

NRM on farms



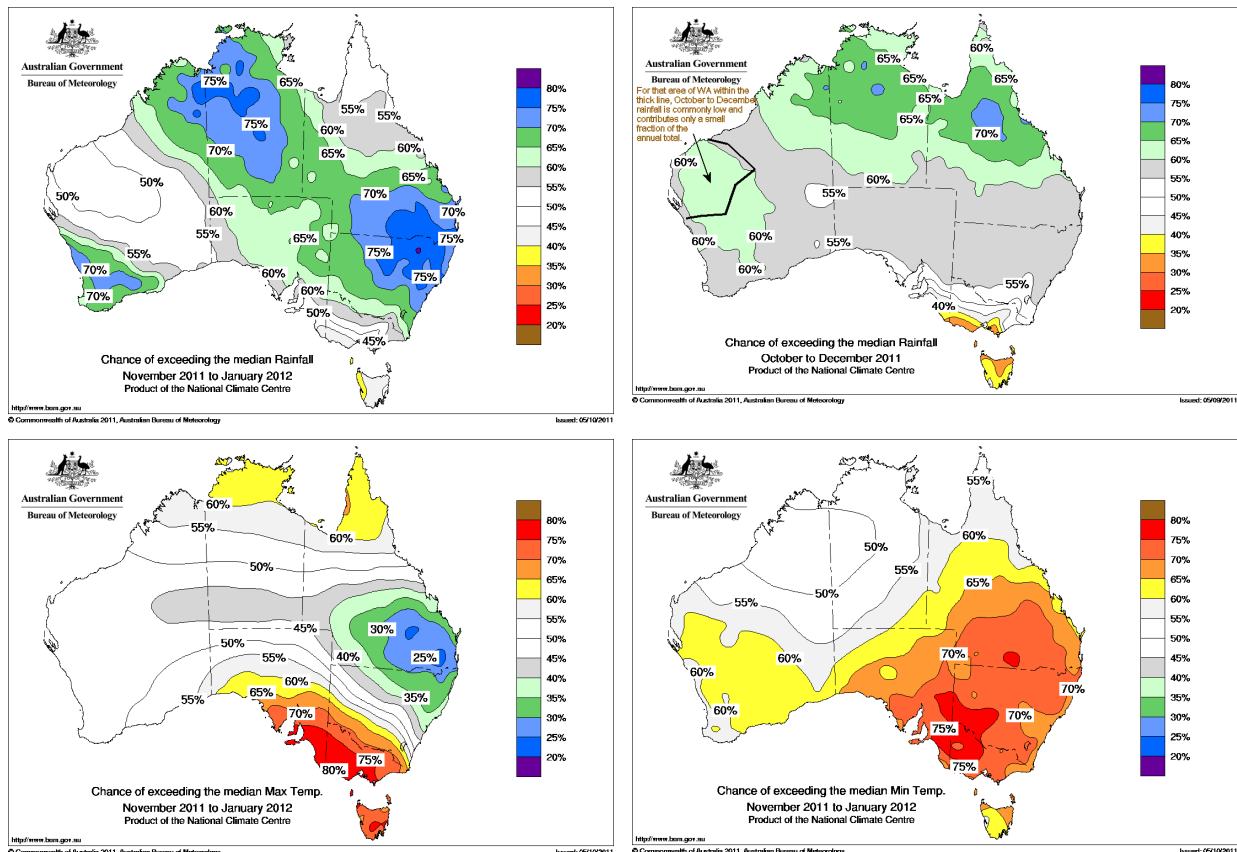
A monthly news summary about climate and natural resources in agriculture.

November 2011

CLIMATE

Wetter summer likely thanks to the Indian Ocean

November's three month rainfall outlook (below left) is looking much wetter for NSW compared with a month ago (below right), largely due to the warming Indian Ocean, but also consistent with the developing La Nina in the Pacific.



Maximum temperatures (above left) are expected to be cooler in northern NSW and hotter in southern NSW. Minimum temperatures (above right) are expected to be higher than average throughout the state.

La Nina event is developing

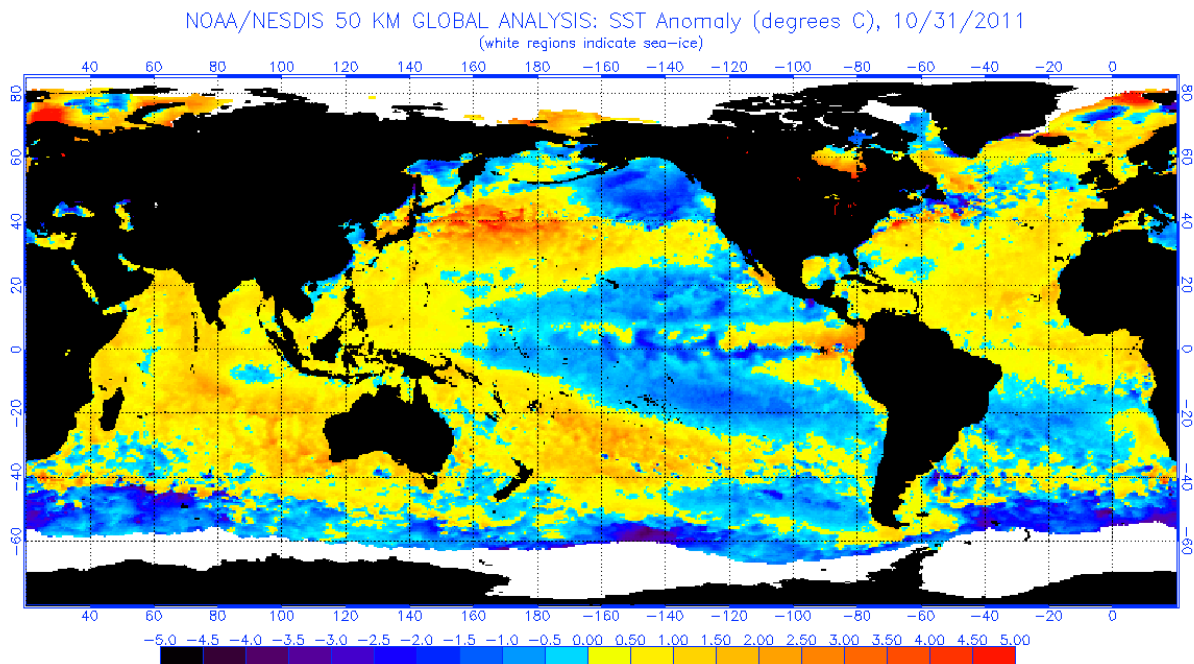
The tropical Pacific Ocean is now in the early stages of a late-forming La Niña event, and further strengthening of the event is likely until mid-summer, but it will be weaker than the 2010-2011 event. Pacific Ocean temperatures are now at La Niña levels and key signals

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such as trade winds, cloud and the Southern Oscillation Index, are also close to, or have exceeded, La Niña thresholds.

<http://www.bom.gov.au/climate/enso/>

Global sea surface temperatures



Global sea surface temperatures in October showed a warming in the equatorial Indian Ocean near Sumatra compared with a month ago, and further cooling in the central Pacific.

<http://www.osdpd.noaa.gov/data/sst/anomaly/2011/anomg.10.31.2011.gif>

Australian winds are speeding up

Recent CSIRO research has found that Australia's average wind speed is increasing. Averaged across Australia over 1989–2006, wind speeds at 10 metres height increased by 0.69 per cent per annum, compared to a decline of 0.36 per cent for wind speeds at 2m height.

<http://www.csiro.au/news/New-energy-in-search-for-future-wind.html>

US researchers find land temperature is rising

The Berkeley Earth Surface Temperature study of global land surface temperature records has found that its results line up with previously published studies and suggests that the average global land temperature has risen by roughly 0.9 °C since the 1950s. The independent team of researchers, some of whom had previously expressed doubts about the mathematical rigour of climate science, used data from 39,000 temperature stations on land and then applied standard statistical techniques to remove outliers.

<http://www.nature.com/news/2011/111020/full/news.2011.607.html>

Perennials in dryland agriculture project

A new project funded through NCCARF's Primary Industries grants program will evaluate whether integrating perennial plants into dryland agriculture can help farmers adapt to climate change. The project will investigate the use of belts of eucalypt trees; screen Australian native and introduced shrubs for drought fodder potential; trial use of perennial

plants during the non-crop phase of cereal production systems, and trial planting high-performance stock feed based on drought tolerant perennial pasture varieties.

<http://www.nccarf.edu.au/sites/default/files/September%20Newsletter.pdf>

Climate smart agriculture statement for action

A global science conference on climate-smart agriculture held at Wageningen on 24-26 October has released an eight page statement for action which urges increased farm and landscape level research, education, extension and innovation, and sustainable intensification. Read the full statement at

<http://www.gscsa2011.org/LinkClick.aspx?fileticket=eDlto5l7E0E%3d&tabid=2871>

Access conference presentations at

<http://www.gscsa2011.org/>

CLIMATE RESOURCES

Climate Smart winter/spring rainfall map

DPI's Climate Smart Agriculture team has produced a poster showing rainfall decline and the historic relationship between El Nino Southern Oscillation Index, Indian Ocean Dipole and NSW rainfall from June to November from 1900 to 2010.

<http://www.dpi.nsw.gov.au/?a=410644>

Farmer health and climate change

ANU researchers have found that farmers' pre-existing health problems are important to consider when designing climate adaptation programs and policies, because they may affect farmers' capacity to adapt. Intent to adapt is a more important indicator of farmers' capacity to work towards sustainable practices than assets tests alone.

<http://www.mdpi.com/1660-4601/8/10/4039/pdf>

<http://www.mdpi.com/1660-4601/8/10/4055/pdf>

Queensland climate change adaptation

Queensland's primary industries sector is vulnerable to a range of climate risks, particularly increased temperatures that will trigger decreased water availability, increased pest and weed incursions, and greater land degradation. However, significant barriers exist to the uptake of adaptation actions beyond information provision.

<http://www.climatechange.qld.gov.au/whatsbeingdone/adaptation/pdf/issues-paper.pdf>

Climate change and agricultural water supply

Drier conditions are projected for most of southern Australia which means dryland agriculture will have to adapt to slightly lower annual average rainfall and perhaps changed seasonality of rain, and irrigated agriculture will have lower water entitlements and less reliable annual allocations. This fact sheet looks at the implications for future agriculture in Australia.

<http://www.piarn.org.au/sites/piarn.boab.info/files/resources/421/piarninformationsheet1water.pdf>

Australia's Wild Weather

The National Library of Australia has selected weather photographs from its archive for a new book, and commissioned an essay by NSW poet Mark Tredinnick about what the weather means to us and how it affects our lives.

<http://www.publish.csiro.au/nid/18/pid/6866.htm>

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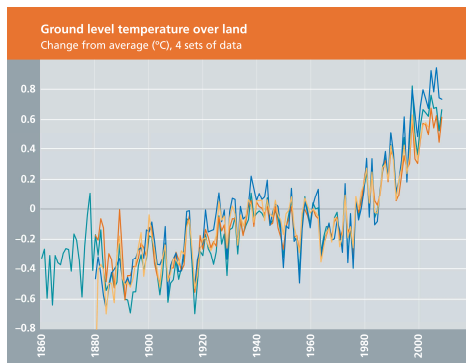
Primary
Industries



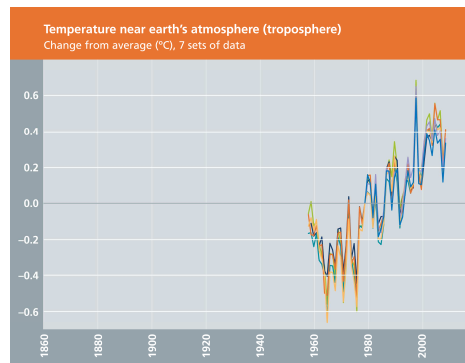
The warming world in graphs

The UK Climate Information Program has produced graphs of several climate variables using public data from the US National Oceanic and Atmosphere Administration (NOAA) to show changes over the past 150 years.

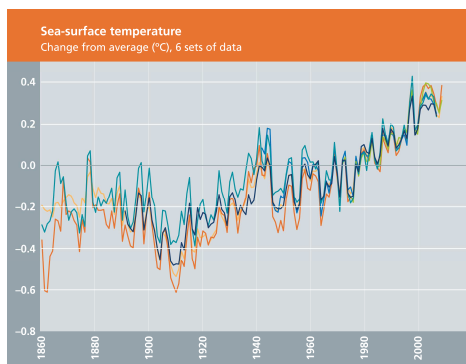
<http://www.ukcip.org.uk/essentials/climate-indicators/>.



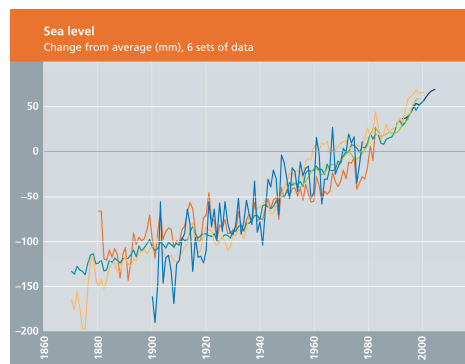
UKCIP 2011, data from National Climatic Data Center at NOAA



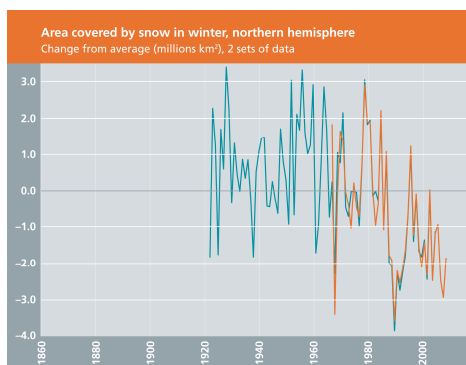
UKCIP 2011, data from National Climatic Data Center at NOAA



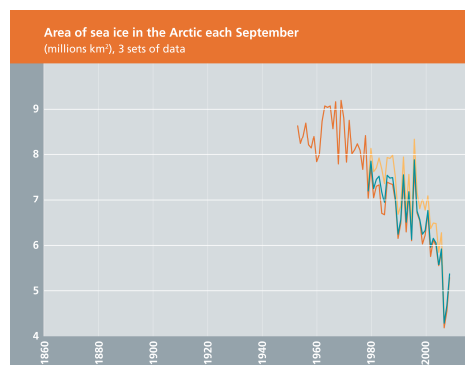
UKCIP 2011, data from National Climatic Data Center at NOAA



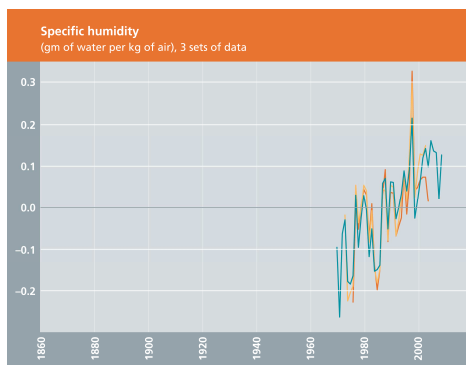
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UKCIP 2011, data from National Climatic Data Center at NOAA



UKCIP 2011, data from National Climatic Data Center at NOAA



UKCIP 2011, data from National Climatic Data Center at NOAA



Climate uncertainty

The journal Climatic Change has produced a special issue that discusses approaches to evaluation, characterisation, and communication of uncertainty in the climate science debate.
<http://www.springerlink.com/content/k2r46wj51481/>

EMISSIONS

Clean Energy Futures legislation update

The House of Representatives has passed the Clean Energy legislative package of 19 Bills. The Bills put a price on carbon pollution, promote investment in renewable and clean energy technologies and support action to reduce carbon pollution on the land. The legislation will be debated in the Senate in November, with the aim of it being passed by the end of the year.
<http://www.climatechange.gov.au/government/legislation.aspx>

Clean Energy Futures report

A Senate Committee report on the Clean Energy Future Legislation provides an overview of the arguments for and against the legislation. In relation to agriculture, the report says 'a considerable amount of effort' will be required to inform farmers about both the impacts and opportunities of the legislation, particularly the Carbon Farming Initiative, which will be implemented from 1 December 2011.

<http://www.aph.gov.au/house/committee/jscacefl/report/CommitteeFinal.pdf>

Carbon Bills digests

The Parliamentary Library issues Bills Digests to explain the purpose and operation of new Bills when they are passed.

Clean Energy Bill

<http://www.aph.gov.au/library/pubs/bd/2011-12/12bd068.pdf>

Carbon Credits (Carbon Farming Initiative) Bill 2011

<http://www.aph.gov.au/library/pubs/bd/2011-12/12bd005.pdf>

Carbon Credits (Consequential Amendments) Bill 2011

<http://www.aph.gov.au/library/pubs/bd/2011-12/12bd004.pdf>

Measuring nitrous oxide emissions from cropland

A US study into the impact of farm practices on nitrous oxide emissions found that expressing emissions per unit of crop yield instead of area produces very different results. Emissions were not significantly affected by tillage practices when expressed on an area basis, but when calculated per unit yield of grain, were significantly greater under no-tillage than conventional tillage due to lower production in no-tillage crops.

<https://www.agronomy.org/publications/jeq/abstracts/40/5/1521>

Inland waterways are big emitters of CO₂

Rivers and streams in the United States are supersaturated with carbon dioxide compared with the atmosphere, according to US researchers. Carbon dioxide emissions from streams and rivers are positively correlated with rainfall, which is attributed to stream surface area, and the flushing of carbon dioxide from soils.

<http://www.nature.com/ngeo/journal/vaop/ncurrent/full/ngeo1294.html>

WATER

Santos water website for Queensland CSG sites

Coal seam gas company Santos has launched a website to share information on water quality and groundwater levels at CSG sites across the Surat and Bowen basins in Queensland.

<http://www.santoswaterportal.com.au/>

SA science review of MDB Plan guide

The SA-based Goyder Institute has released a science review of the implications of the MDB Plan Guide for SA. Overall, the Guide scenarios substantially increase flows in the lower River Murray, but how the water is delivered, particularly operation of upstream storages and assets, will be critical to the meeting SA Government's environmental water requirements.

<http://www.goyderinstitute.org/publications/2011/synthesis-science-review-Basin-plan.pdf>

Water, food and poverty in river basins

This study of 10 river basins in Africa, Latin America and Asia concludes that there is enough water to produce food but water use needs to be much more efficient, and address institutional and governance failures.

<http://awm-solutions.iwmi.org/water-food-and-poverty-in-river-basins-special-issue.aspx>

SOILS

Carbon in soils workshop

Soil Science Australia and the Australasian Soil and Plant Analysis Council have organised a carbon in soils workshop at the University of Adelaide's Waite campus on 22 November covering carbon accounting, carbon fractions, sampling, biochar, knowledge gaps, laboratory measurement and farm profits.

<http://www.aspac-australasia.com/>

Carbon Cocky awards

The recent carbon conference at Dubbo presented Carbon Cocky awards to John and Robyn Ive, Yass; Martin Royds, Braidwood; Cameron McKellar, Spring Ridge; Charlie Arnott and Dick Richardson, Boorowa; Bob and Anne Davie, Phillip Island; and Victoria Royds, Braidwood.

http://www.carboncoalition.com.au/blog/Carbon_Farmers_of_Australia_Blog/tag/Carbon_Cocky_Awards/

Soil health knowledge bank

This website provides an overview for farmers and agricultural industries of current soil health knowledge and tools to assess soil condition, including characteristics of healthy soil, habits of healthy soil farmers, and onfarm diagnosis of soil health.

<http://soilhealthknowledge.com.au/>

Draft biochar guidelines released for comment

The International Biochar Initiative (IBI) has prepared draft guidelines to categorise biochars according to relevant, reliable and measurable characteristics. The guidelines prescribe tests and thresholds to identify certain qualities and characteristics of seven biochars.

<http://www.biochar-international.org/node/2843>

Persistence of soil organic matter

Persistence of soil organic matter depends on the interactions between organic matter and the surrounding soil ecosystem, and we need to know more about these interactions to better predict how soils will respond to changing climate, vegetation, erosion and pollution, says a recent *Nature* article.

<http://www.nature.com/nature/journal/v478/n7367/full/nature10386.html>

US soil carbon study

US study of soil organic matter in different dryland crop rotations found that uncultivated prairie soils have higher organic matter content and contain a different kind of organic carbon relative to the crop rotation soils.

http://www.snarc.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=252021

The phosphorus cycle: a broken biogeochemical cycle

This *Nature* paper examines the lack of public and governmental discourse about the plight of the element phosphorus – and the potential social consequences of inaction.

<http://www.physorg.com/news/2011-10-endangered-species-cheap-phosphorus-elemental.html>

ENERGY

Energy analyst warns of groundwater impact of CSG

Energy analyst Gundi Royle has criticised industry and regulators for failing to conduct independent regional modelling of the groundwater impacts of up to \$80 billion in planned coal seam gas (CSG) development, mostly in Queensland. “Currently there are hundreds of wells planned but over the life of these projects some 40,000 wells will be drilled. It is the scale-up that will have unintended consequences and is rightly alarming to other land users,” she said.

<http://www.smh.com.au/environment/water-issues/energy-analyst-turns-up-heat-on-new-gas-projects-20111027-1mm53.html#ixzz1c1wLHb00>

Liverpool Plains farmers blockade CSG site

Farmers have blockaded a planned drilling site at Spring Ridge on the Liverpool Plains, preventing resources company Santos from drilling an exploratory gas well. The farmers say the blockade will go on for “as long as it takes” to stop drilling in the area, which they say could harm the underground aquifers that made the region the nation’s most productive food bowl. Santos says the proposed well would provide useful data for the Namoi water catchment study.

<http://www.smh.com.au/environment/water-issues/farmers-pledge-to-continue-blockade-of-csg-mining-site-for-as-long-as-it-takes-20111027-1mm55.html#ixzz1c1x46K9V>

Oilseed biofuel plant for Echuca

A new bio-energy production facility to be built near Echuca will produce 1.5 million litres of biodiesel and 4,000 litres of animal feed from Indian mustard or canola oilseed. Construction is scheduled to be completed by the end of 2012.

http://www.premier.vic.gov.au/images/stories/111005_Ryan_Vic_Coalition_announces_500000_biofuels_boost.pdf

BIODIVERSITY

DPI helps perennial wheat search

US-developed perennial wheat has survived in NSW trials for three consecutive years, and the seed is now being sent around the world to try and develop a commercial perennial wheat which would not need sowing each year. DPI participated in the trials which found that most of the successful lines were highly resistant to leaf rust, stripe rust, stem rust and wheat streak mosaic virus.

<http://www.dpi.nsw.gov.au/aboutus/news/recent-news/agriculture-news-releases/perennial-wheat-research>

Analysis of global soil biodiversity

The first comprehensive molecular analysis of soil animals from the tropics to the poles has found that each ecosystem has its own array of soil animals. On average, 96 percent of identified soil animals were found at only a single location, suggesting most soil animals have restricted distributions, or are endemic. There was no indication in the study by Wu et al that latitude makes a difference in soil animal diversity.

<http://www.pnas.org/content/early/2011/10/11/1103824108.abstract>

FOOD

Food, health and climate

Australia's domestic food system is almost self-sufficient, but food security requires a stable and supportive climate. This article reviews the current state of science concerning the interface between climate change, food systems, and human health to reveal the key issues that must be addressed if Australia is to advance human health and sustainable food systems under a changing climate.

http://aph.sagepub.com/content/23/2_suppl/91S.abstract

Waite food security debate

The Waite Research Institute in Adelaide hosted a debate on the topic *Increasing agricultural production is the only sure way to feed 9 billion people by 2050*. You can read the speeches from the six speakers at the website below.

<http://www.cosmosmagazine.com/features/online/4765/feeding-nine-billion-can-it-be-done>

Solutions for a cultivated planet

A US study suggests five techniques will increase food production and reduce agriculture's environmental impacts: halt agricultural expansion, close 'yield gaps' on underperforming lands, increase cropping efficiency, shift diets and reduce waste.

<http://www.nature.com/nature/journal/v478/n7369/full/nature10452.html>

Oxfam report: Growing a better future

This report presents research forecasting price rises for staple grains in the range of 120–180 per cent within the next two decades, as resource pressures mount and climate change takes hold.

<http://www.oxfam.org/grow/reports/growing-better-future>

SUSTAINABILITY

NSW land and water advisory panel

The NSW Government has established a land and water advisory panel to replace the disbanded Natural Resources Advisory Council. The panel will include senior representatives from DPI, Office of Environment and Heritage, Department of Aboriginal Affairs, Department of Planning and Infrastructure, NSW Office of Water, State Water, CMAs and nominated representatives from the NSW Farmers' Association, NSW Irrigators' Council, Total Environment Centre, Nature Conservation Council and the Local Government and Shires Association.

http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/412547/201110189-LAND-AND-WATER-PANEL-TO-ADVISE-NSW-GOVERNMENT.pdf

ABS review of agricultural environment

The Australian Bureau of Statistics is undertaking a review of its environment and agriculture statistical program and has released a discussion paper for comment.

<http://www.abs.gov.au/ausstats/abs@.nsf/mf/7105.0.55.001?OpenDocument>

Year of the Farmer

The Australian Year of the Farmer 2012 officially launched in Sydney on 12 October. The year will celebrate the hard work of everyone involved in producing, processing, handling and selling products from 136,000 farms across the country.

<http://www.yearofthefarmer.com.au/>

Focus on environment as well as production

To feed the world, funding needs to focus not just on developing new and better agricultural crops, but also on the science and practice of restoring the environmental conditions necessary for crop productivity, says Jack Heinemann, Professor of Molecular Biology and Genetics at NZ University of Canterbury.

<http://theconversation.edu.au/why-would-australia-want-to-grow-genetically-modified-wheat-3755>

Rodale 30 year organic study

The US Rodale Institute has published a summary of 30 years of its side-by-side comparison of organic and conventional agriculture, initiated to see what occurred in the transition from chemical to organic agriculture. After an initial decline in yields, the organic system soon rebounded to match or surpass the conventional system.

<http://www.rodaleinstitute.org/fst30years>.

EVENTS

- | | |
|----------------|--|
| November 7-9 | CarbonExpo Australasia 2011
http://www.carbonexpo.com.au |
| November 8-11 | 20 th NSW Coastal Conference, Tweed Heads
http://www.coastalconference.com/ |
| November 9-10 | Australian agriculture roundtable conference, Melbourne
http://www.farminstitute.org.au/news-and-events/upcoming-events/index.html |
| November 9-11 | Stipa national native grasslands conference, Holbrook
http://www.stipa.com.au/Events/Conferences.html |
| November 21-22 | NCCARF water governance workshop, Canberra
http://watergovernance2011workshop.eventbrite.com/ |

- November 22 Carbon in soil workshop, Adelaide
<http://www.aspac-australasia.com/>
- November 22-23 Wetland recovery after drought, Sydney
<http://www.nccarf.edu.au/water/node/25>
- November 24-25 Bioenergy Australia conference, Sunshine Coast
<http://www.bioenergyaustralia.org/index.html>
- November 28-30 APEN forum: Sustaining landscapes livelihoods & lifestyles, Armidale
<http://www.apen.org.au/default.asp?PageID=70>
- November 29-Dec 1 Australasian Wildlife management society conference, Bathurst
<http://www.onqconferences.com.au/events/awms11/>
- December 6-8 Agri-Food: Sustainabilities, and agriculture in the Asia-Pacific region
<http://www.afn.org.au/>
- 2012**
- March 6-7 3rd national acid sulfate soils conference, Melbourne
www.scu.edu.au/nationalassconference
- May 1-3 Water and climate: Policy implementation challenges
<http://www.climatechange2012.org/index.asp?IntCatId=14>
- May 1-4 Water and beyond, Griffith NSW
www.waterandbeyond.com.au
- June 26-28 Climate adaptation in action, Melbourne
<http://www.nccarf.edu.au/conference2012/>
- October 14-18 16th Australian agronomy conference, Armidale
<http://www.agronomy.org.au/events/2012/>
- December 2 – 7 Soil solutions for diverse landscapes, Hobart
<http://www.cdesign.com.au/soilscience2012/>

OTHER NRM NEWSLETTERS

ASSAY - acid sulfate soils

<http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/assay>

Climate Institute newsletter

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

Murray Darling Basin Commission e-letter

http://www.mdba.gov.au/media_centre/mdba_eletter

National Water Commission e-letter

<http://www.nwc.gov.au/www/html/171-subscribe.asp>

Newstreams- aquatic habitat

<http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/newstreams>

NRM Notes (invasive animals)

<http://www.invasiveanimals.com/research/goals/goal-11/11t1/>

MAILING LIST

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