

NRM on farms



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

May 2015

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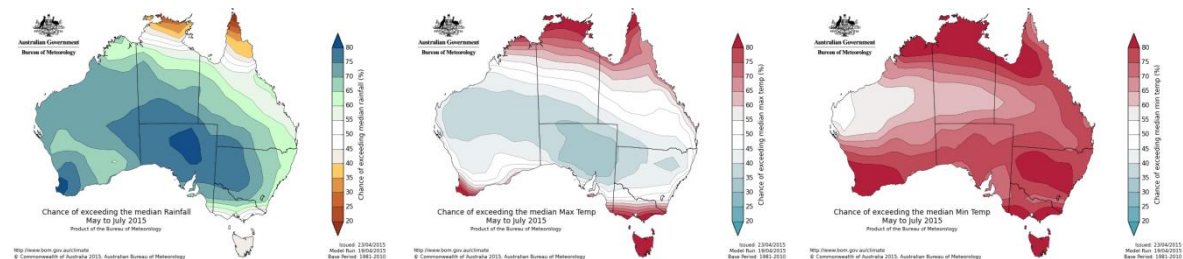
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CLIMATE

Seasonal outlook



A wetter than normal outlook is likely for NSW over the next three months, along with average to cooler days and warmer nights, due to warmer than normal sea surface temperatures in the Indian Ocean and waters surrounding much of the Australian coastline.

<http://www.bom.gov.au/climate/outlooks/#/overview/summary/>

Video: <http://www.bom.gov.au/climate/outlooks/#/overview/video>

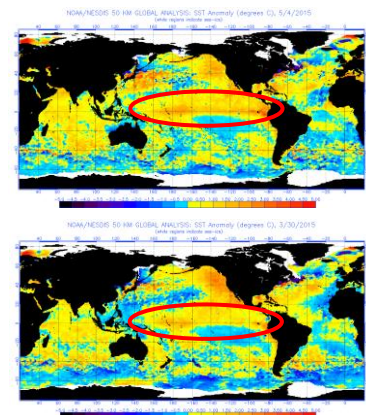
Ocean temperatures

Sea surface temperature anomalies have increased across the tropical Pacific to above El Niño thresholds. Warm anomalies remain across a large part of the northeast Pacific and down the US west coast. Warmer-than-average temperatures persist along Australia's east coast and across most of the Indian Ocean.

Right: Ocean temperatures in May (top) and late March.

<http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/index.html>

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



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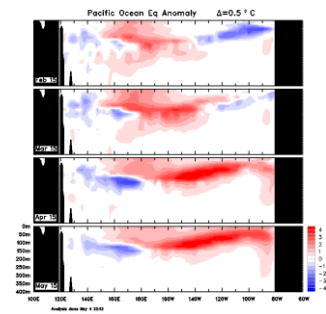


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Warm anomalies are moving east

The four-month sequence of sub-surface temperature anomalies in the tropical Pacific shows the eastward progression of warm anomalies and their gradual rise towards the surface.

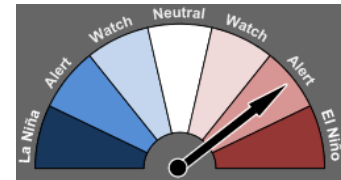
<http://www.bom.gov.au/climate/enso/>



El Niño now on alert status

ENSO indicators in the tropical Pacific are approaching El Niño levels. Sea surface temperatures now exceed El Niño thresholds and trade winds have remained weaker than average for several weeks. If these patterns persist or strengthen, El Niño will become established. The ENSO Tracker remains at El Niño alert. This means the likelihood of El Niño developing in 2015 is around 70%, which is three times the normal likelihood.

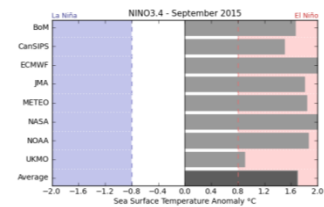
<http://www.bom.gov.au/climate/enso/tracker/>



Model outlook

All international climate models surveyed by the Bureau indicate that ocean temperatures are likely to remain above El Niño thresholds until at least the southern hemisphere spring. However, the accuracy of model outlooks at this time of year, the traditional El Niño–Southern Oscillation (ENSO) transition period, is lower than at other times.

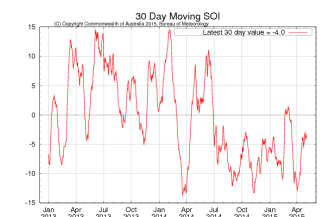
<http://www.bom.gov.au/climate/ahead/model-summary.shtml#abs=Pacific-Ocean>



SOI returns to neutral

Southern Oscillation Index values are returning to neutral after being generally negative since spring 2014 and are yet to show a sustained shift into negative values below -7 indicating an El Niño.

<http://www.bom.gov.au/climate/enso/#abs=SOI>



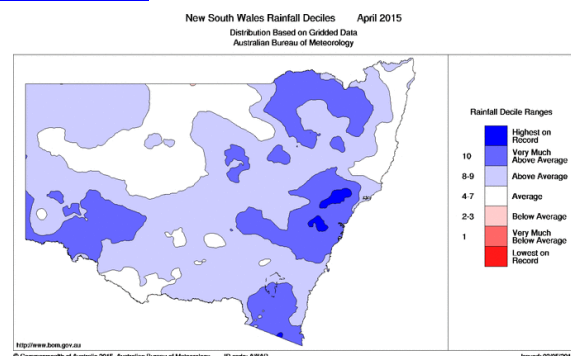
Indian Ocean remains warm

The Indian Ocean Dipole remains neutral and model outlooks indicate a neutral IOD for the coming months. However, the Indian Ocean's very warm temperatures are having a significant impact upon Australia's climate, increasing the odds of wetter months ahead in most dynamical climate models surveyed.

<http://www.bom.gov.au/climate/ahead/model-summary.shtml#abs=Indian-Ocean>

Wettest NSW April in 25 years

Average NSW rainfall during April was 47% above average, making it the wettest April since 1990. Some stations in the Hunter and Sydney regions recorded their wettest April on record. The most significant rainfall event was the East Coast Low with 48 hour rainfall totals of 436 mm at Maitland, and waves as high as 14.9 m



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off Sydney. Daytime temperatures were 1.0°C below average with parts of central NSW more than 8°C below average on the 7th and large areas of northern NSW more than 8°C below average on the 20th and 21st. The average minimum temperature was 0.4°C above average, associated with warm sea surface temperatures and cloudy conditions.

<http://www.bom.gov.au/climate/current/statements/scs51.pdf>

NSW DPI seasonal conditions report

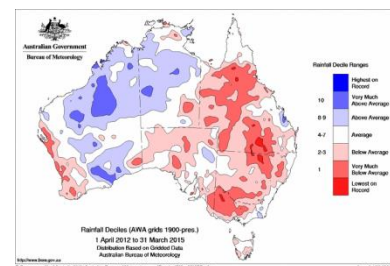
Subscribe to NSW DPI's seasonal conditions report, and the climate summary which provides a snapshot of the monthly report in an easy to read four-page format with additional graphs and charts.

<http://www.dpi.nsw.gov.au/agriculture/emergency/seasonal-conditions/regional-seasonal-conditions-reports>

CLIMATE RESOURCES

Southern Australia's long-term rainfall decline

Australia's rainfall in the past three years shows some of the characteristics of the long-term rainfall trend; dry conditions in southeast and southwest Australia, contrasting with unusually wet conditions in the north and northwest. It seems likely that drying across southern Australia is due to movement of storm tracks to the south, and movement of the subtropical and polar jet streams. These changes are likely due to anthropogenic warming, and anthropogenic reductions in stratospheric ozone. Global warming also reduces the temperature difference between the equator and pole, which reduces the energy available to mid-latitude weather systems.



<http://www.bom.gov.au/climate/updates/articles/a010-southern-rainfall-decline.shtml>

Wind bursts strongly affect El Nino severity

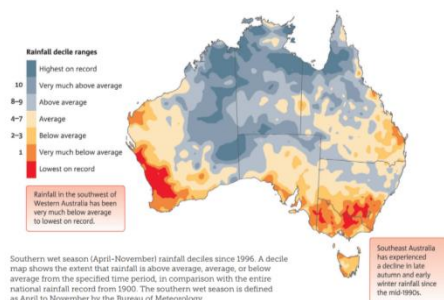
Prolonged wind bursts originating in the western Pacific can have a strong effect on whether an El Nino event will occur and how severe it is likely to be. The wind bursts produce surface warming in the eastern equatorial Pacific and generate strong equatorial surface currents that extend the eastern edge of the warm pool. There are three warming patterns associated with El Ninos: extremely strong events with the largest warming near the South American coast; a cluster of weak warm events centred near the dateline; and moderate warming in the central-eastern equatorial Pacific. In strong El Niño events, the westerly wind bursts grow strong and extend east of the dateline.

<http://cmns.umd.edu/news-events/features/2961>

Thirsty country: Climate change and drought in Australia

The Climate Council reports on changes in drought conditions, drying trends and the influence of climate change in the southeast and southwest of the continent.

<https://www.climatecouncil.org.au/droughtreport2015>



Global increase in hot and wet extreme weather

Analysis of the frequency of daily hot and wet extremes over the past century has found a global trend towards more frequent and intense hot extremes since the 1950s, with significantly more stations recording increases than decreases in heavy precipitation. More than half of the hot extremes and nearly a fifth of precipitation extremes can be attributed to global warming. The less common and more extreme the hot extreme or heavy rainfall event, the more this can be attributed to a man-made contribution.

<https://www.ethz.ch/en/news-and-events/eth-news/news/2015/04/more-than-half-of-hot-extremes-due-to-climate-change.html>

Explainer: the wild storms that lash Australia's east coast

This article from The Conversation explains East Coast Lows and provides context for the rain and storms that hit Sydney and the Hunter in April.

<http://theconversation.com/explainer-the-wild-storms-that-lash-australias-east-coast-40564>

Natural resources planning for extreme climate events

UTS workshops with residents in NSW's south-east region found that improving the protection of natural resources is a critical pathway in local adaptation strategies, and there is considerable scope in enhancing management of local ecosystems to prepare for extreme weather events.

<http://www.uts.edu.au/sites/default/files/JacobsBoronyakVasco2015extremeclimateevents.pdf>

Knowledge and uncertainty in bushfire and flood risk

Uncertainty is a necessary element of scientific methods, and as such risk mitigation practitioners and researchers alike need to 'embrace uncertainty' as part of navigating bushfire and flood risk mitigation. This review outlines the key scientific practices and scientific uncertainties in bushfire and flood risk mitigation in Australia.

http://apo.org.au/files/Resource/rmpp_scientificknowledge_litreview_04-2015.pdf

MyFireWatch

MyFireWatch provides bushfire location information in a quickly accessible form for community-based users, particularly in remote and regional areas of Australia. It provides useful map layers to assist people in the preparation and response to fire threats in their vicinity.

<http://srss.landgate.wa.gov.au/fire>

Australia's ranks sixth for global climate adaptation

Australia is ranked sixth in the world on the global ND-GAIN climate adaptation index which summarises countries' vulnerability to climate change and readiness to improve resilience. Australia is ranked first on vulnerability which measures countries' exposure, sensitivity and ability to adapt to the negative impact of climate change, and 15th on readiness which measures aspects of the economy, governance and society that affect the speed and efficiency of adaptation. Interestingly, it is ranked 38th on the food score which measures vulnerability to climate change, in terms of food production, food demand, nutrition and rural population.

<http://index.gain.org/>

Applied studies in climate adaptation

This new book includes 38 Australian adaptation case studies in agriculture, business, the coastal zone, community services, disaster management, ecosystems, indigenous populations, and settlements and infrastructure.

<http://au.wiley.com/WileyCDA/WileyTitle/productCd-1118845013.html>

Australian Climate Futures tool

The Australian Climate Futures tool shows projections from up to 40 climate models for different regions, years and emission scenarios. The tool helps select future scenarios so people can plan for climate change.

<http://www.climatechangeinaustralia.gov.au/en/climate-projections/climate-futures-tool/introduction-climate-futures/>

Explainer: the models that help us predict climate change

This article from The Conversation explains how global climate models work. Their fundamentals are based on the laws of physics including conservation of mass, energy and momentum. These models represent, in three dimensions, the large-scale circulations of the atmosphere and ocean, such as the progression of high and low pressure systems and large-scale oceanic currents.

<http://theconversation.com/explainer-the-models-that-help-us-predict-climate-change-39568>

Heat stress causes productivity losses

A new paper in Nature Climate Change calculates that heat stress cost the Australian economy nearly A\$7 billion in 2013-2014 through productivity losses.

<https://theconversation.com/extreme-heat-poses-a-billion-dollar-threat-to-australias-economy-41153>

Why are there clouds?

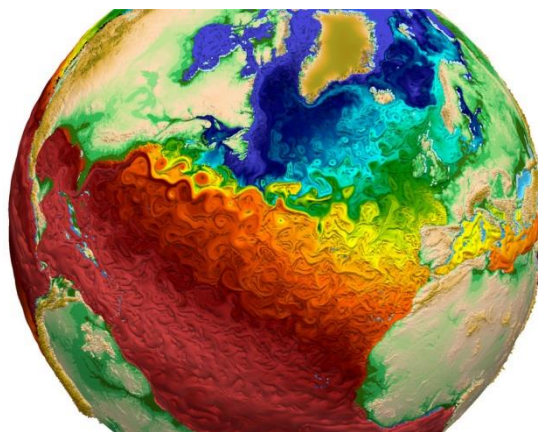
This animated Youtube clip explains how clouds form.

https://www.youtube.com/watch?v=QC2x_RRnk8E

Global map of ocean temperatures

Los Alamos National Laboratory has produced a new global map of the world's oceans. This view of the Atlantic Ocean shows a clear divide between cooler Northern Hemisphere and the warmer Southern Hemisphere waters, and details such as trapped regions of hot water adjacent to the Gulf Stream in the Atlantic Ocean, and warmer water in the Mediterranean.

<http://www.lanl.gov/newsroom/picture-of-the-week/pic-week-2.php>



EMISSIONS

Beef industry reduces emissions

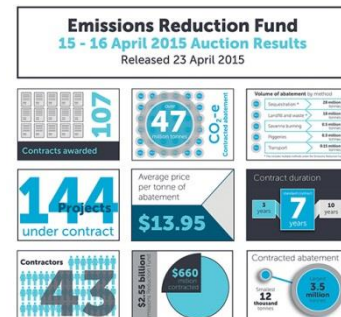
In the past 30 years the Australian beef industry has reduced its GHG emissions intensity from 15.3 to 13.1 kg CO₂-e/kg liveweight due to efficiency gains through heavier slaughter weights, increases in growth rates in grass-fed cattle, improved survival rates and greater numbers of cattle being finished on grain. However, the increase in supplement and grain use on farms, and the increase in feedlot finishing, resulted in a twofold increase in fossil fuel energy demand over the same time. Fresh water consumption for beef production dropped to almost a third due to increased competition for irrigation water, capping artesian bores in the rangelands, and an overall decline in water available for agriculture compared to industrial and domestic uses.

<http://www.mla.com.au/About-MLA/News-and-media/Media-releases/Australian-beef-industry-reduces-environmental-footprint-over-30-years>

Emissions auction pays \$660 million

Results of the Federal Government's first reverse auction of carbon cutting projects have been released. The government will spend A\$660 million of its A\$2.55 billion Emissions Reduction Fund on 107 contracts involving 43 contractors and 144 projects. These will reduce emissions by some 47.3 million tonnes, more than half of it in carbon farming projects to lock up carbon in vegetation. The average price of carbon abatement in this auction is \$13.95 per tonne.

<http://www.cleanenergyregulator.gov.au/Emissions-Reduction-Fund/Want-to-participate-in-the-Emissions-Reduction-Fund/step2/auction-results-april-2015/Pages/Default.aspx>



Climate Change Authority recommends emissions targets

A draft report from the Climate Change Authority has recommended that Australia should reduce its 2000 emissions levels by 19 per cent by 2020, by 30 per cent by 2025, and by 40 to 60 per cent by 2030. It has also recommended Australia use international emissions reductions to complement domestic measures. The Authority is inviting submissions on the draft report. It will also release a draft report later this year on emissions trading and other policies to reduce emissions, and will release a final report in June 2016 recommending Australia's climate action.

<http://www.climatechangeauthority.gov.au/>

Australia can cut emissions at low cost

A new report from UNE and the World Wildlife Fund says deep cuts in national emissions can be achieved by promoting energy efficiency, moving to a zero-carbon electricity system, switching from direct use of fossil fuels to decarbonised electricity, and improvements in industrial processes. Remaining greenhouse gas emissions could be fully offset through carbon farming and forestry. Australia has among the best prerequisites in the world for moving to a fully renewable electricity supply.

http://awsassets.wwf.org.au/downloads/fs077_australia_can_cut_emissions_deeply_and_the_cost_is_low_21apr15_v2.pdf

New ERF methods approved

Newly approved ERF methods include avoided deforestation, savanna fire management method, and replacing deep open anaerobic lagoons with anaerobic digesters.

<http://www.environment.gov.au/system/files/resources/5e2fe53b-9eae-4d9c-8851-80c32de9387d/files/erf-update-april-2015.pdf>

Understanding the Emissions Reduction Fund

This online training program explains key concepts for running a carbon sequestration project, provides tools and information to help choose a method, and explores how to map a project area and measure carbon abatement. There are video demonstrations of sequestration tools including FullCam, the Carbon Farming Mapping Tool and the Reforestation Modelling Tool.

<http://www.cleanenergyregulator.gov.au/Emissions-Reduction-Fund/Forms-and-resources/Planning-a-project/Pages/default.aspx>

Ferticare carbon farming

Ferticare has produced a range of resources on land-based GHG emissions reductions and carbon sequestration relevant to the development of soil, plant nutrition and fertiliser management advice for farmers.

http://www.fertilizer.org.au/default.asp?V_DOC_ID=1237

US incentives to reduce agricultural emissions

The US Government is introducing a range of voluntary programs for farmers to reduce agricultural emissions. These include improving soil, health, managing nitrogen, reducing livestock methane, conserving sensitive lands, encouraging rotational grazing, growing private and urban forests, managing Federal forests promoting wood products and promoting renewable energy.

<http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=2015/04/0109.xml>

WATER

101 streamflow forecast locations available

The Bureau of Meteorology now provides seasonal streamflow forecasts at 101 locations around Australia, with an interactive map to help users select forecast locations. Many more locations are being tested for release in coming months. All forecast locations go through a period of registered-user testing before being released to the public. If you'd like to get involved in this testing please email

water_ssf@bom.gov.au.

www.bom.gov.au/water/ssf/



Live River Data for the Murray

Live River Data provides information from over 60 measurement points within the River Murray system including near-real-time and historic data.

<http://www.mdba.gov.au/river-data/live-river-data>

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Farm irrigation efficiency program

Applications for funding under this program are now being assessed and will target projects in the Murrumbidgee, NSW Murray and the Lower Darling that improve the efficiency and productivity of on-farm water use and management.

<http://www.environment.gov.au/water/rural-water/srwui/on-farm-irrigation-efficiency-program>

Wetlands for our future

The latest edition of Wetlands Australia highlights innovative wetland conservation and rehabilitation practices, including examples of the wise use of wetlands for our future.

<http://www.environment.gov.au/water/wetlands/publications/wetlands-australia/national-wetlands-update-february-2015>

California introduces mandatory water restrictions

With 93% of California still in severe drought after four years, mandatory water restrictions aim to cut usage by a quarter. The water cuts follow news that the Sierra Nevada snowpack, a major source for California's reservoirs, is at 8% of usual levels, the lowest since records began. Scientists warn of the worst drought in 1,200 years. Farmers are turning to groundwater to irrigate crops, but groundwater deposits are getting saltier as cities and farms extract more water than is replenished naturally, allowing ocean water into the porous aquifers.

<http://ca.gov/drought/>

<http://www.scientificamerican.com/article/california-s-drought-may-be-worst-in-a-millennium/>

<http://www.scientificamerican.com/article/california-farmers-confront-ominous-groundwater-shortage/>

Insecticide levels in agricultural waters

A study of global insecticide contamination data for agricultural surface waters has found that more than 40% of water samples and more than 80% of sediments have insecticide concentrations that exceed regulatory levels. In less regulated countries 42% of insecticide concentrations exceeded the RTL; only slightly more than 40% in highly regulated countries such as the US, EU, Canada, Japan and Australia.

<http://www.sciencedaily.com/releases/2015/04/150414083714.htm>

SOILS

NSW soils on eSPADE

NSW landowners now have access to what's in their soil through the NSW Government's new online soil mapping database eSPADE, a Google Maps-based information system that allows easy, no-cost, map-based access to NSW soil and land information. The website provides a compendium of natural resource information that describes not only soil and landscape features— such as geology, topography, native vegetation and soil type - but also information about the capability of the land and the fertility of its soils.

<http://www.environment.nsw.gov.au/eSpadeWebApp/>

Soil Constraints West

Soil Constraints West is a new WA research initiative on farming problems that limit agricultural production, including non-wetting soils, sub-soil constraints, soil compaction and

soil acidity, which cost WA growers more than \$1.6 billion annually. The initiative aims to take a long-term holistic view of the soil system instead of focussing on individual issues. http://www.giwa.org.au/pdfs/CR_2015/Belford_Bob_Soil_constraints_West_a_GRDC_initiative_to_develop_soil_management_FINAL.pdf

Victoria launches Land Health

Victoria's Land Health Program works with dryland farmers across Victoria to improve the productivity, quality and health of their land and protect adjacent natural assets such as waterways. It offers training, advice and information to farmers and rural service providers in farm planning, productive soils, farm water, grazing and pasture management, sustainable cropping and soil conservation.

<http://www.depi.vic.gov.au/agriculture-and-food/farm-management/land-health>



Soil and Landscape Grid of Australia

The Soil and Landscape Grid of Australia provides detailed digital maps of the country's soil and landscape attributes. Soil attributes provided include, bulk density, organic carbon, clay, silt, sand, pH, available water capacity, total nitrogen, total phosphorus, effective cation exchange capacity, depth of regolith, depth of soil, and coarse fragments.

<http://www.clw.csiro.au/aclep/soilandlandscapegrid/>

The state of Australia's soils

This review of Australia's soils from Future Directions concludes that we may have a better understanding of the specific ailments of our most degraded soils rather than the complex interactions at play in healthy soil. There is an increasing need for strategic investment to better understand what is happening to all our soils. Coordinated initiatives such as the National Soil Research Development and Extension Strategy will play an essential role in improving our understanding of soils and our response to the challenges of food security, water quality and climate change.

http://www.futuredirections.org.au/files/sap/2015/FDI_Strategic_Analysis_Paper_-_The_State_of_Australia's_Soils.pdf

Improving grain yields on sodic clay

Victorian research into grain production on sodic soils prone to waterlogging found that adding ameliorants such as composted pig bedding–litter or deep ripping gypsum produced grain yield increases in all crops by up to 48% compared with the control. Similar increases were produced when crops were grown on raised beds, even in seasons when growing-season rainfall was well below average. Greatest yield increases were recorded when both raised beds and ameliorants were used.

<http://www.publish.csiro.au/nid/40/paper/CP14210.htm>

Biochar for sustainable soils project

NSW DPI's Annette Cowie is leading the technical committee for an international UN-funded biochar project to support small scale subsistence farmers in Peru, China, Vietnam, Kenya, Indonesia and Ethiopia to build a global evidence base on biochar performance in agriculture. The project is led by Starfish Initiatives, a NSW-based organisation.

<http://biochar.international/>

Increased atmospheric carbon dioxide limits soil storage

US researchers have found that higher levels of atmospheric carbon dioxide increase both carbon's input and release from the soil. The scientists compared data from experiments around the world with models of the soil carbon cycle to test how soil carbon release by microbes responds to rising carbon dioxide. They conclude that soil carbon may not be as stable as previously considered, and soil microbes have more direct control on carbon storage than is represented in today's global climate models.

<http://science.energy.gov/ber/highlights/2015/ber-2015-03-c/>

Soil changes affect microbe communities

UK research has found that changes in carbon, nitrogen, and pH have a significant impact on the make-up of the soil microbe communities, regardless of whether the plot is organic or conventionally managed. The most dramatic difference in microbes occurred in year to year samples, possibly due to rainfall which can change the chemistry of the soil. This means that agricultural management processes that maintain stable carbon, nitrogen and pH, can protect the structure of microbial communities.

<http://onlinelibrary.wiley.com/doi/10.1111/jam.12822/abstract>

Soil nutrients may limit plants CO2 intake

A US review that looked at 11 leading climate models to examine changes in nitrogen and phosphorus found that N limitation will reduce plant uptake of CO₂ by 19 percent, while a combined nitrogen and phosphorus limitation will reduce plant uptake by 25 percent. This means that the terrestrial biosphere could become a net source of CO₂ to the atmosphere by the end of the century, with soil microbes releasing more carbon than growing plants can absorb.

<http://news.umt.edu/2015/04/042015clim.aspx>

More food, low pollution (MoFoLoPo)

Improving nitrogen use efficiency to grow more food with less nitrogen pollution requires policies that recognise economic and social factors affecting farmer decision-making. These include private-public partnerships to demonstrate best management practices; continuing education to private sector retailers and crop advisers; and tying nutrient management to performance-based indicators on the farm and in downwind and downstream environments.

<https://dl.sciencesocieties.org/publications/jeq/articles/44/2/305>

Online biochar classification tool

The International Biochar Initiative has developed an online tool that allows biochar producers to classify their biochar materials based on a set of physicochemical properties, and better understand how a specific biochar may function as a soil amendment. The tool classifies carbon storage value, fertiliser value, liming value, and particle size distribution, and provides the fertiliser grade for several nutrients. It will be launched on the IBI website in early May.

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

IYS communications kit

FAO has produced a communications kit for the International Year of Soils, to help engage the public in soil-related activities. Materials include videos, key messages, soil facts, social media tips, information resources and outreach suggestions.

<http://www.fao.org/soils-2015/communications-toolkit/en/>



Soil biodiversity facts

This four page fact sheet from FAO explains soil biodiversity and its importance.

<http://www.fao.org/3/a-i4551e.pdf>

Film: Better save our soil

Produced for Global Soils Week in April, this promotes options for actions to protect soil for future food cultivation.

<http://globalsoilweek.org/resources/videos/video-better-save-soil>

ENERGY

Impact of oil and gas development in US and Canada

A US assessment of landscape impacts of oil and gas development across the US and Canada concludes that the development has resulted in significant vegetation loss of rangelands and croplands across broad swathes of central North America, disrupted wildlife migration routes, altered wildlife behaviour and assisted new disruptive invasive plant species. Nearly half of the wells drilled are in extreme or high water-stress regions, thus intensifying competition among agriculture, aquatic ecosystems and municipalities for water resources. The study calls for a policy framework that quantifies and weighs major tradeoffs at large scales because current policy does not address both assessment and future mitigation adequately.

<http://news.umt.edu/2015/04/041515oill.php>

BIODIVERSITY

Policy for more efficient environmental approvals

The Australian Government has released a draft policy to minimise unnecessary duplication between State, Territory and Commonwealth conditions for environmental approvals. The draft is open for public comment to 15 May 2015. The draft policy will initially support the operation of the NSW revised assessment agreement. The public consultation will inform the finalisation of the policy and its possible extension to other willing states and territories.

<http://www.environment.gov.au/protection/environment-assessments/bilateral-agreements/condition-setting-assessment>

Many native plants already climate-ready

Many Australian plants are already able to cope with predicted future climate scenarios according to a review of key functional traits in native grasses, legumes and forage shrubs. The review examined species' life history, regenerative traits, forage quality and quantity,

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drought tolerance and invasiveness in three pastoral regions (high-rainfall temperate south, tropical and subtropical grasslands, and low-rainfall semi-arid shrublands).
<http://www.publish.csiro.au/nid/40/paper/CP13406.htm>

Native shrubs can provide valuable feed

NSW DPI research has found that native Australian shrub legumes may provide a valuable source of feed for livestock in temperate grazing systems. Analysis of 15 shrub legume species collected from low fertility roadsides and travelling stock routes across the Riverina found half to have adequate digestibility to fulfil the needs of dry adult sheep and cattle. All species analysed had sufficient crude protein content for dry adult livestock.
<http://www.aginnovators.org.au/news/native-legumes-new-stockfeed-and-soil-replenisher>

Beekeeping on public land

A new RIRDC report on beekeeping access to public land in Australia calls for development of a decision framework to help land managers and beekeepers identify when and where access impacts are likely to be significant. Such a framework would also increase the capacity of individual beekeepers to demonstrate compatibility with management objectives for public lands on a site by site basis and hence negotiate access.
<https://rirdc.infoservices.com.au/items/15-024>

Honey bee larvae nutrition is key to colony health

A US study has shown that inadequate access to pollen during larval development has lifelong consequences for honey bees, leading not only to smaller workers and shorter lifespans, but also to impaired performance and productivity later in life.
<http://www.wellesley.edu/news/2015/04/node/60296>

Bees attracted to pesticides

UK scientists have found that bees are attracted to nectar containing neonicotinoid pesticides which is putting them at risk of poisoning when they eat contaminated nectar.
<http://www.ncl.ac.uk/press.office/press.release/item/bees-prefer-nectar-containing-pesticides>

Cane toads killing dung beetles

Farm dams are encouraging the spread of cane toads and related loss of dung beetles. Researchers have found that cane toad numbers at dams were about 6.4 times higher than at water tanks and dung beetles were about 9.6 times lower at dams than at tanks. The toads sit on freshly-deposited dung pats at night and eat all the dung beetles in it.
<http://link.springer.com/article/10.1007%2Fs10021-015-9865-x#>

FeralScan App

Farmers and the community can now map feral animals with the new FeralScan Mobile App. You can record sightings of pest animals, the damage they cause, and control actions such as trapping. Information is entered on the FeralScan website to map hotspot areas for pests, and coordinate targeted pest control programs.
<https://itunes.apple.com/au/app/feralscan-pest-mapping/id975407187>
www.feralscan.org.au

Biodiversity stabilises ecosystems

A worldwide study of the interplay between organisms and their environment suggests that greater biodiversity helps maintain more stable and productive ecosystems. Conservation of biodiversity benefits the plants and animals directly involved, and by extension the human populations that rely on these organisms and ecosystems for food, water, and other basic services. The review suggests that science may have underestimated the importance of biodiversity to the functioning of ecosystems in nature.

<http://www.vims.edu/newsandevents/topstories/multidiversity.php>

Stability in diversity

A long term US study of experimental grassland plots has found that all human-induced changes affected the productivity of the grassland plots, but only changes that reduced biodiversity reduced ecosystem stability. The 28 years of data covered plant growth, number of species, ecosystem stability and exposure to changes in nitrogen, carbon dioxide, fire, grazing and water. The study concluded that any driver of environmental change that causes a loss of plant diversity will in turn reduce the stable production of plant biomass over time.

<http://discover.umn.edu/news/science-technology/diversity-key-stability-grassland-study-finds>

Bonn Challenge

The Bonn Challenge is an international movement to restore 150 million hectares of the world's deforested and degraded lands by 2020 using mosaic restoration in which forests are combined with land uses incorporating trees, including agroforestry, small-holder agriculture, and buffer plantings around settlements.

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

FOOD

Consumption is key to climate impact

US research in to the relationship between land use, food related greenhouse gas emissions, and climate change has found that changing our consumption is the most effective way to reduce the impact food has on the climate.

<http://www.sciencedaily.com/releases/2015/04/150401084157.htm>

Healthy food for a healthy world

This US report recommends ways food systems can be made more productive, nutritious, and sustainable, and how the US government can better promote nutrition as part of its global food security strategy.

<http://www.thechicagocouncil.org/publication/healthy-food-healthy-world>

LAND USE

Pastures from Space

Pastures from Space uses satellite data to estimate feed on offer, and combines with climate and soil data to estimate growth rates.

<http://www.pasturesfromspace.csiro.au/>



SUSTAINABILITY

Landcare review recommends continued funding

A Federal Government review of landcare programs has made 15 recommendations including that Government continue funding the National Landcare Program and reinstate funding for facilitators and community support staff. The review also recommends that landscape scale projects continue, with collaboration on long-term landscape scale strategic planning and action; that reporting be proportionate to the size of a project or grant; and that reporting should focus on outcomes, including social outcomes, rather than outputs.

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/landcare/Report

Pathways to sustainable intensification

Growing more food on the same land will require intensification of agricultural practices, from improvements in production efficiency to investing in more profitable and risk-efficient practices and a mix of farm enterprises, and designing new farming systems that are able to further intensify the use of land and water or add value to existing produce. All productivity increases will need to protect critical factors such as water quality, environmental flows, pollination services, soil quality and natural fisheries.

<http://theconversation.com/the-future-of-food-growing-more-with-the-same-land-35559>

Revaluing ecosystems

In 2013 the Rockefeller Foundation hosted a workshop on the future of revaluing ecosystems which resulted in six critical ideas: mainstreaming ecosystem values in national economic accounts; building capacity for more pragmatic ecosystem assessments; highlighting the benefits of investing in natural infrastructure; investing in ecosystems to reduce risk in the food and beverage sector; using financial tools similar to green bonds to restore ecosystems in agricultural landscapes; and using knowledge and communication tools to promote more resilient communities, particularly after disasters.

<http://www.wri.org/publication/revaluing-ecosystems>

New CSIRO book: Global megatrends

A scarcity of natural resources, and protection of biodiversity and the global climate, are two of seven global megatrends identified by CSIRO in this new book. The other trends are rapid economic growth and urbanisation in Asia and the developing world, changing demographics and an ageing population, impact of new digital technologies, consumer expectations and an imperative to innovate.

<http://www.publish.csiro.au/nid/18/pid/7265.htm>

Economic value of two ecosystem services

Research has quantified the economic value of biological pest control and plant-accessible nitrogen in soil organic matter in 10 organic and 10 conventional fields on NZ grain farms. The value of the two ecosystem services, averaging \$146 per acre each year in organic systems and \$64 in their conventional counterparts. The study calculated that the value of the two ecosystem services on the organic farms exceeded the combined cost of traditional pesticide and fertiliser inputs on the conventional farms.

https://news.wsu.edu/2015/04/14/study-puts-a-price-on-the-help-that-nature-provides-agriculture/#.VTXa8_yUc6I

New Eureka Award for rural innovation

The 2015 Eureka science awards have a new category for Rural Innovation for excellence in research, development or innovative application of agricultural practices that have improved, or have the potential to improve, the productivity and sustainability of Australia's agriculture, fisheries and forestry industries.

<https://eureka-entry.australianmuseum.net.au/>

EVENTS

2015	International Year of Soils http://www.fao.org/soils-portal/en/
May 12-14	Ozwater'15, Adelaide http://www.ozwater.org/
May 26-27	NSW Nature Conservation Council bushfire conference, Sydney http://www.nature.org.au/healthy-ecosystems/bushfire-program/conferences/
May 26-28	Irrigation Australia regional conference, Sydney http://www.ial2015.com.au/
June 3-4	Primary Industries Education Foundation Conference, Canberra http://www.primaryindustrieseducation.com.au/
June 12	Biodiversity in rural landscapes, Ballarat http://www.csu.edu.au/_data/assets/pdf_file/0003/1297524/2015-BAB-Conference-Flyer.pdf
July 7-10	National Carbon Farming Conference Expo, Albury carbonfarmingconference.com.au
July 14	Agriculture and environment research symposium, Sydney “ Uta.stockmann@sydney.edu.au
July 15-17	Australian Meteorological and Oceanographic Society conference, Brisbane http://www.amos.org.au
July 23-24	Current issues for soil science. Moree woodlots3@bigpond.com .
September 7-9	WA Soils Conference, Mandurah http://www.soilscienceaustralia.org/component/content/category/43-wa-state-conference-blog?layout=blog
Nov 30-Dec 2	Bioenergy Australia 2015, Launceston http://www.bioenergyaustralia.org/

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