



Australian Government
Department of Climate Change
and Energy Efficiency

Cutting Edge Science Symposia:

Water and carbon coupling at regional scales: key issues and a new approach



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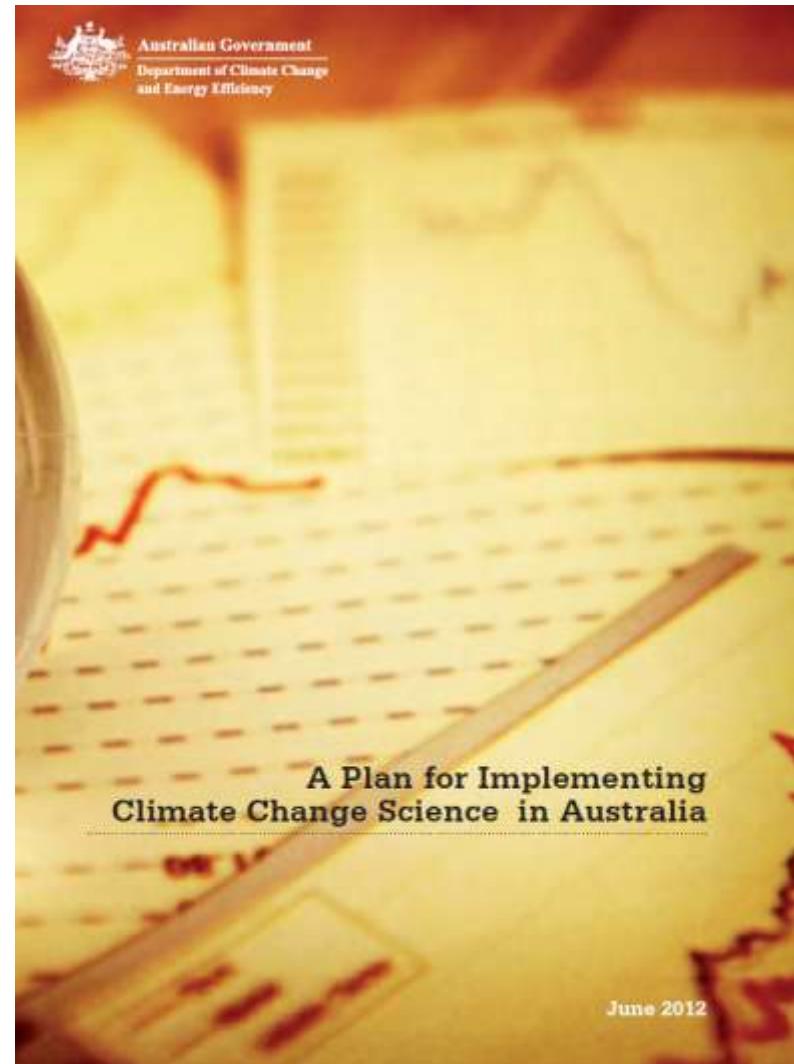
Climate change science and the role of carbon & water exchanges

- Carbon and water exchanges are a critical component of our understanding.
- There is a clear need to understand the Australian context.
- Improved understanding can improve policy outcomes



A Plan for Implementing Climate Change Science in Australia

- Developed by the High Level Coordination Group (HLCG)
- Aligns science deliverables to key policy questions that when answered will deliver national benefit through:
 - informing mitigation policy
 - Informing adaption policy
 - helping to shape a global solution.



Aligning science deliverables to policy needs

Nation benefit for Australian Government Policy

- Mitigation Policy
- Adaptation Policy
- Shaping a global solution

Key Policy Questions

- **12** key policy questions to deliver national benefit and frame the science deliverables.

Science Deliverables

- **47** individual science deliverables that answer the key policy questions.

Mitigation Policy

Key Policy Questions	Science Deliverables
How much greenhouse gas are we emitting and what will the consequences be?	<p>Accurate tracking of atmospheric greenhouse gas changes and regional carbon budgets, via monitoring and modelling, including inverse modelling.</p> <p>Increased spatial and temporal coverage of carbon flux observations.</p>
What is the role of natural land and ocean sinks, in sequestering emissions and what will happen to these processes in the future?	<p>Process studies of the influence of climate change on carbon sources and sinks.</p> <p>Understanding of Australia's carbon budget, the processes that affect it and how it will change with climate change.</p>
How can we use our natural land sinks and other natural processes to mitigate Australian emissions?	<p>Assessments of the stability of Australia's land-based carbon sinks and the influence of climate and land management.</p> <p>Determine the CO₂ fertilisation effect on Australian vegetation.</p> <p>Incorporate Australian terrestrial processes in ACCESS.</p>

Adaptation Policy

Key Policy Questions	Science Deliverables
What changes in the climate are we observing today and can we attribute them to human influences?	Tracking changes in terrestrial carbon, water and heat exchanges.
	Process studies of terrestrial changes including carbon, water and heat.
How can we best prepare for low likelihood but high impact consequences of climate change?	Investigate the potential for climate feedbacks to accelerate climate change.

Shaping a global solution

Key Policy Questions	Science Deliverables
How are we tracking to limit warming to specific targets (such as the 2°C target) and what level of emissions reduction is needed to meet targets?	Participate in global monitoring programs to track our greenhouse gas emissions.
Is the 2°C warming limit sufficient and what are the implications of going beyond the 2°C target?	Develop a more definitive understanding of how climate feedbacks may impact on meeting the 2°C global challenge.

Governance structures for climate change science in Australia

Australian
Climate Change
Science Program



ANTARCTIC CLIMATE
& ECOSYSTEMS CRC

- The Plan introduces new governance structures to coordinate the delivery of climate change science.
 - High Level Coordination Group
 - Science Advisory Group
- Align the programs of the ACCSP, ACE CRC, AAD and CoE CSS for the greatest efficiencies and effectiveness.



Australian Government

Department of Sustainability, Environment,
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Australian Antarctic Division

