

Our rainfall and pasture growth – comparing current seasons with the past

Webinar #2: “Getting the *Inside Edge* in grazing land management” series

Grant Stone for *The Grazing Land Systems team*

www.longpaddock.qld.gov.au



Queensland Government

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26 Sep, 2018

Average SOI value for the last 30 days

-6.86

Climate risk information for rural Queensland

A Queensland Government initiative providing seasonal climate and pasture condition information to the grazing community



- Accessing the New Rainfall Poster page
- Australia’s Variable Rainfall Poster
- Queensland’s Extended Wet and Dry Period Poster
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Australia's Variable Rainfall

[ENSO year classification](#)[Classification Documentation](#)[Home](#) / [Australia's Variable Rainfall](#)

Australia's Variable Rainfall

Posters showing inter-annual (April to March) rainfall variability for Australia

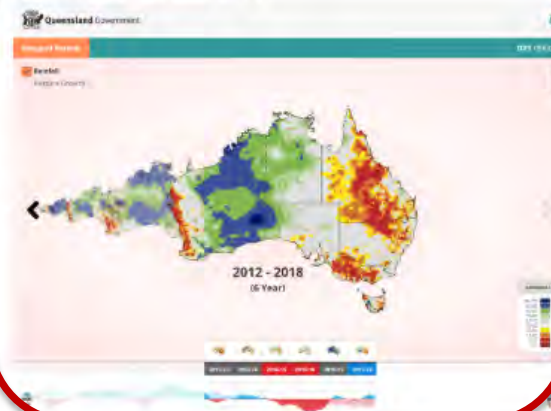
This version of Australia's Variable Rainfall Poster depicts twelve monthly rainfall (April-March) in maps for the years 1890 through to 2018 alongside a graph of Southern Oscillation Index and Inter-decadal Pacific Oscillation values.

[Australia's Variable Rainfall poster \(1890 – 2018\) \(PDF\)](#)

Note: This poster replaces previous versions that covered periods 1900 to 1997, 1890 to 2004, 1890 to 2013 and 1890 to 2015. The April to March period best captures ENSO periods and is useful in most areas of the country.

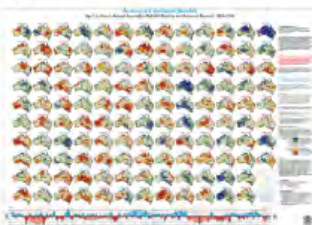
- [Maps for updating the previous versions of the posters.](#) This update contains maps for years (2016/17 and 2017/18) for all posters and can be used to extend your current A4 printed posters to 2017/18. (PDF)

Rainfall Poster Map App

[Open the Rainfall Poster Map App](#)

Poster Series

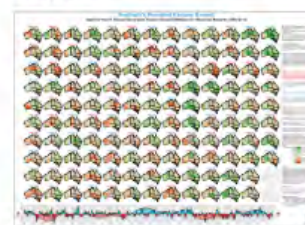
Australia's Variable Rainfall poster

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Queensland's Extended Wet and Dry Periods

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Australia's Modelled Pasture Growth

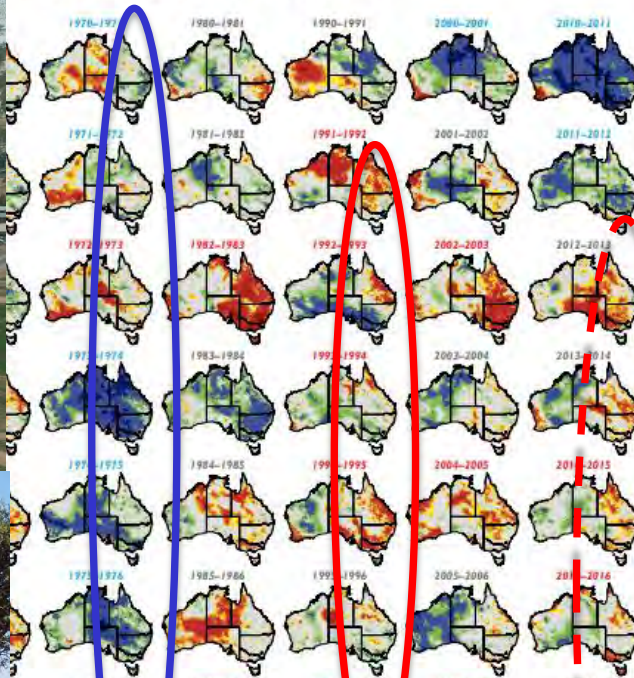
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Australia's Variable Rainfall with Tropical cyclone tracks

[Download PDF Poster](#)

Australia's Variable Rainfall

April to March Annual Australian Rainfall Relative to Historical Records 1890–2018



Classification of years
 Years are classified according to whether they are either 'El Niño' years (red) or 'La Niña' years (blue). For this poster, El Niño and La Niña year classification is based on values of the Southern Oscillation Index (SOI) between June and March. An original classification proposed by Sir Gilbert Walker has been modified to allow for late-starting El Niño or La Niña events. Threshold values of the SOI have been adjusted such that the frequency of El Niño and La Niña years from 1950-51 to 2017-18 is similar to that obtained by the 'WMO EA IV Consensus Index and Definition of El Niño and La Niña'.

El Niño
 Originally defined specifically as a warming of the sea surface off the coast of Peru, sea surface generally refers to the warming of the central and eastern equatorial Pacific Ocean, strongly associated with persistently negative values of the Southern Oscillation Index (SOI). Commonly associated with extended 'dust periods'.

For this poster, an 'El Niño year' is indicated if the six-month average value of the SOI, ending in any month between November and March, was above a threshold value of negative 0.5.

La Niña
 This poster, a 'La Niña year' is indicated if the six-month average value of the SOI, ending in any month between November and March, was above a threshold value of positive 0.5.

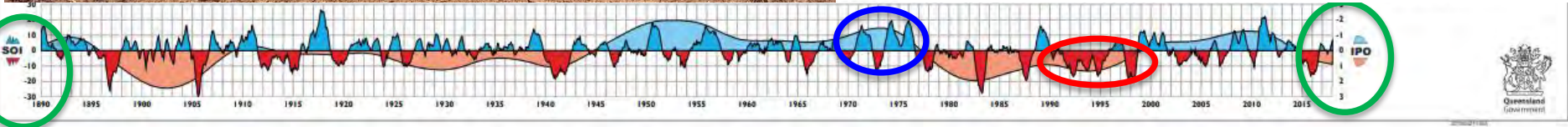
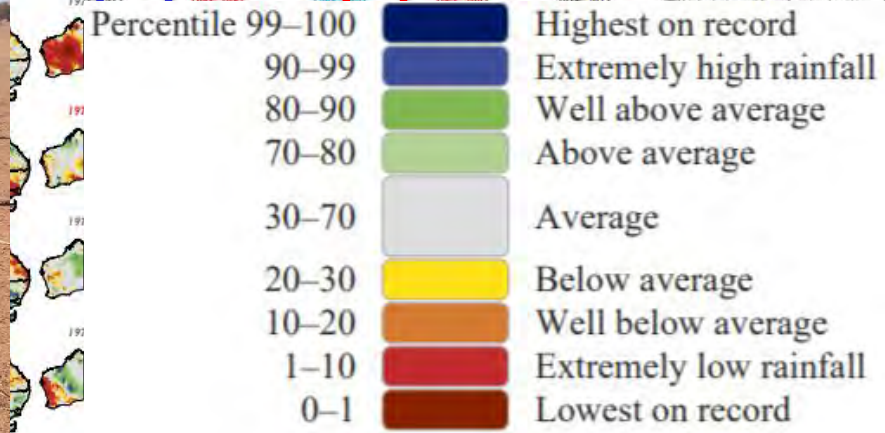
El Niño Neutral
 This poster, 'El Niño Neutral' are all years which do not fit in either El Niño or La Niña categories (above).

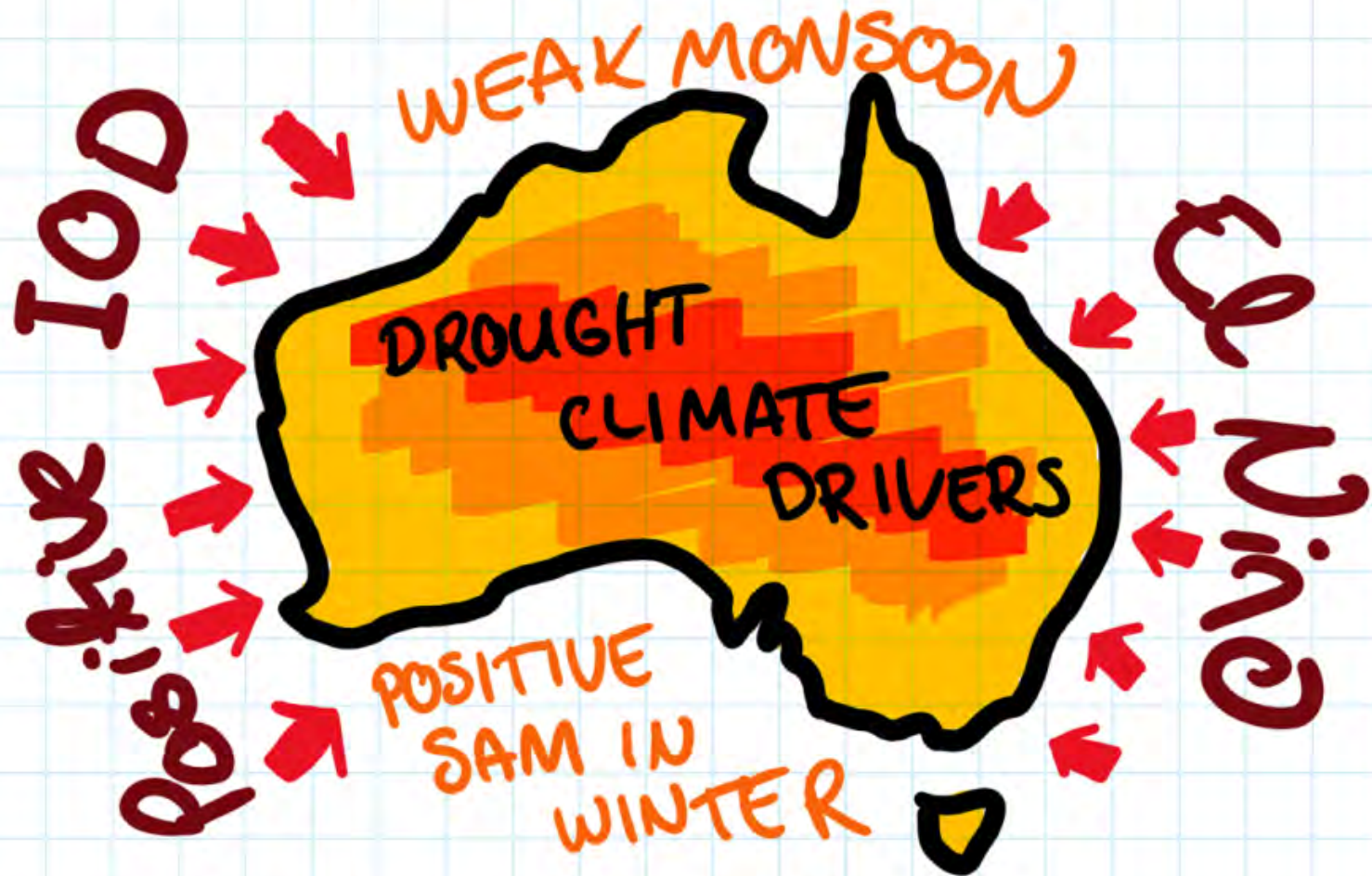
SOI
 SOI is an index calculated using the period 1950-1992. It is a measure of the difference in sea level pressure between Tahiti and Darwin.

El Niño Neutral
 This poster, 'El Niño Neutral' are all years which do not fit in either El Niño or La Niña categories (above).

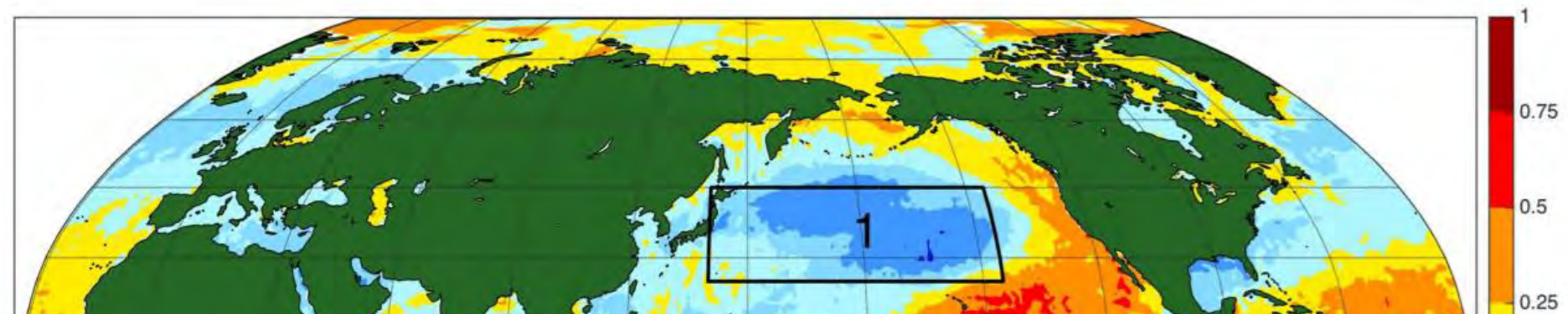
SOI
 SOI is an index calculated using the period 1950-1992. It is a measure of the difference in sea level pressure between Tahiti and Darwin.

Rainfall classification
 This poster, 'El Niño Neutral' are all years which do not fit in either El Niño or La Niña categories (above).





Kate Doyle (ABC Weather 9/10/2018; <https://www.abc.net.au/news/2018-10-09/bom-declares-el-nino-alert/10356724>)



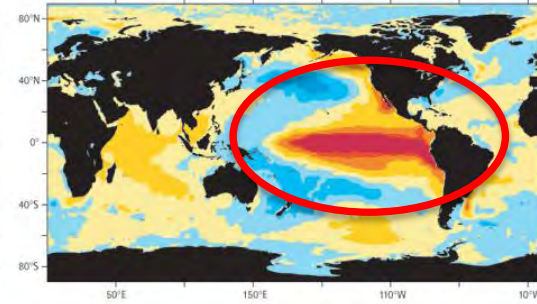
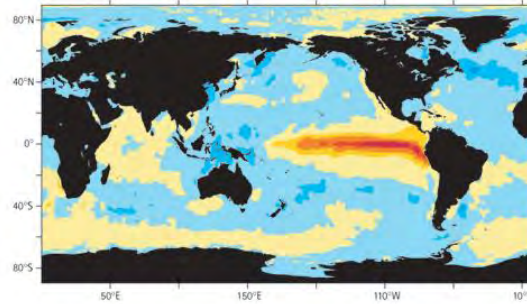
IPO summary

- IPO related to movement of warm water in the Pacific Ocean.
- IPO's pattern similar to ENSO - linked?
- IPO operates on much longer timescales (10-30 years).
- “Warm phase” (+ve IPO) is “detrimental” for our rainfall
- “Cool phase” (-ve IPO) is “beneficial” for our rainfall
- Phases have additive effect with ENSO when in synchrony

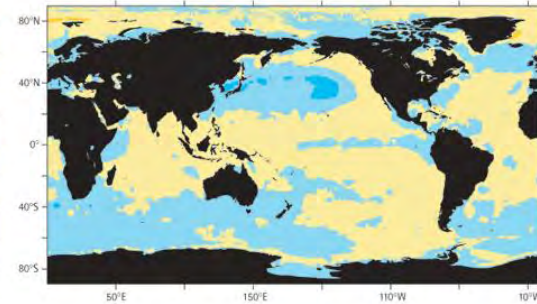
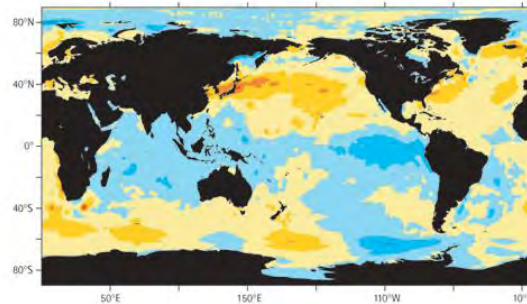
IPO - cool

IPO - warm

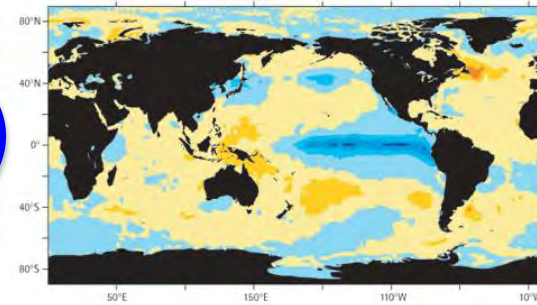
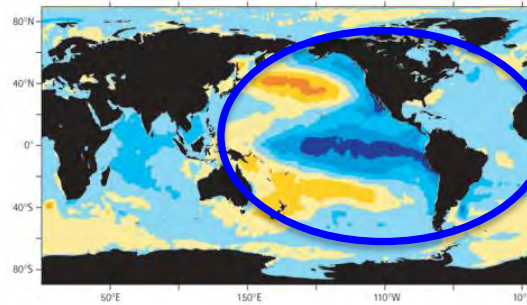
El Niño

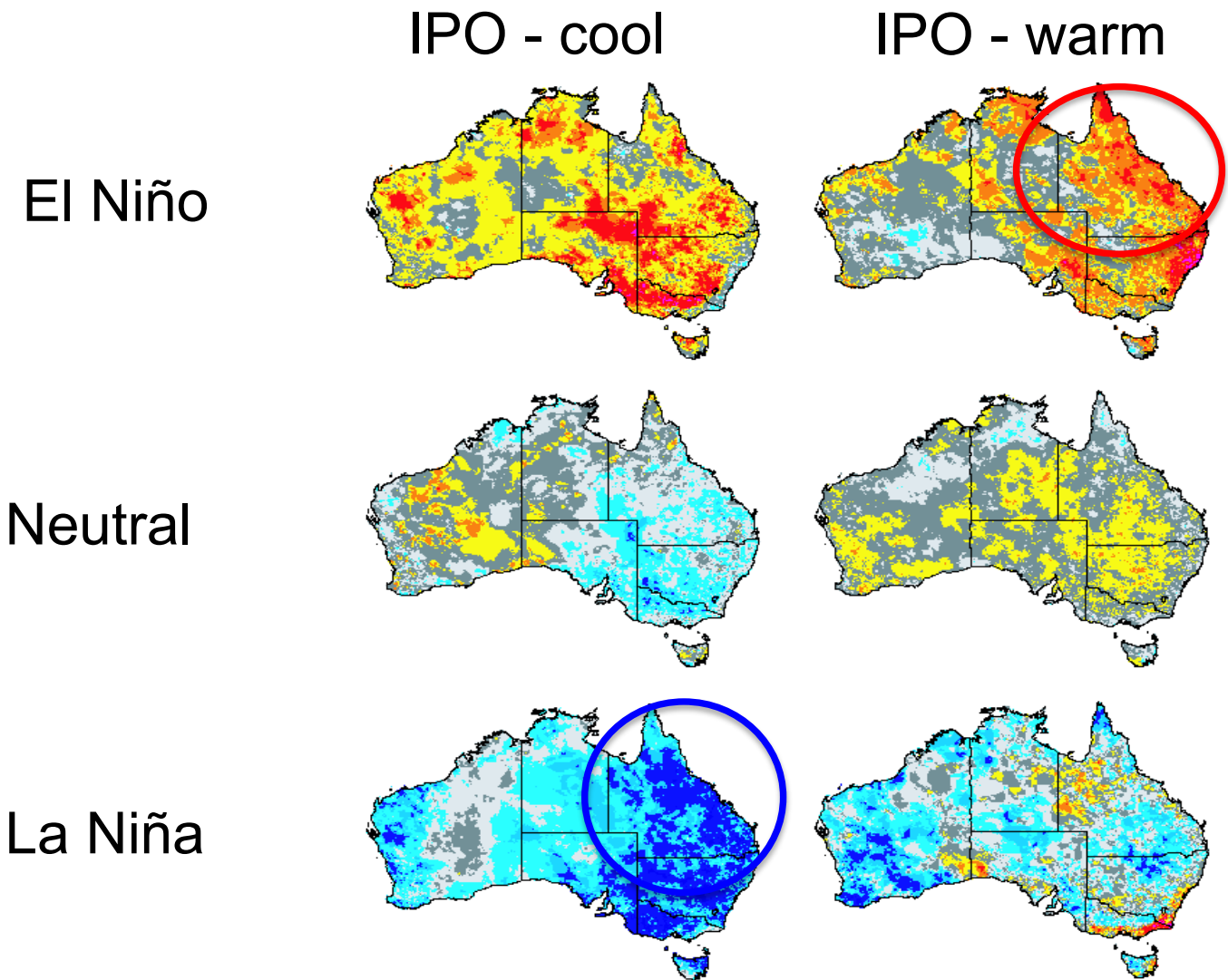


Neutral



La Niña

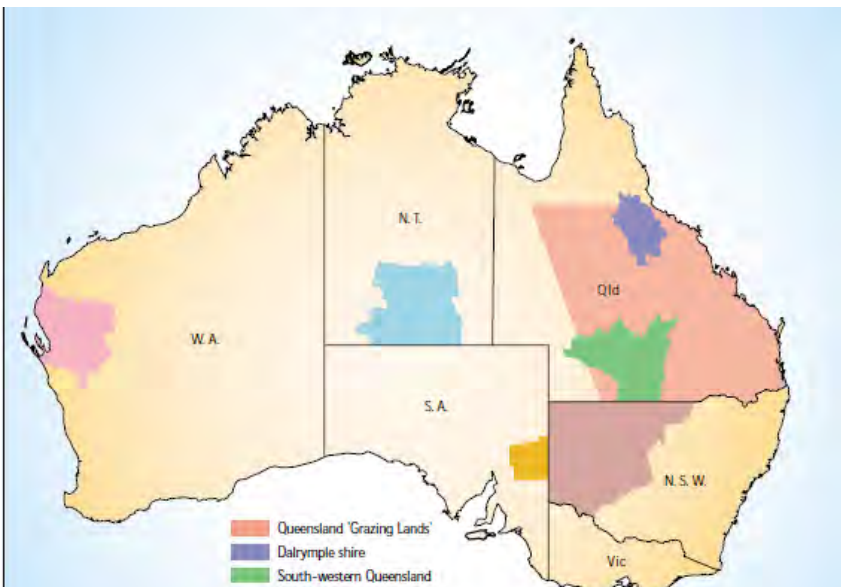
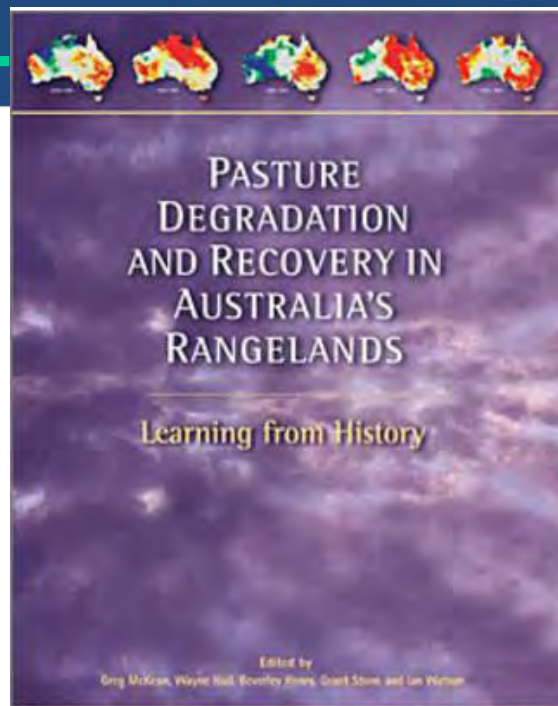




Percent chance of exceeding median rainfall

Red
Orange
Yellow
Grey
Light Blue
Dark Blue

Learning from History.



The Long Paddock

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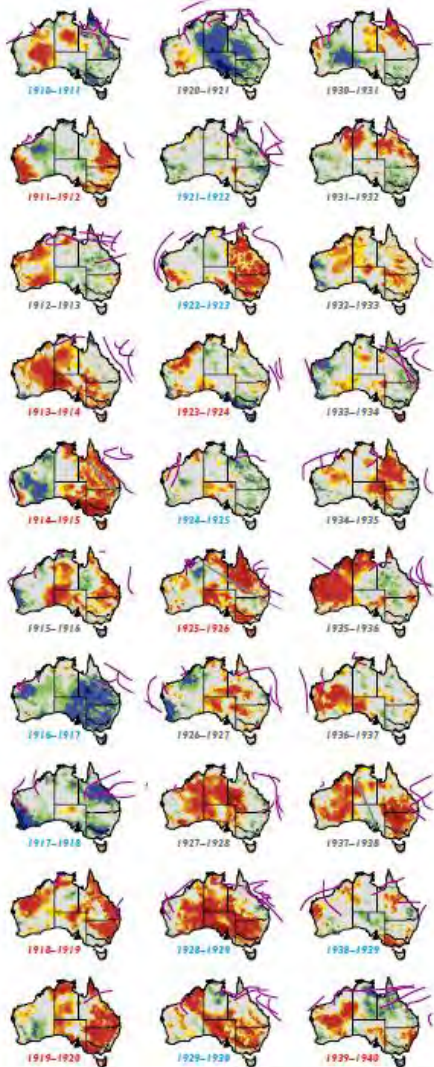
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Pasture Degradation and Recovery in Australia's Rangelands: Learning from History.

Droughts are inevitable in Australia's rangelands. Yet, despite the physical hardship, the social heartbreak, the animal suffering, the financial and economic consequences, and the environmental damage we know for certain will occur, we appear to be surprised by the next inevitable drought.

Available from: **The LongPaddock**

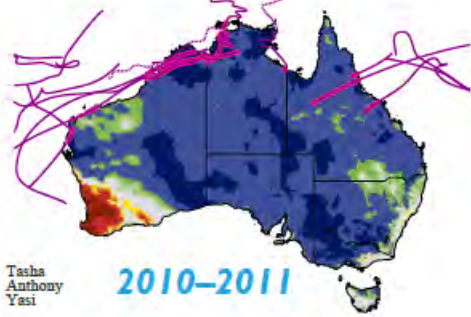


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Yasi

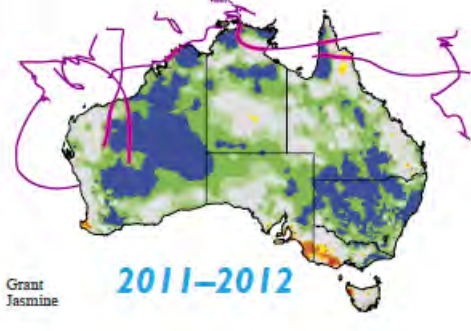
Grant
Jasmine

Oswald
Tim

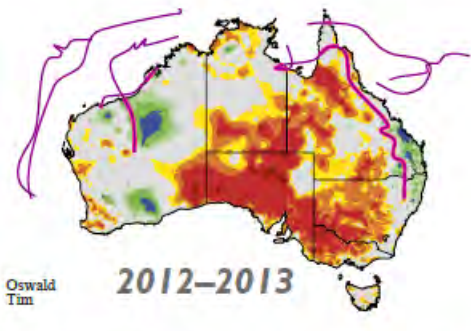
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Fletcher
Gillian



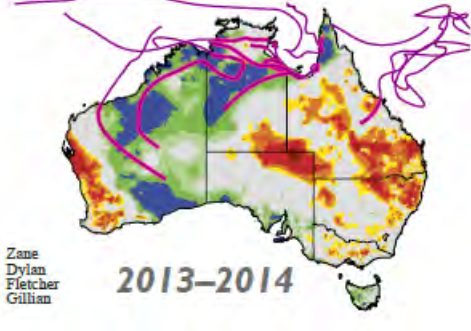
2010-2011



2011-2012



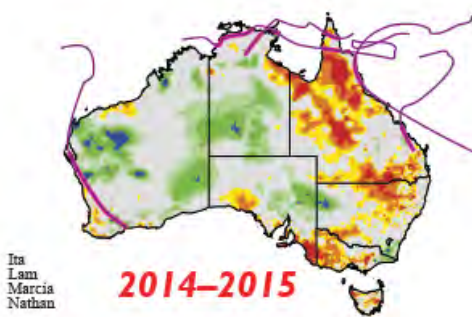
2012-2013



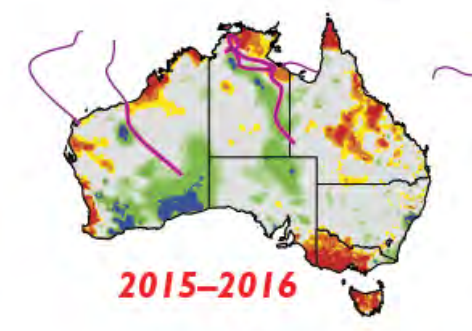
2013-2014

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Nathan

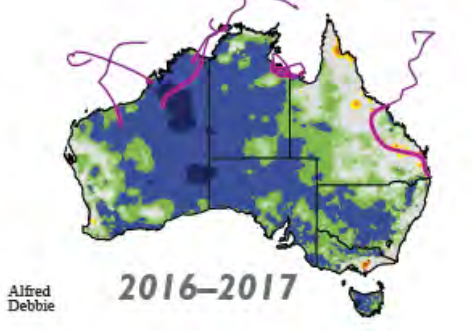
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Debbie



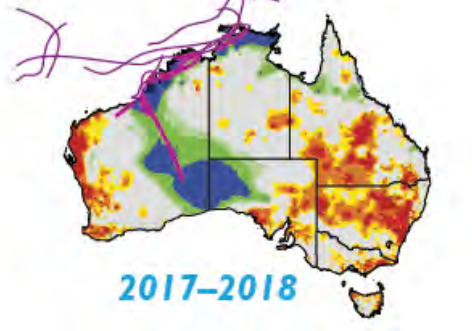
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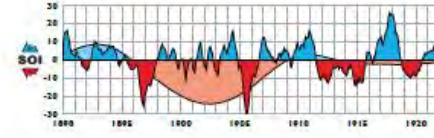
2015-2016



2016-2017



2017-2018



Classification of years

Years are classified, according to colour, based on whether they are either 'El Niño' years (red) or 'La Niña' years (blue) or 'ENSO Neutral' years (dark grey) years.

For this year: 'El Niño' year classification is based on values for the Southern Oscillation Index (SOI) between June and March. An original classification proposed by Dr Bob Allan has been modified to allow for late-onset El Niño or La Niña events. Threshold values of SOI have been adjusted such that the frequency of El Niño and La Niña years from 1970 to 2006-17 is similar to that observed by the 'WMO' ICA IV Consensus Index and Definition of El Niño and La Niña.

El Niño
Originally defined specifically to a warming of the sea surface off the coast of Peru, now more generally refers to the warming of the central and eastern equatorial Pacific Ocean, strongly associated with persistently positive values of the Southern Oscillation Index (SOI). Generally associated with wetter than average periods.

For this year: 'El Niño' year is indicated if the six-month average value of the SOI, ending in any month between November and March, was below a threshold value of negative 5.0.

La Niña
Now used to refer to the opposite of El Niño, generally associated with persistently negative values of the SOI. Generally associated with drier than average periods.

For this year: A 'La Niña' year is indicated if the six-month average value of the SOI, ending in any month between November and March, was above a threshold value of positive 5.0.

ENSO Neutral
ENSO refers to the El Niño-Southern Oscillation, which fluctuates between El Niño or La Niña (above the seasonal) index to neither El Niño or La Niña. When the seasonal Southern Oscillation Index (SOI) is close to zero, it is possible to have wetter or drier periods associated with 'ENSO Neutral' years.

For this year: 'ENSO Neutral' an all year which do not fall in either the El Niño or La Niña category (above).

Rainfall classification
Maps for each year show rainfall index against historical records from 1850 to 2016. The rainfall index is expressed as a percentage. For example, a percentage mark of 0-10 indicates that rainfall over the year was below the long-term average of rainfall values recorded for all annual periods, at that location.

90-100	Highest on record
80-90	Increasingly high rainfall
70-80	Well above average
60-70	Above average
50-60	Average
40-50	Below average
30-40	Well below average
20-30	Below average
10-20	Increasingly low rainfall
0-10	Extremely low rainfall
0-1	Lowest on record

Tropical Cyclone tracks
Tropical Cyclone tracks have been sourced from Australian Bureau of Meteorology (<http://www.bom.gov.au/cyclones/history/index.shtml>). Tracks for 1950-1999 have not been included due to space availability. Data in the post-1999 era (to 2016) are considered to be of higher quality. The 'system count' is based on the highest intensity the whole system evolved to in its lifetime. The track number of a track would normally signify a sub-rotated operational track.

System names are indicated for systems that cross the Queensland coast. Systems that occur over the North/Austli boundary are shown in both year's maps and indicated by a dotted track. Tracks that proceed or originate outside the map boundary are faded and shown by a broken line. Track colour changes when over land.

Graph
The below graph shows fluctuations in the six-month moving average of the Southern Oscillation Index (SOI). The SOI compares the difference in atmospheric pressure anomalies between Tahiti and Darwin. The graph also shows fluctuations in the Inter-decadal Pacific Oscillation (IPO), a slow-moving fluctuation in Pacific Ocean sea surface temperatures which influence climate variability. The IPO value on the graph as the El Niño this series using 11 year Chebyshev filter provided by Andrew Coleman, US Natl Oceanic, updated to June 2016.

Produced by
Queensland Government, Economics Precinct.
CPO Box 5078, Brisbane, Queensland 4001.
email: rosamain@dpmp.qld.gov.au
web: www.LandUseData.qld.gov.au

Acknowledgments

- Rainfall data sourced from the Australian Bureau of Meteorology (www.bom.gov.au), Interpolated and monthly climatological by Queensland Government.
- SOI data sourced from the Australian Bureau of Meteorology (www.bom.gov.au) with monthly values smoothed using a six-month moving average.
- IPO data sourced under the terms of the Creative Commons Attribution-NonCommercial License Number: <https://creativecommons.org/licenses/by-nc/4.0/>
- Tropical Cyclone track database sourced from the Australian Bureau of Meteorology (www.bom.gov.au/cyclones, <https://doi.org/10.1017/9781107318305>)



Posters continued...

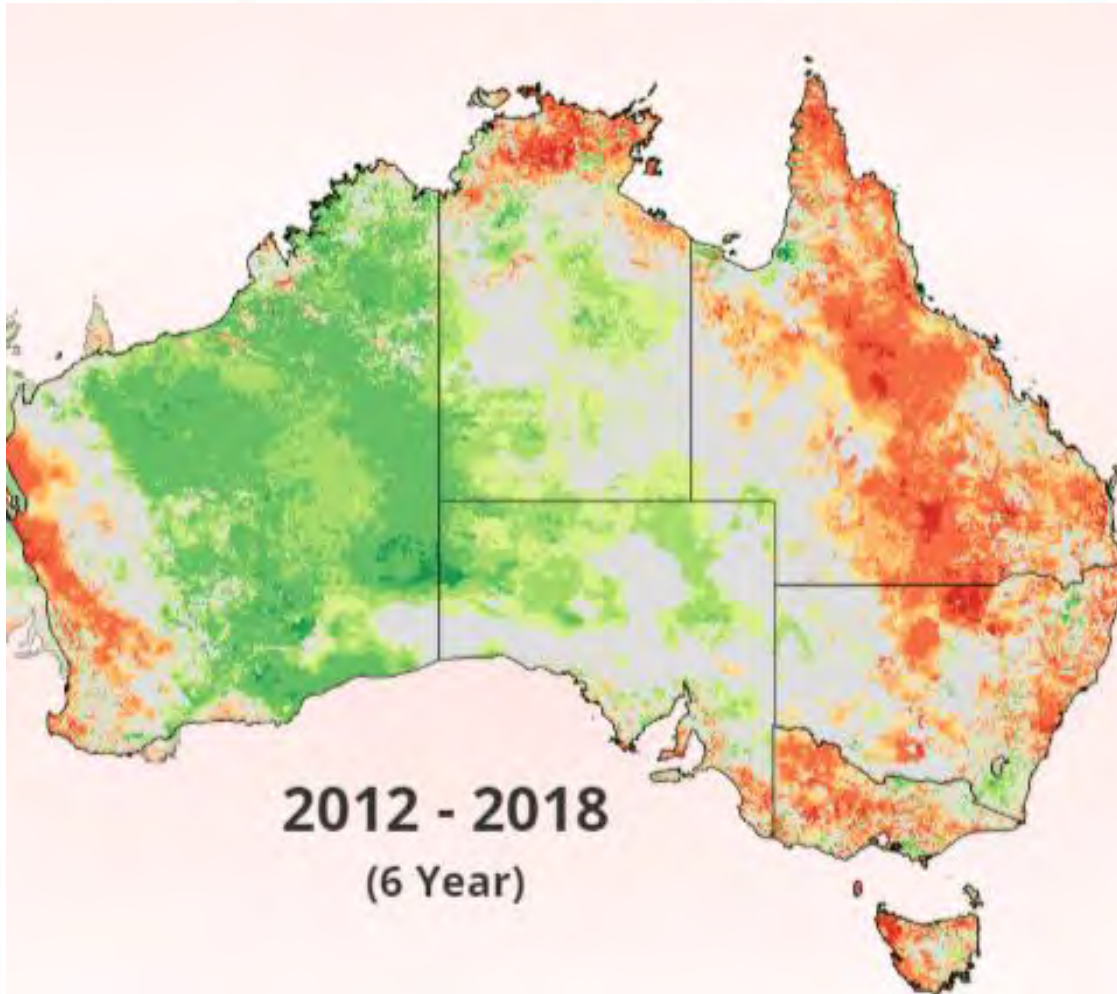
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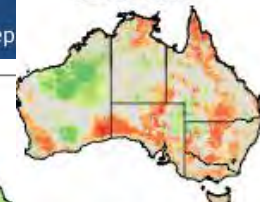
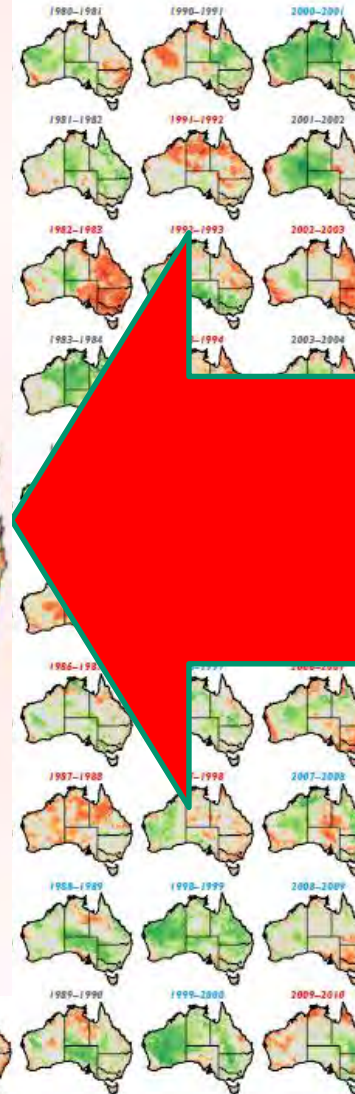
Science

Australia's Modelled Pasture Growth

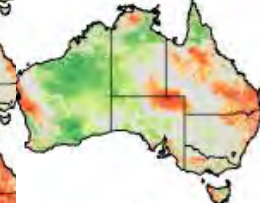
April to March Annual Australian Pasture Growth Relative to Historical Records 1890-2018



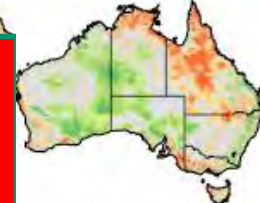
2012 - 2018
(6 Year)



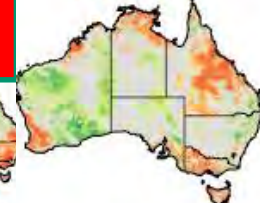
2013-2014



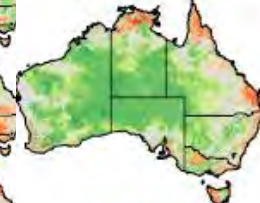
2014-2015



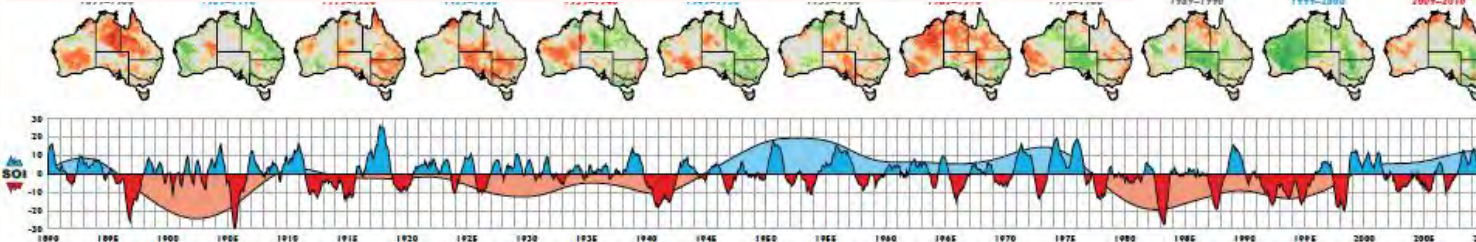
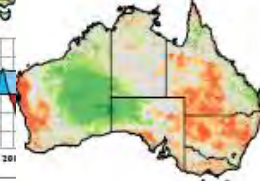
2015-2016



2016-2017



2017-2018



data

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Extremely high growth
Well above average
Above average

Average
Below average
Well below average
Extremely low growth
Lowest on record

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- Australia**
- New South Wales
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia

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AussieGRASS

Rainfall and pasture growth maps Time series graphs

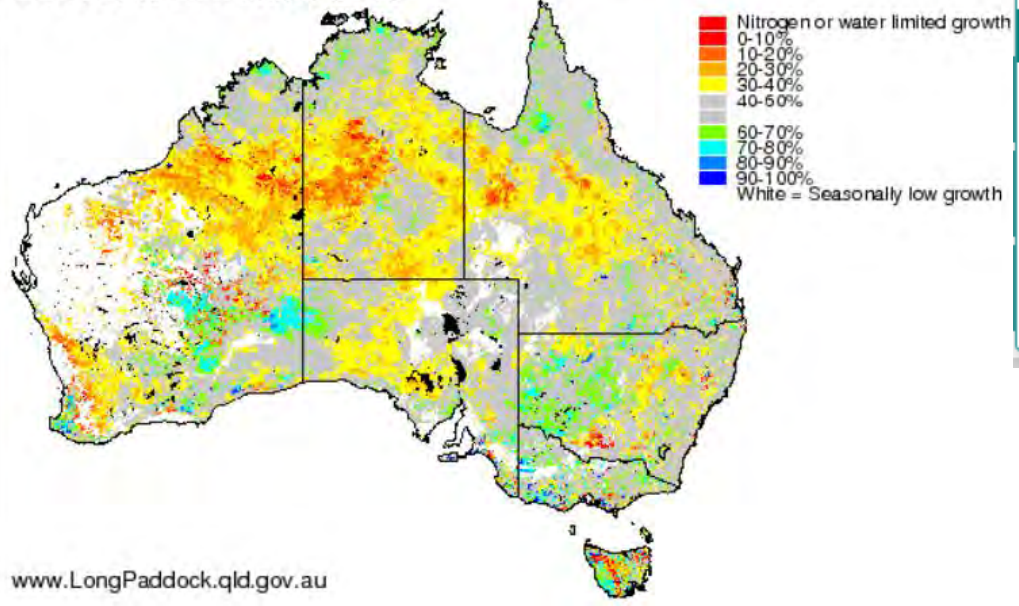
Region: Map Types:
 *Duration: End on:

*Not all durations are available for all map types.

Files downloaded:

- Maps (GIF, 28KB) Last updated: 8 October 2018
- Maps (PDF, 152KB) Last updated: 8 October 2018
- GIS file (ZIP, 140KB) Last updated: 8 October 2018

Chance of Exceeding Median Growth October to December 2018



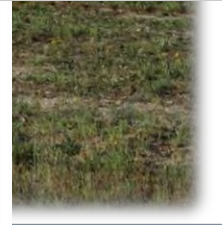
Rainfall Relative

- Rainfall Total
- Forecast Curing Anomaly
- Pasture Curing Index
- Pasture Grass Fire Risk
- Potential Flow To Stream Seasonal Probability
- Potential Flow To Stream Relative

2018

2018

- 2017
- 2016
- 2015
- 2014
- 2013



EXPLORE 2012-2018 >

< Back to Grouped Periods April

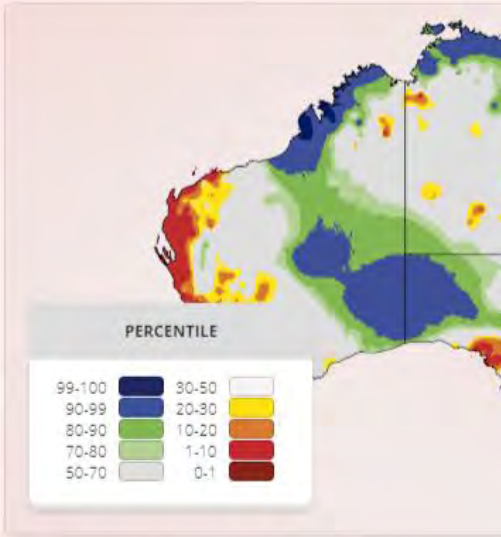
Lasted for a total of **6 years**. Rainfall was 36% below the previous wet period.

There was a surface and stock water drought, followed by a deficiency in pasture biomass.

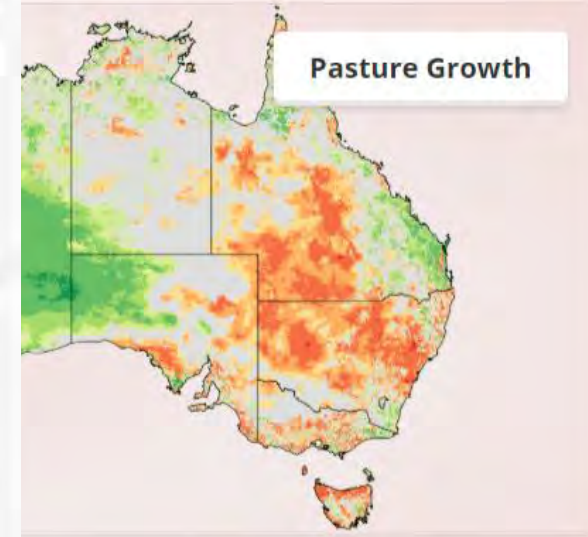
The live export hiatus resulted in livestock retention, excess domestic supply and severe market price failure; with market recovery in the latter part of this period.

Widespread floods and damage were associated with Tropical Cyclones Oswald and Marcia (2013).

Above-average winter rainfall and unseasonal pasture growth (2016) created respite for Queensland and most of northern Australia.



DRY PERIOD



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- Historical sequences of rainfall and pasture growth can assist us to understand the past...
 - and can help to prevent us repeating previous poor decisions
- See our posters and Map App: at *The Long Paddock* website www.longpaddock.qld.gov.au
- or email us at longpaddock@qld.gov.au

Next in the “*Getting the Inside Edge*” webinar series:

- FORAGE – free property information to assist with grazing land management decisions:
 - Part 1 – currently available information (Thurs 15th Nov)
 - Part 2 – new and soon to be released information (Thurs 29th Nov)

Questions and suggestions - email The Long Paddock team at longpaddock@qld.gov.au



The Long Paddock

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26 Sep, 2018
Average SOI value for the last 30 days
-6.86

Climate risk information for rural Queensland

A Queensland Government initiative providing seasonal climate and pasture condition information to the grazing community