

NRM on farms



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

April 2017

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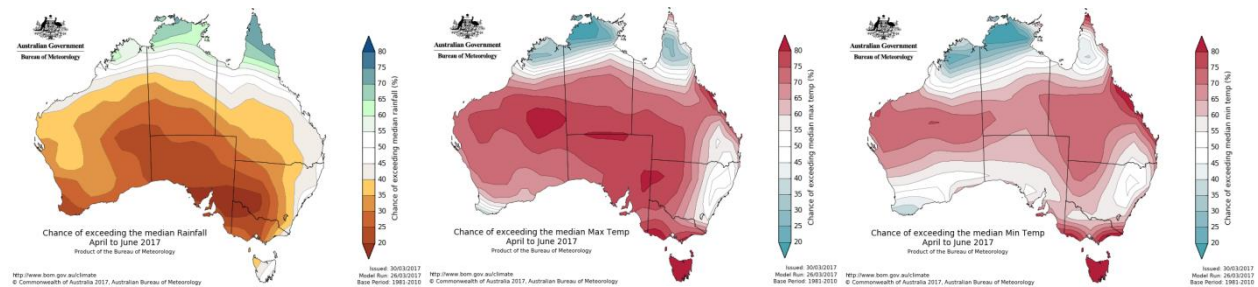
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CLIMATE

Outlook for NSW



The climate outlook for the next three months is for average to below average rainfall, and average to warmer than average temperatures, influenced by warming in tropical Pacific sea surface temperatures and a cooler eastern Indian Ocean.

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

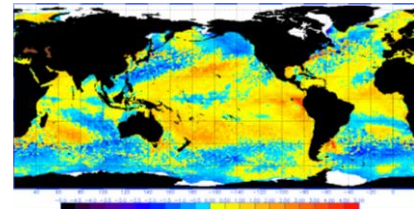
<http://www.bom.gov.au/climate/outlooks/#/overview/video>

Ocean temperatures

Temperatures in the central Pacific Ocean are close to average, with warm anomalies in the far eastern and southern Pacific, and around eastern Australia.

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

<http://www.bom.gov.au/climate/enso/#tabs=Sea-surface>



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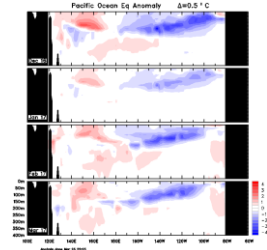


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Pacific subsurface cooling

Cooler than average temperature anomalies continue to weaken and decrease in volume. Weak warm anomalies in the west have contracted slightly.

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

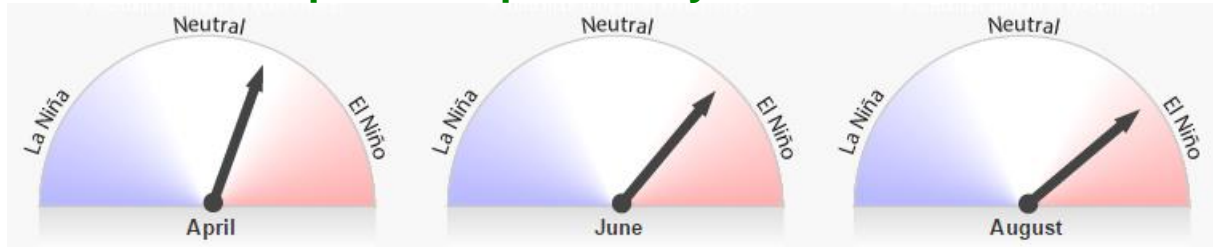


ENSO outlook: Watch

ENSO is currently neutral, but sea surface temperatures in the tropical Pacific have warmed steadily since January and all climate model outlooks show further warming is likely in coming months, possibly reaching El Niño thresholds this winter. El Niño WATCH means that there is a 50% chance of El Niño developing in 2017, which is about twice the normal likelihood.

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

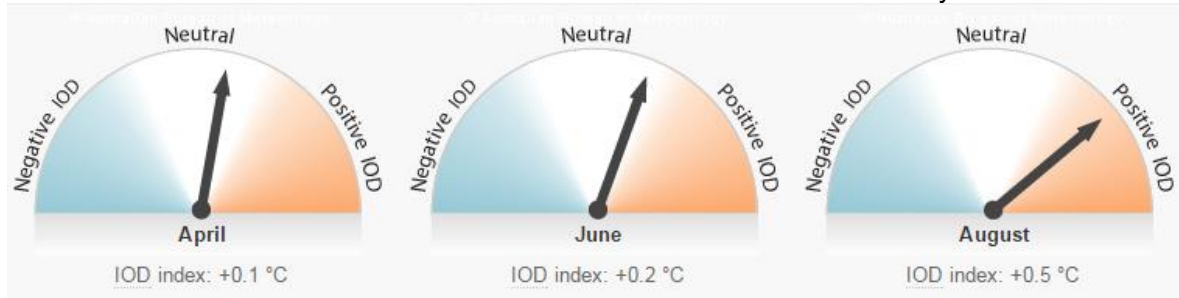
Model outlook points to possibility of El Niño



<http://www.bom.gov.au/climate/model-summary/>

Positive IOD may be on the horizon

The IOD remains neutral, and has little influence on Australia from December to April. However, five of six models suggest an increased chance of a positive IOD by August. If a positive IOD occurs with El Niño, this can reinforce the typical dry signal observed in Australia during El Niño. However, it should be noted that model accuracy during early autumn for both ENSO and IOD outlooks is lower than at other times of year.

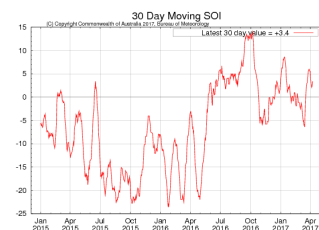


<http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean>

SOI remains neutral

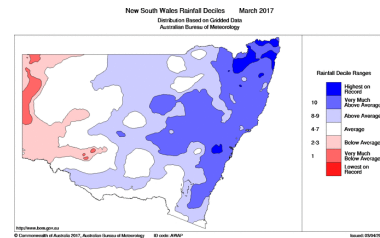
The 30-day Southern Oscillation Index (SOI) has generally been within the neutral range since mid-October.

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



Second warmest March for NSW

March 2017 was the second-warmest March on record for NSW. Rainfall was well above average in eastern and central NSW, with ex-tropical cyclone Debbie bringing major flooding to the northeast. Several north coast centres recorded more than 400mm on 31 March, including Eungella, near Murwillumbah, which also recorded 1021.5mm for the month. <http://www.bom.gov.au/climate/current/month/nsw/summary.shtml>



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>

GLOBAL CLIMATE

WMO: State of the global climate

The World Meteorological Organisation released its annual statement on the state of the global climate in March.

<https://wmo.maps.arcgis.com/apps/Cascade/index.html>



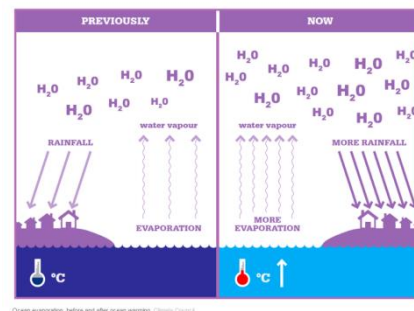
CLIMATE IMPACTS

2017 NSW

floods not the same

Almost all of NSW's flood-causing rainfall from ex-Tropical Cyclone Debbie fell within 24 hours, unlike severe flooding in the region in 1954 and 1974 which was due to sustained La Nina conditions. A rapidly warming climate means that storms are now occurring in a "super-charged" atmosphere. As temperatures increase, so does the water-holding capacity of the lower atmosphere. The oceans are also warming, especially at the surface, driving up evaporation rates. Global average surface temperature has already risen by about 1° above pre-industrial levels, leading to an increase of 7% in the amount of water vapour in the atmosphere.

<https://theconversation.com/northern-nsw-is-no-stranger-to-floods-but-this-one-was-different-75701>



CLIMATE TOOLS

Sow early trials

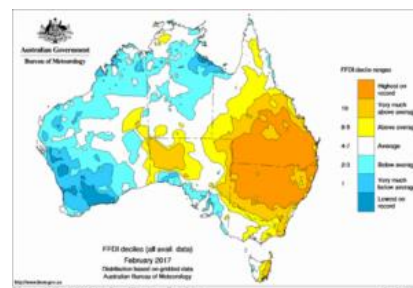
Birchip Cropping Group has is investigating a range of sowing times to determine the best management options to avoid frost and heat shock events, and work out the most appropriate sowing times for farmers to manage their sowing window and logistical challenges.

<https://www.bcg.org.au/how-early-is-too-early-to-sow-2/>

Fire Danger Index

Australia now has a fire danger index, based on temperature, rainfall, humidity and wind, that extends back to 1950. The FDI shows how rare fire weather conditions are for a given region. The exceptional conditions experienced in February 2017 were the highest Forest FDI values since 1950 throughout large regions of New South Wales and southern Queensland.

<http://nespclimate.com.au/adding-a-new-dimension-to-fire-weather-warnings/>



Climate-ready revegetation guide

This guide outlines how to use online tools to gauge if existing vegetation (species and local populations) are likely to be suitable as the climate changes.

http://anpc.asn.au/resources/climate_ready_revegetation

iSeeChange

iSeeChange is a US website that encourages communities to observe how weather and climate are affecting their environment.

<https://www.iseechange.org/>

EMISSIONS

Review of Australia's emissions reduction policies

The Federal Government is seeking comment on reducing emissions and the implications for policy, including the role and operation of the Emissions Reduction Fund and its safeguard mechanism. Comments on the discussion paper close on 5 May 2017.

<http://www.environment.gov.au/climate-change/review-climate-change-policies/discussion-paper-2017>

SOILS

Land use change destabilises subsoil carbon

Australian researchers have found that land-use change affects subsurface organic carbon over decadal timeframes, leading to large losses of young carbon down the entire soil profile. Previously it was believed that old carbon stored in the subsoil was stable. The driver of

change is the lack of a supply of fresh, young carbon to the soil as the biomass produced is harvested from the agricultural system.

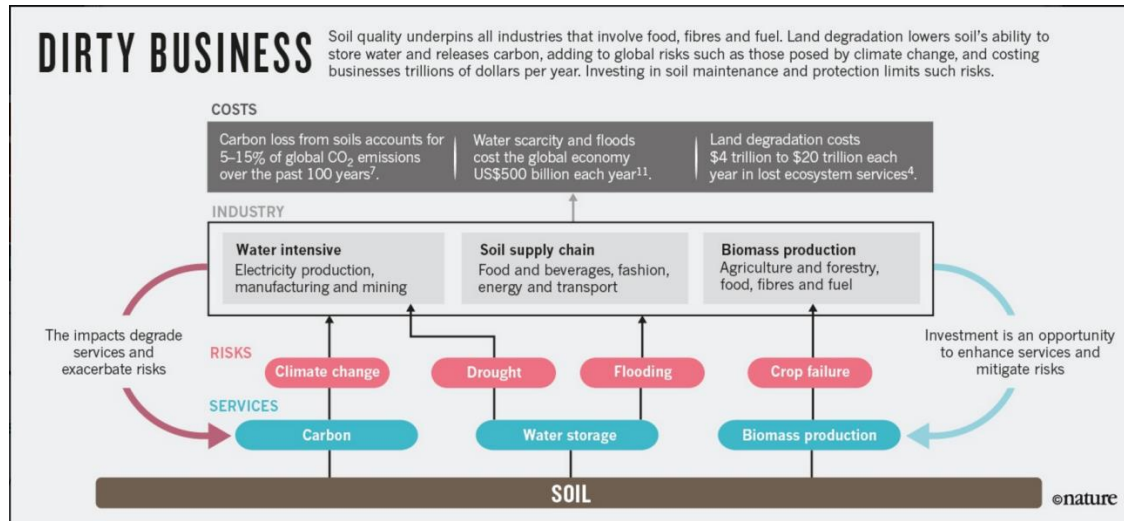
<https://phys.org/news/2017-03-radiocarbon-insight-soil-carbon-dynamics.html#Cp>

Rangeland soil carbon

DPI research into rangeland soil carbon has found that rotational grazing and exclusion fencing did not increase soil C stocks compared with continuous grazing. Increases in soil C may be limited in certain parts of the landscape as high values are associated with litter and perennial ground cover and within close proximity to trees.

<http://www.publish.csiro.au/rj/RJ16020>

The business case for soil



<http://www.nature.com/news/the-business-case-for-soil-1.21623>

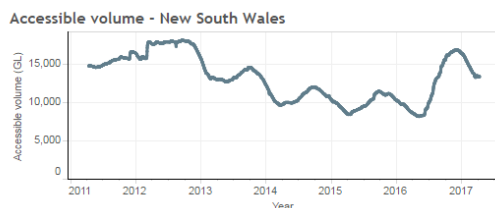
Soil organic carbon: The hidden potential

This free online book from FAO reviews the main scientific facts and information on SOC and its potential to adapt to and mitigate climate change and achieve overall sustainable development.

<http://www.fao.org/3/a-i6937e.pdf>

WATER

NSW water storage levels

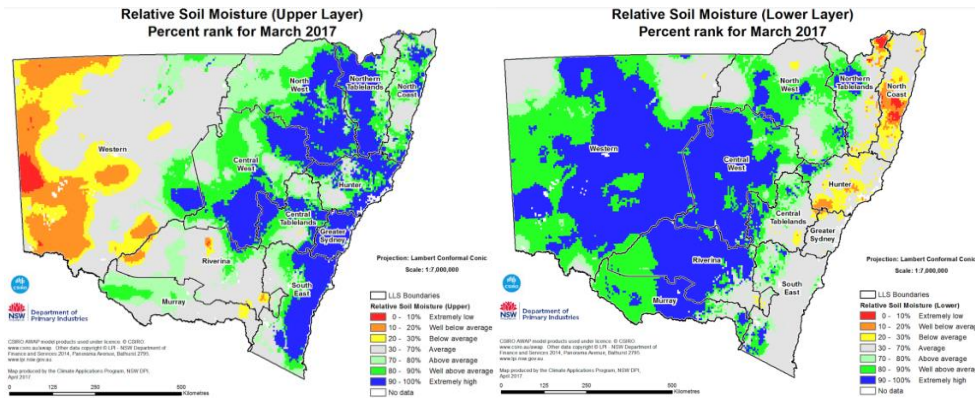


New South Wales (NSW)	
Percentage full (%):	62.2
Number of storages:	69
Accessible volume (ML):	13,311,681
Accessible capacity (ML):	21,389,949
Change since last year (%):	+22.7
Reported date:	9 April 2017

<http://www.bom.gov.au/water/dashboards/#/water-storages/summary/state>

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NSW soil moisture



National water reform inquiry

The Productivity Commission has released an issues paper for its national water reform inquiry. The inquiry will focus on the challenges of climate change and variability, population growth, and ageing water infrastructure to ensure water policy settings are future-proof. Initial submissions are due by Tuesday 18 April 2017. Opportunity for further comment will be sought upon release of the draft report in September 2017.

<http://www.pc.gov.au/inquiries/current/water-reform>

Australia’s water markets video

This video was presented at the Global Forum for Food and Agriculture 2017 held in Germany recently, where Australia's water markets were promoted as a world-leading initiative.

<http://www.agriculture.gov.au/SiteCollectionDocuments/water/water-matters/water-markets-in-aus.mp4>

CSIRO’s water data tool Water Cloud

CSIRO’s new Water Cloud tool has just won the 2017 World Bank Big Data Innovation Challenge in the Forests and Watersheds category. Water Cloud analyses international water data to provide a picture of water distribution in basins around the world and help speed up the policy cycle in times of urgency, narrow down policy options using cost-benefit analyses, and deliver a cheap, no frills solution in the absence of existing solutions.

<https://blogs.csiro.au/ecos/speeding-up-water-planning-using-the-cloud/>

Eating ourselves dry

This international study of non-renewable groundwater used to grow food shows that approximately 11% of global non-renewable groundwater was exported through agricultural trade in 2000-2010. Of this, about two-thirds was accounted for by the combined exports of Pakistan, US and India.

<http://www.nature.com/nature/journal/v543/n7647/full/543633a.html>

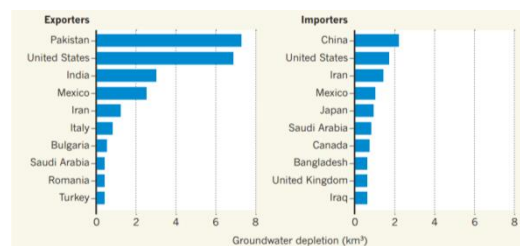
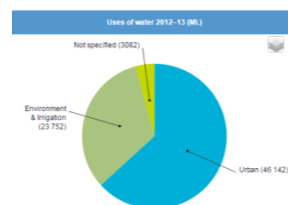


Figure 1 | Top ten exporters and importers of groundwater depletion embedded in the food trade.

Climate-resilient water sources

This website provides information on recycled and desalinated water sources across Australia. It details how much water can be and is produced, where it is and how it is used, to support integrated water management and planning.

<http://www.bom.gov.au/water/crews/>



BIODIVERSITY

Changes recommended to biodiversity regulations

The Productivity Commission's report into agricultural regulation has concluded that native vegetation and biodiversity conservation regulations need fundamental change so that risks and impacts are considered at a relevant landscape-wide scale. Environmental regulatory decisions also need to take into account economic and social factors.

http://apo.org.au/files/Resource/prod_comm_agriculture_regulation_march_2017.pdf

ENERGY

Building community power: Hepburn Wind

Hepburn Wind is the owner and operator of Australia's first community-owned wind farm, near Daylesford Victoria. The 4.1 MW wind farm hosts two turbines called Gale and Gusto, that produce enough clean energy for over 2000 homes.

<https://www.theguardian.com/environment/2017/mar/15/renewables-roadshow-community-owned-windfarm-daylesford-hepburn-australia>

FOOD

Urban food systems and local governments

This University of Queensland discussion paper is the first in a series of discussion papers on urban food systems in Australia, with a particular focus on the risks, opportunities and role of local governments in driving the transition towards sustainable urban food systems.

<https://gci.uq.edu.au/urban-food-systems>

Environmental effects of food consumption 'alarming'

Junk foods contribute more than one-third of the average Australian household's diet-related water use, greenhouse gas emissions and land use, according to UNSW research, highlighting the challenge of reducing consumption impacts meeting dietary guidelines.

<https://www.science.org.au/academy-newsletter/apr-2017-107/findings-environmental-effects-food-consumption-alarming>

10 portions a day keeps illness at bay

UK research has found eating up to 800g of fruit and vegetables a day – equivalent to 10 portions and double the recommended amount in the UK – is associated with a 24% reduced risk of heart disease, a 33% reduced risk of stroke, a 28% reduced risk of cardiovascular disease, a 13% reduced risk of total cancer, and a 31% reduction in premature deaths.

<https://www.theguardian.com/society/2017/feb/23/five-day-10-portions-fruit-veg-cut-early-death>

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Refashioning food systems with sustainable diets

This UK report outlines the current state of policy thinking on sustainable diets and reviews some national, international and local attempts to chart new policy directions to tackle growing evidence that food consumption has immense impact on the environment, health, society and economy.

https://www.foe.co.uk/sites/default/files/downloads/Sustainable_diets_January_2016_final.pdf

FAO: The future of food and agriculture

This FAO report identifies global trends and major drivers of change shaping the future of food and agriculture in the 21st century. Challenges include uneven demographic expansion, threats posed by climate change, intensification of natural disasters, upsurges in transboundary pests and diseases, and the need to adjust to major changes taking place in global food systems.

<http://www.fao.org/3/a-i6881e.pdf>

LAND USE

Productivity Commission inquiry into agricultural regulation

The Productivity Commission inquiry into agricultural regulation has found that some regulations lack sound policy justification and should be removed. Examples include restrictions on the use of land held under pastoral lease arrangements, state bans on cultivating genetically modified crops, barriers to entry for foreign shipping providers, mandatory labelling of genetically modified foods, and the regulated marketing of rice in New South Wales and sugar in Queensland.

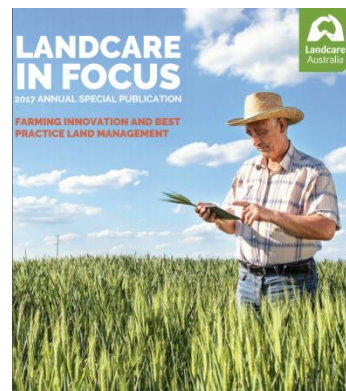
http://apo.org.au/files/Resource/prod_comm_agriculture_regulation_march_2017.pdf

SUSTAINABILITY

Landcare in Focus: Farming innovation

Landcare has produced a special edition on farming innovation and best practice land management, featuring case studies and innovations.

<http://www.landcareaustralia.org.au/EDM/LiF/march2017/LiF-March2017.pdf>



Organic agriculture review

This review of organic agriculture assesses its benefits and costs in terms of production, environmental impact, producer livelihoods and consumer health. It concludes that, while organic farming is not a total solution to many of the problems facing agricultural sustainability, many benefits may be derived from incorporating certain elements of organic practice into conventional or other agricultural systems.

<http://advances.sciencemag.org/content/advances/3/3/e1602638.full.pdf>

Invisible Farmer project seeks women's stories

Invisible Farmer is the largest ever study of Australian women on the land. The project is gathering stories on rural women and their contribution to farming to celebrate the extraordinary, creative and vital role that women play in agriculture and farm communities. Photos and stories of up to 500 words on a woman/women involved in agriculture, food or fibre are now sought. Contributions accepted until May 15.

<https://invisiblefarmer.net.au/>

EVENTS

- May 1-4 Australasian Vertebrate Pest Conference, Canberra
<http://avpc.net.au/>
- May 7 Compost awareness week:
<http://www.aginnovators.org.au/events/international-compost-awareness-week-icaw-australia-2017>
- May 9 Biodiversity across the borders' conference, Ballarat
<https://federation.edu.au/faculties-and-schools/faculty-of-science-and-technology/research/conferences/biodiversity-across-the-borders>

SUBSCRIBE

NRM on Farms is a monthly NSW DPI newsletter that summarises recent information about climate and natural resource management relevant to agriculture to keep farmers and agricultural and NRM advisors and researchers up to date. It is freely available to anyone interested or involved in agriculture or NRM. To subscribe, email Rebecca Lines-Kelly at rebecca.lines-kelly@dpi.nsw.gov.au.

Recent issues of NRM on Farms are available at <http://www.dpi.nsw.gov.au/content/agriculture/resources/climate-and-weather>