



# Climate adaptation risks and opportunities

Mark Howden and many others

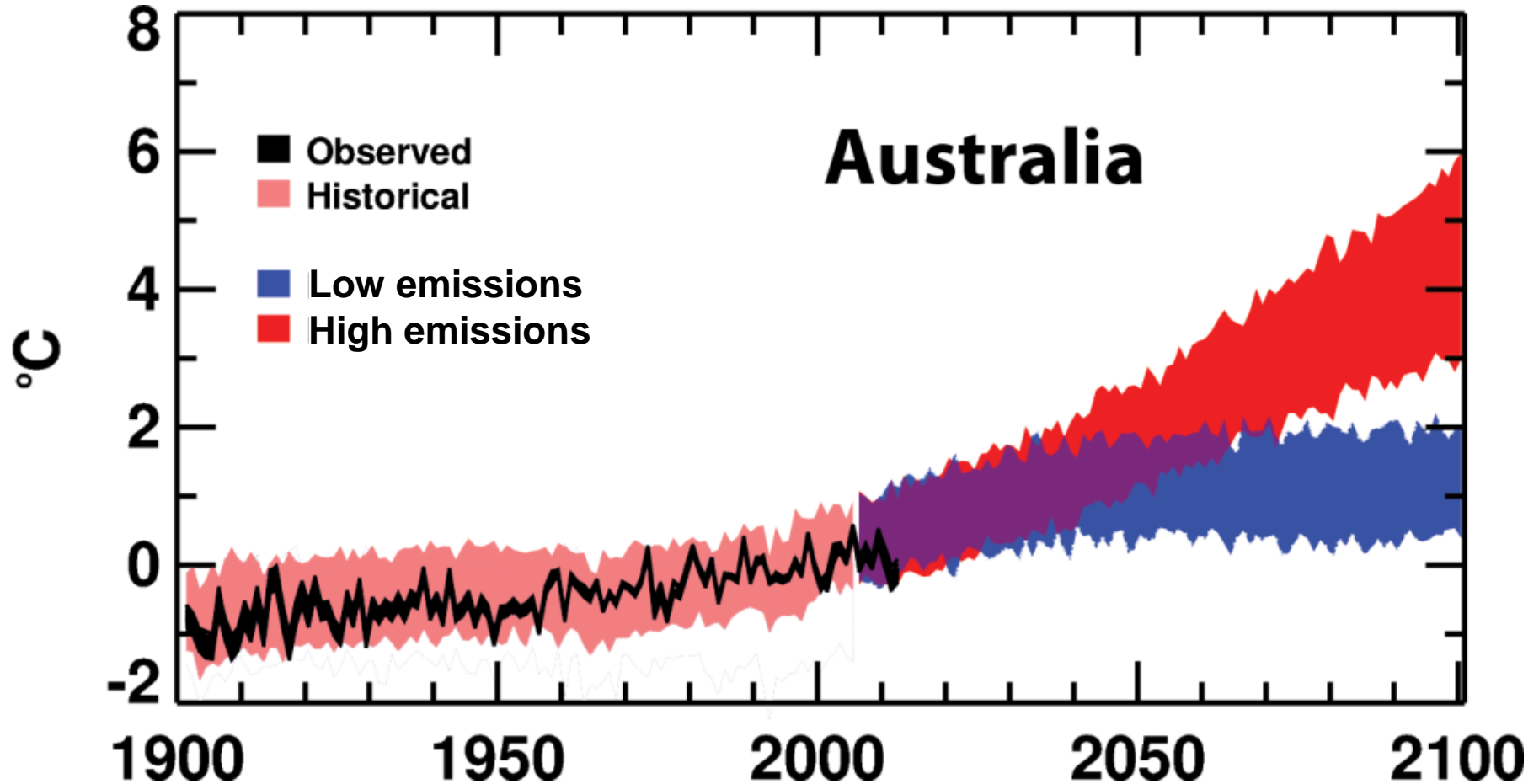
ANU Climate Change Institute

Vice Chair, IPCC Working Group II

# Adaptation is core business

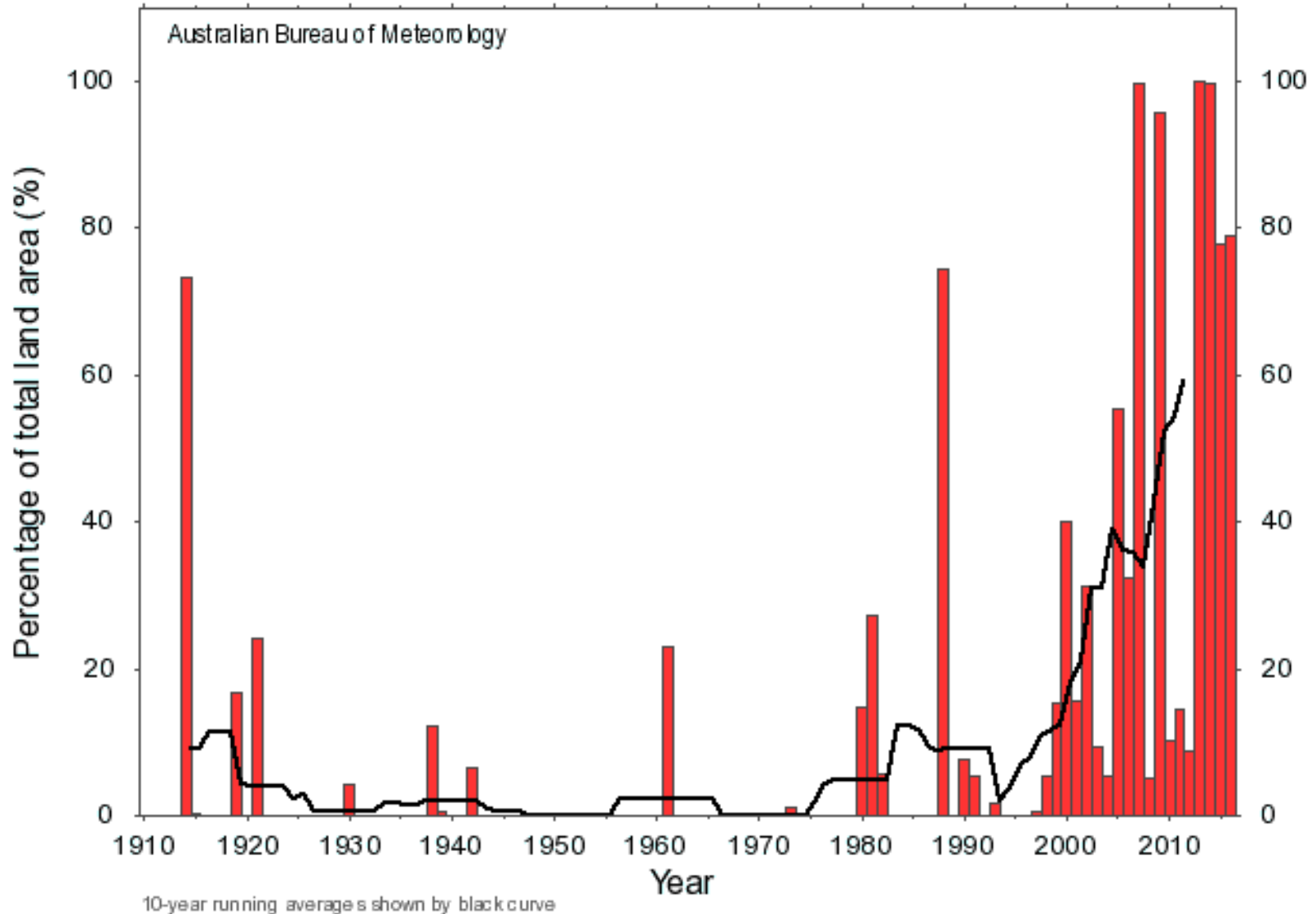
- Climate variability and change means likely increasing gaps between expected outcomes and realised ones
  - sometimes for the better, sometimes for worse
- e.g. for dairy systems the consequence of **not** matching the genetics and/or management to the climate is either underperformance and/or increasing risk
  - the logic for considering adaptation is strong
- Adaptation is *just changing what we do to get what we want*
- Adaptation is always done in anticipation of expected benefits

# What do we adapt to?: Temperature



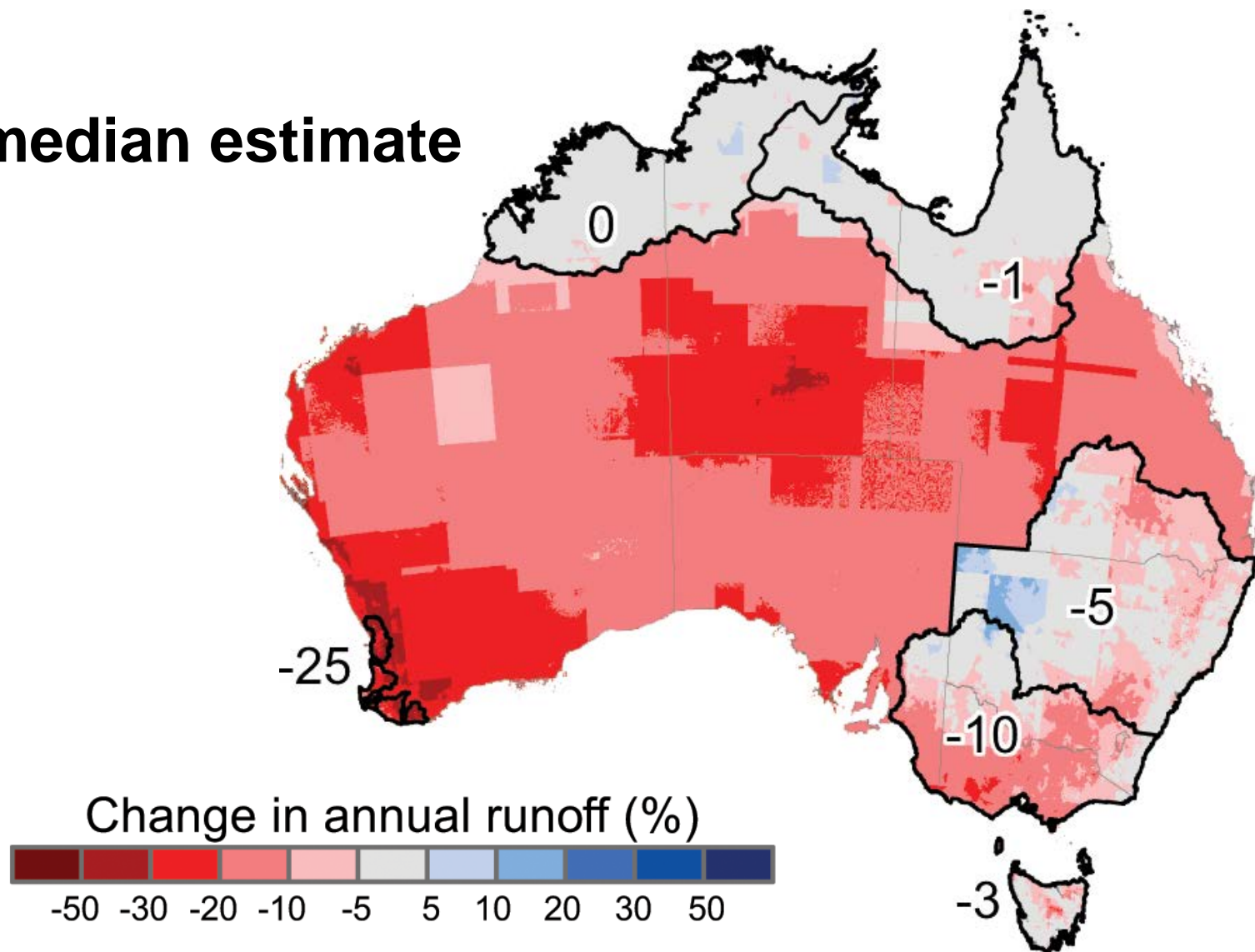
# Extremes almost everywhere, all the time

Annual percentage area in decile 10 - Southeastern Australia (1910-2016)

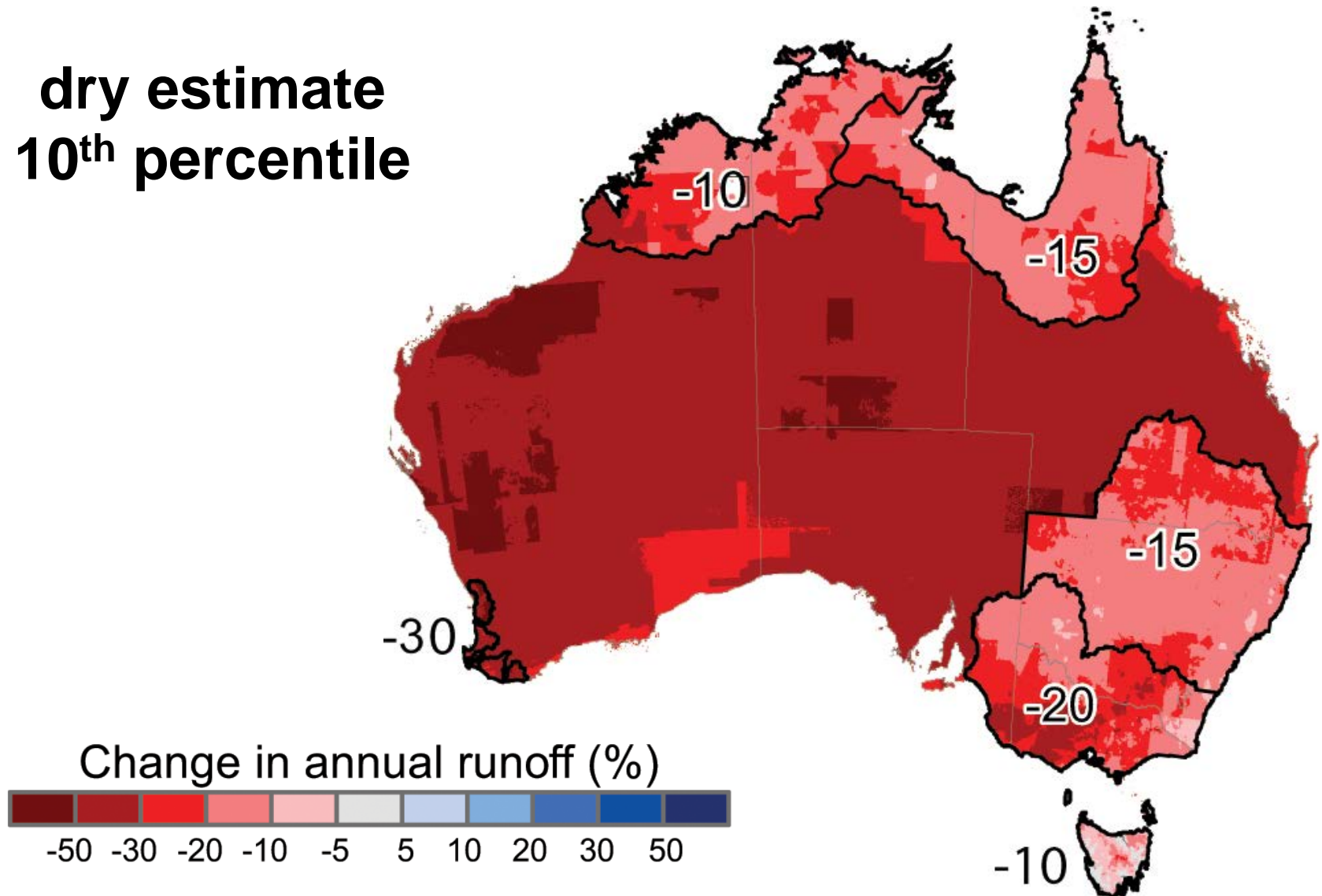


# Run-off change per °C warming

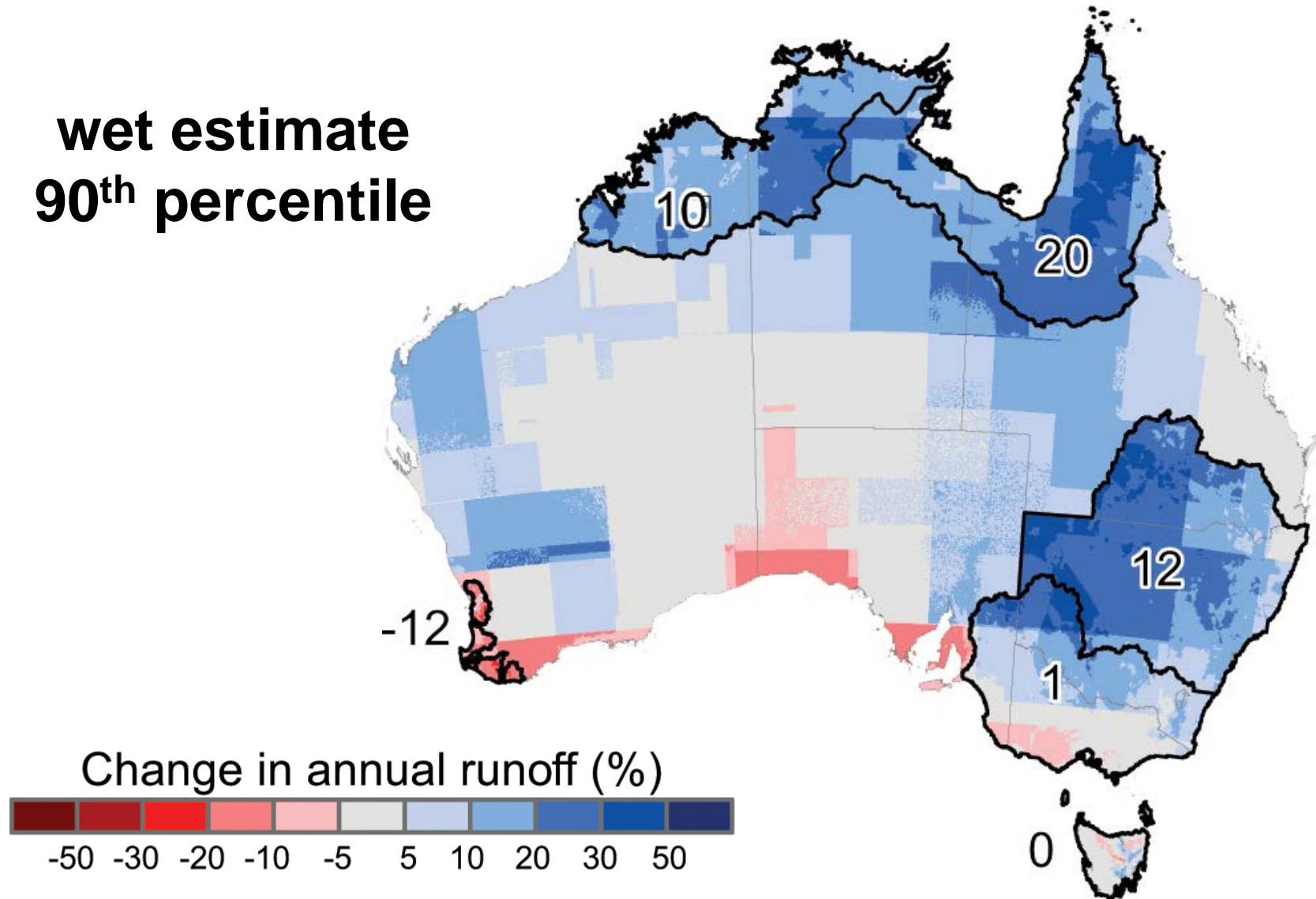
median estimate



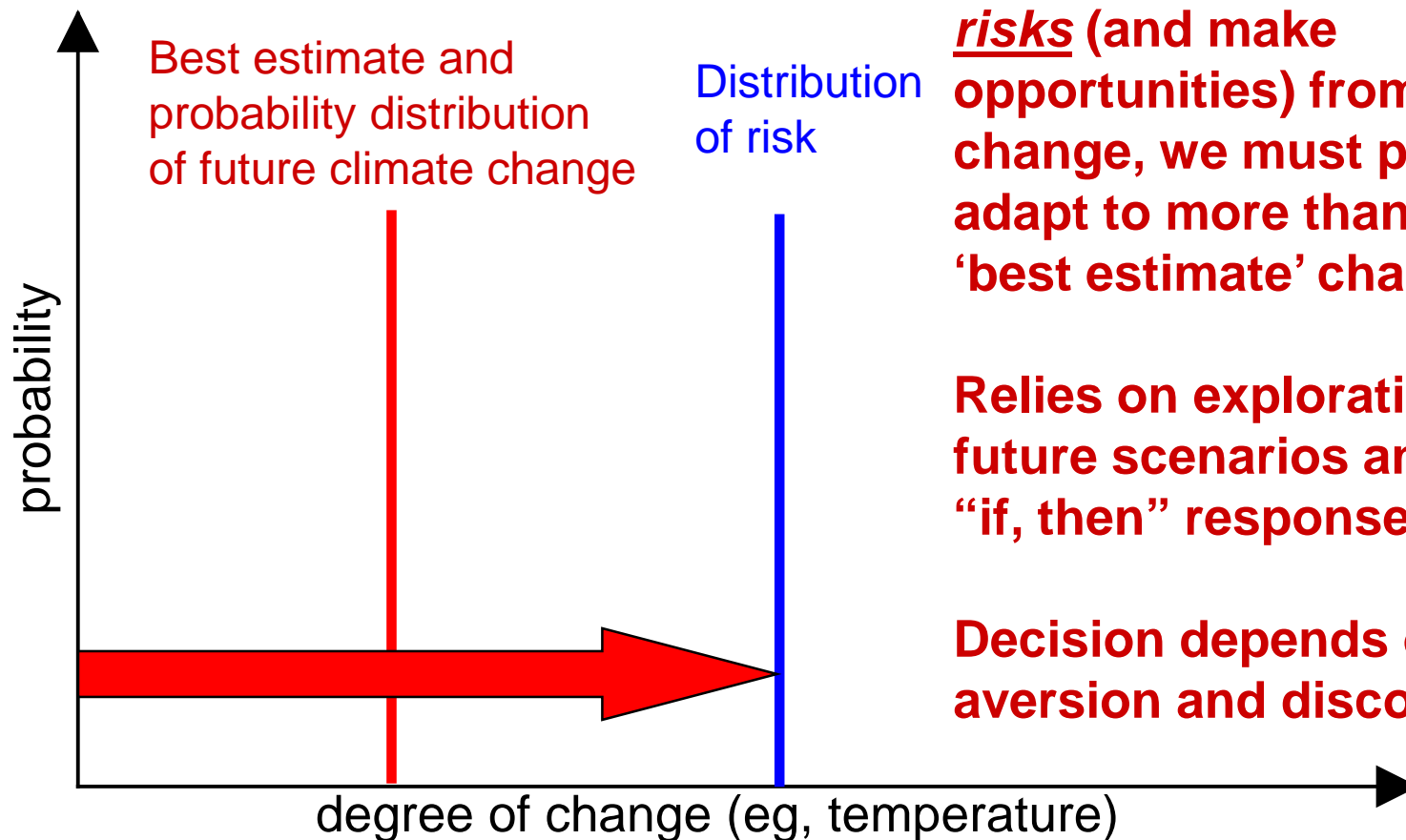
**dry estimate  
10<sup>th</sup> percentile**



wet estimate  
90<sup>th</sup> percentile



# Understanding climate risk and uncertainty



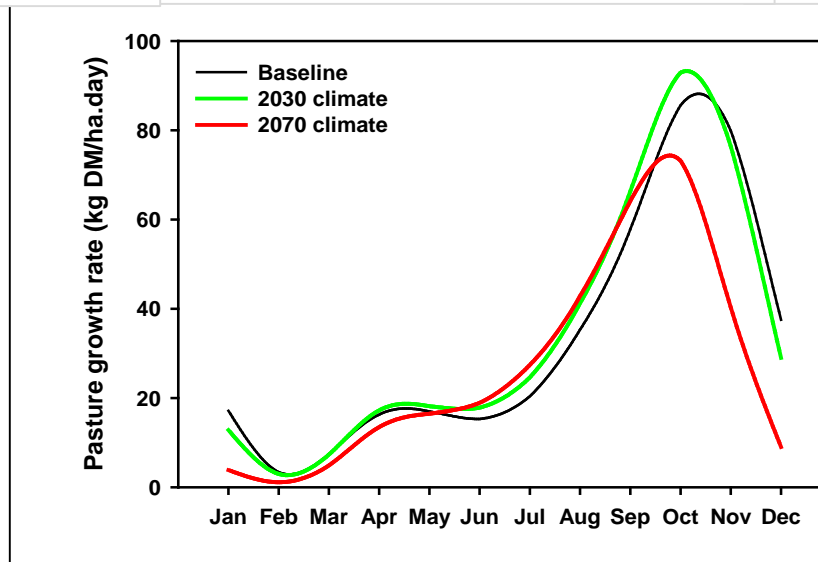
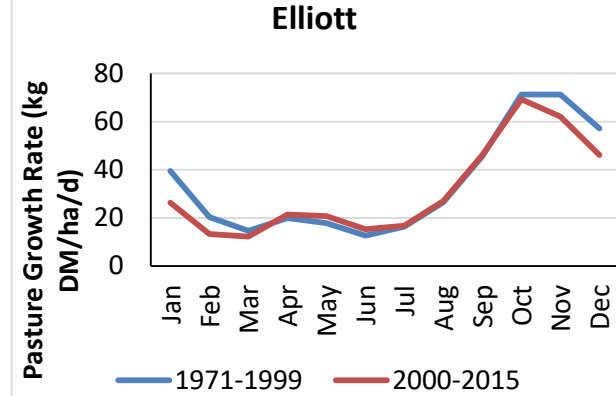
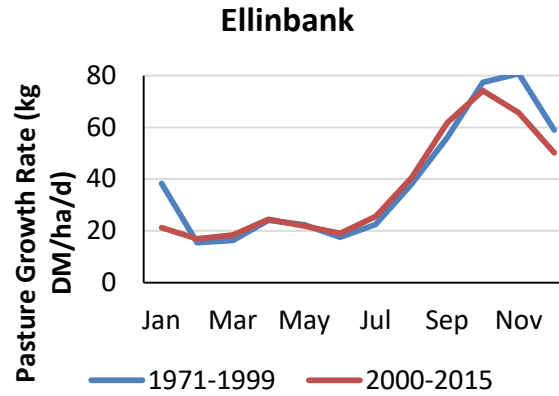
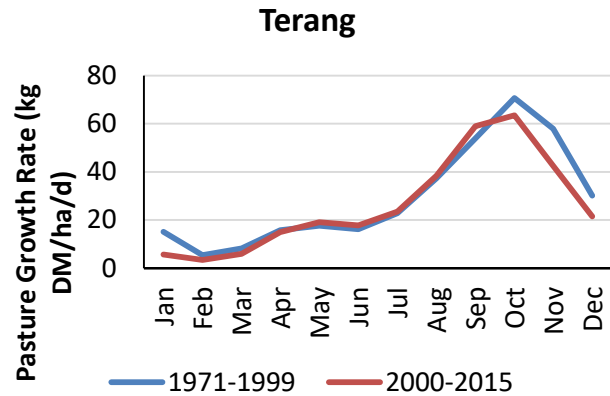
If we want to minimise risks (and make opportunities) from climate change, we must plan to adapt to more than the 'best estimate' changes

Relies on exploration of future scenarios and "if, then" response options

Decision depends on risk aversion and discounting



## Pasture growth rates, SE Australia



# How do we adapt well ?



- Huge diversity of options
  - on farm and off farm
  - technical and managerial
  - tactical and strategic
  - incremental to transformational
  - institutional
  - value chain
  - etc
- Highly contextual - values
- All require some change in knowledge

# Additional adaptation elements

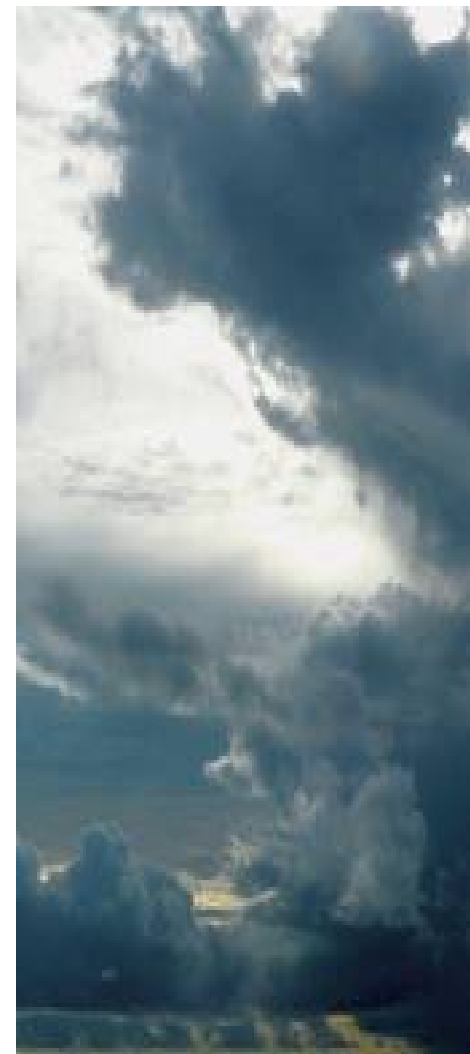
- Build strategic business management capacity
- Smarter adoption strategies – especially given climate change skepticism
- Addressing social, cultural and institutional norms which act to focus on incremental change only
- Opening up pathways to more systemic and transformational adaptation (e.g. risk-neutral adaptation experiments)
- Aim for GHG emission reductions too
- Effective monitoring and evaluation including ongoing revision of best practice – e.g. the last 100 years of record is no longer a good estimate of climate risk

‘Past performance is not a reliable indicator of future performance’

– *Aust Securities & Investment Commission*

‘The past climate is no longer a reliable indicator of the future climate’

— *message from scientific community*



# Reconfiguring your resources and goals

- Land, energy, skills, knowledge, innovation, reputation etc
- Each other - and the broader community
- Thinking beyond current systems and values
- Positive, strategic and timely climate adaptation choices in a fast-changing world



*Thankyou*



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