

Climate Outlook

Livestock – Feeding Horses Sheep & Goats

May 2020

Damien O'Sullivan DAF Kingaroy



Topics to cover

Climate

- Current situation
- Seasonal outlook
- Where to get climate information

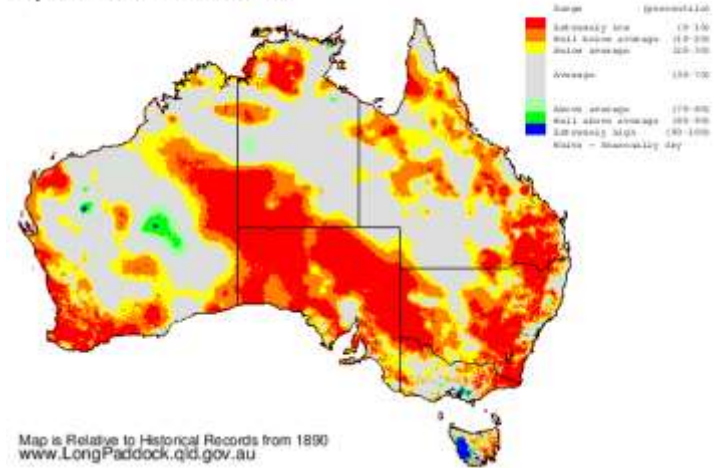
Feeding

- When to start feeding
- How much to feed for maintenance
- Horses, Sheep & Goats

Water Supplies

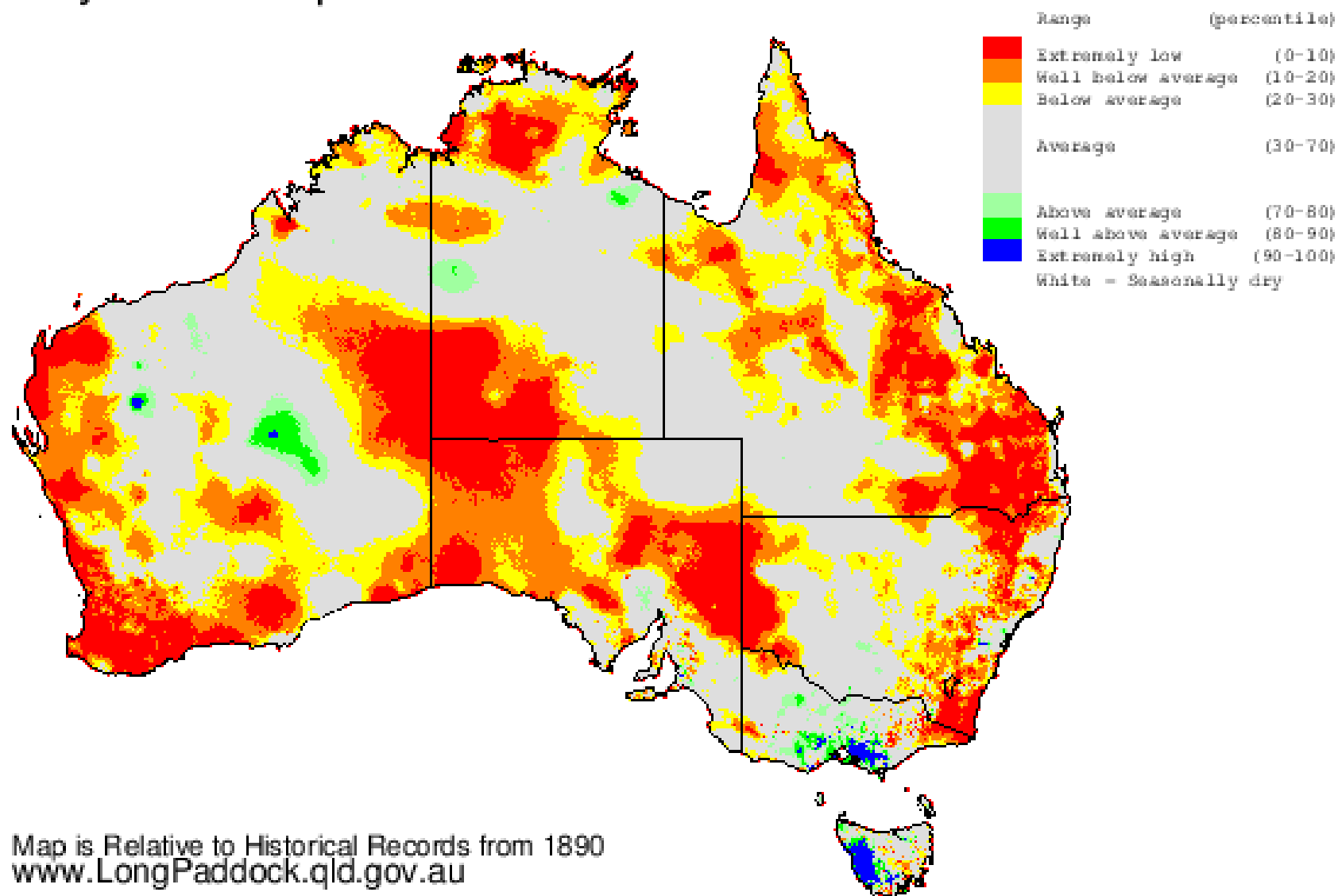
Management after rain

Rainfall Percentile
April 2019 to March 2020



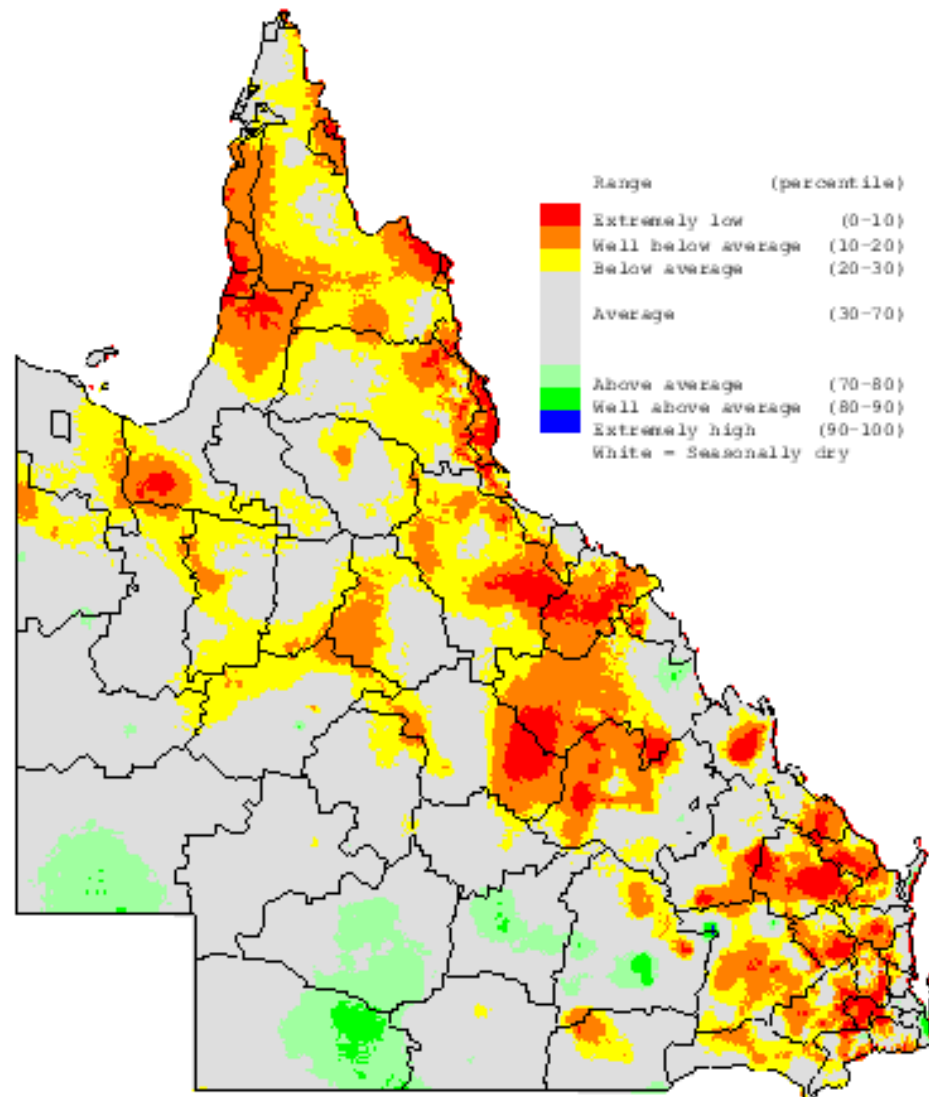
Rainfall Percentile

May 2019 to April 2020



Rainfall Percentile

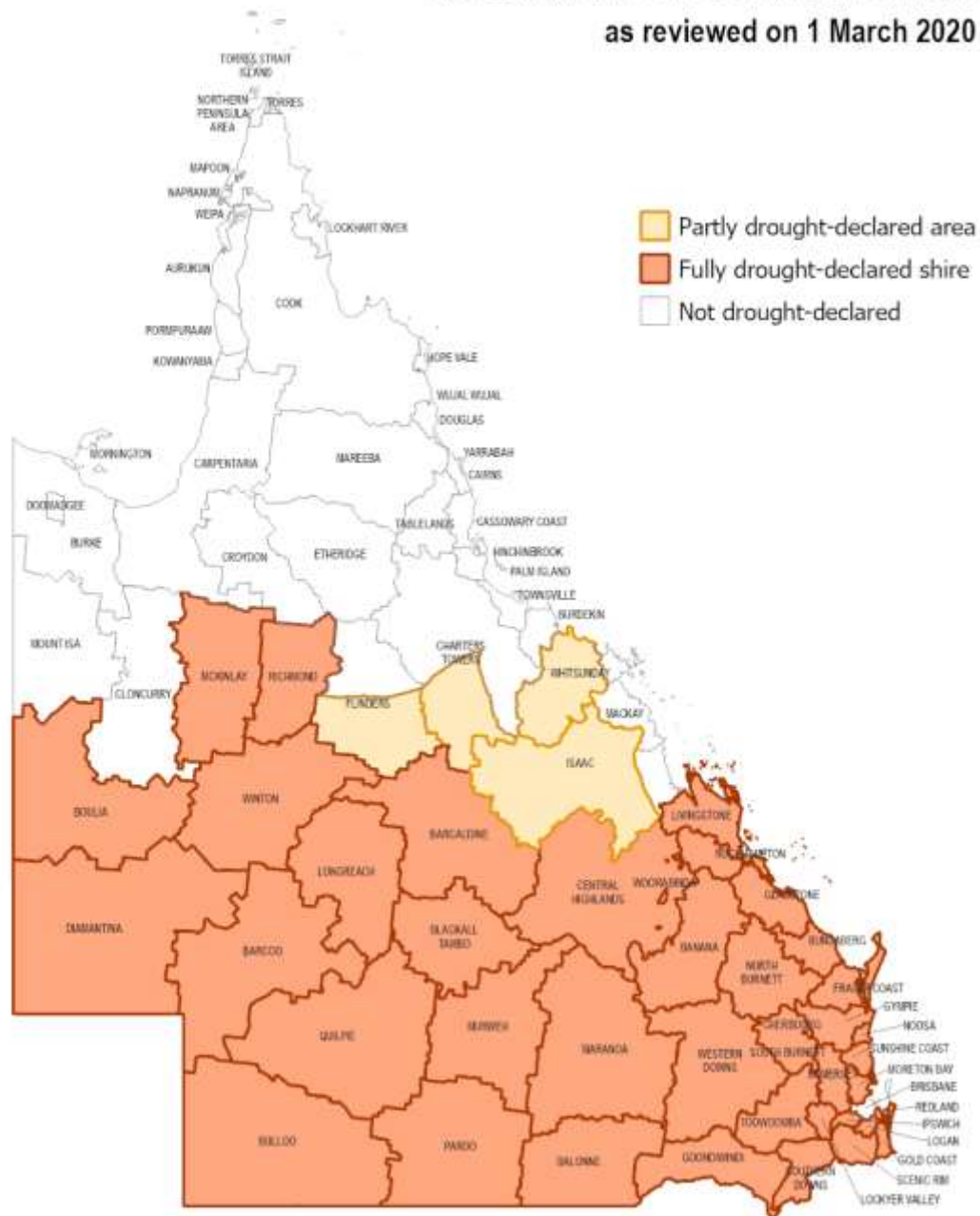
November 2019 to April 2020

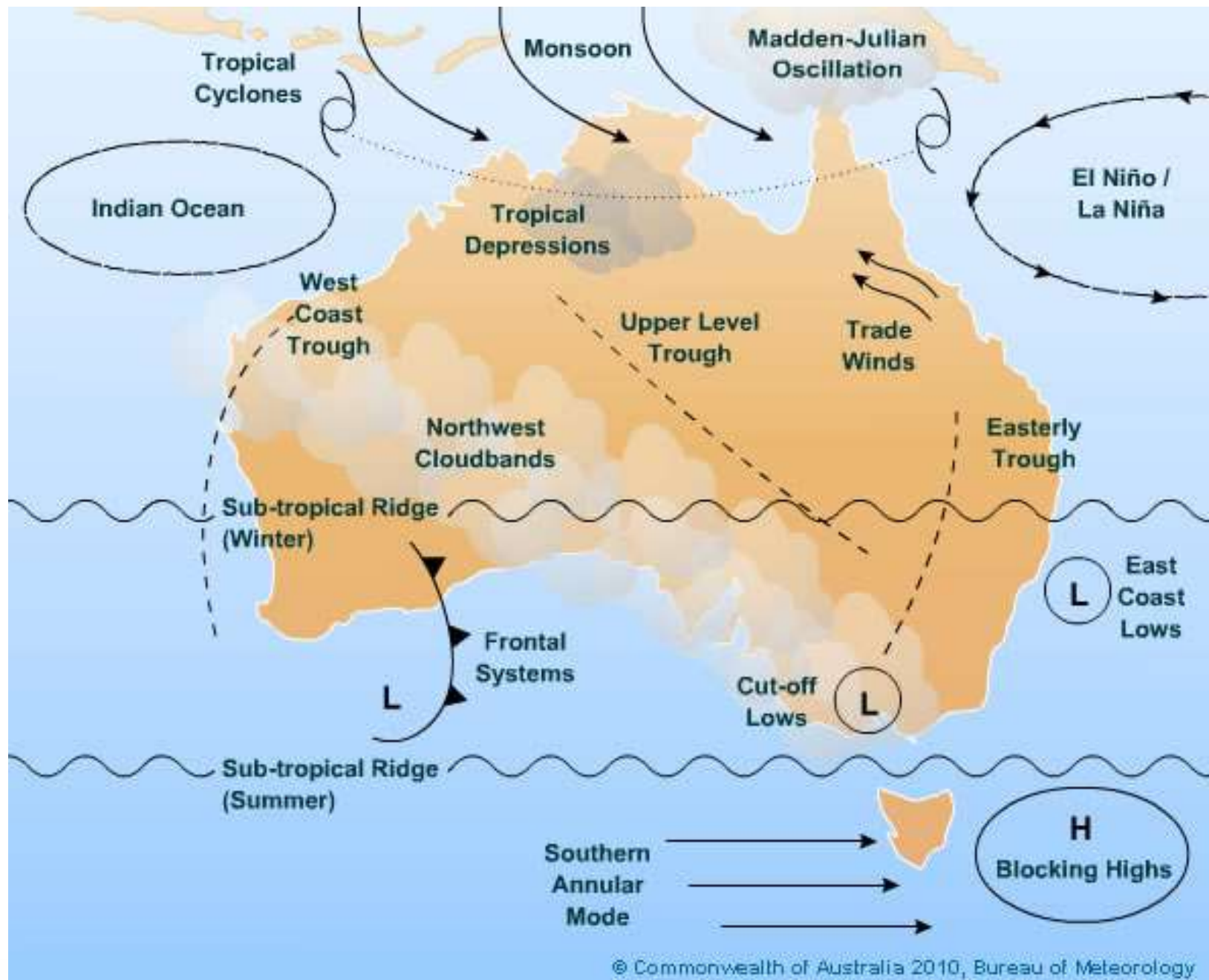


Map is Relative to Historical Records from 1890
www.LongPaddock.qld.gov.au

QUEENSLAND DROUGHT SITUATION

as reviewed on 1 March 2020





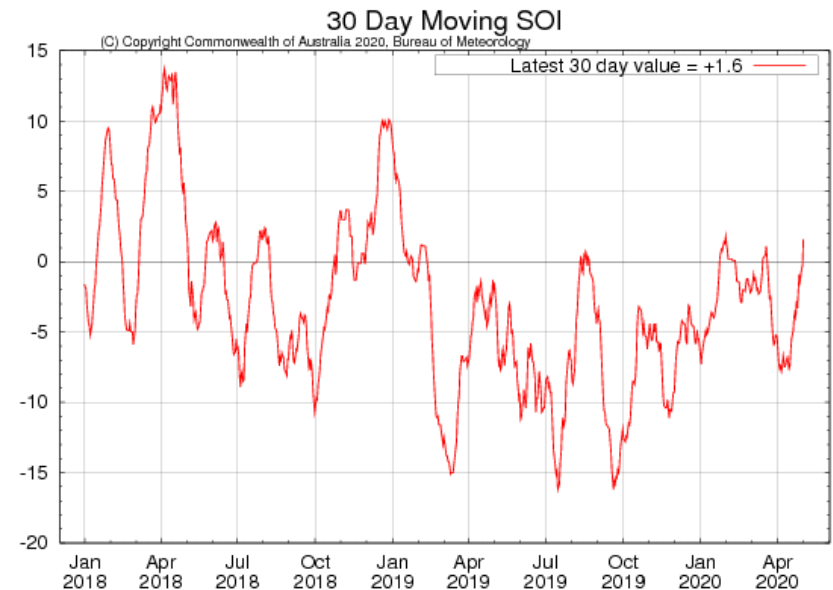
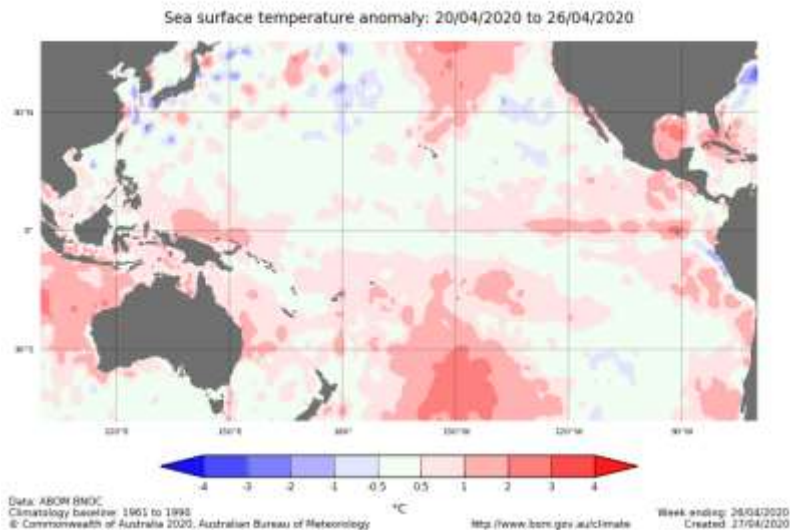
Climate Drivers



Climate Drivers

Southern Oscillation Index (SOI)

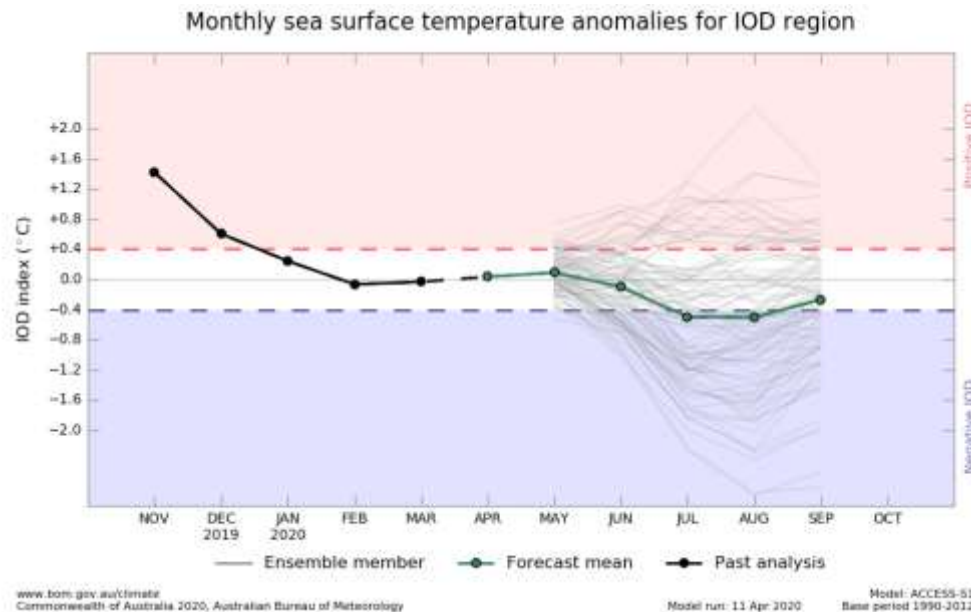
- Difference in air pressure between Tahiti & Darwin
- SOI – 2.1
- positive SOI more than +7 most favourable, -7 usually drier weather
- Currently a neutral pattern



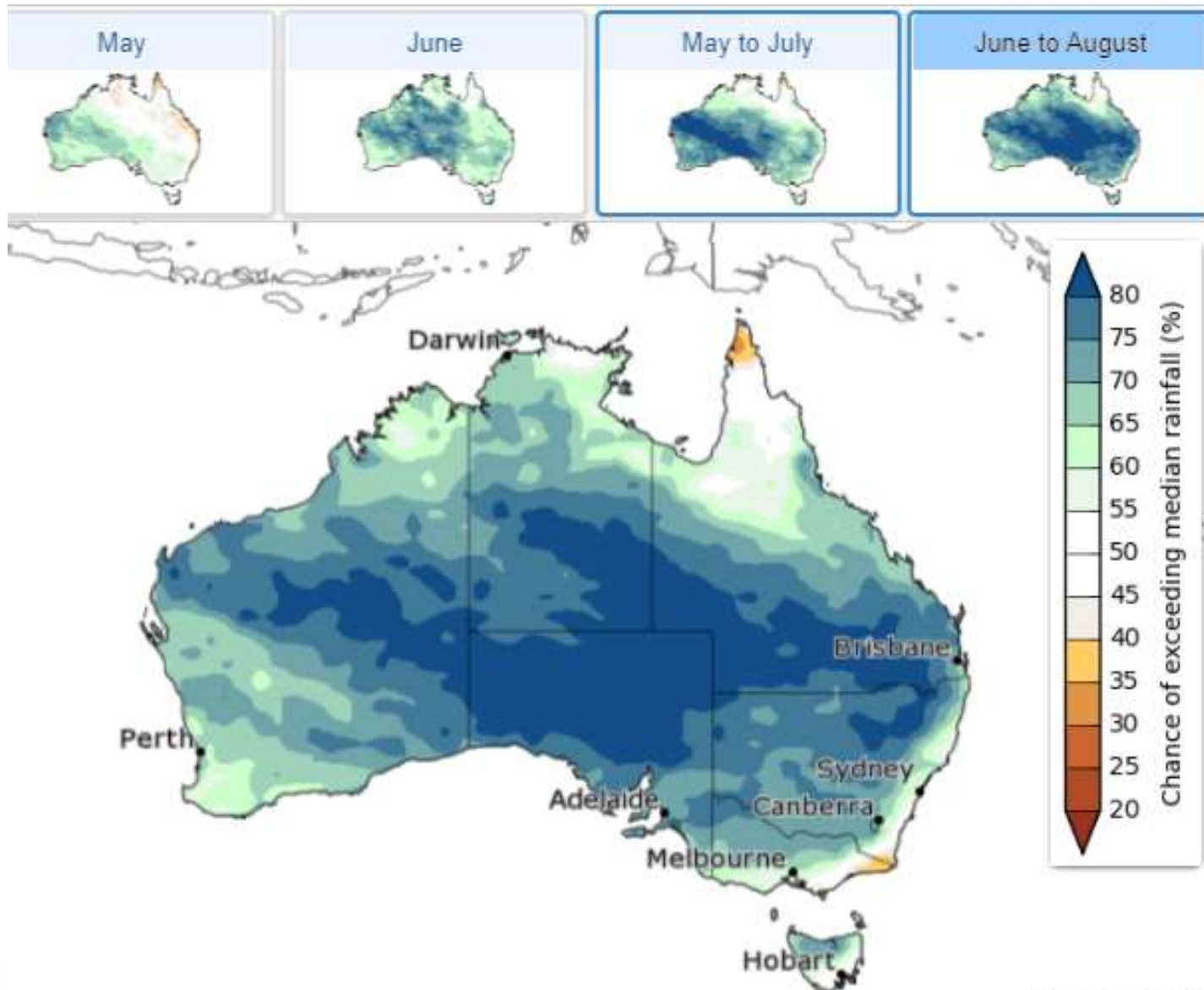
Climate Drivers

Indian Ocean Dipole (IOD)

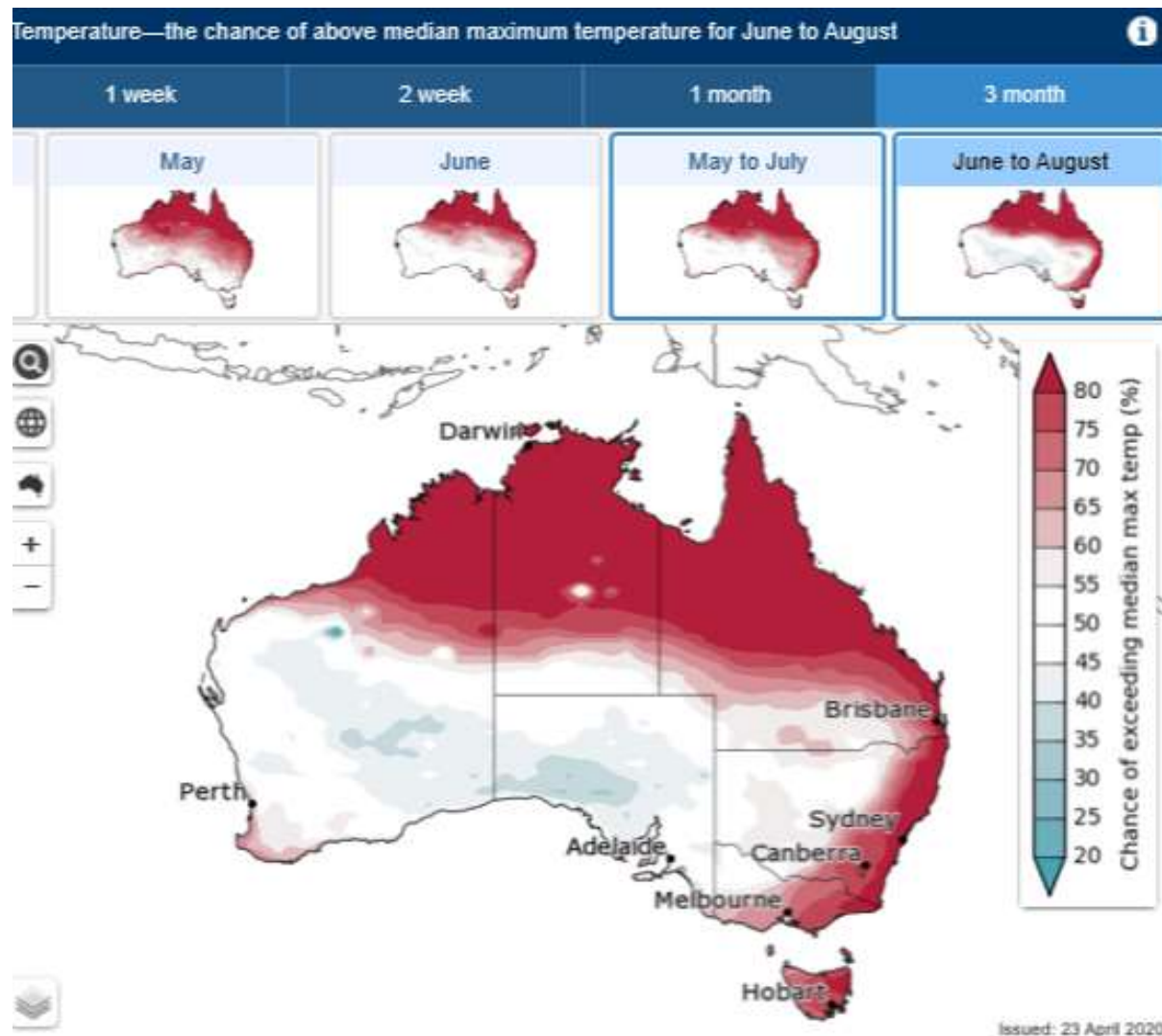
- Indian Ocean sea surface temperatures impact rainfall and temperature patterns over Australia.
- Events usually start around May or June, peak between August and October
- IOD is neutral
- Best conditions for Australia are when the IOD is negative
- Last year the IOD was strongly positive.
- Some models indicating possibility of a negative IOD



Outlooks - rainfall



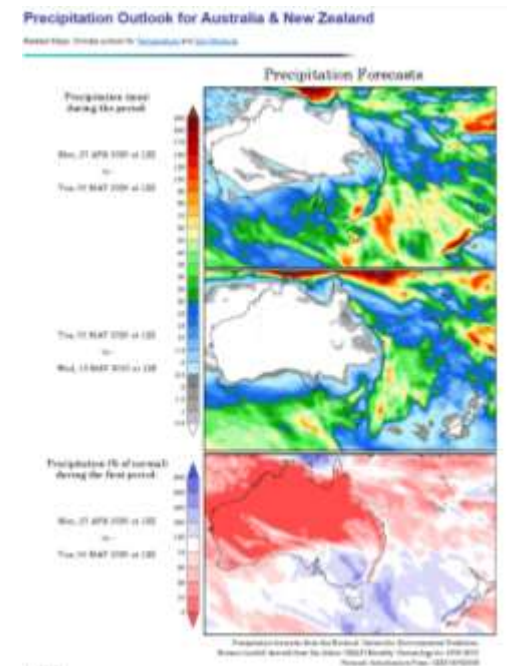
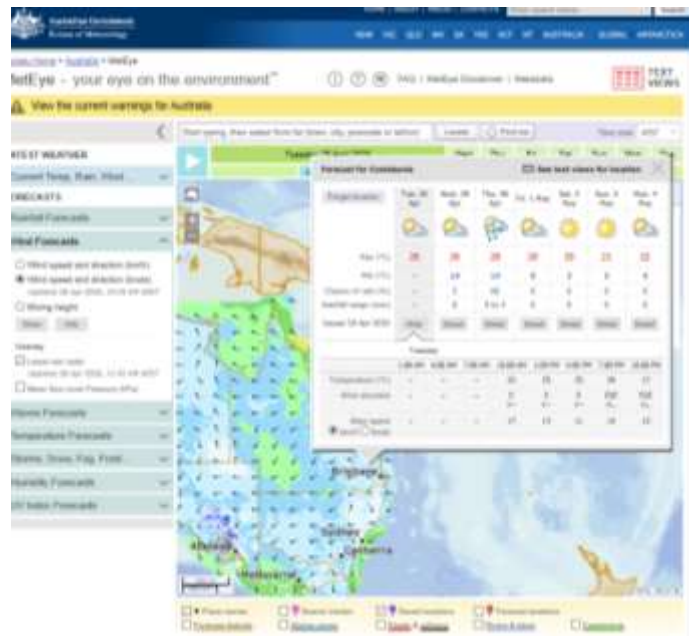
Outlooks - Temperature



Where to get Climate information

Short term

- **Bureau of Meteorology phone app 7 day forecast includes radar**
- **MetEye – Comprehensive forecasts for your area BoM**
- **Wxmaps 10 day forecasts www.wxmaps.org/pix/prec7**



Where to get Climate information

Long term

- Rainfall records for your area Bureau of Meteorology Climate Data on line app
 - Weather outlooks 1 week to 3 months
- ## For your location – BoM Seasonal Outlooks
- Climate App - How wet, How dry

Monthly rainfall
Kingsey Airport

The monthly rainfall is the total of all recorded daily rainfall for the month. Observations of daily rainfall are normally made at 3 am each clock hour and reported as the total for the previous 24 hours. Reported rainfall is in terms of precipitation that reach the ground. Such as rain, drizzle, fog and snow (when possible, melted).

Station: Kingsey Airport
Station: 40821
Elevation: 296.1
Nearest town: 424.0
Units: 10.0 mm

Any rainfall data not shown in this table is for monthly totals only.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1991	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1992	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1993	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1994	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1995	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1996	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1997	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1998	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1999	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2000	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2001	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2002	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2003	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2004	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2005	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2006	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2007	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2008	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2009	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2010	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2011	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2012	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2013	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2014	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2015	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2016	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2017	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2018	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2019	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2020	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Information about climate statistics

Seasonal statistics for all years

Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1991	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1992	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1993	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1994	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1995	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1996	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1997	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1998	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
1999	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2000	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2001	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2002	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2003	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2004	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2005	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2006	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2007	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2008	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2009	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2010	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2011	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2012	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2013	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2014	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2015	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2016	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2017	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2018	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2019	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2020	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

Issue: 23 April 2020

Australian CliMate
Climate analysis for decision makers

Question focused analyses for exploration of weather data across Australia.

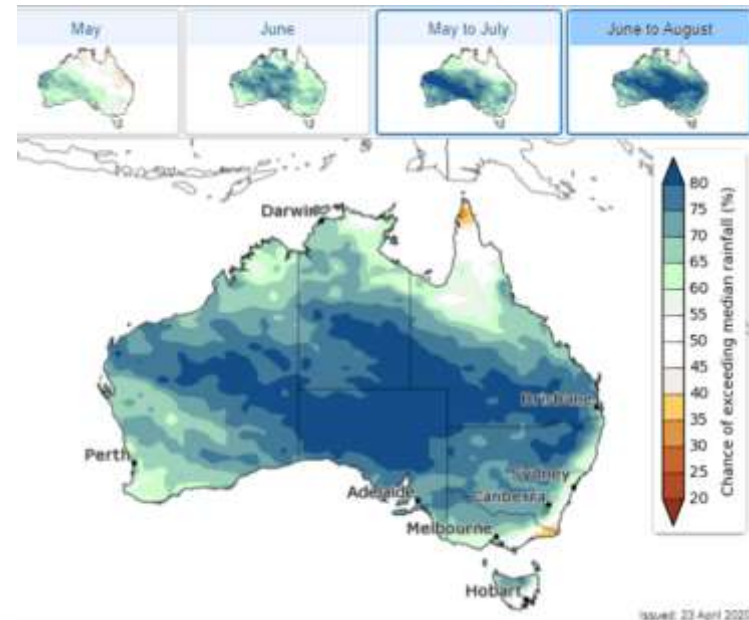
Also available for iOS and Android devices.

Download on the App Store

GET IT ON Google Play

OR

Start Now!



Drought & Climate Adaptation Program

- 1 - The Inside Edge for graziers to master our drought prone climate (\$2.419 million Qld Govt and total all partners in kind of \$3.51 million)
- 2 - Social research to support adoption (\$400,000 Qld Govt, all partners in-kind of total of \$3.51 million)
- 3 - Palaeoclimate data to plan for extreme events (\$315,000 Qld Govt, all partners in-kind of total of \$329 000)
- 4 - Northern Australian Climate Program – (\$3. 4 million Qld Govt, all partners in-kind of total of \$7.283 million)
- 5 – Crop Insurance (\$1.08 million Qld Govt, partners in-kind of total of \$353,000)
- 6 - Economics of improving drought management (\$283,000 Qld Govt, all partners in-kind of total of \$952,000)
- 7 – Multi week forecasts for Vegetable Industry (\$0.6m)
- 8 – Grazing Futures in WQ (\$4 million Qld Govt)
- 9 - Forecasting climate extremes in grazing and sugar industry – Forewarned is Forearmed (\$200,000 Qld Govt all partners in-kind of total of \$4.8 million)

Topics to cover

Climate

- Current situation ✓
- Seasonal outlook ✓
- Where to get climate information ✓

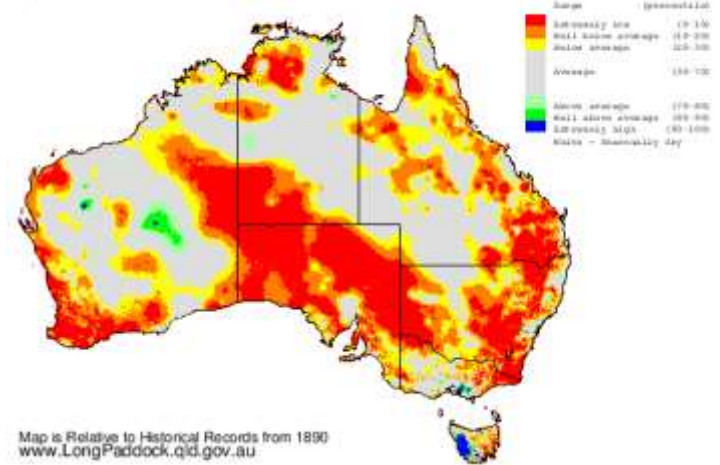
Feeding

- When to start feeding
- How much to feed for maintenance
- Horses, Sheep & Goats

Water Supplies

Management after rain

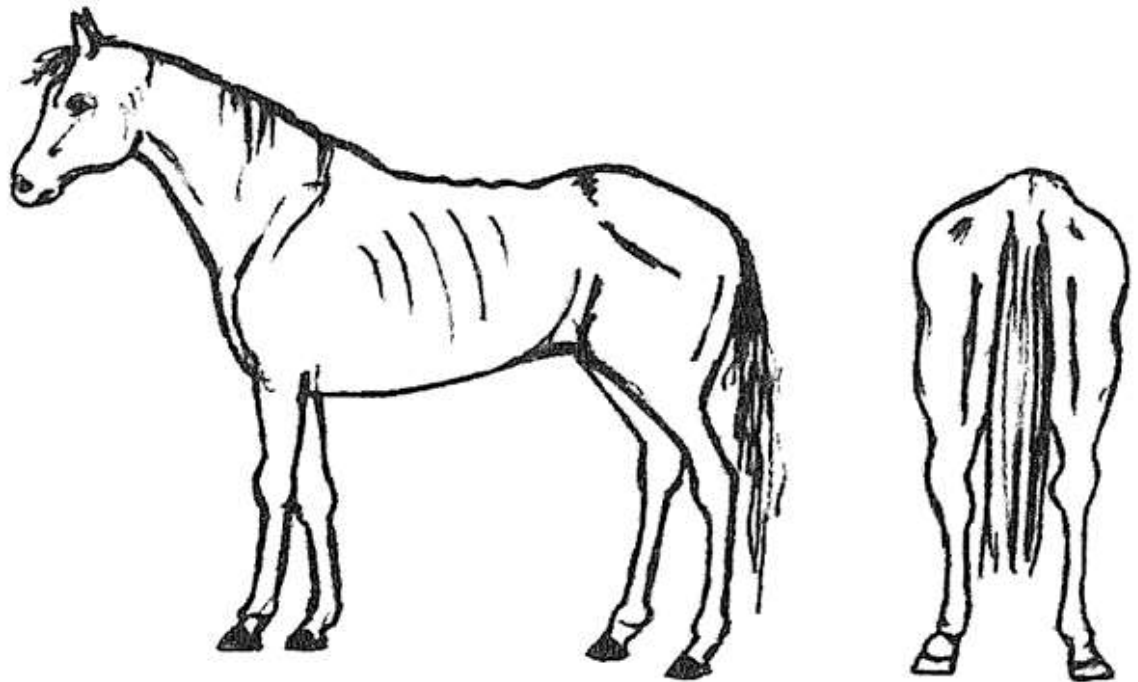
Rainfall Percentile
April 2019 to March 2020



Feeding Horses

When to feed?

- Flat rump either side of backbone
- Poverty line still visible
- Ribs just visible
- Narrow but firm neck
- Backbone well covered



- Horses being monogastrics are less able to handle high fibre diets

Feeding Horses

Estimating weight



Height	Condition score					
Hands	cm	1	2	3	4	5
12	120	190	210	250	300	360
13	130	240	285	345	375	455
14	140	310	330	400	460	540
15	150	380	420	465	535	600
16	160	420	470	520	575	650

Source: *Estimating a horse's condition and weight* NSW Primefact (2009)

Feed Quality - Horses

Feed type	Energy (MJ/kg)	Crude protein (%)
Oats	10	6–12
Horse pellets	10	8–20
Grass hay	6	5–10
Lucerne	8.5	16–25
Oaten hay	7	5–10
Straw (barley, wheat, oats)	5	3–5
Cane tops	5	5

Adapted from Nash d. 1999 et al.

Feeding Horses

How much to feed for maintenance only

- Horses eat between 1.75 to 3% of their bodyweight
- On average it is about 2.5% of its bodyweight each day.

For maintenance a horse will need:

Weight (kg)	Feed requirements (kg) dry matter	MJ energy
400	10.0	56.1
500	12.5	68.6
600	15.0	81.2

Cost for full feeding a horse for 30 days

Feed prices current at 17 January 2020

Horse weight and the amount of hay they need	Grass hay \$700/t	Lucerne \$900/t	Oaten hay \$500/t	Straw \$350/t	Pellets 50% and straw 50% \$1000/t and \$350/t
400 kg 10 kg/day + 10% = 11 kg	\$231	\$297	\$165	NA	\$222
500 kg 12.5 kg/day + 10% = 13.75 kg	\$288	\$371	\$206	NA	\$253
600 kg 15 kg/day + 10% = 16.5 kg	\$346	\$445	\$247	NA	\$303

NA = straw fed as a full diet will not provide enough nutrition

For example, if you have a 500 kg horse in a paddock with no pasture, it will need to eat roughly 12.5 kg of hay every day. If you have lucerne bales that weigh 25 kg and cost \$30, you will need to feed the horse half a bale a day. Fifteen bales a month at \$30 will cost \$450.

Feeding Horses

Other Factors to consider

- Feed early before pasture grass is gone
- Change feeds slowly over at least 5-7 days – colic
- Check teeth
- Worm status
- Competition at feeding time between horses and your safety
- Boredom, bad habits if feeding in small areas, slow feeders

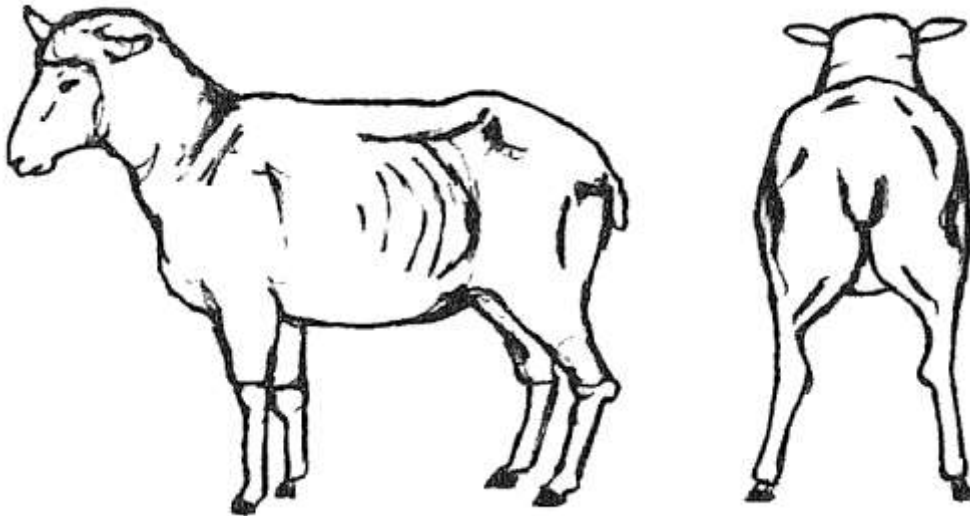


Feeding Sheep & Goats

When to feed?



Body condition score 2 – Moderate



- Backbone raised but smooth
- Ribs are easily felt
- Tail bone easily detectable
- Thin neck

Know the weight of your Sheep & Goats

- A good guide to their dietary requirements for maintenance feeding

Sheep with wool – feel along the back bone and the short ribs this will give an indication of fat cover



Feeding Sheep & Goats



- Sheep will eat 2–3% of their bodyweight each day.
- Younger sheep or ewes with lambs can eat up to 4%.
- Grain is generally, the best option
- Corn can be fed out on the ground but all other grains should be fed in troughs.
- 1 metre of trough space for every 6 sheep.
- Condition sheep to grain feeding if they are not eating any dry paddock feed,
- feed a small amount of grain mixed with hay or roughage for 4–7 days then increase the amount of grain gradually until they are on a full grain ration.

Cost of feeding sheep and goats

Feed prices current at 20 January 2020

Class of sheep	Feed	Amount needed per week (kg /hd)	Cost per week (\$/hd)
45 kg ewes in lamb early stages	Wheat	3.8	1.79
	or Oats	4.6	2.30
	or Hay (good)	5.4	4.86
	or Hay (poor)	7.0	4.90
60 kg ewes with lambs	Wheat	9.0	4.27
	or Oats	11.0	5.50
	plus Hay (good)	2.0	1.80
	or Hay only (good)	14.0	12.60
Lambs 15 kg +	Wheat	2.0	0.95
	or Oats	2.3	1.15
	plus Hay (good)	3 + grazing	2.70
	or Hay only (good)	4.5	4.05

*Costs are based on wheat \$475/t, oats \$500/t, lucerne hay \$900/t and cereal hay \$700/t landed.
Adapted from: Drought feeding and management of sheep (2018)*

Cottonseed –

- Fed as a supplement and should be limited to 10-20% of total dry matter intake
- High levels can cause scouring
- Needs to be fed with roughage



Class of Sheep	Daily intake (grams)	Cost/week \$ At \$700/t
Weaners >5mths	100	0.50
Dry ewe, wethers Rams	150	0.74
Pregnant ewes	200	1.00
Lactating ewes	300	1.47

Adapted from: Cottonseed supplementation for sheep QDAF 2018

Pellets –

- Many types with varying energy and protein levels
- Depending on the analysis of the pellet, consumption rates will vary and often roughage is required.
- Current costs for these pellets is in the vicinity of \$500/t. Check with your supplier to determine correct feeding rates for their product.

Feeding Sheep & Goats

Other factors to consider:

- Goats can use a wider range of paddock feed and browse in comparison to sheep.
- Make changes to the diet of sheep and goats gradually over 5–7 days.
- Consider worming and the condition of teeth in older animals
- Poisonous plants - pigweed.
- Goats have generally similar energy requirements to sheep there is evidence that under non-grazing conditions, responses to grain feeding, welfare needs, and requirements can differ significantly from sheep and cattle (McGregor, 2005).



Water Supplies

All water for animals needs to be of potable quality:

- Sheep and goats
 - 6 litres (L) a day for a weaner,
 - 10 L for an adult dry sheep and
 - 14 L for a ewe with a lamb.
- Horses
 - 25 to 50 L of water a day,
 - dehydrated horses are more susceptible to developing colic.

These figures will vary depending on the season and moisture content of the feed.



Management after Rain



- Short green feed high in protein/water
continue to feed roughages until pasture bulk increases
- Time to spell paddocks - always keep at least 50% groundcover
- Allow pasture grow for at least 6-8 weeks before being grazed this will:
 - allow seeding of pastures
 - increase root area and depth of plant roots
 - improve drought resilience of plant
 - increase long-term pasture production of the paddock
 - reduce run-off and loss of nutrients
- Pasture budget for the coming winter
 - Review dates: end of March, Green dates
 - Short-term growing season
 - Grasses are likely to go to seed early and have less pasture bulk
 - Supplementary feed supplies will be low

In Summary

Feeding Stock

- Pasture budget early – when will I run out of supplies?
- Review amount of pasture available at the end of March
- Reduce numbers of stock to feed if pasture supplies are limited.
- Have I got the money, time and resources \$ to feed?
- Budget for the costs and returns of feeding.
- Plan to feed after rain for a number of weeks to allow pasture recovery



Feeding horses

- Start early before horses loose weight
- Changes feeds types slowly to avoid colic
- Condition of teeth and parasite control are priorities

Sheep & Goats

- Grain & cottonseed are good options
- Feed pregnant ewes and does separately to dry animals



More Information

Feeding Stock

- www.mla.com.au/research-and-development/feeding-finishing-nutrition/drought-feeding/
- www.mla.com.au/research-and-development/feeding-finishing-nutrition/supplementary-feeding/

Feeding horses

- www.agriculture.vic.gov.au/agriculture/livestock/horses/feed-requirements-of-horses
- <http://agriculture.vic.gov.au/agriculture/livestock/horses/horses-and-drought>

Sheep & Goats

- www.feedinglivestock.vic.gov.au/sheep-resources/sheep-drought-feeding-guide/
- www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/livestock/animal-welfare/sheep-health/supplementary-feeding/grain
- <https://www.dpi.nsw.gov.au/animals-and-livestock/sheep/feed-nutrition>
- <https://www.agrifutures.com.au/wp-content/uploads/publications/05-188.pdf> goats