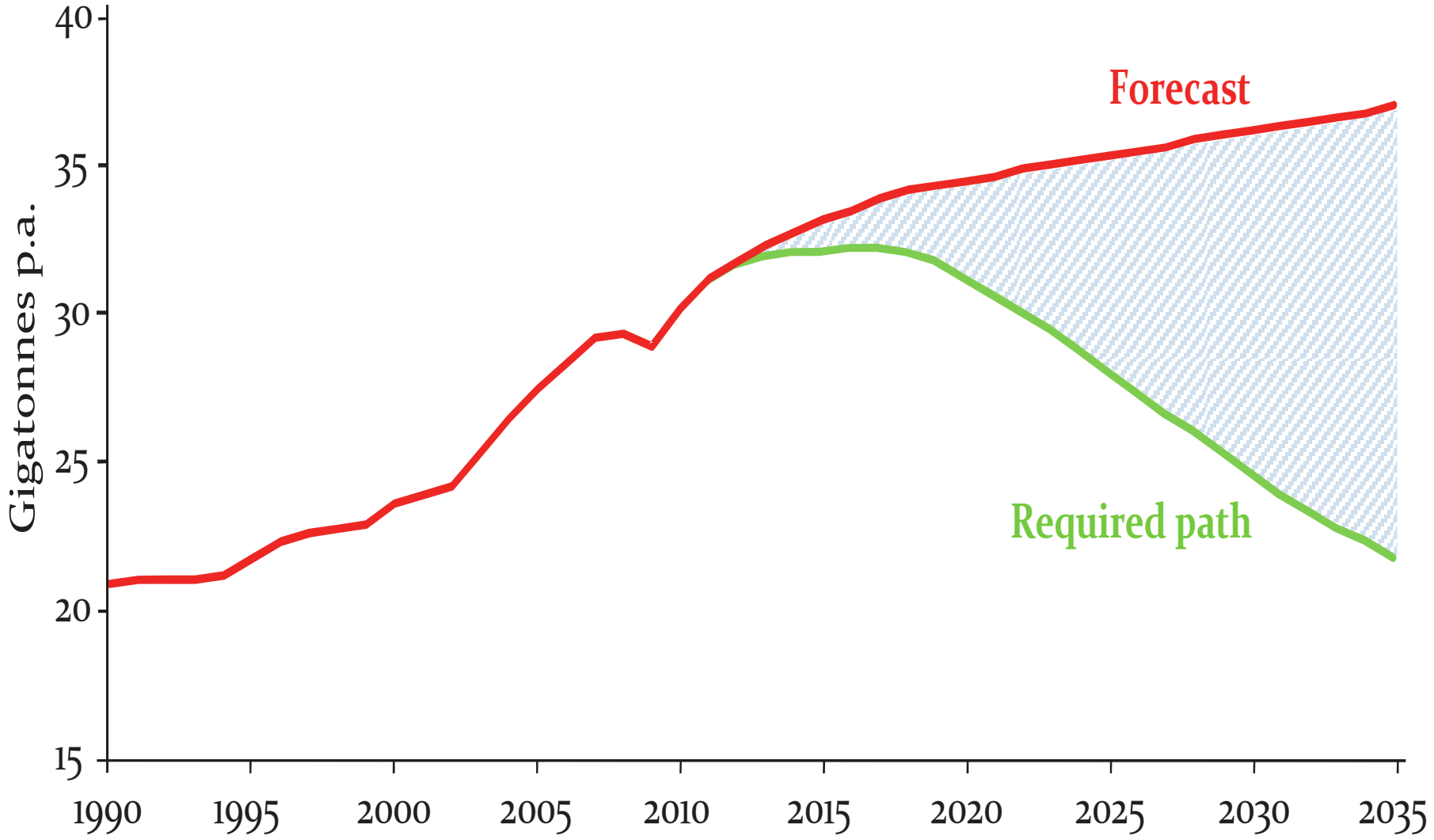

Global INDCs compared with global carbon budgets

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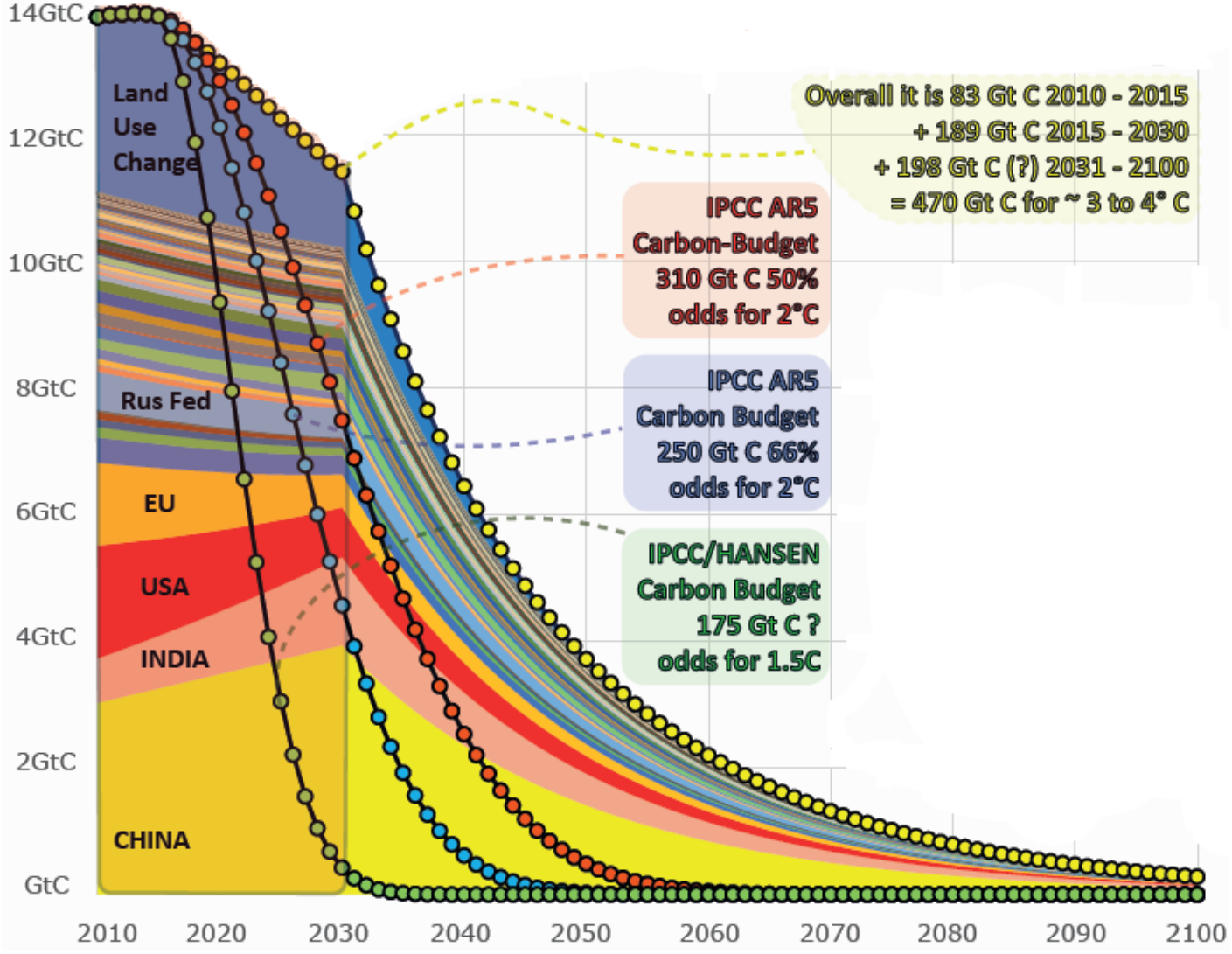

Climate change: the risks

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Climate change: the science

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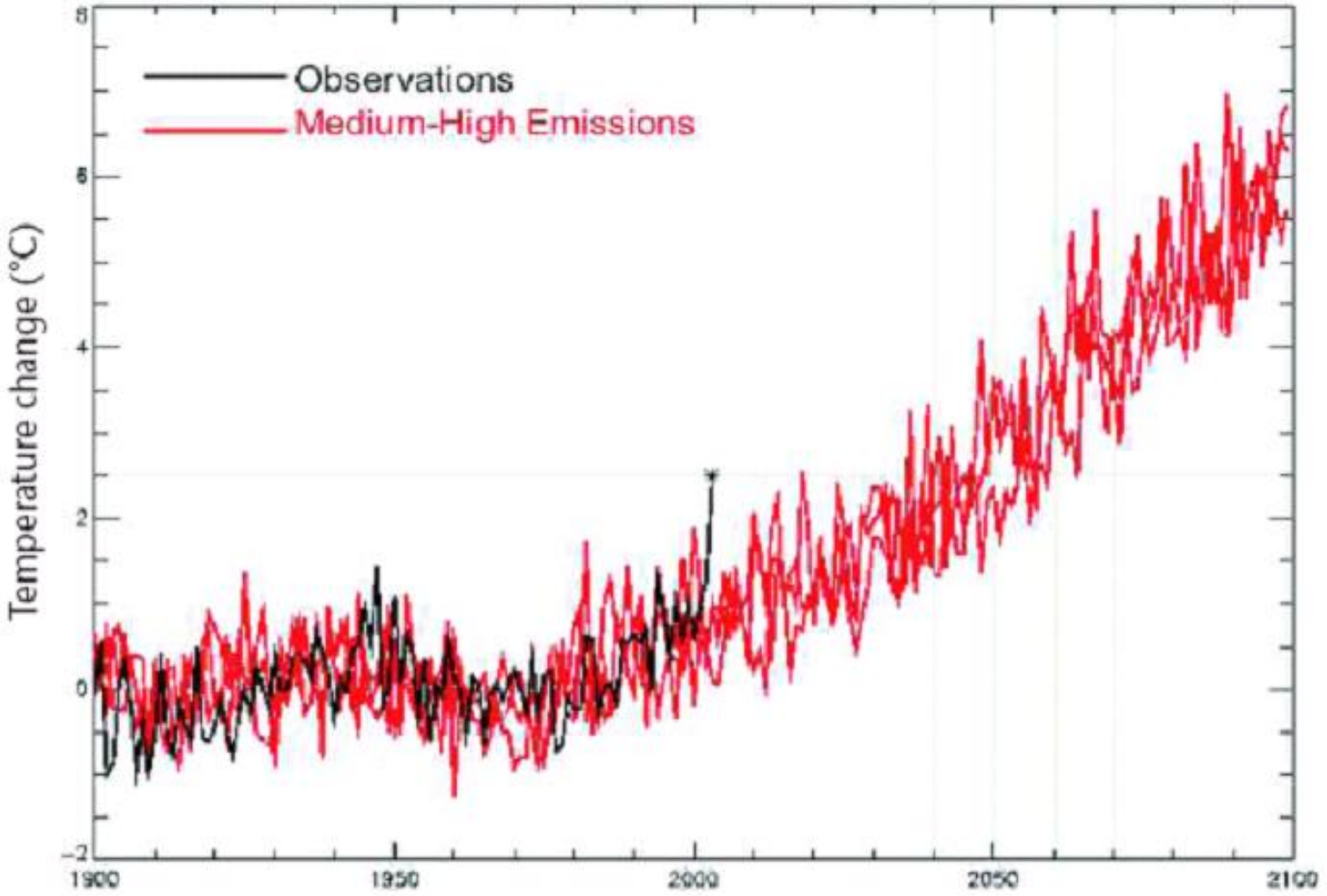
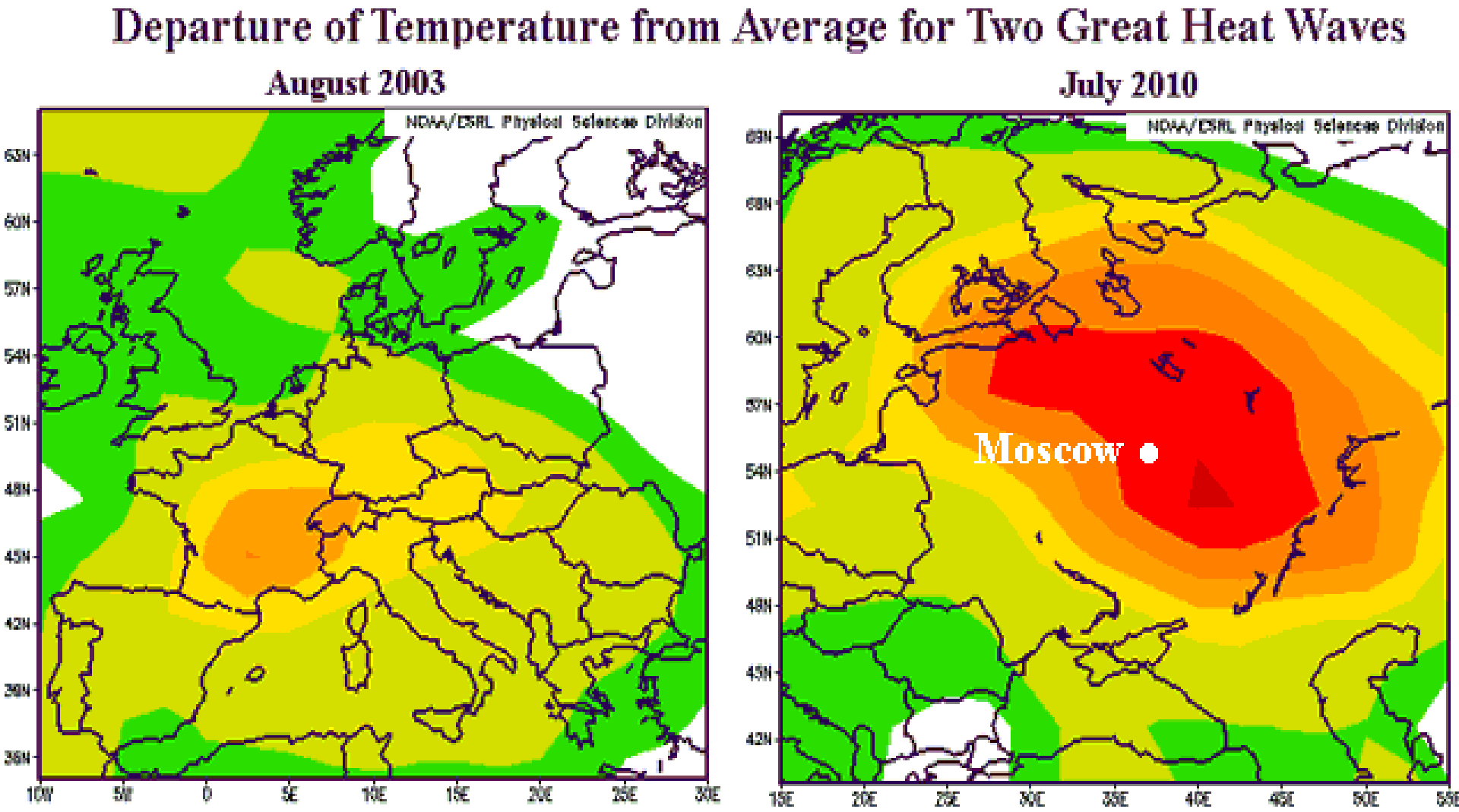
European average summer temperature

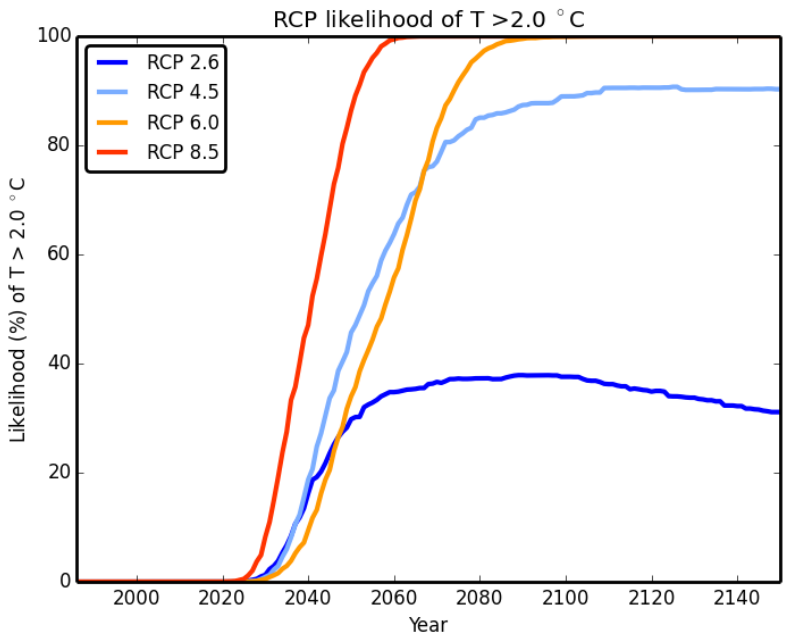


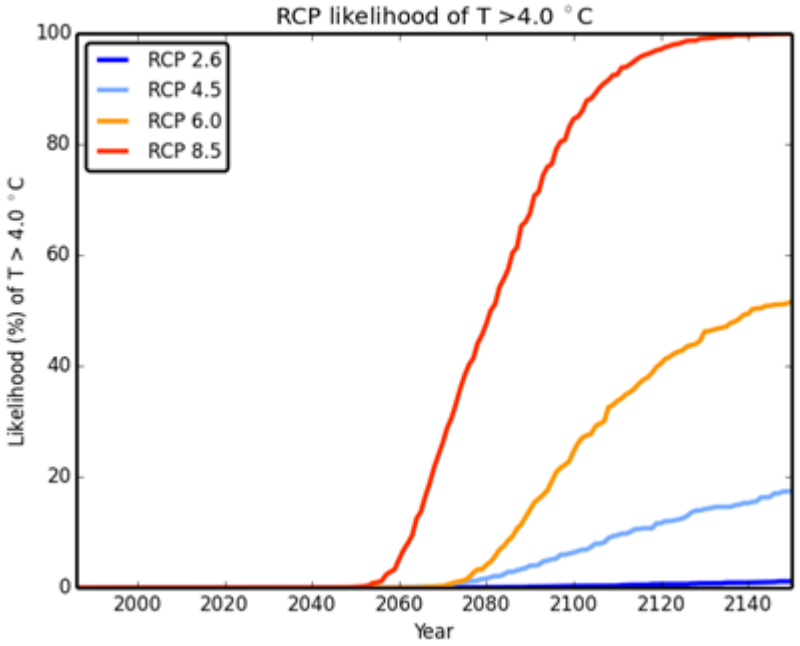
Extreme Weather



35-75,000 extra deaths over 2 wk

Probability of exceeding 2 °C and 4°C allowing for observational uncertainty



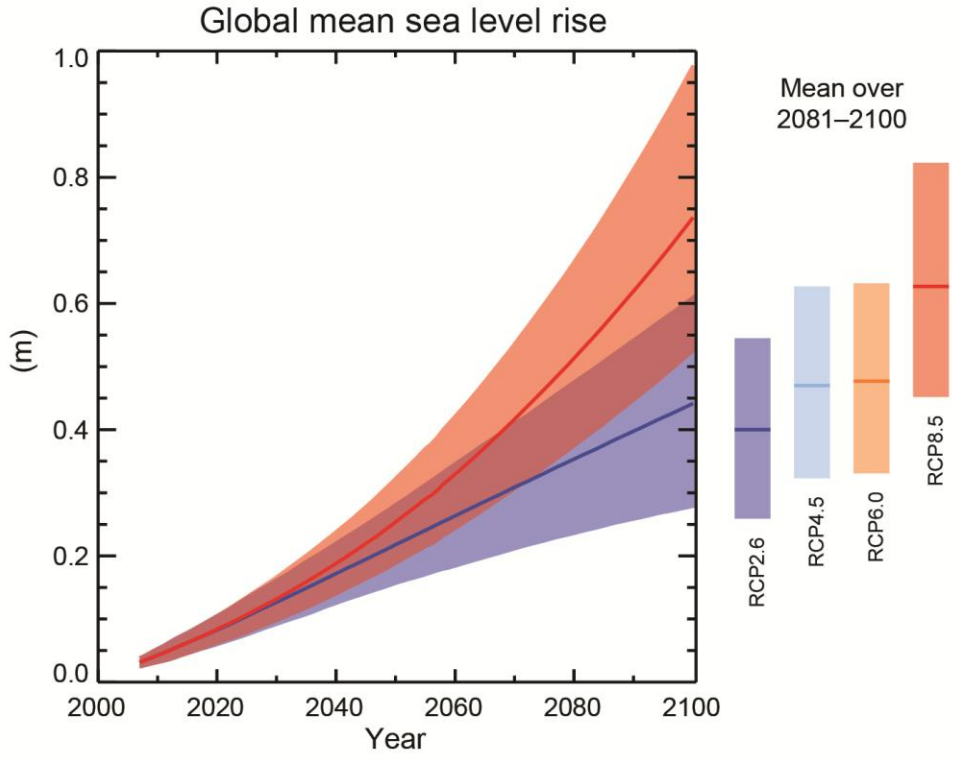


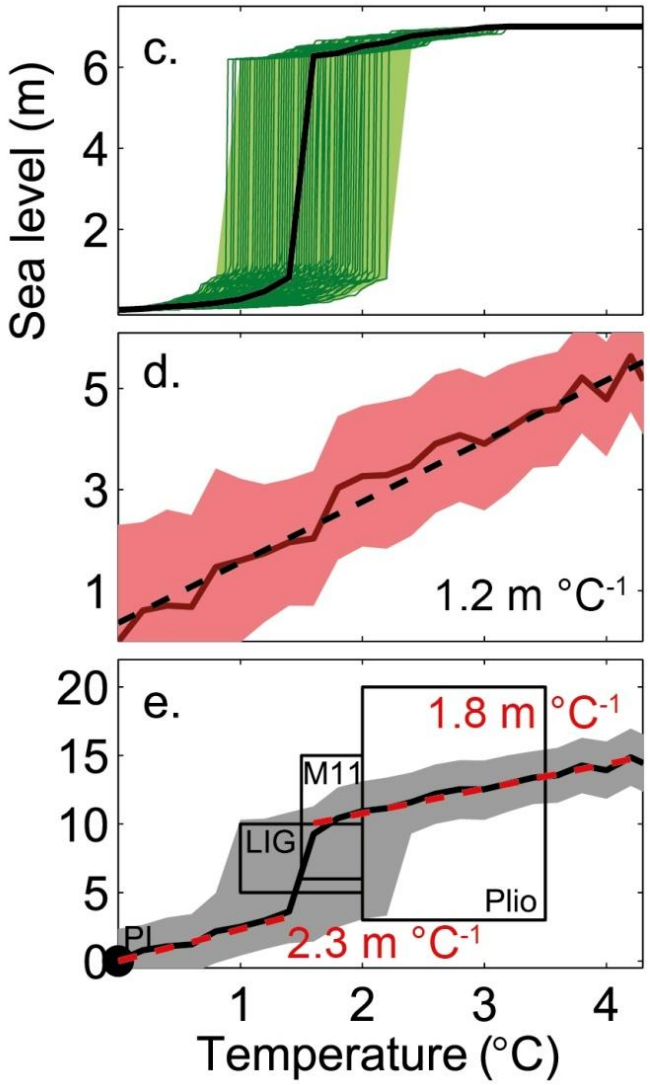
Projected likelihood of exceeding 2 ° C and 4 ° C from the RCPs. Temperature targets are set relative to pre-industrial levels.

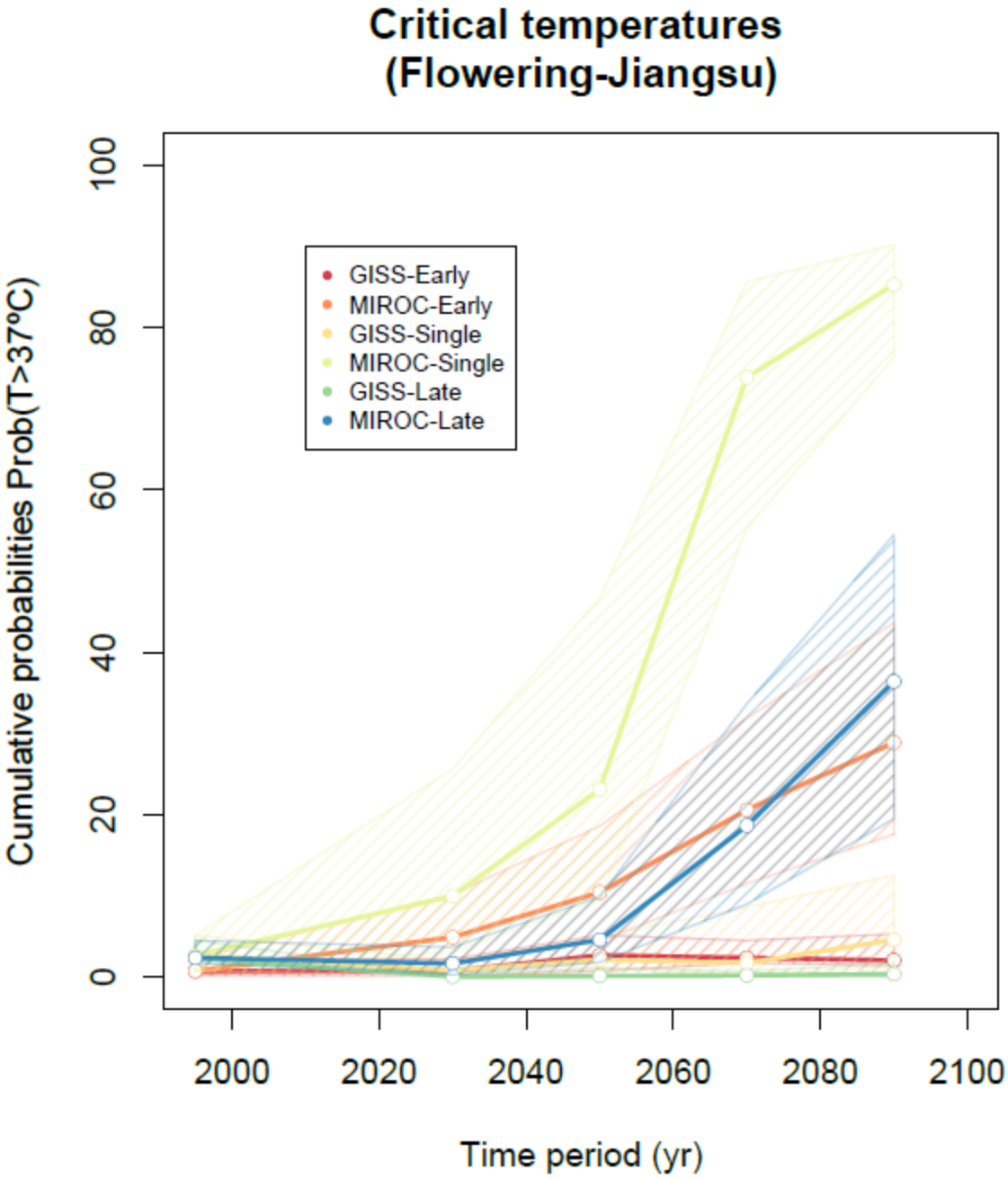
Only RCP2.6 gives a reasonable chance of avoiding warming of 2 ° C. All except RCP8.5 have an appreciable chance of avoiding temperature increases of over 4 ° C.

- 1/5 Pakistan's total land area underwater (796,095 km^2 : 307,374 $miles^2$)
- 20 million people affected
- 10 million people drink unsafe water

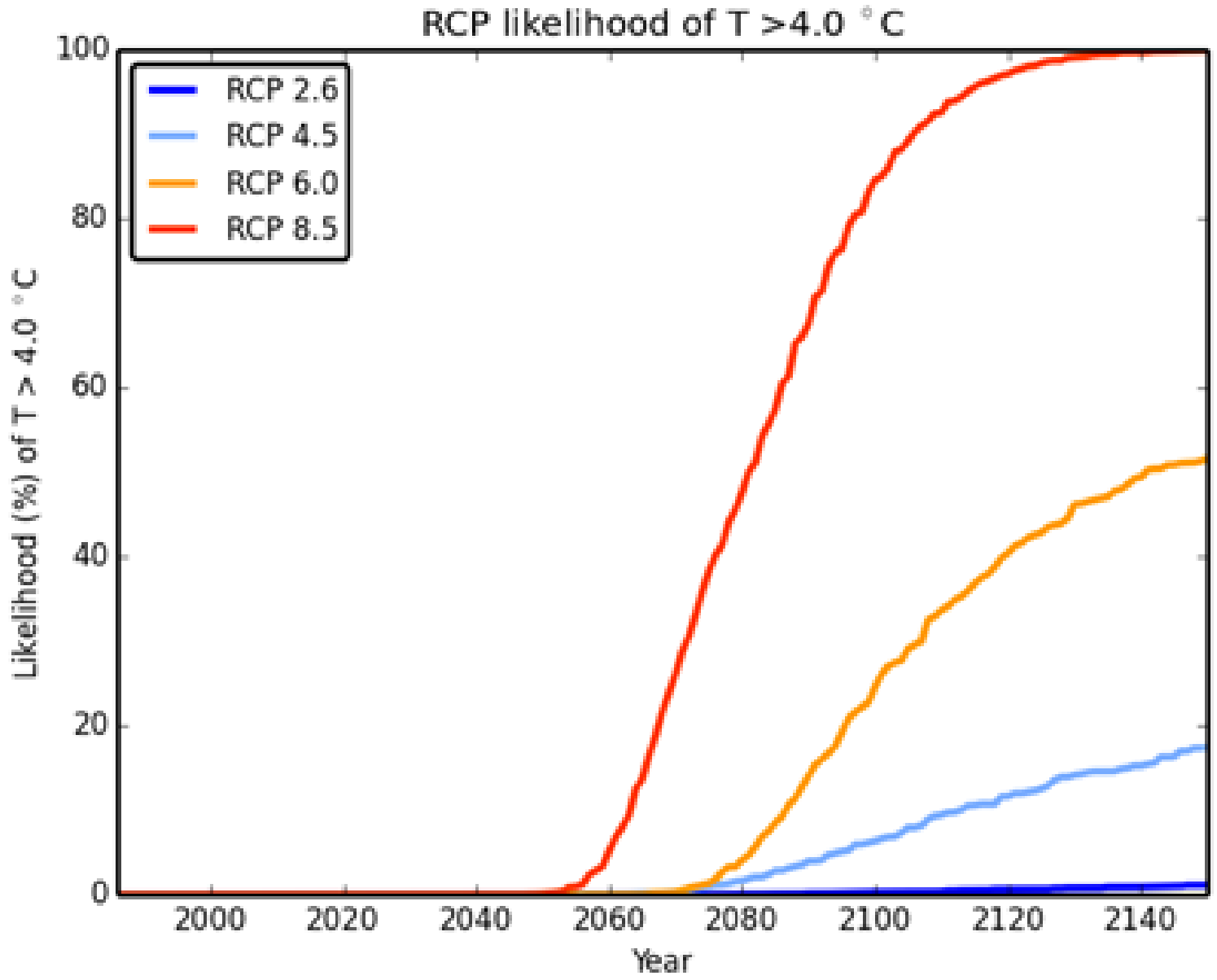
Sea level rise: actual vs committed






Critical temperatures
(Flowering-Jiangsu)
Cumulative probabilities Prob(T>37°C)
0
20
40
60
80
100
2000
2020
2040
2060
2080
2100
Time period (yr)
GISS-Early
MIROC-Early
GISS-Single
MIROC-Single
GISS-Late
MIROC-Late

Probability of exceeding 4°C



UK leadership in tackling climate change

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- First country to introduce comprehensive legislation - **Climate Change Act** (2008)
- All – Party Agreement
- $1.2bn committed to **Green Climate Fund**
- UK's own **International Climate Fund: $13bn**
- First country to commit to **coal phase-out**

UK actions, commitments

- 1997 renewables obligation on grid.
- 2002 Energy Research Partnership, UKERC and Energy Technologies Institute formed.
- 2003, 2007 Energy White Papers; feed-in tariffs; Dept of Energy & Climate Change formed.
- 2005 Gleneagles G8, topics: Climate Change and Development, commitment to raise ODA to 0.7% GDP.
- 2008, Clim Ch Act of Parliament, incl commitment 80% redn by 2050 & creation of Climate Change Com. 5th Carbon Budget to 2032, 57% reduction.
- 2011 International Climate Fund, £3.89bn REFINANCED AT A FURTHER £5.8bn in October 2015. $1.2bn committed to global Green Climate Fund.
- 2016. First country to commit to complete coal phase-out, 2025.

Outcomes: 30% reduction achieved to date; 2028 Carbon Budget means 52% by 2028. Pressure on EU.

- The Current UK Government Position, with DECC being incorporated into BIS.
- 2016 commitment to reduce emissions by 57% by 2032.
- The impact of BREXIT.

EDITORIAL

Biggest opportunity of our age

Sir David King is the United Kingdom Foreign Secretary's Special Representative for Climate Change. E-mail: david.king@fco.gov.uk

The importance of the agreement reached at the Paris climate Conference of Parties (COP21) last month cannot be overstated. It is a major step toward preventing some of the worst risks that climate change presents to the global economy and security. Now is the time to seize the opportunity that this moment represents. We must transform world economies away from fossil fuels toward a more sustainable low-carbon future.

Research and innovation have a critical role in this transformation. Advances in renewable energy generation, smart energy storage, smart grids, and improved energy efficiency will help countries meet the targets they have signed up to in Paris for reducing greenhouse gas emissions. But crucially, these advances will enable countries to increase their emission reduction targets, which are set to be reviewed every 5 years under the United Nations Framework Convention on Climate Change system. Indeed, nations must increase their targets if we are to achieve a safe and stable climate in which temperature rise is limited to less than 2°C. The Paris agreement sets out a distinct long-term goal of net zero emissions in the second half of the century, showing that the world is committed to decarbonizing the economy. This sends a strong signal to industry and investors that the shift is global, irreversible, and transformational, and provides confidence that will clear a path for the private sector to drive a long-term solution.

Many companies are considering signing up to 100% renewable energy pledges. The dynamic has changed—previously, the cost-benefit analysis was more finely balanced; now, it is a higher-risk strategy not to invest in renewable energy and sustainability.

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"Now is the time to...transform world economies...toward a more sustainable low-carbon future."

There is already more investment in renewable energy globally than there is in conventional energy. This trend is expected to increase to meet the enormous new demand resulting from the Paris agreement. Although there is currently a shortage of good investable green projects, an increase in finance to meet the new demands for clean energy will create more business opportunities for such projects, such as cheap and large rechargeable batteries and solar- and battery-powered airships for transport.

"Mission Innovation," the initiative announced in Paris, will see 20 countries, including the United Kingdom and the United States, double their public sector budgets for clean energy research and development. In addition, the Breakthrough Energy Coalition, a global group of private investors including Bill Gates, will provide investment flows of potentially $20 billion in its early stages, for the most promising new clean energy technologies that can be streamlined into the marketplace.

Backed by the U.S. and UK governments, the Energy Africa initiative aims to ensure that every home in Africa has clean, affordable energy by 2030. A huge challenge, indeed, but renewable clean energy is already growing faster in many developing nations than it is in richer countries because it makes economic sense and is the right choice for environmental and health reasons, too.

So the direction is set: decarbonization. The target: to reduce greenhouse gas emissions fast enough to prevent the worst impacts of climate change from hitting all of us, particularly the world's poorest and most vulnerable. The opportunity: immense. The question that remains: What part are you going to play?

–Sir David King

Falling costs of Clean Energy Technologies

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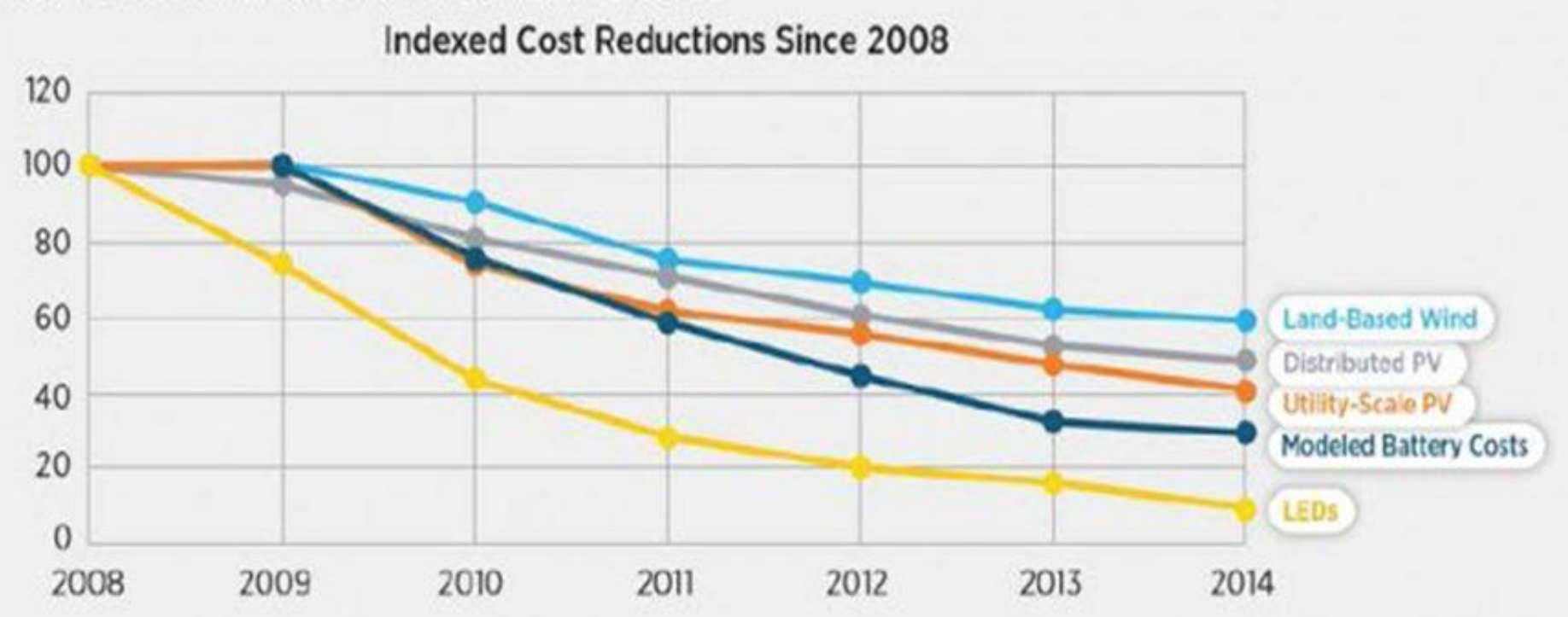

Global Apollo Program becomes Mission Innovation in Paris

- Launched by Obama, Modi, Hollande and Cameron in Paris.
- 20 nations + the EC/EU have joined, committed to doubling Clean Energy RD&D by 2020: amounting to annual spend of aprox $30bn.
- Breakthrough Energy Coalition also announced, organised by Bill Gates, up to $20bn total over next 10 years to spin out potential market facing Clean Energy solutions.
- Ministers agreed a framework on June 2nd 2016 in San Francisco.

Mission Innovation

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- High-profile initiative to **strengthen public funding of clean energy RD&D.**
- 22 nations, committed to doubling by 2020/2021: **annual spend of approx $30bn**.
- **Breakthrough Energy Coalition**, 29 investors pledged to invest $20bn in solutions.

The co-benefits of the transition to a low-carbon economy

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- **Health**: For example 2003 heatwave which expected to represent a normal summer by 2040.

- **Air quality**: Tackling air pollution will help the UK meet its carbon targets and improve health.

Climate change: the economics

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Opportunities **across the UK economy:**

- **460,000 people were employed in the low carbon sector in the UK** in 2013
- Total turnover in 2013 **£120bn.**

Source: the Size and performance of the low carbon economy (Department for Business, Innovation, Skills 2015.)

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