Avoiding dangerous climate change

Vicky Pope

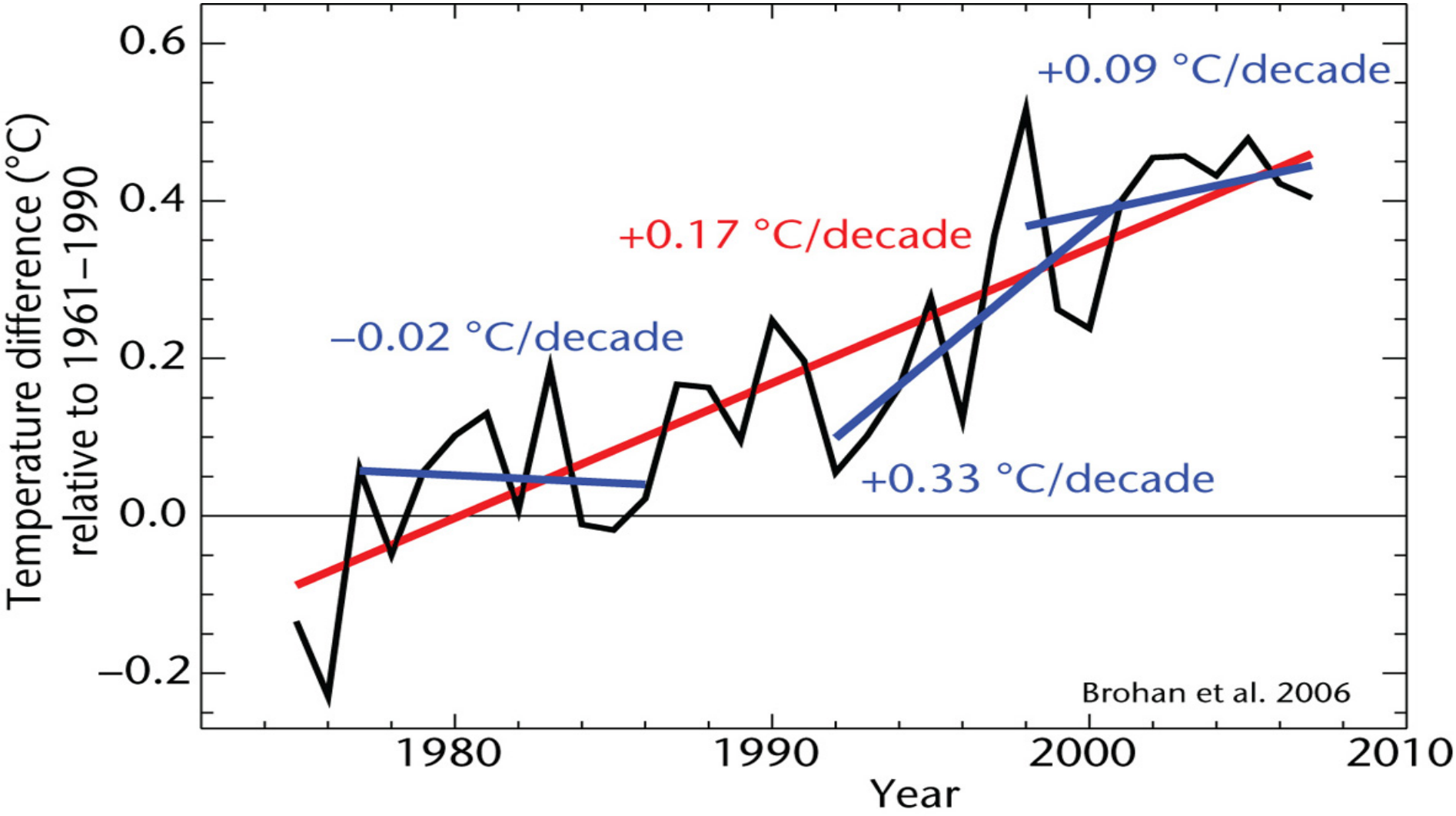
CoP December 2008

Avoiding dangerous climate change

- Climate continuing to warm
- Early and rapid reductions in emissions required
- Emerging science: Climate change more dangerous than previously expected

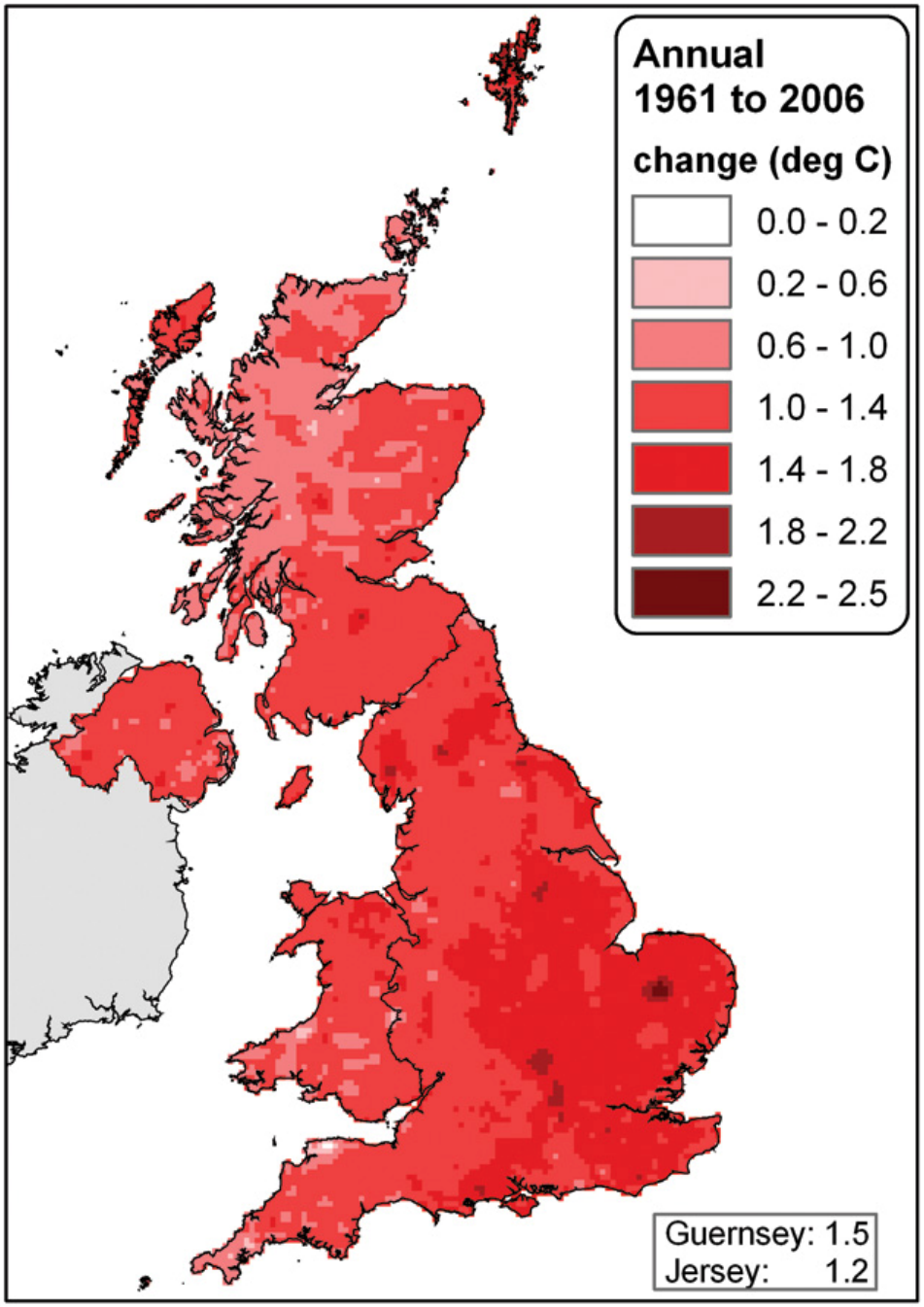
Climate continuing to warm

Temperature anomaly and trends



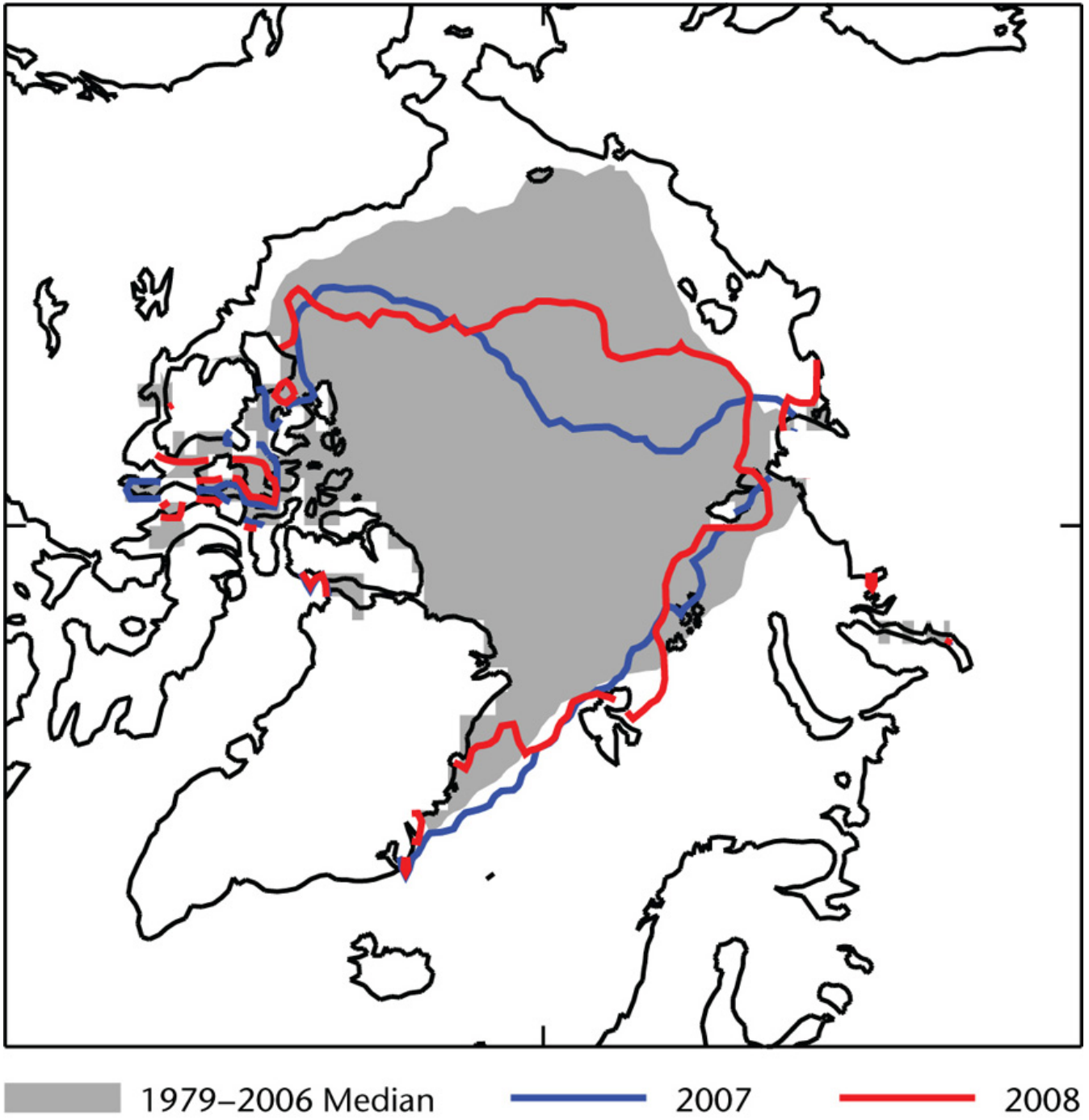
Met Office
Hadley Centre

Temperature increase 1961-1990

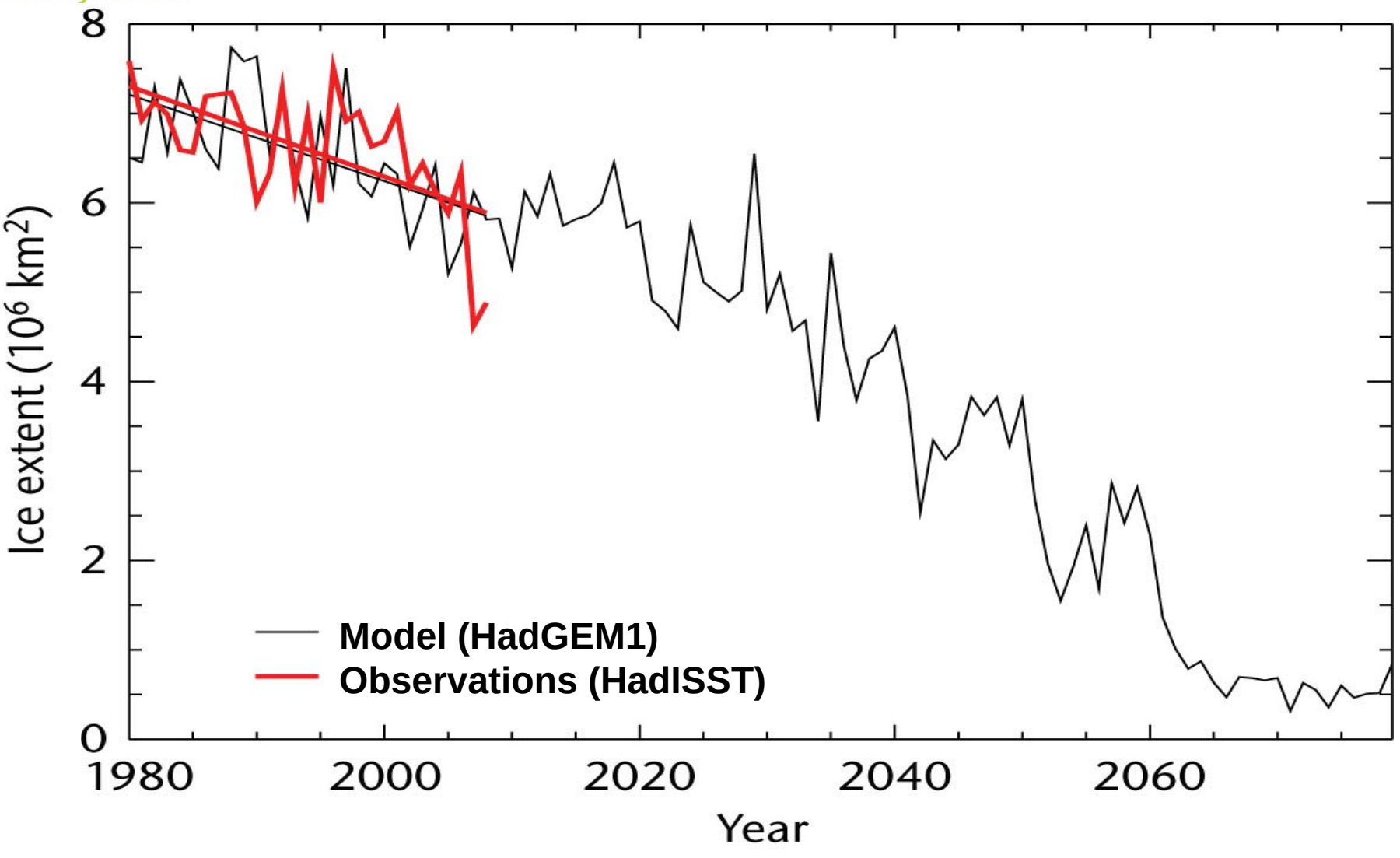


Met Office
Hadley Centre

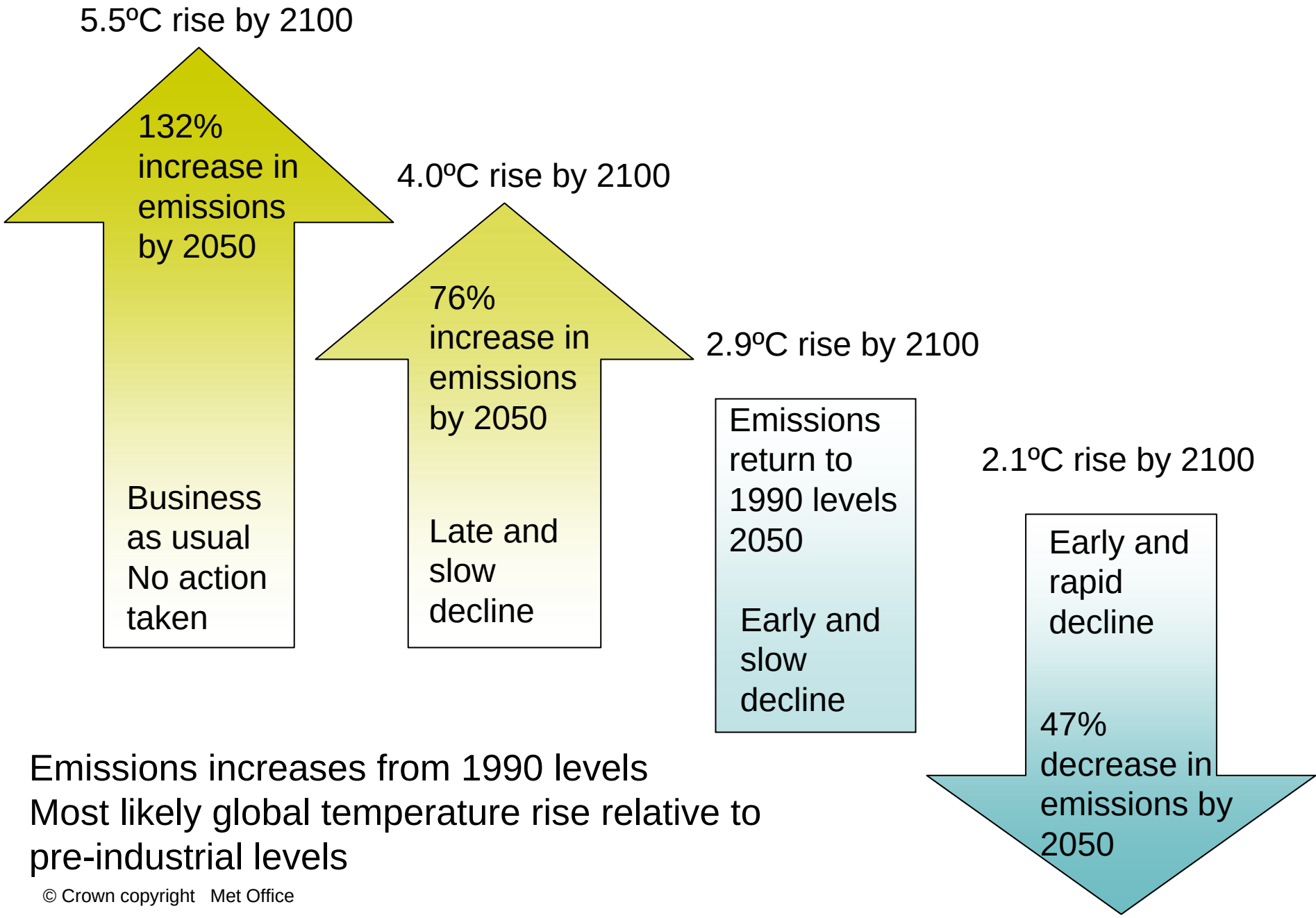
Sea ice extent



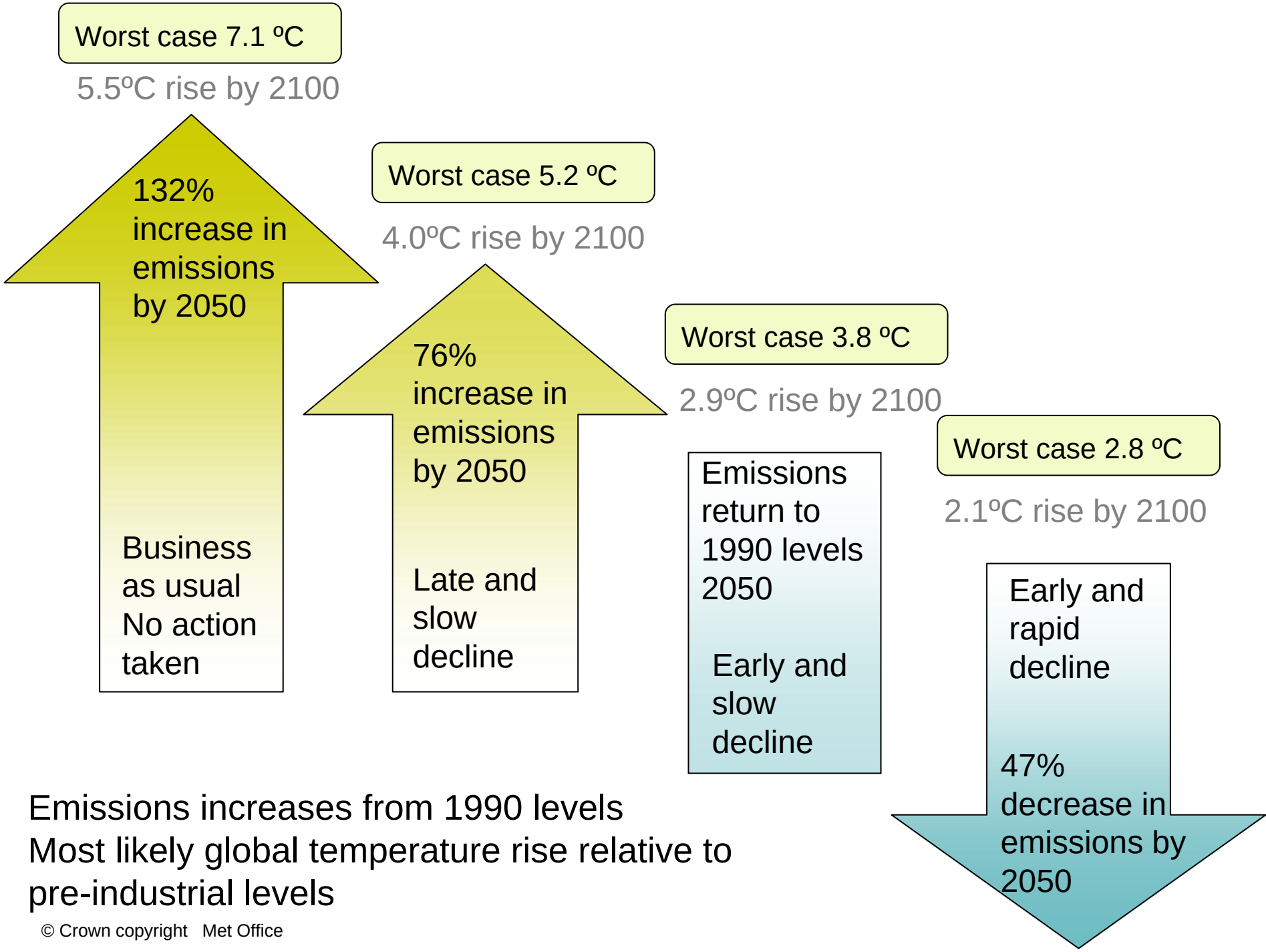
Sea ice extent



Early and rapid reductions in emissions required



Emissions increases from 1990 levels
Most likely global temperature rise relative to pre-industrial levels



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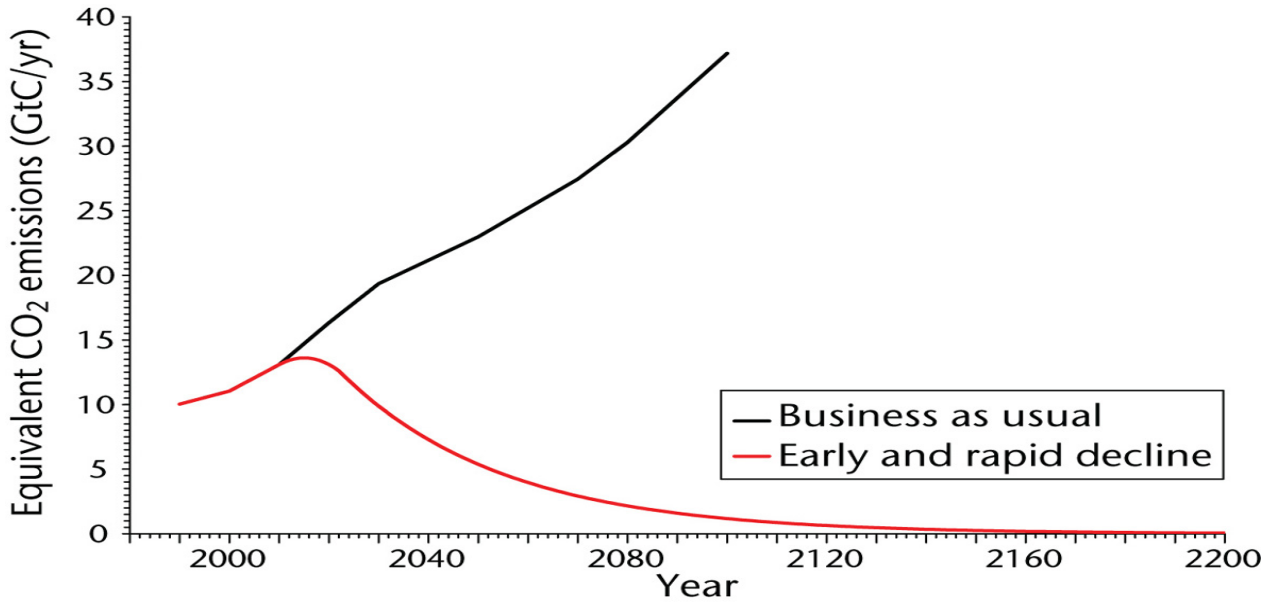
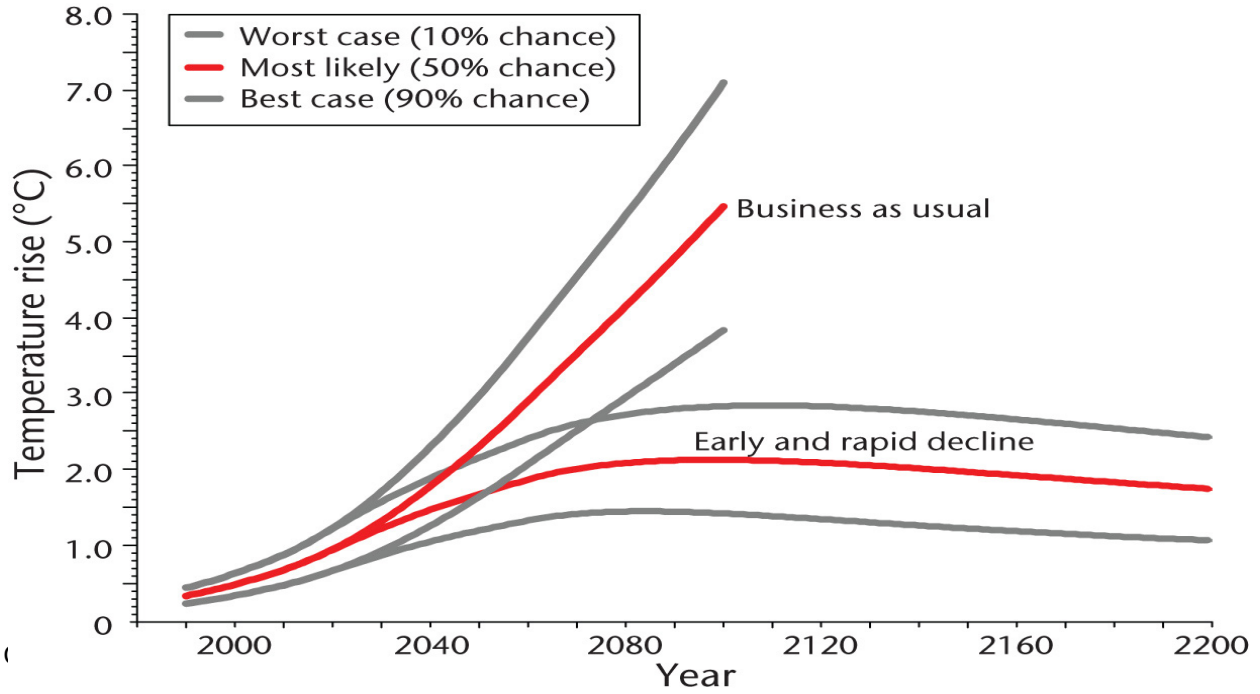
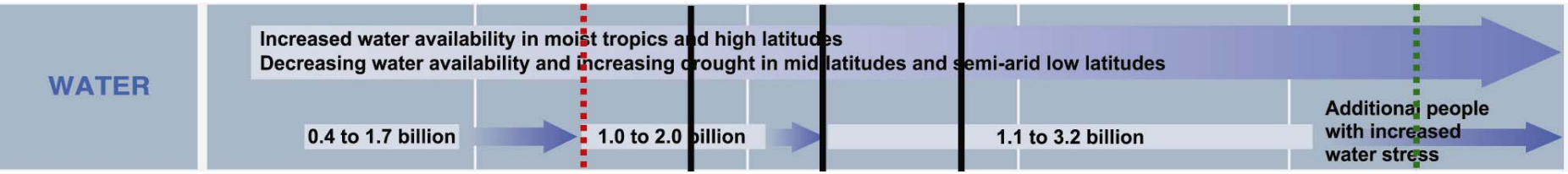




Impacts under 80% and 50% and delayed emissions cuts



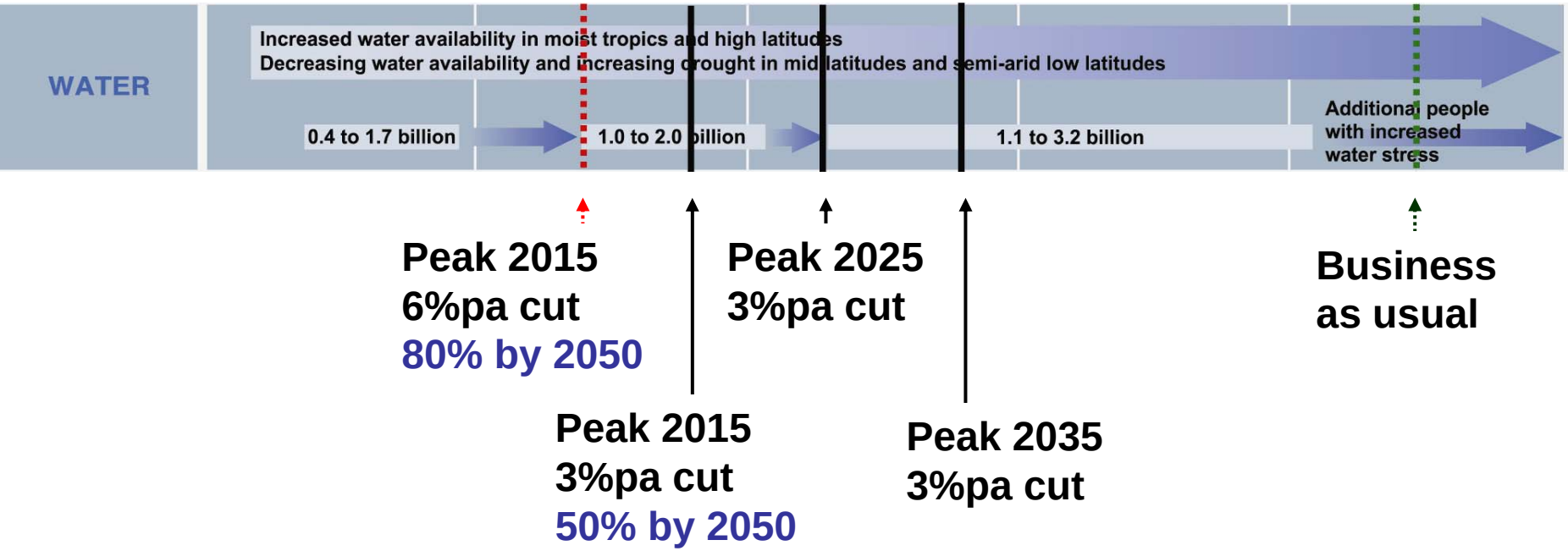
Business as usual

Peak 2015
3%pa cut
50% by 2050

Peak 2035
3%pa cut

Parry et al 2008

Impacts under 80% and 50% and delayed emissions cuts



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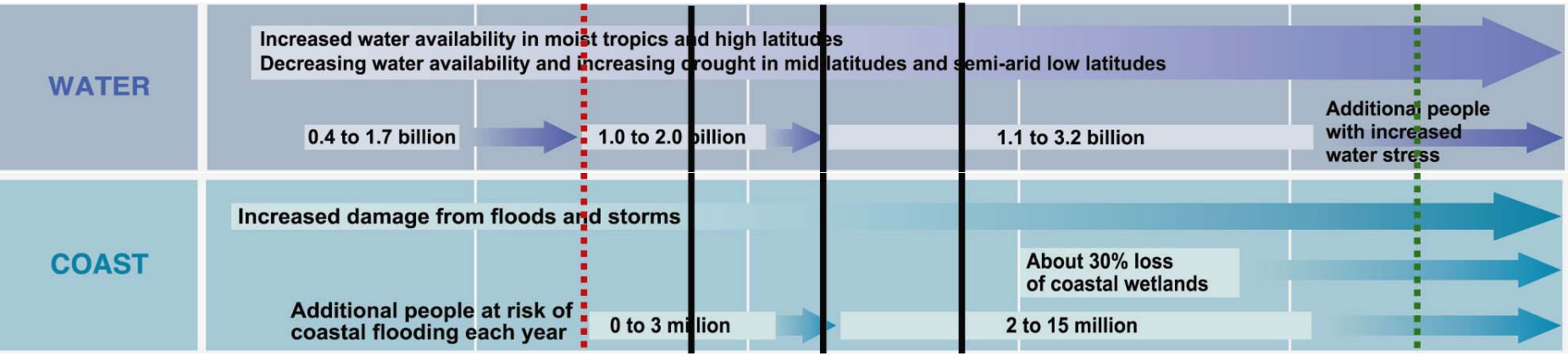

Peak 2015
6%pa cut
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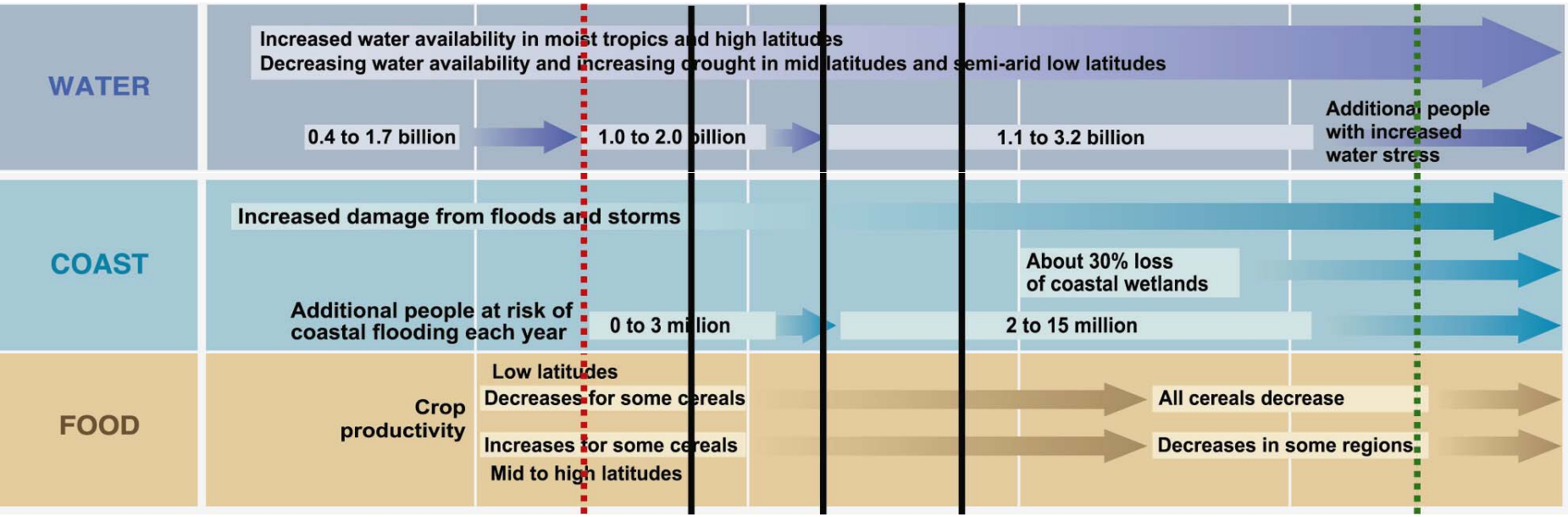

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Business as usual

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10-90th percentile ranges

80%

50%

2025

2035

Parry et al 2008

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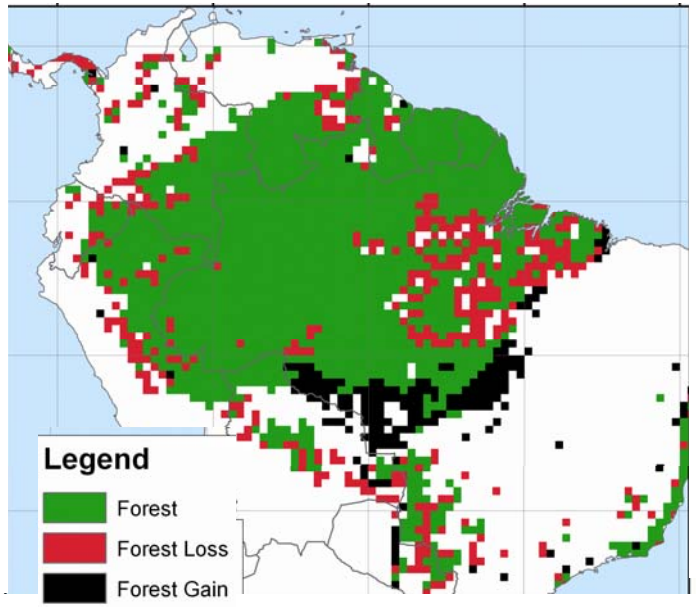
Emerging science: Climate change more dangerous than previously expected

Projected deforestation in 2050

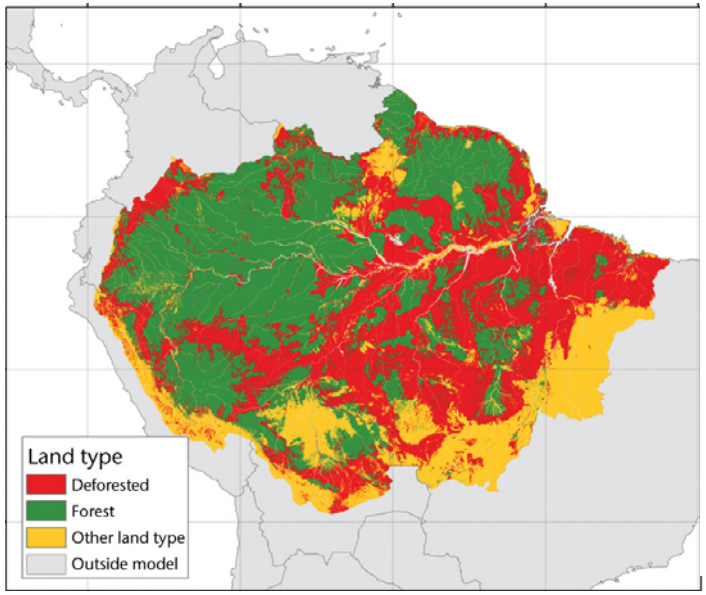
IPCC projections 0.4 million km^2 loss



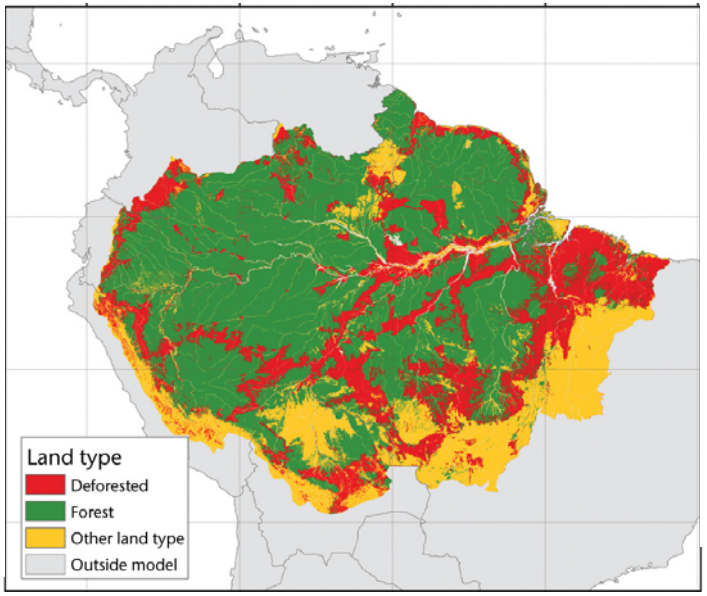
Emissions larger than transport

Stengers et al (2004)
Soares-Filho et al (2006)

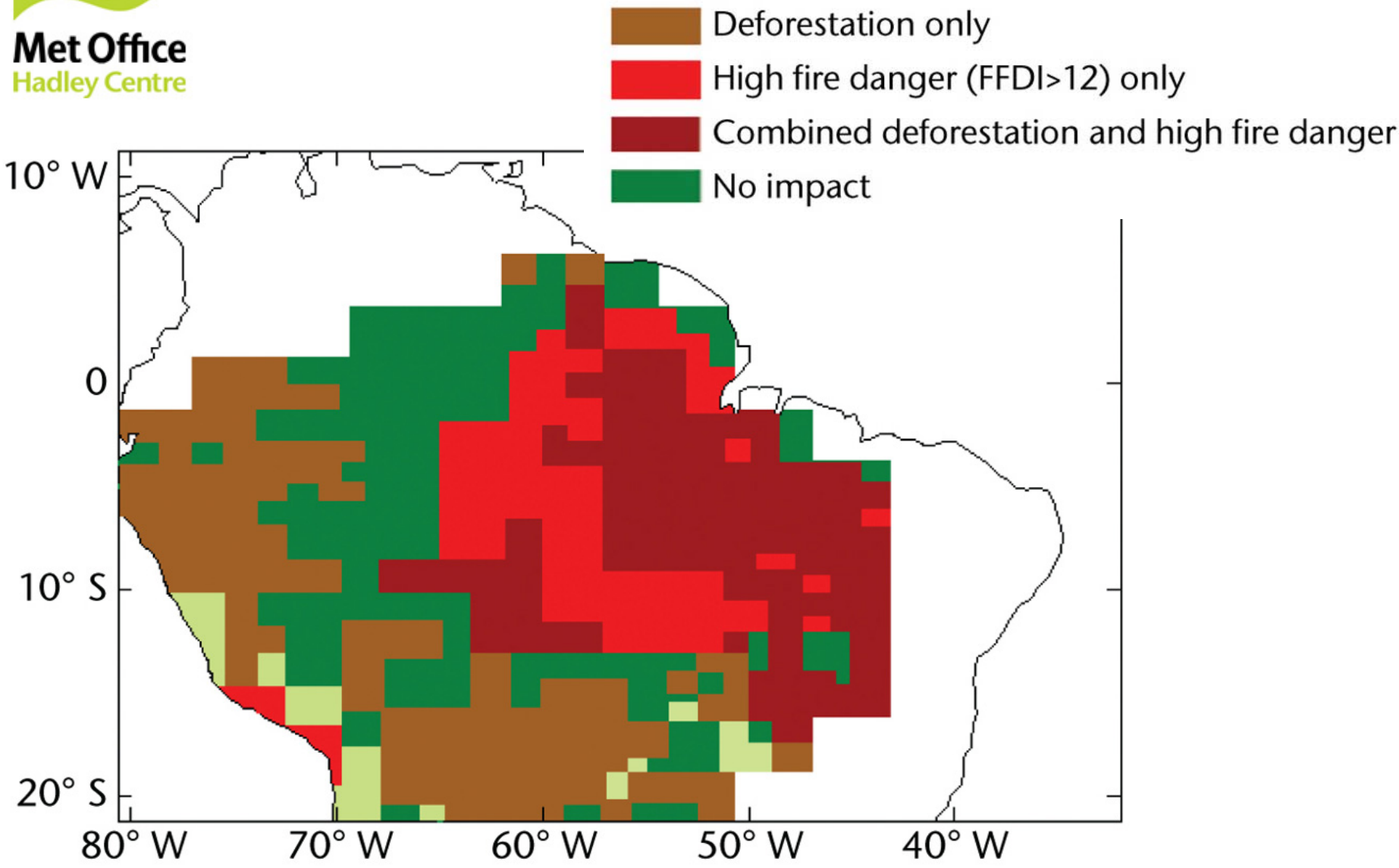
No protection 2 million km^2 loss



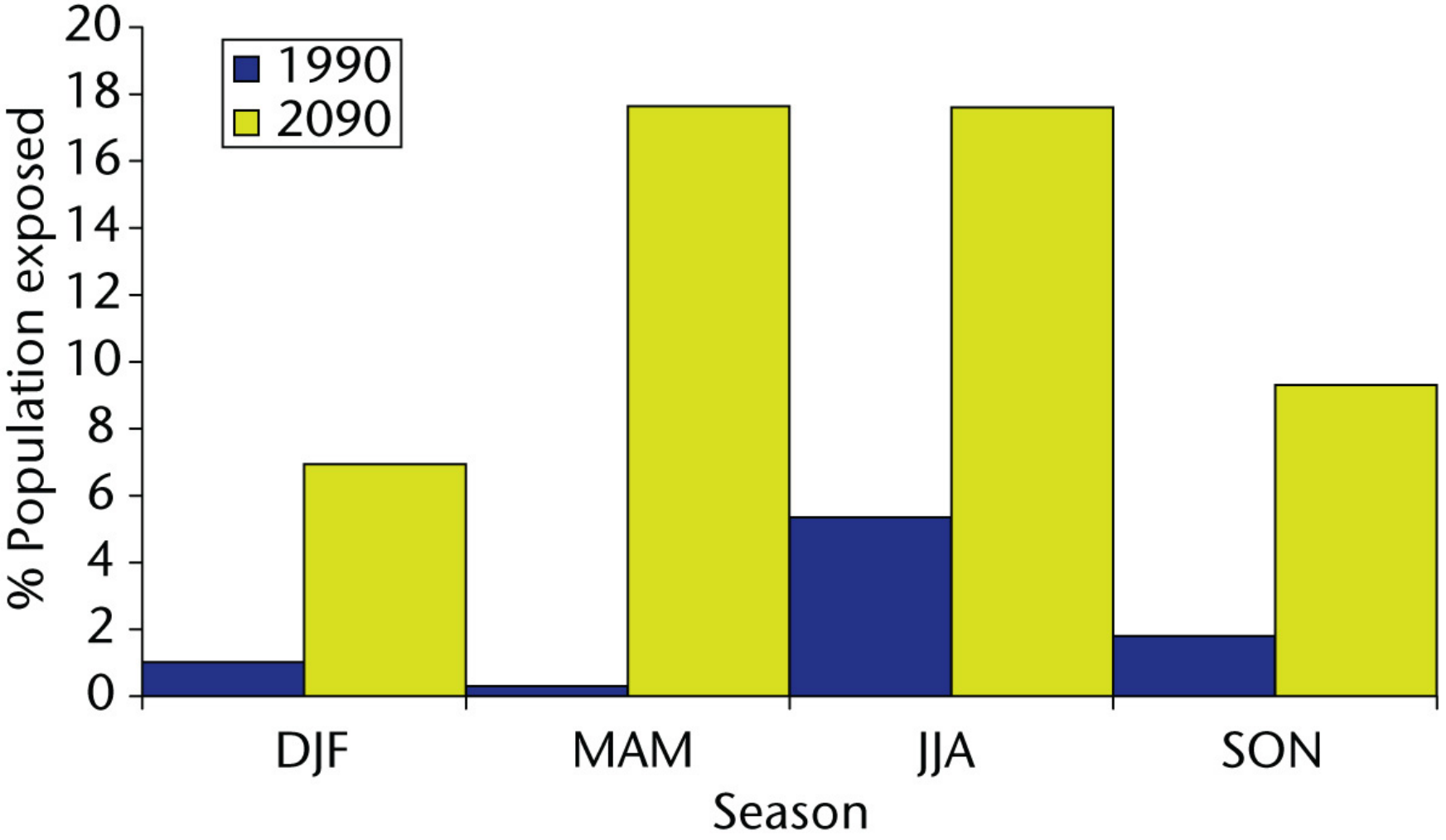
Some protection 0.9 million km^2 loss



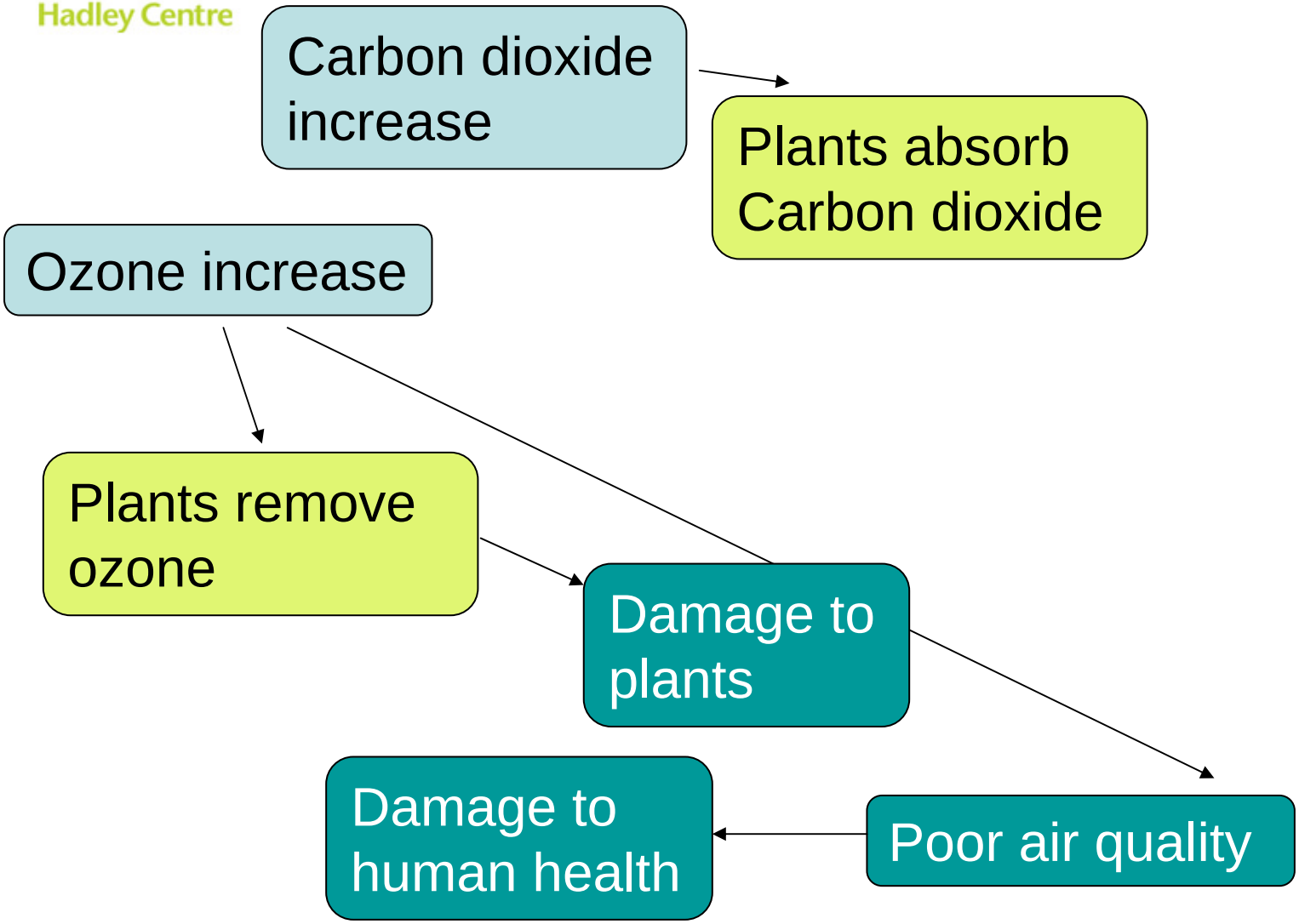
Fire danger and deforestation



Global population exposed to ozone above safe limits (60 ppb)



Links between air quality and climate change



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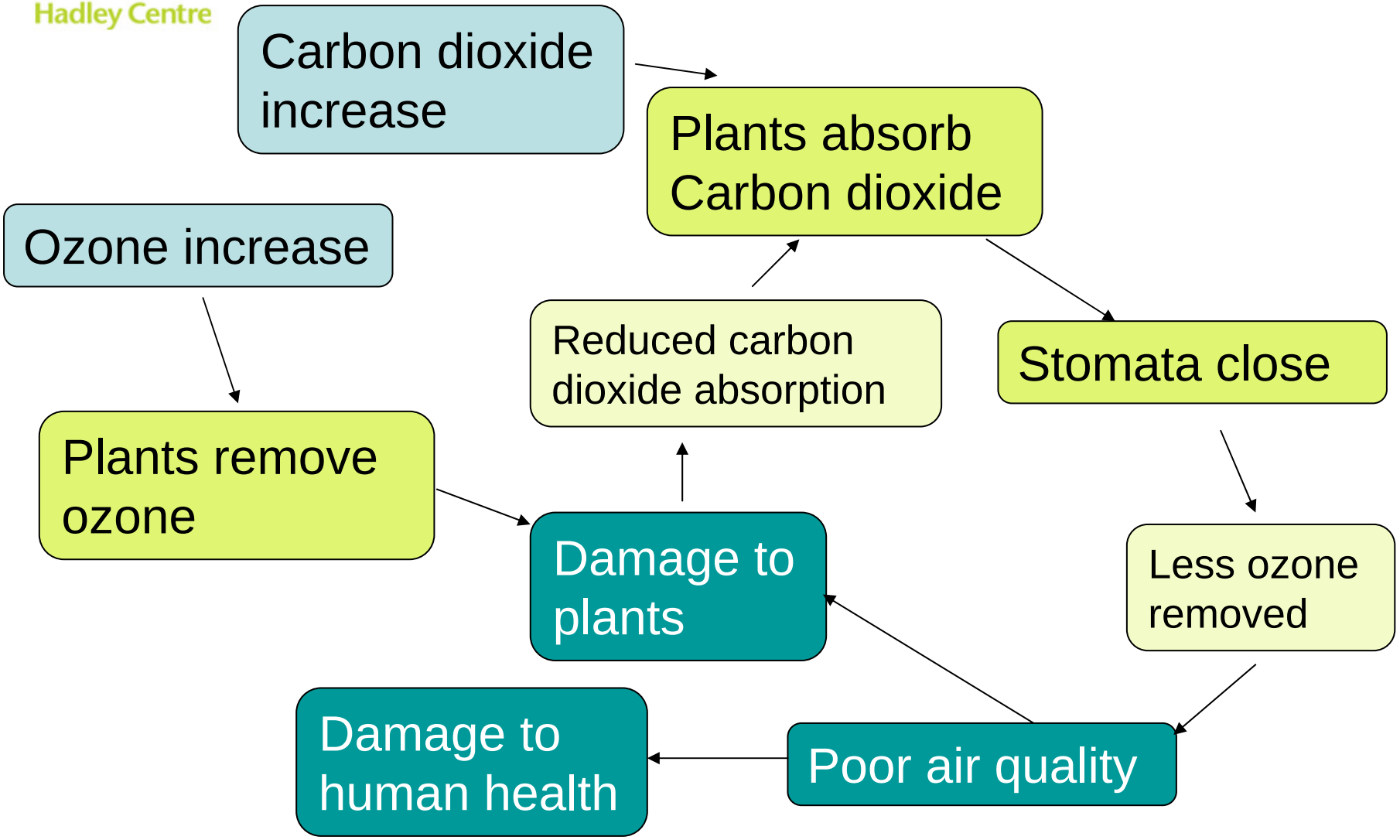
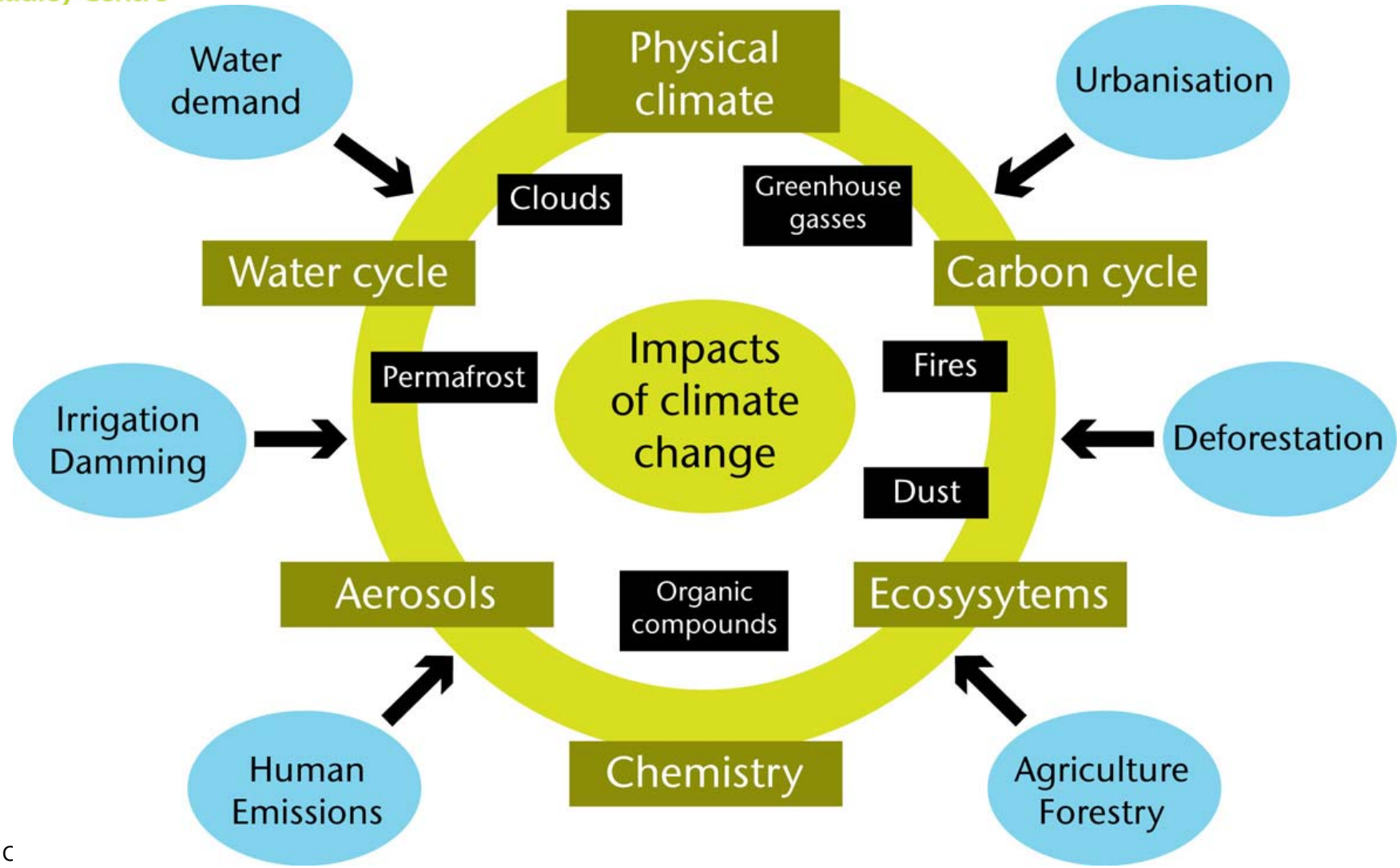


Earth system modelling



Avoiding dangerous climate change

- Climate continuing to warm
  - Global temperature
  - UK temperature
  - Arctic sea ice

- Early and rapid reductions in emissions required
  - Continued growth in emissions 5.5ºC 2100
  - Early rapid reduction (2010 3%pa) 2ºC 2100
  - Late slow reductions (2030 1%pa) 4ºC 2100

Emerging science
Climate change more dangerous than previously expected

- Dangers increased
  - interactions - climate -chemistry - biological systems - fresh water.
- Ozone - carbon dioxide
  - air quality and human health
- Tropical deforestation - climate change
  - fire risk, forest dieback, emissions targets
- Improved information from new models and analysis