



From the Director

With the Copenhagen Climate Conference upon us, the debate about climate change and how we should tackle emissions and adapt to unavoidable climate change is gaining momentum both in policy discussions and in the media. Science is playing a critical role in informing these discussions. In response to the growing challenge of adaptation, the Flagship has stepped up its efforts this year with new partnerships, particularly in the areas of climate projections and extremes, new adaptation research in agriculture and fisheries, and adaptation initiatives in the Asia-Pacific region.



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Science linkages

Positive adaptations to environmental change requires an integrated approach across whole systems. Ongoing connections expand horizons, gain knowledge and seek help to address challenges. The Climate Adaptation Flagship is supporting these interconnections in 2010 with a targeted science symposium and an [International Climate Change Adaptation Conference](#) in collaboration with Australia's National Climate Change Adaptation Research Facility (NCCARF).



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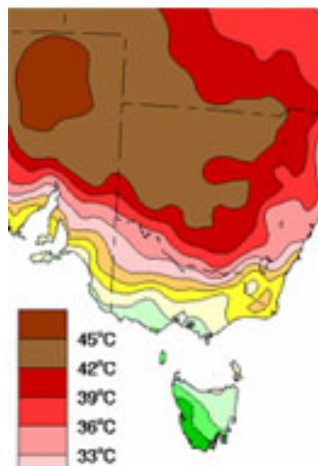
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Australia is adapting: Heat

Heatwaves in our southern cities are becoming more common and intense events, with both chronic and acute impacts. Reactive measures to minimise negative effects range from health monitoring for people at risk of heat stroke to scheduled outages that protect the power supply, but there are many gaps. A more proactive response can integrate solutions across vulnerable systems and provide the evidence to tailor research, information and policy.

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Maximum Temperature (°C)
16th November 2009



Bushfire challenge

Victoria's devastating bushfires brought climate change into acute focus in 2009. As part of the Bushfire CRC's post-fire investigations, Climate Adaptation Flagship researchers have been working with the Victorian Country Fire Authority and Victorian Department of Sustainability and Environment to reconstruct and analyse the Black Saturday fires. CSIRO researchers have also made Royal Commission submissions amid increased bushfire interest and predictions of hotter, drier conditions to come.

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Marine Report Card

While impacts of climate change on marine life have



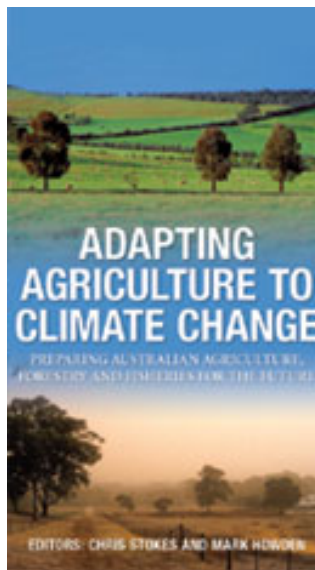
already been observed throughout the world, for the first time a benchmark of climate change impacts on Australia's marine ecosystems and options for adaptation has been compiled in one guide. Funded by the Australian Climate Change Science Program, The National Climate Change Adaptation Research Facility (NCCARF) and CSIRO's Climate Adaptation Flagship, the project is part of a national response to climate change.



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Adapting agriculture

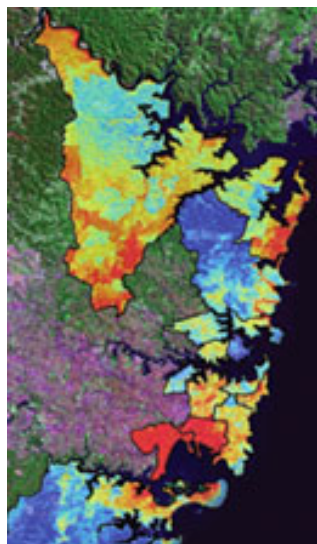
Australia's agriculture, forestry and fisheries industries already confront a harsh and variable climate, and these challenges will be exacerbated by climate change. Some agricultural enterprises will need to implement new strategies to avoid the worst impacts. A new book due out in February will provide a nationally-relevant fundamental resource for preparing Australia's primary industries for the challenges and opportunities presented by climate change.



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Sydney climate vulnerability

A project to map key vulnerabilities to climate change has combined cutting edge science with a very practical approach, allowing local governments to identify key factors to help them respond to climate change and its impacts. Scientists from CSIRO and the University of the



Sunshine Coast worked closely with the Sydney Coastal Councils Group – a consortium of 15 councils – on the award winning project.



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Resilient primary industries

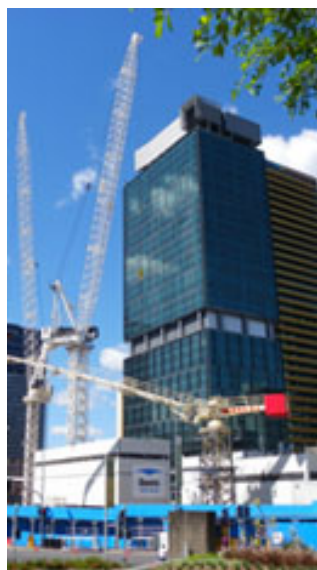
A new three-year project is working with farmers to develop strategies for a range of mixed cropping and grazing systems Australia-wide to adapt to projected climate change and other business pressures. Combining information from real mixed cropping systems with expected climate change impacts, farmers then identify on-farm management options that they believe may offset negative impacts.



[Read more](#)

SE Queensland adaptation

A three year, \$A14 million research initiative is examining south-east Queensland's vulnerability to climate change to inform practical, cost-effective strategies to help the area prepare for coming changes. It is the first comprehensive, regional study of climate change adaptation in Australia, and one of just a few worldwide. Griffith University, The University of the Sunshine Coast and The University of Queensland join CSIRO in the research cluster.



[Read more](#)

Global information for Western Australia



CSIRO and the Bureau of Meteorology, in a research partnership with the Western

Australia (WA) State Government, are developing regional climate information by bringing together local observations and the large scale projections from global climate models. Through the Indian Ocean Climate Initiative (IOCI), decision makers will gain access to state-of-the-art and regionally-specific knowledge of past and projected climate trends in Western Australia.

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The **Climate Adaptation Flagship** is a CSIRO initiative and part of the National Research Flagships program that aims to deliver scientific solutions to advance Australia's most important national objectives. One of the largest scientific initiatives ever mounted in Australia, it aligns closely with the Federal Government's **National Research Priorities**. The initiative brings together our national research resources to deliver breakthroughs in fields ranging from healthcare to light metals and the environment.

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This newsletter is published by **Climate Adaptation Flagship**

Editor: Liese Coulter, 36 Carmody Road, St Lucia, QLD 4103

Phone: +61 7 3214 2642 Mobile: +61 402 084 661 Email: liese.coulter@csiro.au

Message from the Director

With the Copenhagen Climate Conference upon us, the debate about climate change and how we should tackle emissions and adapt to unavoidable climate change is gaining momentum both in policy discussions and in the media. Science is playing a critical role in informing these discussions.



While there is considerable focus in Australia on the domestic emissions trading scheme and international negotiations, this does not mean that adaptation to climate change and variability is no longer a priority. Indeed as the evidence of unavoidable climate change becomes clearer the need for proactive adaptation is becoming more urgent. The importance of adapting to climate change is being expressed through the large number of Commonwealth Parliamentary and State Government Inquiries over the last year relating to the impacts of climate change and how to manage them. The Climate Adaptation Flagship has put in almost a dozen submissions to these various Inquiries and appeared in person before many of them. We have also put a significant effort into submissions and appearances before the Victorian Bushfires Royal Commission in the context of buildings and infrastructure materials and design and the relationship between climate and fires.

In response to the growing challenge of adaptation, the Flagship has stepped up its efforts this year with the number of staff equivalent to full-time who are contributing to the Flagship growing from about 110 to 160. A significant proportion of this new effort is in the area of socio-economics of climate adaptation with the skills in social sciences and economics migrating over from CSIRO's Sustainable Ecosystems Division to tackle issues such as adaptive behaviours and economics of adaptation. The other areas of growth have resulted from new partnerships, particularly in the areas of climate projections, climate extremes, new adaptation research in agriculture and fisheries, and adaptation initiatives in the Asia-Pacific region.

The Flagship has an underpinning principle of participatory research. Honouring this principle requires a close working relationship with our stakeholders, whether they are from government, industry or communities, to ensure we are delivering research that is relevant to decision-making. One mechanism we have in place to ensure our compass is set correctly in terms of research priorities is a Stakeholder Advisory Group, which we operate in partnership with the Department of Climate Change. To ensure we are delivering on our current commitments I will be visiting key stakeholders over the next couple of months to conduct interviews to see how we are performing and to discuss ways we can strengthen the research partnerships. In addition to our long-term partners we have a growing list of new collaborators as the whole field of climate adaptation is developing rapidly.

In this issues of ADAPT we showcase some of the recent research outputs from the Flagship, talk about a few of our new major research initiatives, as well as alerting you to the International Climate Change Adaptation Conference which is being held in the middle of next year on the Gold Coast.

Cheers
Andrew Ash

Facilitating science linkages

The Climate Adaptation Flagship science symposium in February 2010 will showcase, share and develop the diverse science that is occurring across our research projects. This workshop will encourage interactions among the themes and strengthen the links with our partners. There will be a focus on strategic discussions about the Flagship's directions and priorities, including planning pathways for wider application of research findings in current planning.



2010 International Climate Change Adaptation Conference

Climate Change Adaptation Futures: Preparing for the unavoidable impacts of climate change

29 June -1 July 2010. Gold Coast Convention Centre, Gold Coast, Queensland Australia

Co-hosted by the CSIRO Climate Adaptation Flagship and Australia's National Climate Change Adaptation Research Facility, this conference will be one of the first international forums to focus solely on climate impacts and adaptation. The Climate Adaptation Futures Conference will showcase leading impacts and adaptation research from around the world. It will explore the contribution of adaptation science to planning and policy making, and how robust adaptation decision making can proceed in the face of uncertainty about climate change and its impacts.

Keynote speakers include:

- Professor Chris Field (Carnegie Institution for Science)
- Dr Mark Howden (CSIRO Climate Adaptation Flagship)
- Dr R.K. Pachauri (Chair, IPCC)
- Professor Stephen Schneider (Stanford University)
- Neil Adger (Tyndall Centre, UK)
- Saleemul Huq (IIED and Bangladesh Centre for Advanced Studies)
- Martin Parry (Co-Chair, IPCC Working Group II for the Fourth Assessment)
- Mark Stafford Smith (CSIRO)
- Achim Steiner (UNEP)

The call for abstracts will close on the 18th of January 2010. For information see <http://www.nccarf.edu.au/conference2010>

Australia is adapting: Heat

Heatwaves: preparation and response

Heatwaves in our southern cities are becoming more common and more intense events, with both chronic and acute impacts. Reactions to minimise the negative effects have ranged from health monitoring for people at risk of heat stroke to scheduled outages to protect the power supply, but there are many gaps. A more proactive response based on coordinated research can integrate solutions across vulnerable systems.

As part of Australia's history of extreme temperatures, Melbourne's population of 4 million already experience on average more than 9 days each year over 35°C. In late January 2009, Melbourne endured three days in a row above 43°C, with the highest record at 46.4°C. The state's Chief Health Officer estimated that 374 additional or premature deaths occurred during this heatwave in comparison to the rate at that time of year in the previous five years.

With climate change, record breaking extreme temperatures are expected to occur for longer and more frequently. The effects of heatwaves are far reaching and can cause heat-related deaths, increased peak energy demand for air-conditioning, blackouts, increased water demand and buckling of railways. Added to these are the dangers of fire, including smoke pollution and respiratory illness.

Over the next twenty years conservative climate projections show a doubling of heatwaves in Australia's capitol cities. Effective adaptation will involve planned changes to a combination of social and physical systems.

Supported existing physical and social infrastructure

- develop early warning systems to reach all citizens with a social network back-up for those most at risk
- prepare health system/emergency departments,
- improve maintenance programs for key services,
- seek behavioural changes to reduce energy demand peak loads on extreme days,
- retrofit old houses with better insulation
- develop emergency response plans for heat waves in all regions

Improve future planning and infrastructure

- emphasise 'cool cities' approaches to reducing heat islands in urban planning,
- increase resilience of cities to power failures through distributed grids,
- use less heat-sensitive material in key infrastructure, upgrade design standards for extreme events.

Design standards need to take account of rising extremes in their tolerances as shown by vulnerability in energy transformers to high temperature failures and transport vulnerability when train tracks buckle. These standards will need to be reviewed every decade as temperatures rise and we become clearer about the future.

Victoria and other states are developing local planning guides to deal with heatwaves. While this can support existing physical and social infrastructure, these plans may miss fundamental parts of the overall puzzle. A series of design, maintenance and investment problems with physical and social infrastructure have been highlighted by extreme events. It requires a coordinated approach to address these issues across fields as diverse as health and emergency services, power and water supply, and construction practices.

There are both technological and social elements to the solutions, across many sectors and it will require a view that can encompass all of these to develop systematic adaptations.

Rising to the bushfire challenge

Bushfire and climate researchers working with the Climate Adaptation Flagship have had to increase their tempo since the fires of Black Saturday swept through Victoria and demonstrated the deadly potential of hotter, drier conditions under climate change.

The quest to understand bushfires and why and how the Victorian fires caused so much devastation and damage began within hours of the bushfire disaster and has continued throughout the year.

CSIRO bushfire and climate change experts, particularly Andrew Sullivan, Justin Leonard and Kevin Hennessy, were thrust into the media spotlight in early February and this heightened level of interest has remained.

As part of the Bushfire CRC's post-fire investigations, Climate Adaptation Flagship researchers have been working with the Victorian Country Fire Authority and Victorian Department of Sustainability and Environment to reconstruct and analyse the Black Saturday fires.

The bushfire dynamics team led by Andrew Sullivan has been in the field gathering vital evidence on fire behaviour and progression across the landscape. Justin Leonard and bushfire urban design colleagues have investigated building land-use planning, building codes and controls and associated patterns of loss and survival through a detailed post-fire survey. CSIRO's bushfire research teams reported their data and findings to the Bushfire CRC in June and this formed a key part of the CRC's report to the Royal Commission.

Bushfire and climate change researchers with the Climate Adaptation Flagship prepared CSIRO's submission to the Bushfire Royal Commission as well as the Senate Inquiry into Bushfires in Australia. Justin Leonard appeared before the Royal Commission twice to give evidence on urban design and defensible space policies arising out of the report, *Building and Land use planning research after the 7th February 2009 Victorian bushfires*.

In response to concerns over new building standards for homes in bushfire-prone communities which were introduced on 11 March 2009, Justin and CSIRO colleagues have been working with fire-fighting agencies, the building and materials industry and government to develop a safer and more sustainable building code for Australian home-owners.

The community of Climate Adaptation Flagship researchers have been actively helping bushfire affected communities plan to rebuild and move forward in a more environmentally sustainable and bushfire resilient, or eco-resilient, way. In Victoria, at the Flowerdale Rebuilding Expo, urban systems specialists led by Matthew Inman from CSIRO's Sustainable Ecosystems presented information on design in bushfire prone areas, energy efficiency, communication, waste management, water management and recycling and have since followed up with further information and technical advice.

Heading into another 'bushfire season' and with hotter drier conditions predicted, public and media awareness remains high. Preparing for another bushfire crisis is a common concern and the bushfire research under the Adaptation Flagship continues to gain national coverage and exposure such as recently on ABC Catalyst and New Inventors programs. Our researchers are rising to the challenge looking into the most vital questions to enable our communities to understand, adapt to and reduce threats from bushfires.

For more information visit:

<http://www.csiro.au/org/BushfiresOverview>

<http://www.abc.net.au/catalyst/bushfires>

<http://www.abc.net.au/tv/newinventors/specials>

Report card for climate impacts on marine ecosystems

The *Marine Climate Change Impacts and Adaptation Report Card for Australia*, and an accompanying website, is Australia's first guide for scientists, government and the community on observed and

projected ocean impacts of climate change. It addresses the physical ocean (sea level, temperature, currents), ocean chemistry including acidification and marine biology from seagrass and plankton to coral reefs.

More than 70 scientists and 20 lead authors were involved in production of the Report Card and content for the web site led by the project team from the Climate Adaptation Flagship Elvira Poloczanska, Alistair Hobday and Anthony Richardson. The research team comprises scientists from CSIRO, Australian and overseas universities, State and territory environmental agencies, the Australian Institute of Marine Science and the Bureau of Meteorology.

The Report Card has been compiled so environmental and resource managers can consider their options in response to changes in ecosystem balance, according to project leader, CSIRO scientist, Dr Elvira Poloczanska. The report card will help inform policy by identifying regions, habitats and species most at risk, as well as highlight knowledge gaps and adaptation options.

“On both sides of the continent there is clear evidence of ocean warming and this is already bringing sub-tropical species south into temperate waters, while in tropical waters we are already seeing growth declines in massive corals likely due to thermal stress and ocean acidification ” Dr Poloczanska noted.

The Report Card highlights observations over the past decade, projects forward to 2030 and 2100 with assessments of likely status and confidence ratings, and offers adaptation responses that can also inform policy makers. It will be updated every two years allowing us to document changes in our marine ecosystems and chart developments in our knowledge , research and adaptation responses as climate changes.

There are key concerns about the waters around Australia becoming warmer and more acidic, combined with increases in strengths of major warm-water currents such as the East Australian Current. These interact with changes in the productivity of marine ecosystems and shifts in the distribution and abundance of species. Much work is needed to better understand the complex interrelations between all of these factors. The Report Card identifies where change is already occurring, likely trends and confidence levels in those trends depending on the state of knowledge.

Funded by the Australian Climate Change Science Program, The National Climate Change Adaptation Research Facility (NCCARF) and CSIRO’s Climate Adaptation Flagship, the project is an early outcome of a broader national response to climate change being conducted through the NCCARF.

The Director of NCCARF, Professor Jean Palutikoff, says the Report Card reflects both the increased bank of knowledge about impacts, and the responses of government, industry and the community. “Australia needs a guide to likely changes in the marine environment and we feel well-positioned now to bring together the science and the latest climate projections to consider options for adaptation.”

For more information visit:

<http://www.oceanclimatechange.org.au>

<http://www.csiro.au/science/Marine-Climate-Adaptation.html>

<http://www.nceas.ucsb.edu/featured/Richardson>

Adapting agriculture to climate change

Preparing Australian agriculture, forestry and fisheries for the future

As the public debate about climate change shifts from whether the climate is changing to what should be done about it, there is a growing, and largely unfilled, demand to identify practical strategies for adapting to future climate scenarios. Since the planet is now committed to several decades of warming, irrespective of efforts to curb greenhouse gas emissions, climate-sensitive industries will need to prepare for and adapt to these changes.

Australia's agriculture, forestry and fisheries industries already confront a harsh and variable climate, and these challenges will be exacerbated by climate change. Some agricultural enterprises will need to implement significant changes to avoid the worst impacts.

Edited by Chris Stokes and Mark Howden, this book aims to fill an important gap in identifying likely impacts of climate change as well as pointing out the pathways for primary industries to adapt to these challenges. This includes approaches to planning and making decisions despite the considerable uncertainties involved.

Adapting agriculture to climate change provides primary industry professionals, land managers, policy makers, researchers, and students a nationally-relevant and fundamental resource for preparing Australia's primary industries for the challenges and opportunities of climate change.

More than thirty authors have contributed to this book that moves beyond describing climate change causes and likely effects to providing options for people to take action to adapt to climate change.

The authors review the climate change implications and adaptation options for the key Australian primary industries of horticulture, forestry, grains, rice, sugarcane, cotton, viticulture, broadacre grazing, intensive livestock industries, marine fisheries and aquaculture, and water resources.

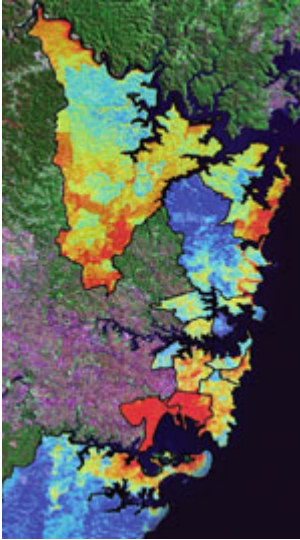
The book summarises the latest climate change scenarios for Australia. It includes chapters on socio-economic and institutional considerations for adapting to climate change, sources and sinks of greenhouse gas emissions, and risks and priorities for the future.

There is growing national and international demand for information on responses required to prepare agriculture for climate change; *Adapting agriculture to climate change* addresses this need.

For more information visit:

<http://www.publish.csiro.au/nid/21/pid/6170.htm>

<http://www.csiro.au/news/AdaptionForFarming.html>



Sydney Coastal Vulnerability

A practically focussed project to assess coastal Sydney's vulnerability to climate change, and start adapting to the potential impacts, won the 2009 Eureka Prize for Innovative Solutions to Climate Change.

The project, which brought together some of the nation's leading climate adaptation experts, found that the consequences of climate change in the region will be driven as much by socio-economic factors and decision making as by climate hazards such as heat waves and storm surges.

According to the Eureka Awards panel, the project successfully combined cutting edge science with a very practical approach, allowing local governments to identify key factors that will help them respond to climate change and its impacts.

Frank Howarth, head of the panel and director of the Australian Museum, added, "More significantly, it was designed and executed in such a way it had strong ownership from its stakeholders."

Local governments are still unsure about their responsibilities regarding climate change, but the three year project addressed their uncertainties by mapping areas of vulnerability, holding workshops to determine regional issues and priorities, analysing existing council systems, and assessing how transferable these systems are to other similar groups.

Scientists from CSIRO and the University of the Sunshine Coast worked closely with the Sydney Coastal Councils Group – a consortium of 15 councils – on the project.

They identified six steps for systematically combating climate change:

- enhance knowledge of existing and future climate hazards
- incorporate climate change into new frameworks
- increase education to staff and the community
- monitor and evaluate measures to track policy outcomes
- improve the ability to adapt within and across councils
- find new ways of generating money to finance these measures.

Applying cutting edge science to local conditions and communities puts targeted information in the hands of local governments, with the systems to update that knowledge. This work is already influencing local government plans in the region, but its broader influence is in inspiring other councils to begin similar preparations.

For more information visit: www.csiro.au/resources/SydneyClimateChangeCoastalVulnerability.html
<http://www.csiro.au/resources/CAF-working-paper-3.html>

Primary industries working for resilience

A new three-year project is working with farmers to develop strategies for a range of mixed cropping and grazing systems Australia-wide to adapt to projected climate change and other business pressures. Combining information from real mixed cropping systems with expected climate change impacts, farmers then identify on-farm management options that they believe may offset negative impacts. These options are then tested using a series of cropping and grazing models to determine the production and

natural resource management implications of introducing these adaptations.

As the work incorporates farmer knowledge it provides the best chance for impact from adaptation science and uptake on the ground. Implementing the adaptation options identified through this collaborative approach with CSIRO's Climate Adaptation Flagship could result in significant reduction in production losses from projected climate change.

Working with Queensland Department of Employment, Economic Development and Innovation, Birchip Cropping Group, Victoria; New South Wales Department of Primary Industries; and South Australian Research and Development Institute, this project will establish a coordinated network of research activities with farmer and science groups across Australia. Using a participatory research approach the goal is to adapt cropping and mixed cropping/grazing system businesses for a future with a more variable climate.

The project is partially funded by the Department of Agriculture, Fisheries and Forestry (DAFF) under the four-year Climate Change Research Program including:

- a national research program for 'climate-ready' cereal crops wheat and sorghum investigating the traits that need to be bred into Australia's crops to deal with higher temperatures and increased carbon dioxide in the future (Project leader: Scott Chapman)
- how agriculture is transforming to adapt to climate change using the peanut industry expansion in the NT as a blueprint (Project leader: Peter Thorburn)
- developing improved on-ground practices and adaptation strategies for beef production enterprises across northern Australia (Project leader for CSIRO component: Chris Stokes)
- adaptation strategies for southern Australian livestock (Project leader for CSIRO component: Andrew Moore)
- adaptation of fishing and aquaculture sectors and fisheries management to climate change in south eastern Australia, providing a national case study (Project leader for CSIRO component: Alistair Hobday)

For more information visit: <http://www.csiro.au/science/resilient-farmers.html>

SE Queensland climate adaptation

A three year, \$A14 million research initiative is examining south-east Queensland's vulnerability to climate change to inform practical, cost-effective strategies to help the area prepare for coming changes. It is the first comprehensive, regional study of climate change adaptation in Australia, and one of just a few worldwide. By being specific to one region and combining the new knowledge emerging across interrelated fields, the research cluster aims to provide insights into complex adaptation options.

Responsible for the overall management of the South East Queensland Climate Adaptation Research Initiative (SEQ-CARI), CSIRO's Dr Ryan McAllister is an economist who specialises in the interactions between human behaviour and ecological processes.

The research program combines eight main components with a fundamental focus on regional synthesis to ensure that the studies of various sectors are coordinated and complementary from the outset. New climate change projections and scenarios are being developed to be relevant for SEQ. They will focus on key local climate variables such as coastal inundation and flood risk. Examining regional socio-economic trends and their interaction with the effects of climate change will show ways to improve

adaptive capacity across the region. Mapping the patterns of human settlements and their vulnerability to climate impacts, it will be possible to develop and test actions to manage climate impacts on urban infrastructure, emergency services, and public health.

Another important role is assessing the vulnerability of SEQ's primary industries under different climate change scenarios. This will inform adaptation plans for key industries to reduce the socio-economic impacts during transitions. In addition to agriculture and forestry, SEQ is host to important marine and coastal ecosystems, and inland ecosystems that span from mountains to lowlands. The program will develop tools to examine the impacts of climate change and other human stresses which can clarify adaptation options. Within the adaptation trajectory for the future, changes in energy use are an important factor. Since climate change may impact on both energy demand and supply systems in the region, this component will analyse adaptation strategies based on renewable, local, distributed and efficient energy technologies.

Members of the initiative include the CSIRO Climate Adaptation Flagship, Griffith University, The University of the Sunshine Coast and The University of Queensland.

For more information visit: <http://www.csiro.au/partnerships/seqcari.html>

WA scales down global information

CSIRO and the Bureau of Meteorology, in a research partnership with the Western Australia (WA) State Government, are developing regional climate information by bringing together local observations and the large scale projections from global climate models. Through the Indian Ocean Climate Initiative (IOCI), decision makers will gain access to state-of-the-art and regionally-specific knowledge of past and projected climate trends in Western Australia.

In October 2009, an Indian Ocean Climate Initiative (IOCI) workshop in Perth brought together scientists and representatives from industry, and state and local government to discuss progress and ambitions for climate information to inform adaptation options in WA.

The research program looks at the baselines and long term predictability of WA climate, setting the foundation to see where the climate is changing. There is a focus on the current and future climate of the North West, including extreme events. As well, work continues to produce very-high resolution climate change projections for the South West to produce coordinated outputs are useful to WA decision makers.

Some of IOCI's most exciting work is in statistical analysis which takes ocean and atmosphere information that reflects large scale climate processes and applies it to local conditions. While the evolving science behind these studies is fundamental to the success of the project, the research results gained most interest from users.

These advances in scientific analysis will aid projects plotting North West WA specific changes in climate impacts. Work on likely patterns in future tropical cyclones will assist industry and communities to plan for safety and productivity. Better understanding of the heat island effect, extra heat that can concentrate around buildings, is helping to clarify the complex patterns of regional warming and the best adaptation responses. The trend in the North West for fewer tropical storms in the winter has another effect. With fewer storms there is less rainfall.

IOCI research is providing more information on the relationship between Australian rainfall variability and fundamental shifts that may come with a changing climate. Recent work by Dr Leon Rotstajn is uncovering the complex relationship between rainfall and fine particle aerosols flowing from the northern

hemisphere. This poses some important questions about the likely changes that will happen if industrial pollution in China is reduced.

Because there are connections between these far off changes in the atmosphere and the regional climate in WA, the work of statistical downscaling from global information continues to provide surprising insights. Communicating these insights in a meaningful way is one of the key challenges for the IOCI as it works to inform adaptation options for Western Australia.

For more information visit: <http://www.ioci.org.au>