



Australian Government  
Department of Climate Change

# Introduction to the forest vulnerability assessment

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Adaptation Partnerships



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# Three pillars

- Pillar 1 – helping to shape a global solution
- Pillar 2 – reducing Australia's greenhouse gas emissions
- Pillar 3 – adapting to climate change that is already happening or inevitable



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# Pillar 3 – adapting to inevitable CC

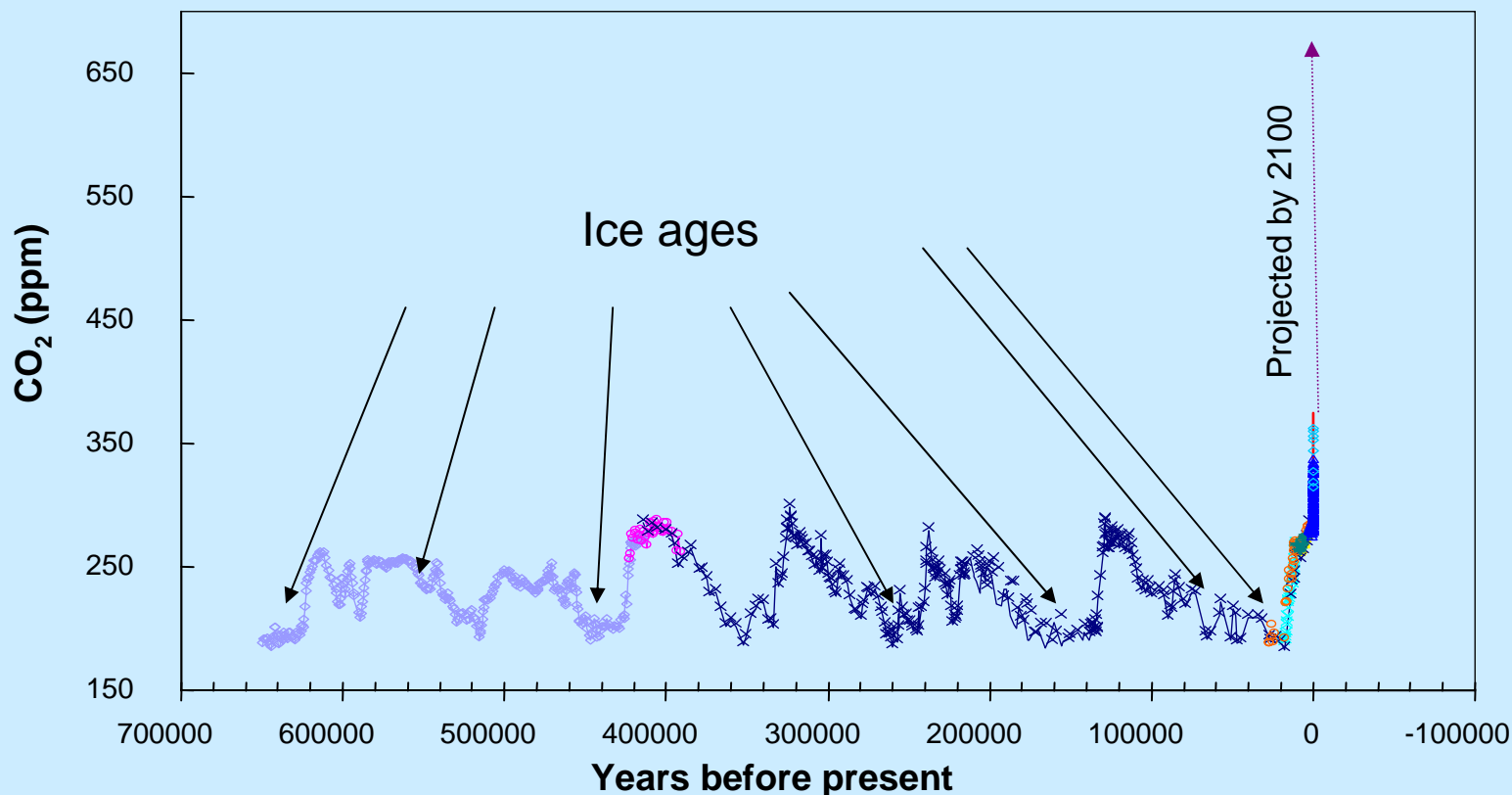
- Improving our knowledge about climate change and how it will impact us
- Strengthening the ability of Australians to adapt to climate change
- Assisting in areas of particular national vulnerability to climate change impacts



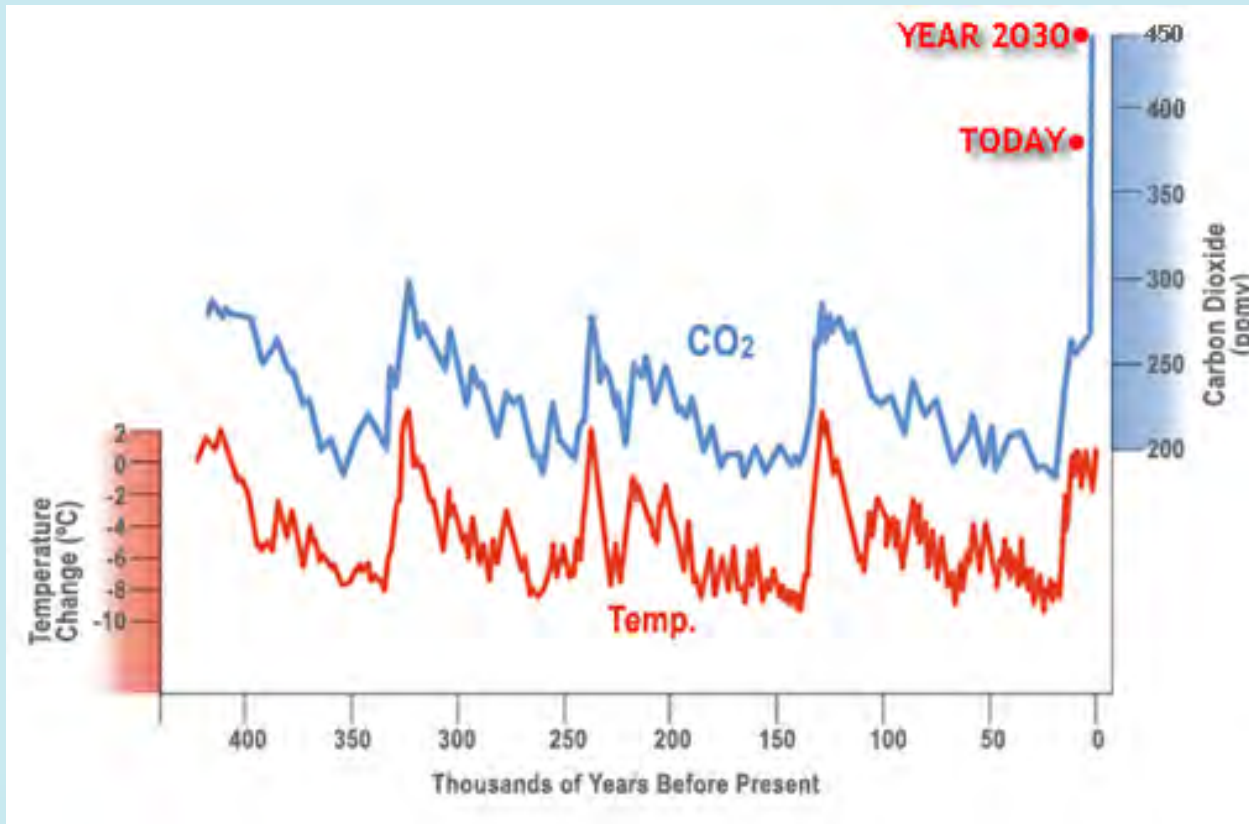
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# Atmospheric carbon dioxide concentrations from ice cores to 650,000 years before present

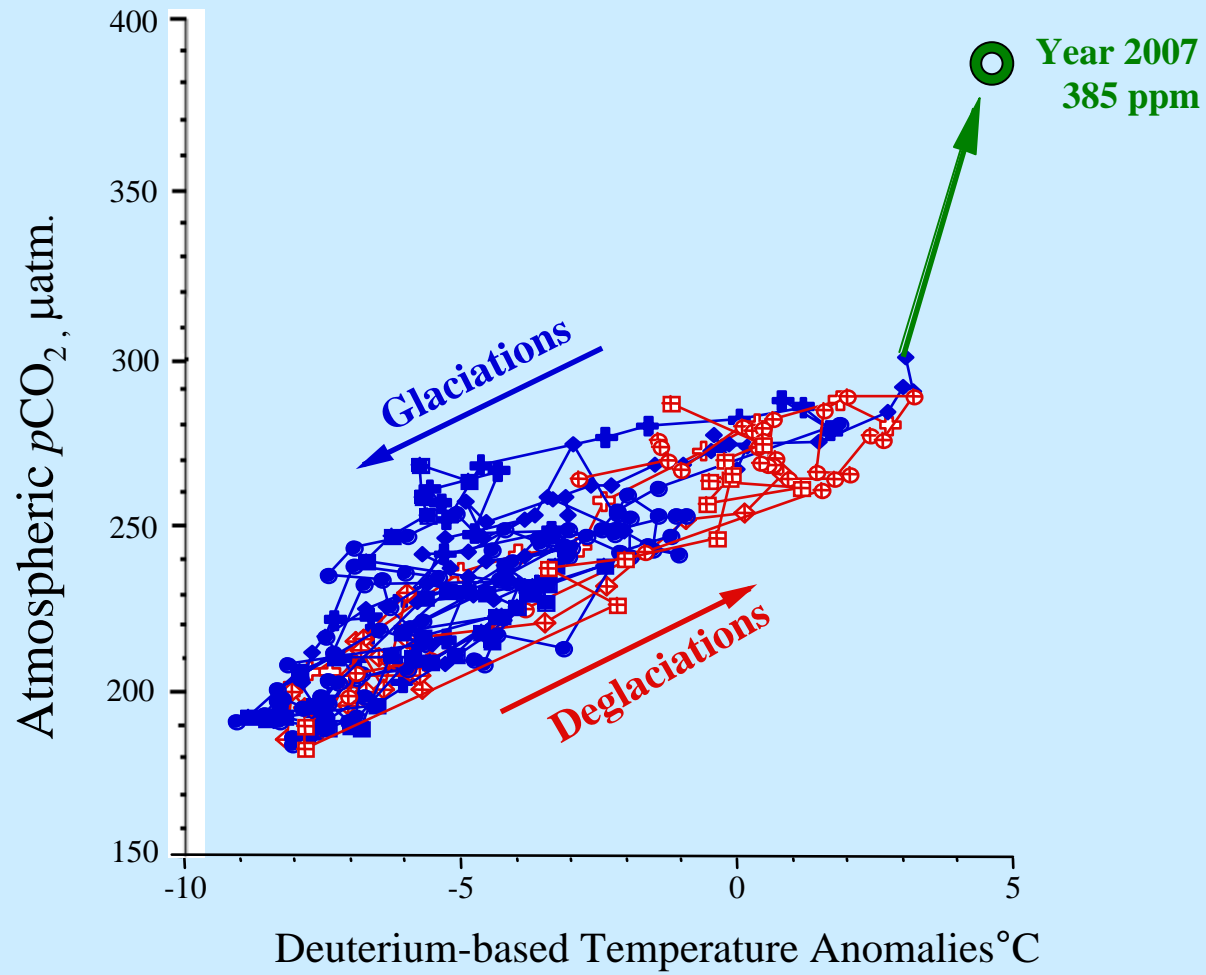


# Temperature and CO<sub>2</sub> relationship

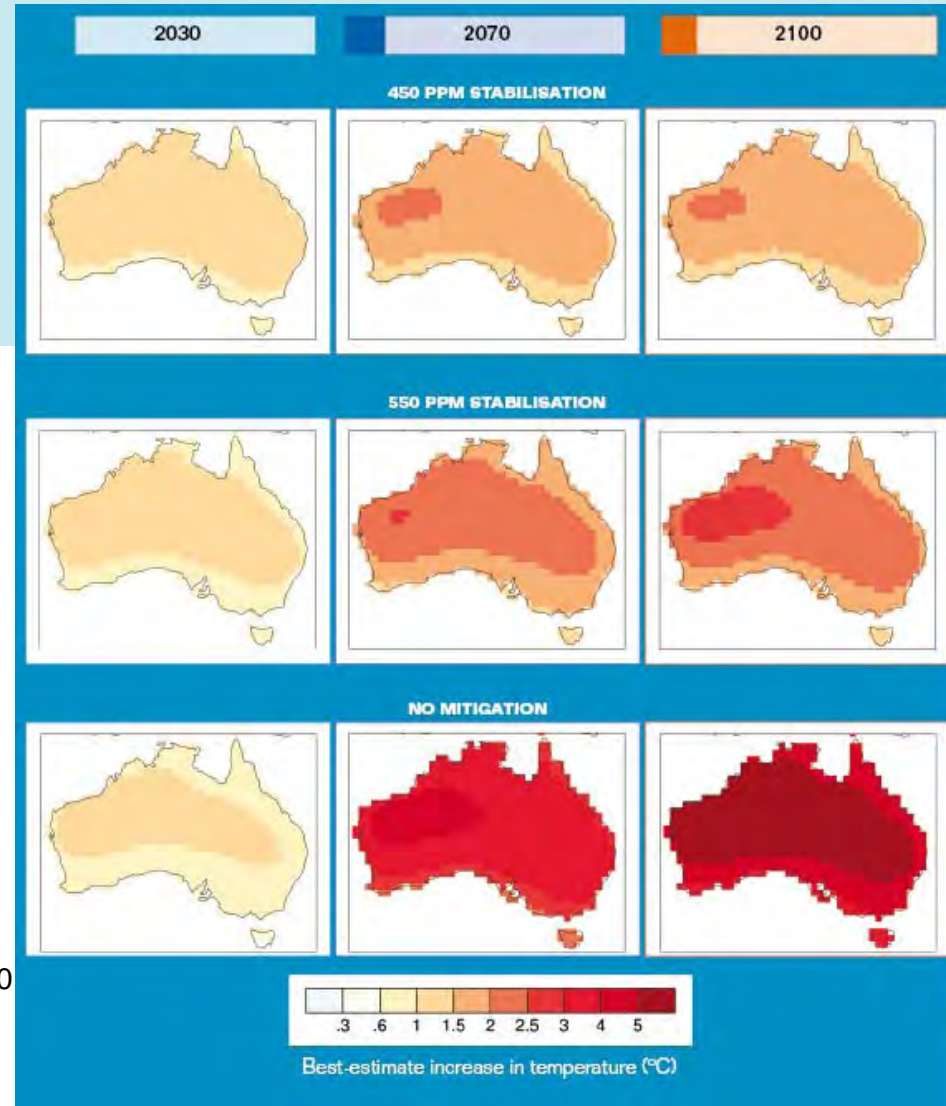
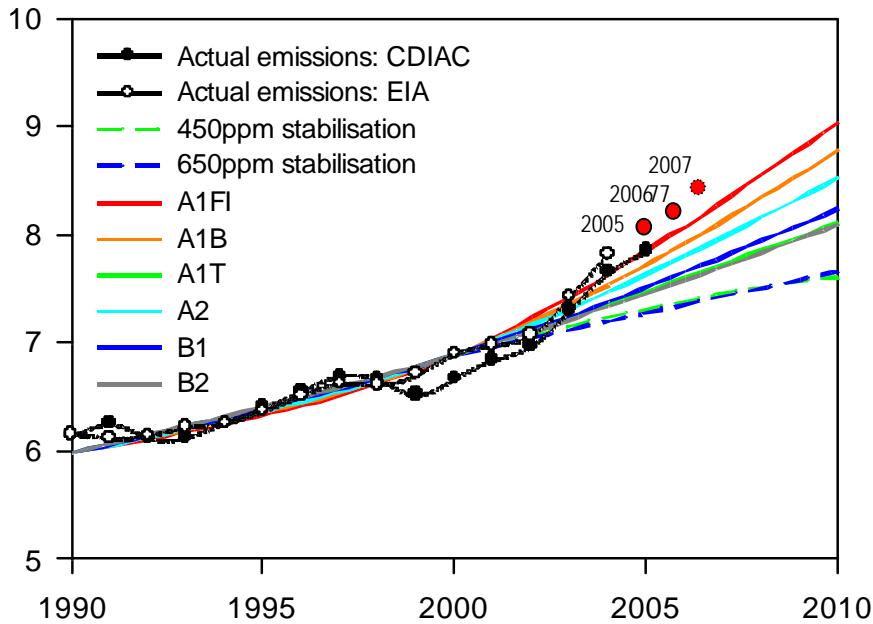


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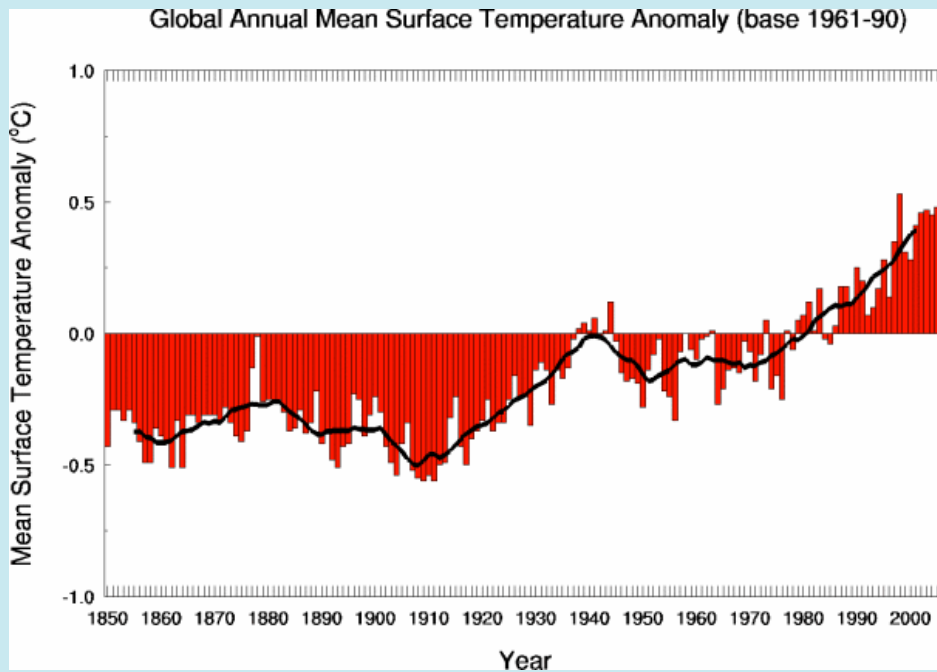
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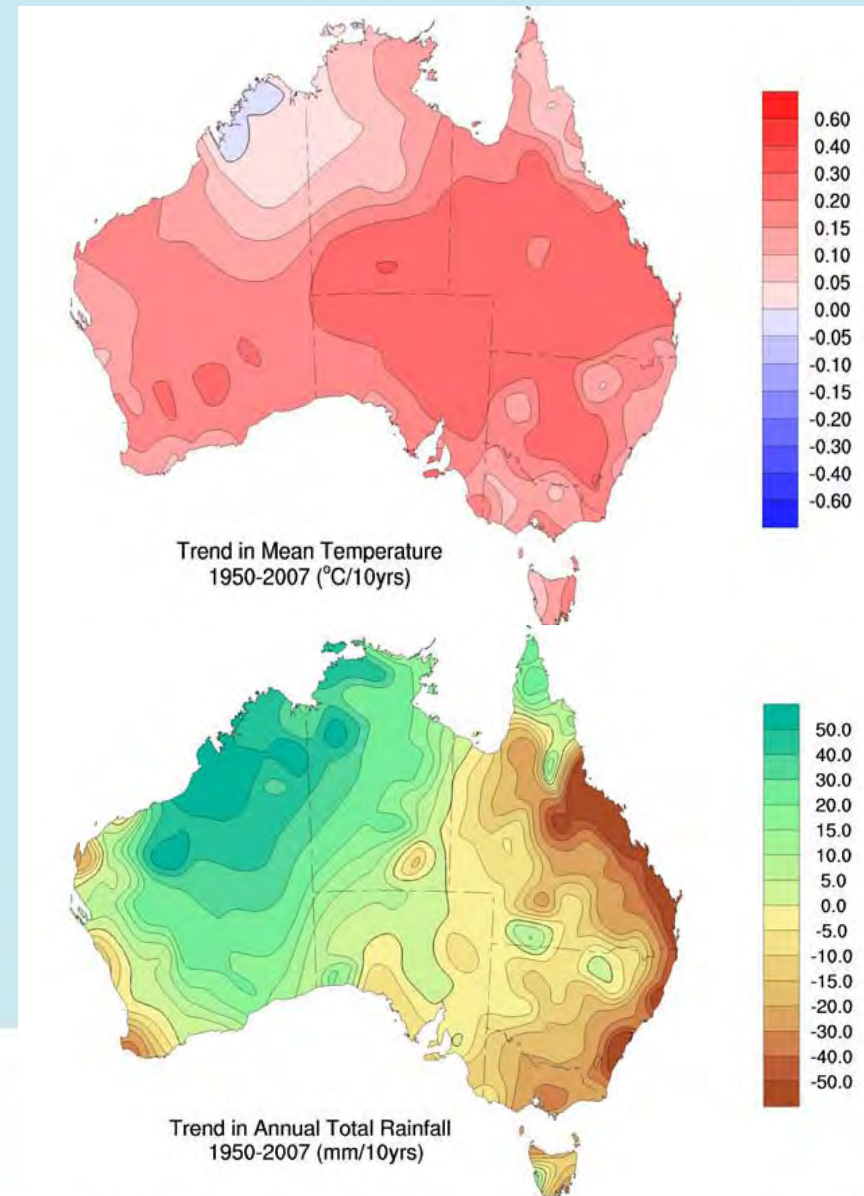
# Projected temperature changes



# Climate change: Australia and global



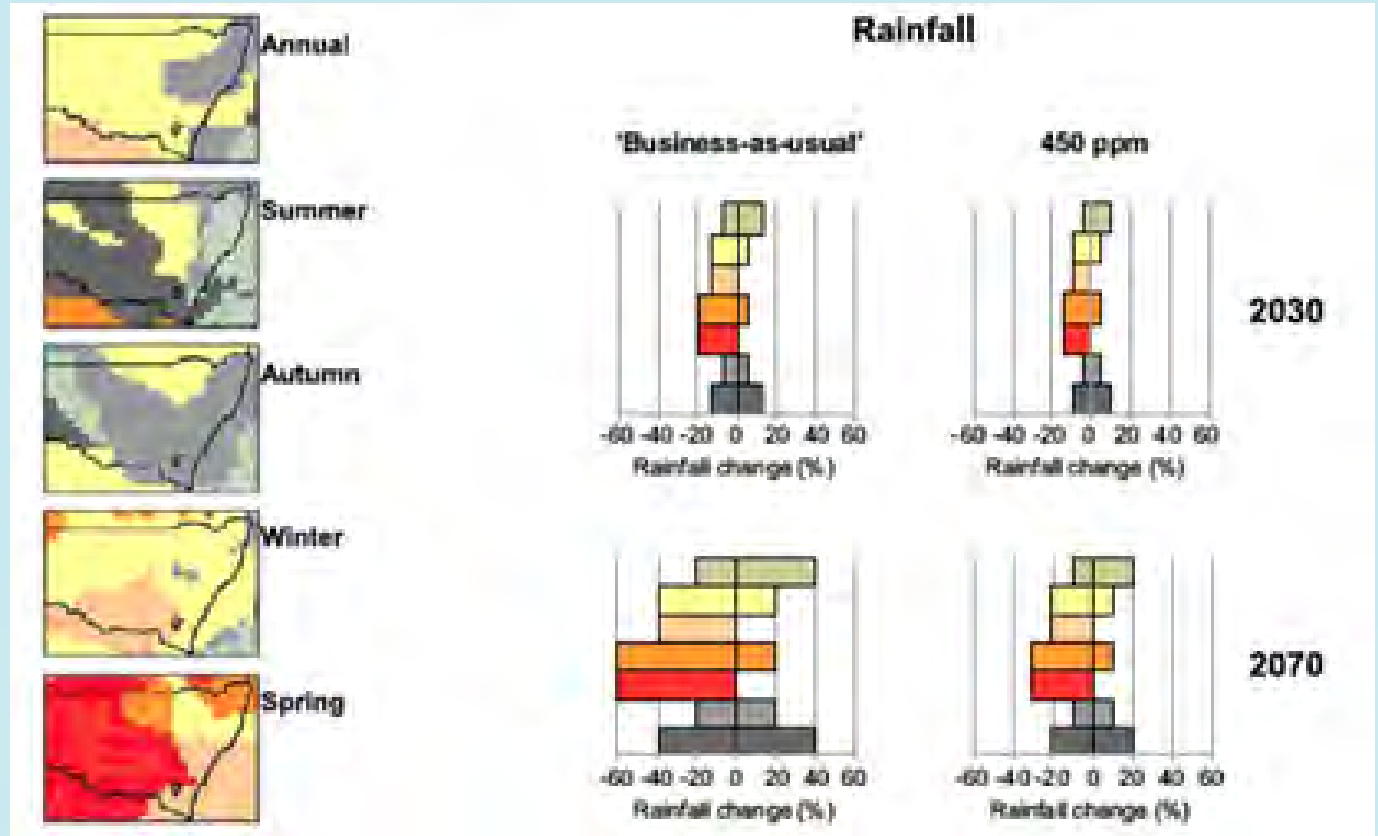
- Climate change trends in Australia generally mirror the global picture.
- However, for forests, change in water availability is at least as important as temperature change.





# Rainfall projections more complex and variable seasonally but high uncertainty

Eg NSW

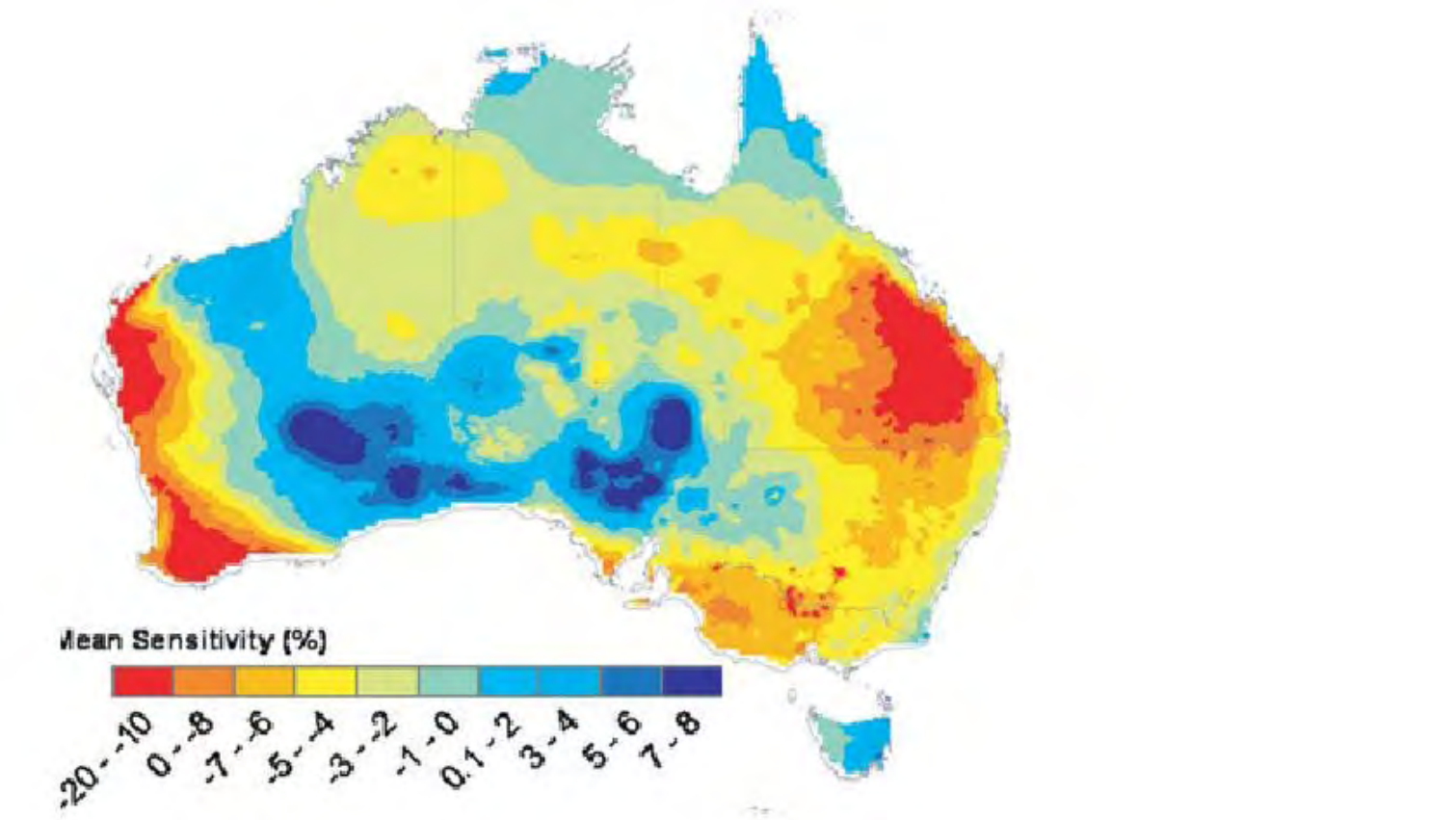


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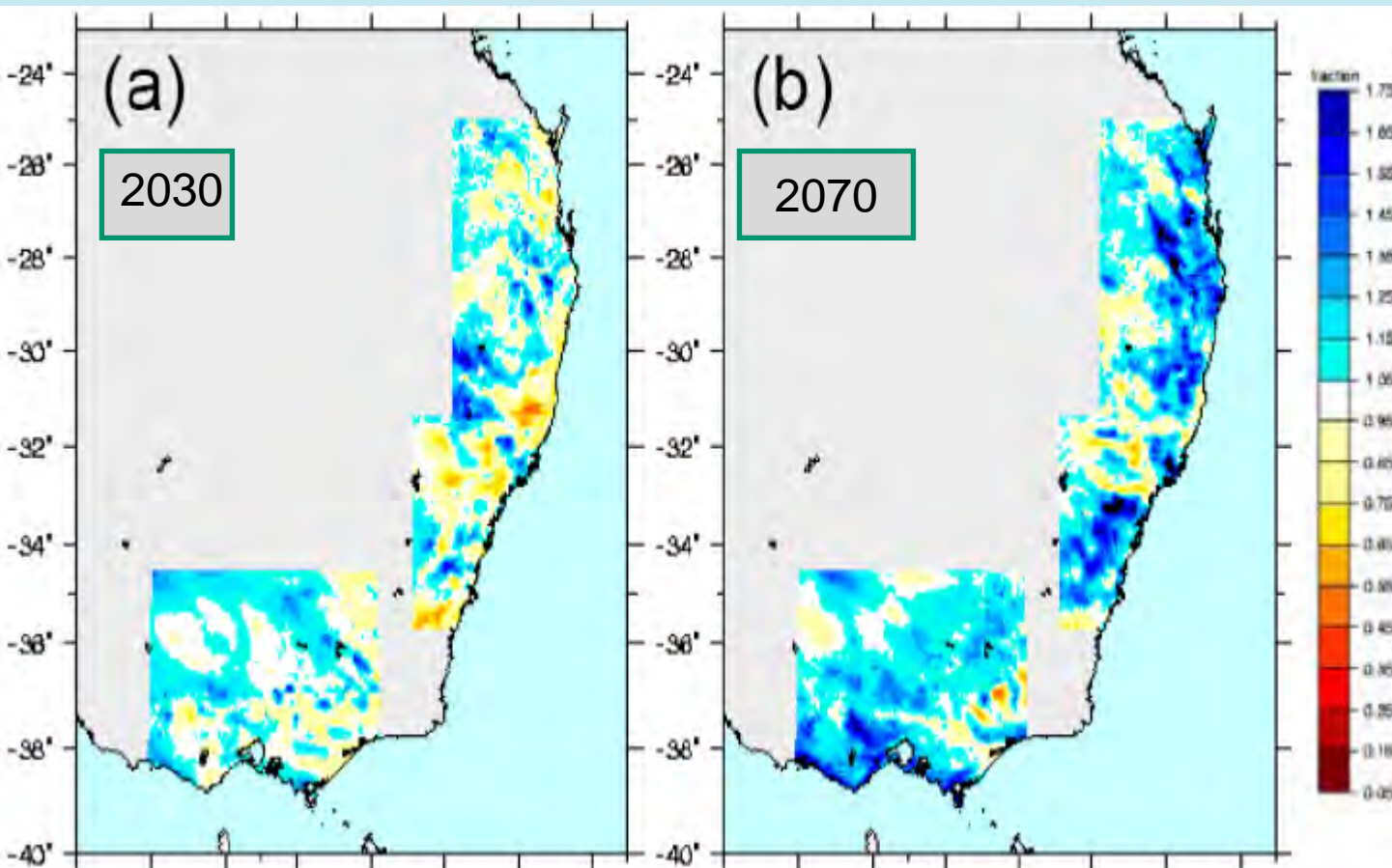
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# Projections of Future Runoff

(%Δ per degree of global warming)



# Projections of Extreme Rainfall



- Climate change will cause increases in extreme rainfall events
- Long-term risk appears greater than short-term

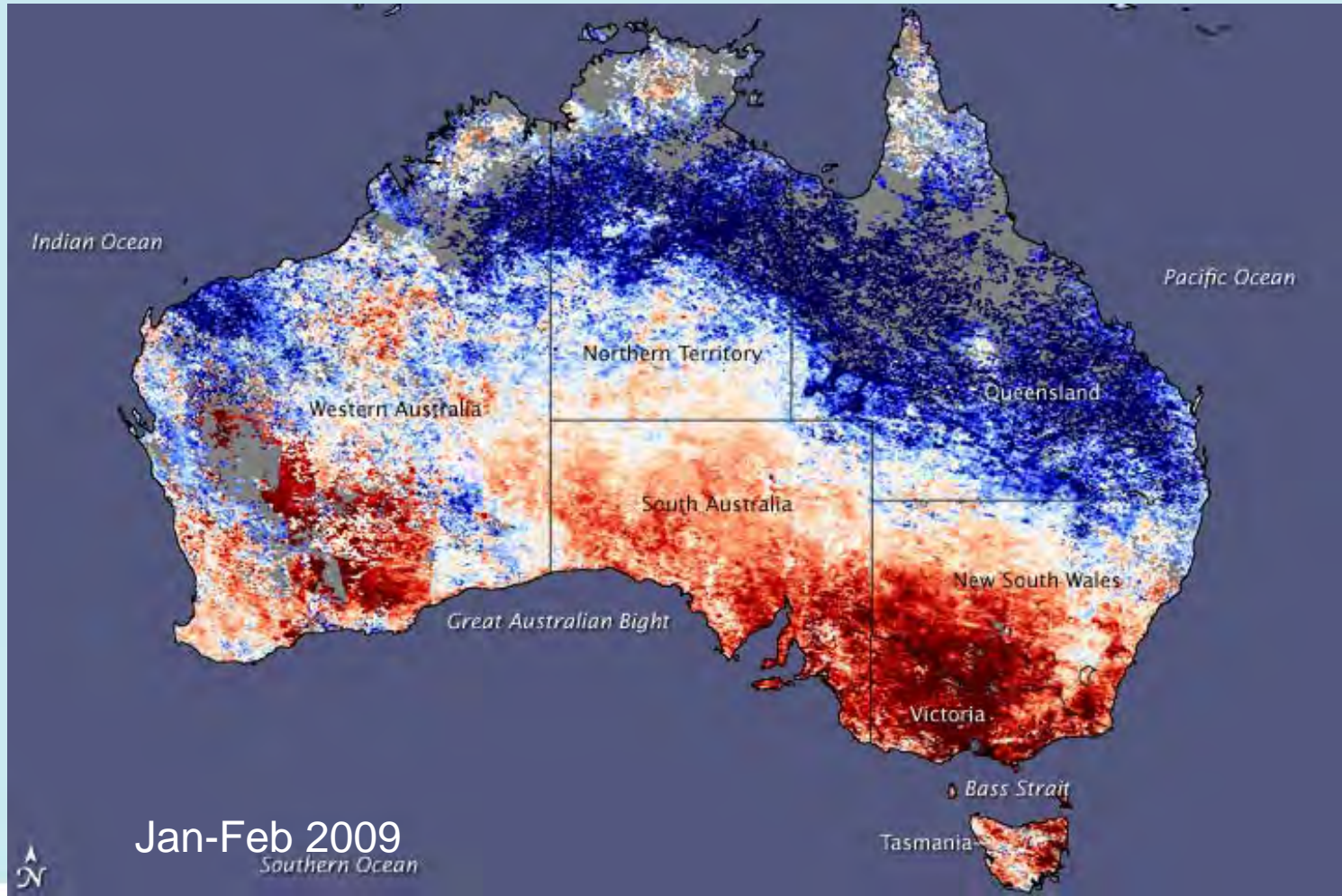
*Abbs et al 2006*



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# Extreme temperature events



# Changed fire regimes



# Other changes?

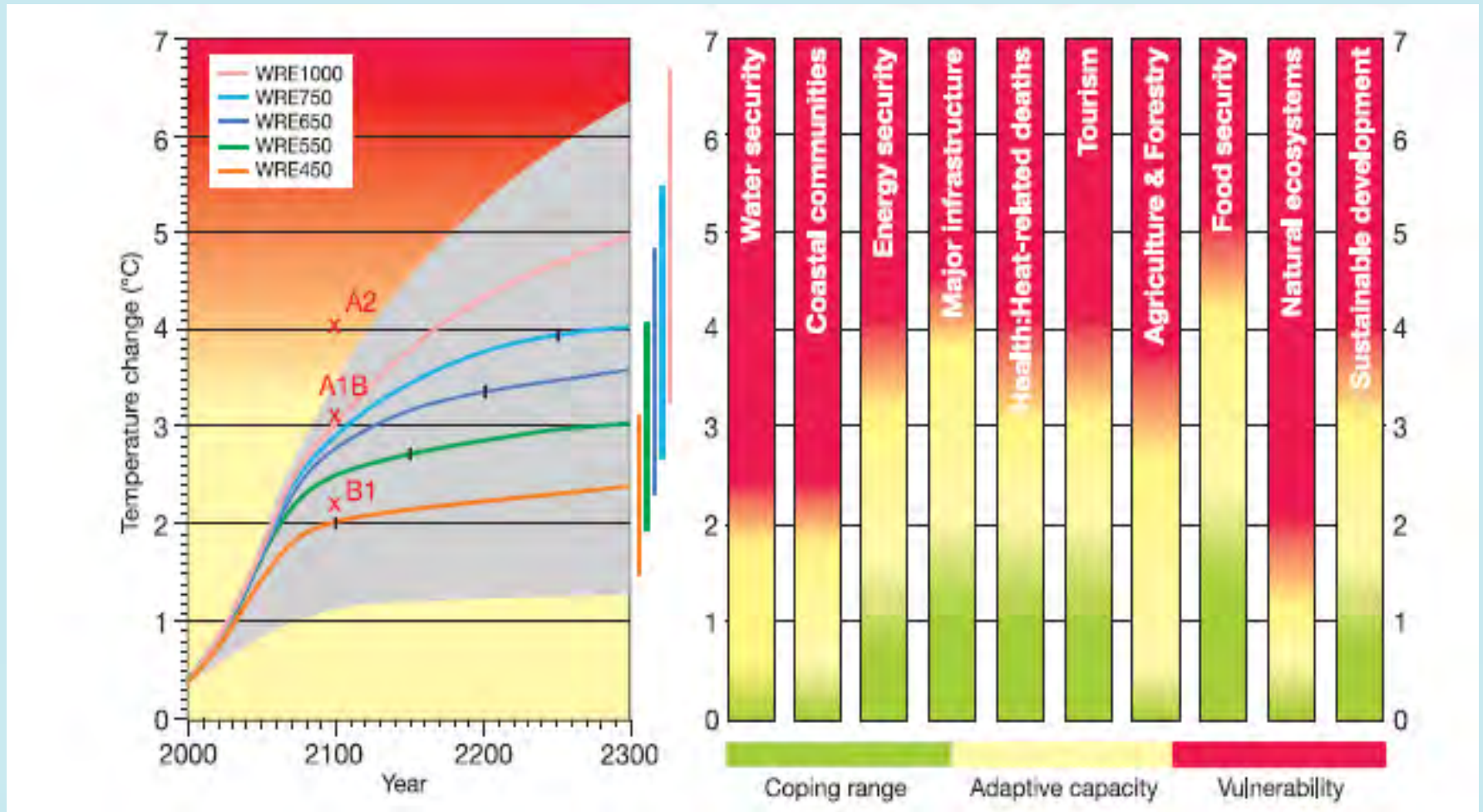
- Relative humidity?
- Wind?
- Seasonality?
- Frosts?
- Impacts on water availability?
- Feedback loops?
- Thresholds and transformation?



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# Relative vulnerability to climate change



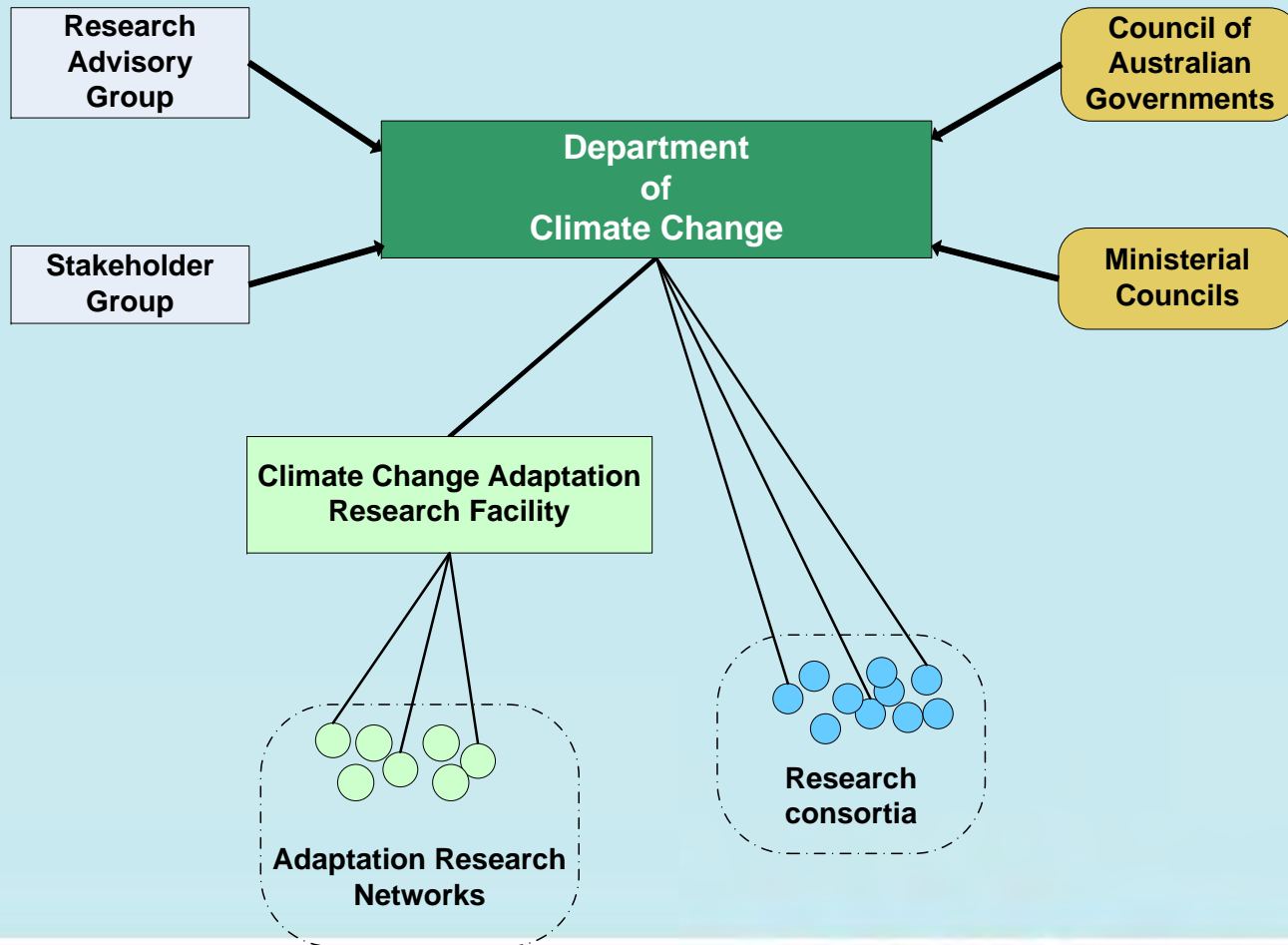
Source: IPCC, 4TH Assessment Report 2007



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# Climate change adaptation delivery structure



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# National context

## COAG

- Working group on Climate Change and Water
  - *National framework on climate change adaptation*
- National Climate Change Adaptation Research Facility
- CSIRO Climate Change Adaptation Flagship

## NRM Ministerial Council

- *Work Plan 2006-9*
- *Work Plan 2009-12*
- *Australia's national biodiversity strategy 2010-20*
- *Biodiversity and climate change action plan 04-07*
- *Australia's native vegetation framework*



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# Role of the National Climate Change Adaptation Facility

- Provide scientific leadership in the **development of research plans** for priority vulnerable sectors;
- Assist with identifying scope and content of plans;
- Manage consultation with stakeholders and researchers during development of plans.
- **Coordinate the implementation of the Research Plans** throughout the research community
- This includes forming and managing **adaptation research networks**.
- Developing **syntheses of information** on priority areas



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# Priority theme areas

- **Terrestrial biodiversity**
- Marine and coastal
- Water resources and freshwater biodiversity
- Settlements and infrastructure
- **Agriculture and forestry**
- Health
- Social and economic

**Adaptation research network** and **NARP** for each theme



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# Vulnerability assessments



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# National vulnerability assessments

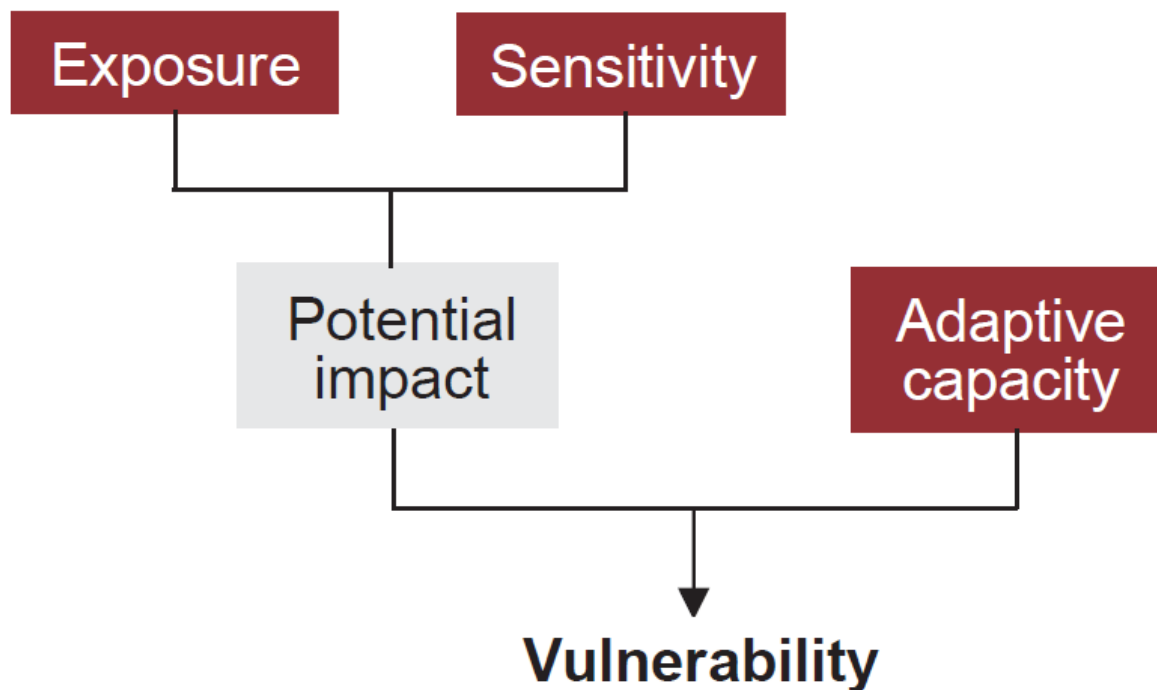
- DCC leading a series of national assessments relevant to biodiversity (and other sectors)
- Most are being done to implement the NRM ministerial committee Adaptation Workplans
- Various stages of completion
  - Completed published and released
  - Being published and soon to be released
  - In progress (eg this project)



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# Elements of a National Vulnerability Assessment



Source: Adapted from D. Schroter and the ATEAM consortium 2004, *Global change vulnerability — assessing the European human–environment system*, Potsdam Institute for Climate Impact Research.

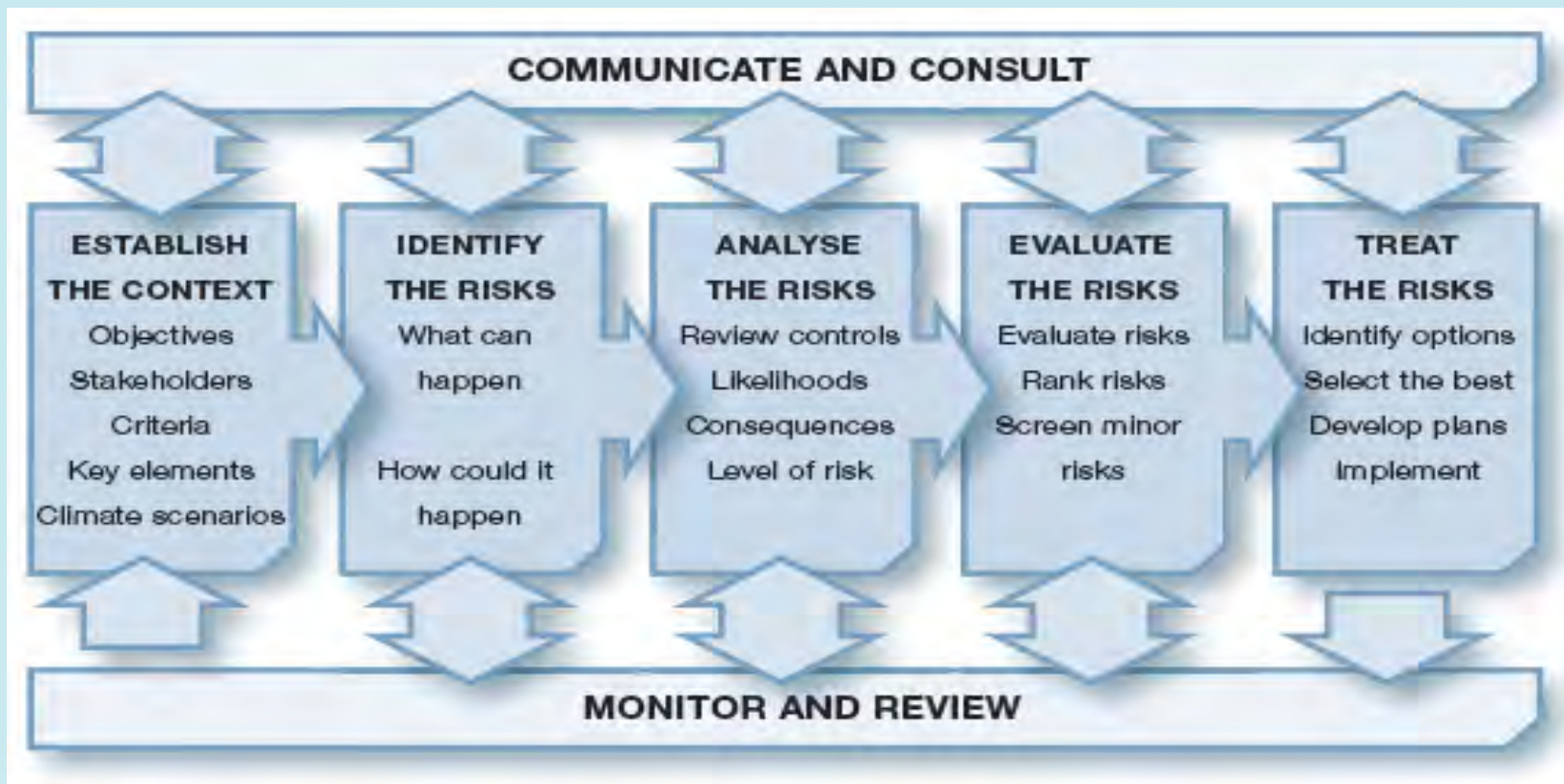


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# Risk management

- a framework for dealing with uncertainty



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# DCC - national impact assessments

Published:

- Impact on the National Reserve System Phase 1 (2008)
- Impact on Aust Govt Protected Areas (2008)
- Climate change primer for NRM bodies (2008)
- Climate change and the Barrier Reef (2007)
- Impact on Australian Marine Life (2006)
- Potential Effects of Global Warming on the Biota of the Australian Alps (2004)

<http://www.climatechange.gov.au/publications/index.html#impacts>



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# DCC national impact assessments

Close to release:

- Australian biodiversity and climate change (BVA)
- World Heritage values and climate change
- Fire, biodiversity and climate change



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# DCC national impact assessments

Still underway:

- Impact on aquatic ecosystems
- Impact on coastal ecosystems
- National Reserve System phase 2
- Forests (this project)



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# Strategic responses

- National Biodiversity Conservation Strategy 2010-20 – led by DEWHA; consultation draft just completed
- National climate change and biodiversity action plan – review due; will be led by DEWHA
- Focus on partnerships
- Working with communities, industry and governments – and researchers - to better understand and manage the impacts of climate change.



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# Other assessments & strategic responses - DAFF led

- *Climate change and commercial forestry action plan* – draft completed Jan 09
- *Climate modelling and impacts on forests and forestry* – underway (Ian Roscoe)
- Both address commercial forests



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# Forest Vulnerability Assessment

## ■ Scope:

- Plantations /farm forests
- Productive native forests
- Conservation native forests
- Environmental plantings

## ■ Governance

- Steering group (chaired by NCCARF)
- Project manager (NCCARF)
- DCC project officer
- Workplan



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# Elements of the FVA approach

- **Work Package 1:** to establish the needs and consult with key stake holders.
- **Work Package 2:** Scene setting and bio-physical impacts review.
- **Work Package 3:** Socio-economic impacts review
- **Work Package 4:** Adaptive capacity, barriers to adaptation and vulnerability
- **Work Package 5:** Synthesis (including regional vulnerabilities, gaps and research needs).



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# Product sought

- One report (150-200 pages)
- Suitable for policymakers and forest managers
  - Executive Summary: 10 pp
  - Introduction and results of needs analysis 5 – 10 pages
  - Bio-physical impacts: 50 pages
  - Socio-economic impacts: 30 pages
  - Adaptation and vulnerability: 30 pages
  - Synthesis: 30 pages
  - Appendices
- PLUS a summary document - around 20 pages.



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