NSW GOVERNMENT | Department of Primary Industries

Change and Variability

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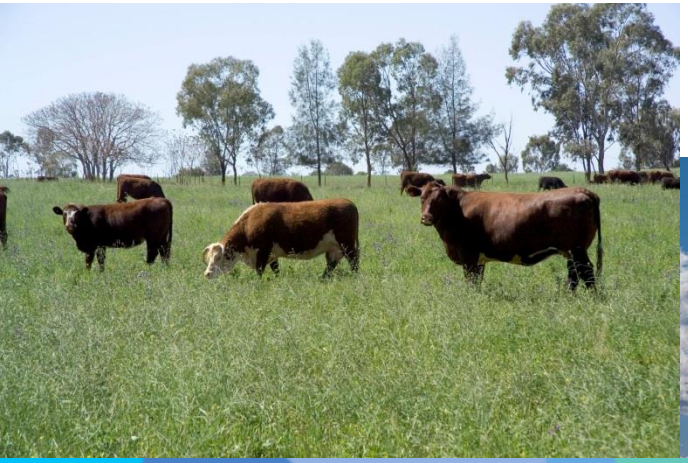
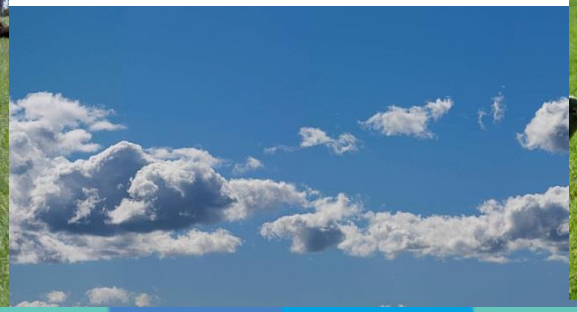
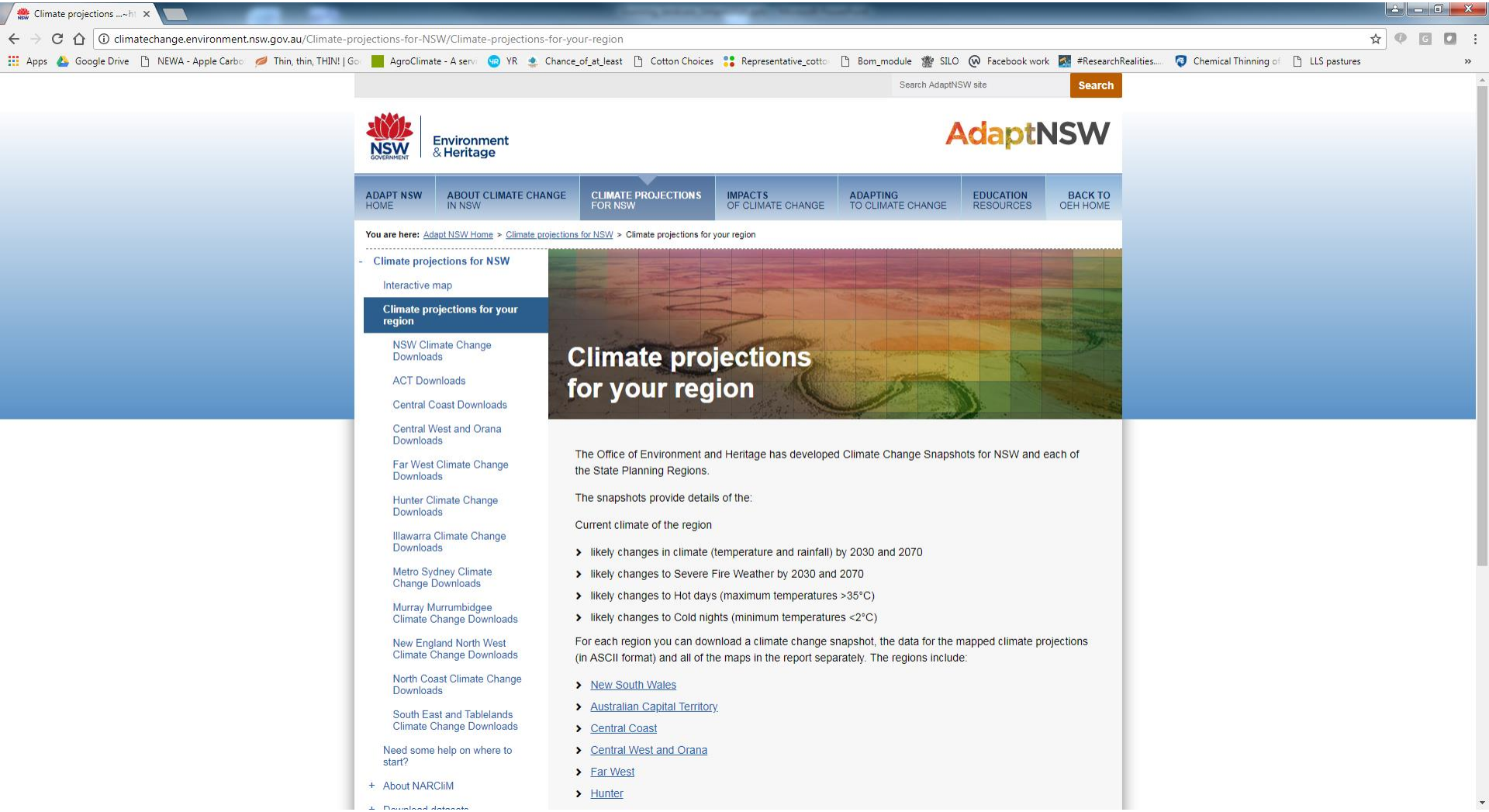
Overview

- Bit of climate change
- Bit of impacts
- Discuss some adaptation
- Bit on variability
- Bit on technologies to assist with variability



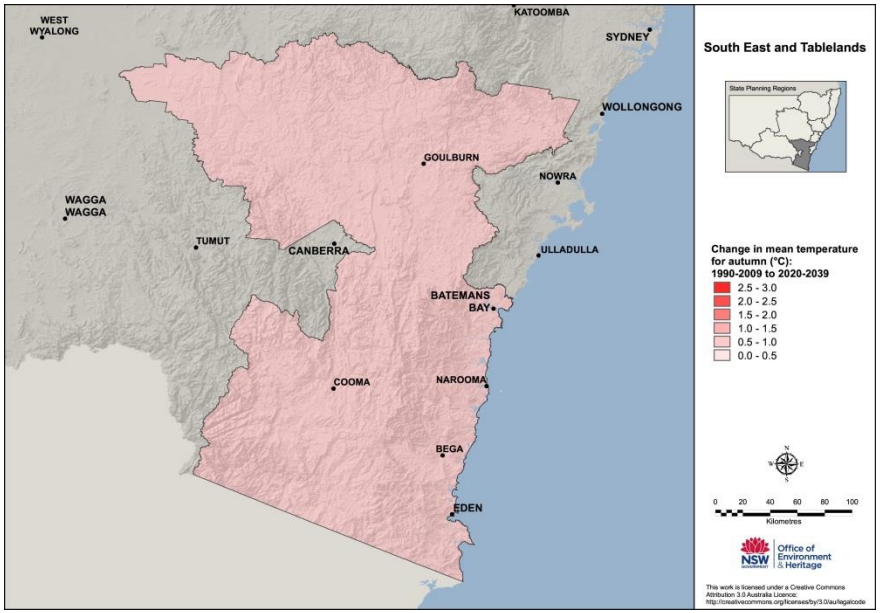


http://climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region



Temperature

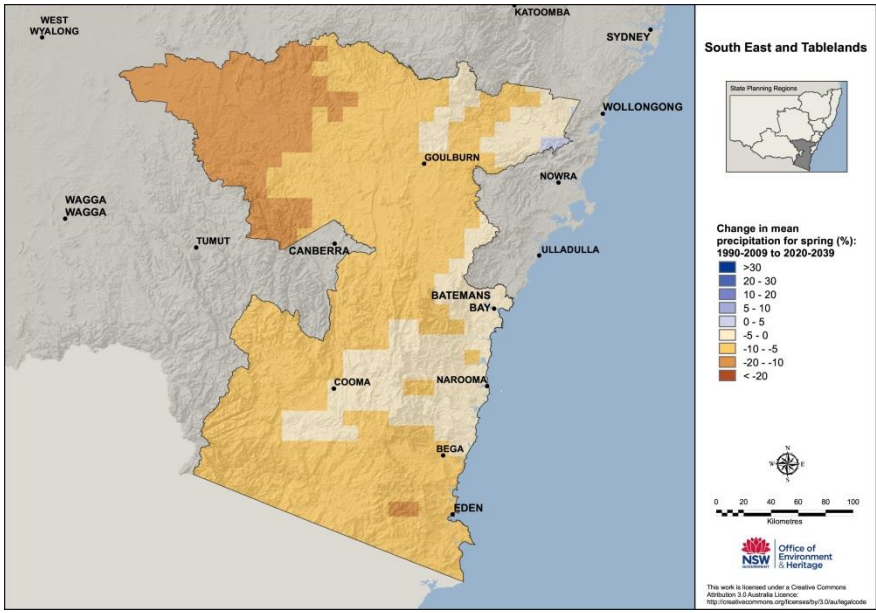
Autumn



warmer

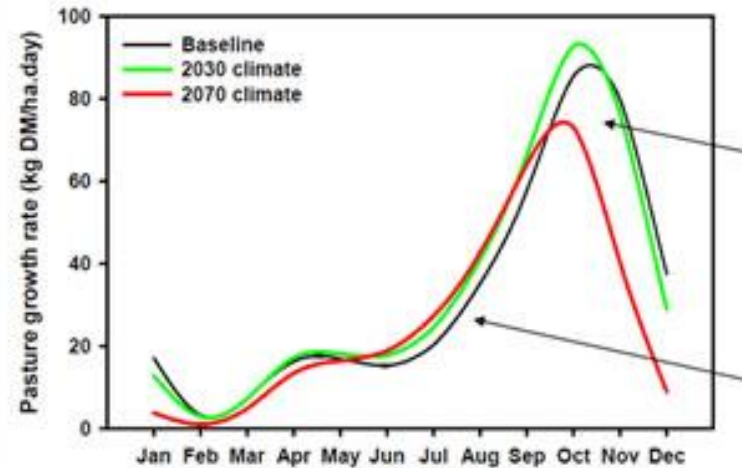
Rainfall

Spring



drier

Change to pasture?



Lower R = contraction and reduction of spring production

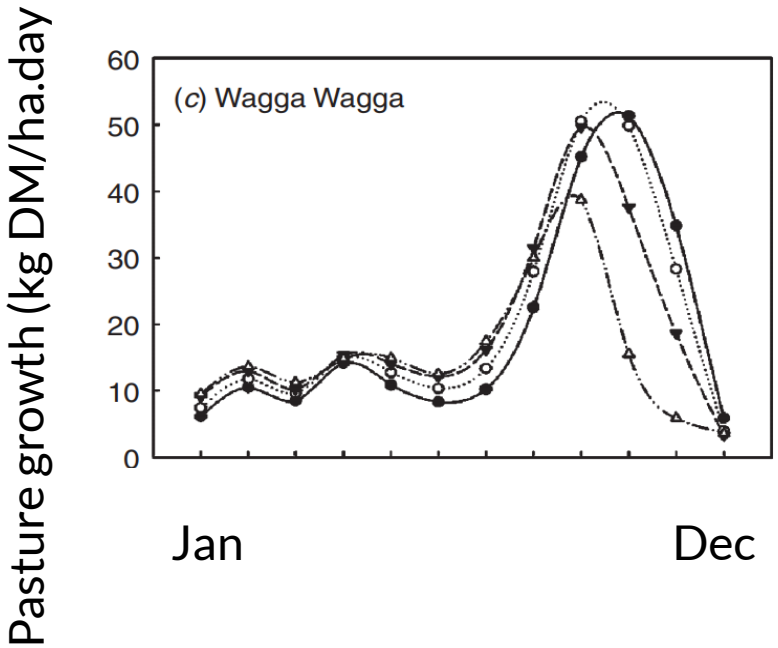
Warmer T = slight increase in autumn production

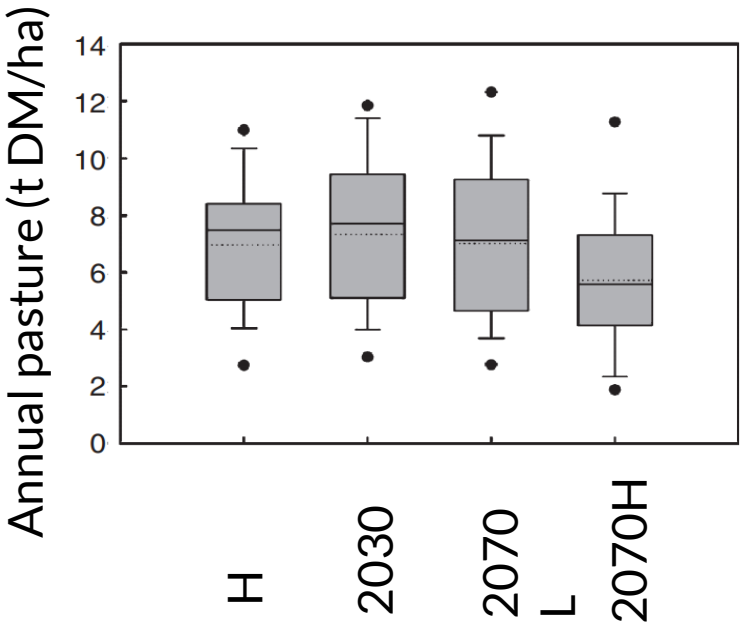
More impact with time

(Cullen et al., 2009)

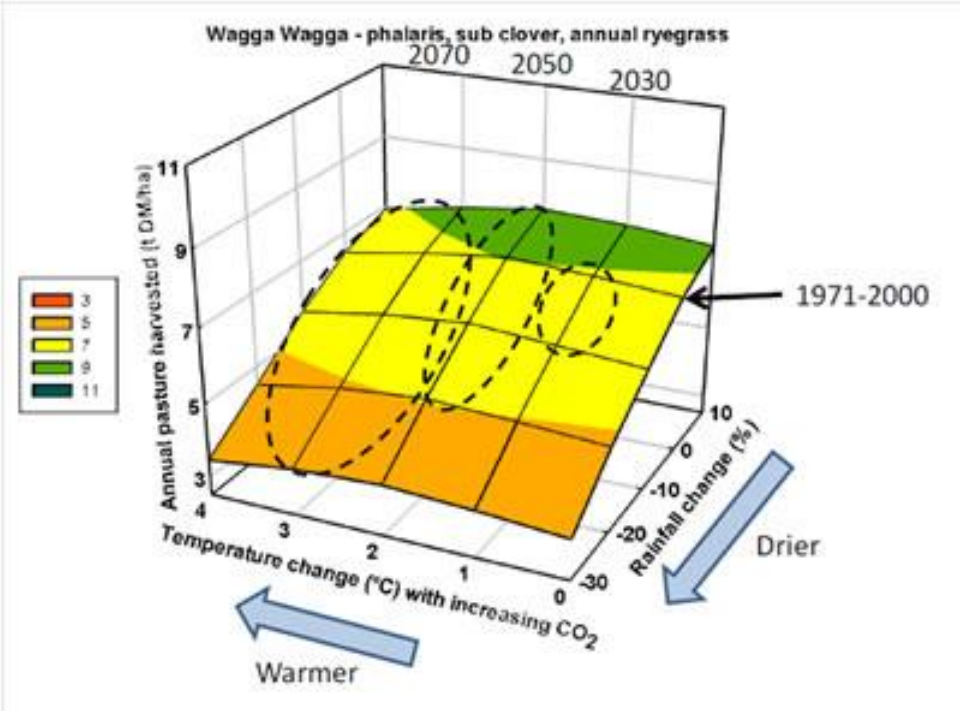
Change to pasture – a bit more local

Hist.
2030
2070Low-High





(Cullen et al, 2009)



Courtesy, B. Cullen

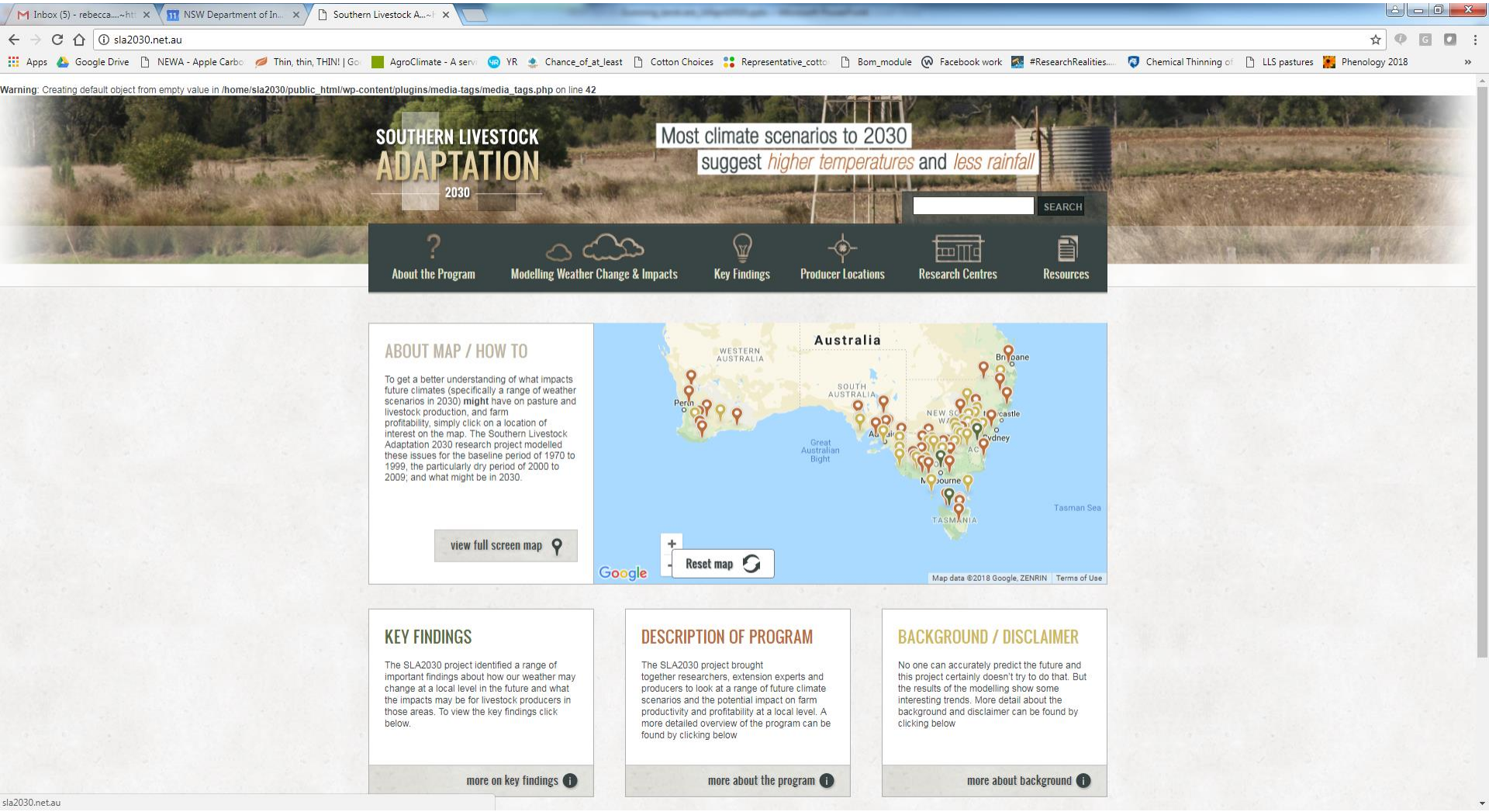
Hist. vs 2030 production & profit

	Pasture as a % of base	DSE/ha as % of base	Profit /ha as % of base
Goulburn	93%	74%	60%
Yass	93%	71%	60%

Annual pasture production, dse set to match ground cover, averaged across sheep and beef enterprises

(Graham, 2012)

http://sla2030.net.au/



Adaptation in Action

Dual purpose canola in Goulburn

- Cattle and prime lamb operation
- rotation added into the traditional weedy oats and wheat crops

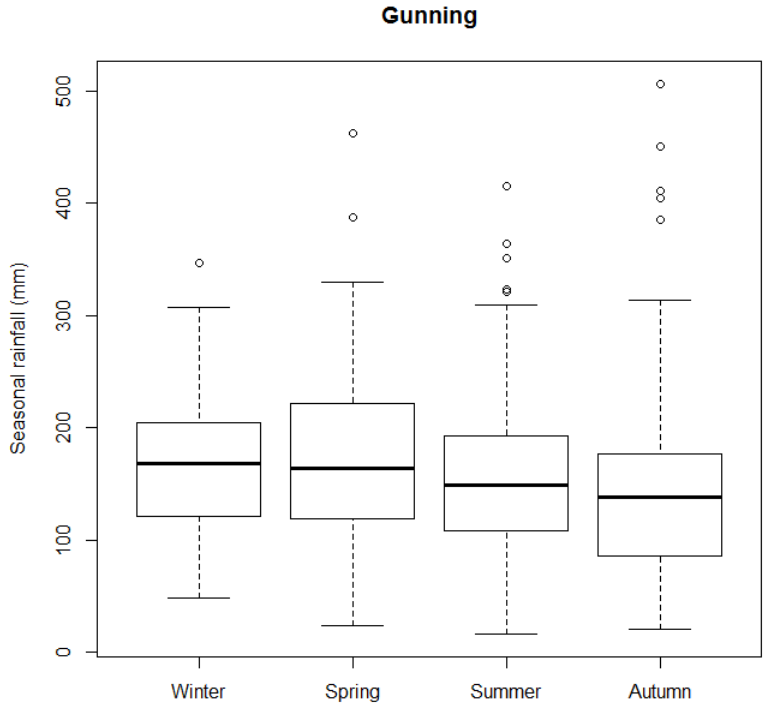
"It gives us the ability to control grass weeds, produce more profitable wheat and supplies a mix of income,"

"A well-run program of grazing and grain is a high-expense, high-return system. It costs $750/ha to run our system, but it returns around $900/ha for meat and $900/ha for grain."

(GRDC, ground cover)

Climate Variability

Climate variability = significant source of profit variability (greatest?)



Climate change = more variability

Adapting to Variability

Have you noticed a change in variability?

Can make changes now… perhaps you have?

- pasture mix to take advantage of changing seasonal conditions?
- natives?

Can technology help better manage variability now and in the future?

- seasonal climate forecasts
- moisture probes

Some New Findings - Teaser

What is the value of including SCF to make the decision of when to sell lambs (Nov or Feb)?

Case study in Holbrook

What else matters?

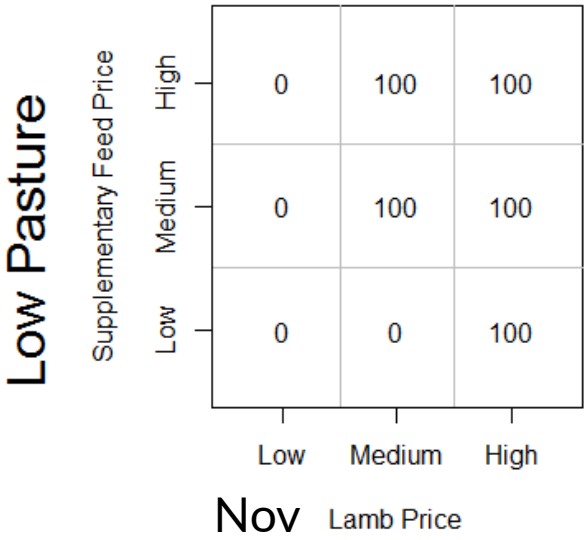
- pasture in Nov
- lamb price in Nov
- supp. Feed price

exploratory NOT advice!

"Improved Use of Seasonal Forecasting to Increase Farmer Profitability"
RnD 4 Profit (DAWR)
Ends June 2018

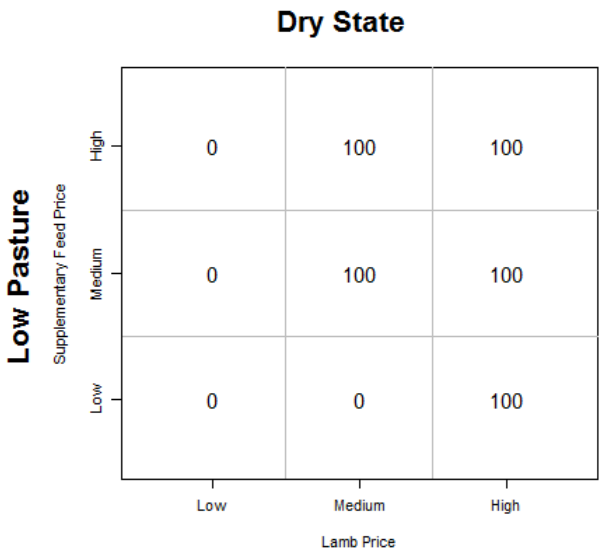
Some New Findings - Teaser

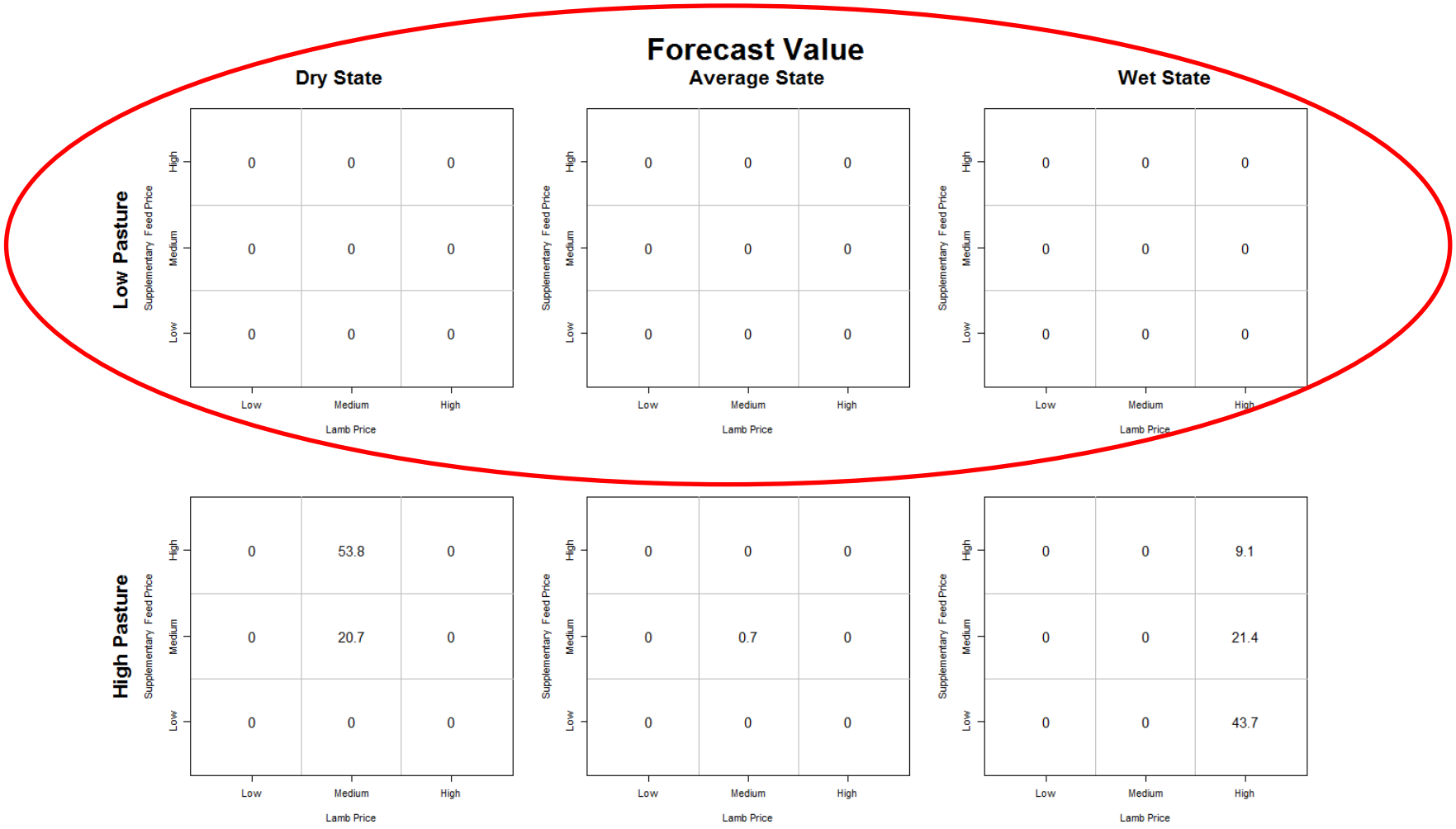
★ **Without Forecast Decision**



% lambs sold in Nov

Perfect Forecast Decision




Forecast Value
Dry State
Average State
Wet State
Low Pasture
High Pasture
Supplementary Feed Price
Lamb Price
Low
Medium
High
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
0
53.8
0
0
20.7
0
0
0
0
0
0
0
0.7
0
0
0
0
0
0
9.1
0
0
21.4
0
0
43.7

$/ha

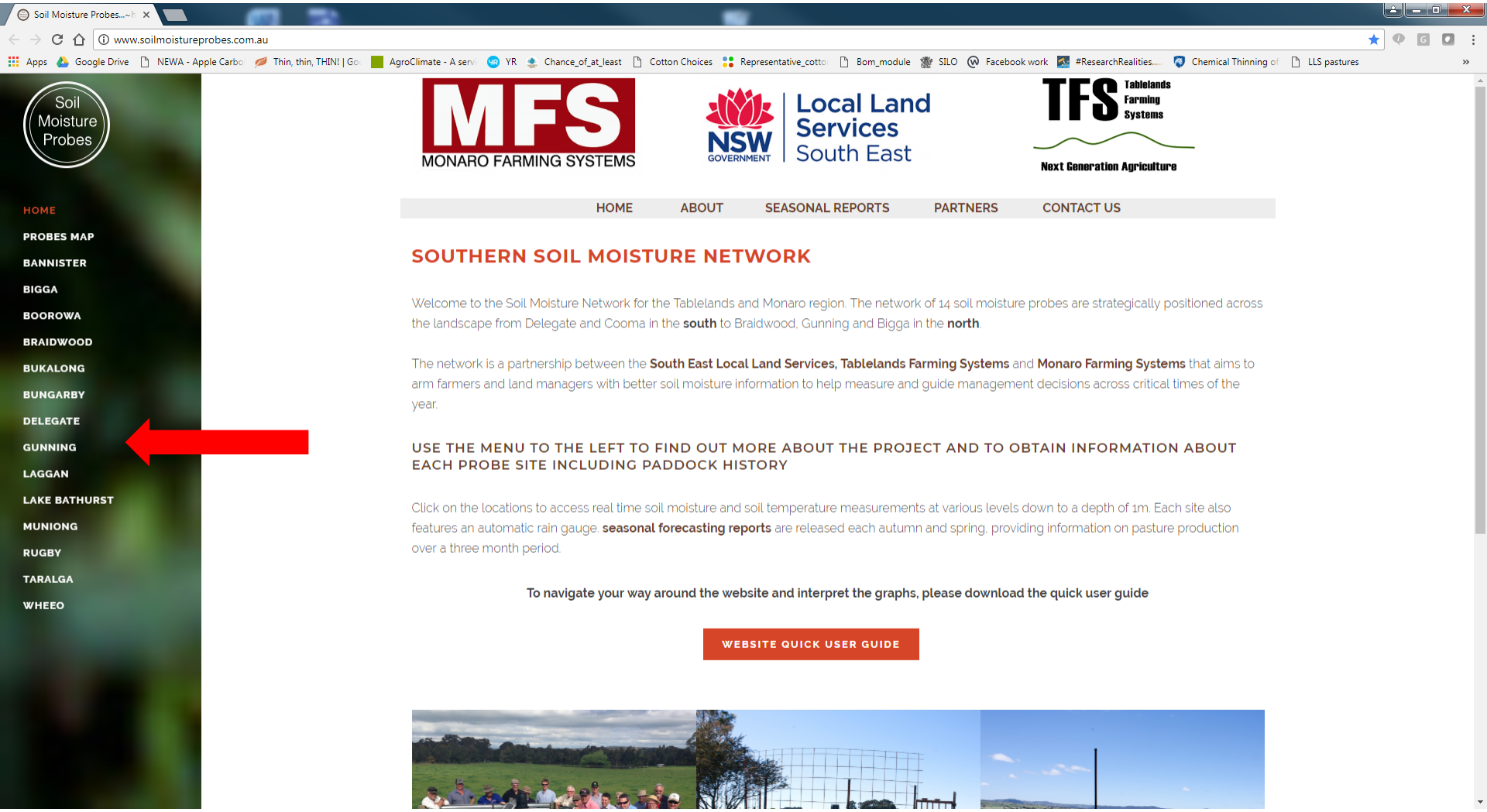
Some New Findings - Teaser

- Pasture amount very important
- Price settings also important
- SCF valuable depending on these settings
- *exploratory* i.e. forecasts are not {dry, average, wet} and are imperfect^

Knowing pasture amount is useful… your LLS is here to help!

http://www.soilmoistureprobes.com.au

LLS here to help



Soil Moisture Probes...

www.soilmoistureprobes.com.au/gunning/

Apps | Google Drive | NEWA - Apple Carbo | Thin, thin, THIN! | Go | AgroClimate - A serv | YR | Chance_of_at_least | Cotton Choices | Representative_cotto | Bom_module | SILO | Facebook work | #ResearchRealities.... | Chemical Thinning of | LLS pastures

Soil Moisture Probes

- HOME
- PROBES MAP
- BANNISTER
- BIGGA
- BOOROWA
- BRAIDWOOD
- BUKALONG
- BUNGARBY
- DELEGATE
- GUNNING
- LAGGAN
- LAKE BATHURST
- MUNIONG
- RUGBY
- TARALGA
- WHEEO

HOME ABOUT SEASONAL REPORTS PARTNERS CONTACT US

GUNNING

Property "Collingwood"

Collingwood is located 3km east of Gunning on the Southern Tablelands of NSW. The terrain is predominantly gently rolling granite soils, rising to steeper basalt and shale peaks. Altitude ranges from 560m to 800m and average annual rainfall is 640mm. Collingwood is a family owned property and is managed by Charles Knight. The businesses prime focus is on wool production. Enterprises include a self-replacing wool flock which is run along side a first cross terminal lamb flock and a cattle trading enterprise.

Annual rainfall: 640mm

Altitude: 590m

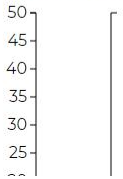
Soil type: Granite
(refer to soil section for further detail)

Pasture type: Introduced
(refer to pasture section for further detail)

INTERACTIVE GRAPH

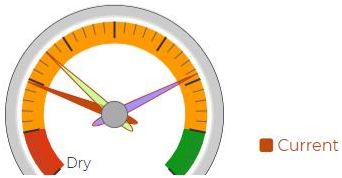
It may take a few seconds to load all the data

RAINFALL SINCE 9AM



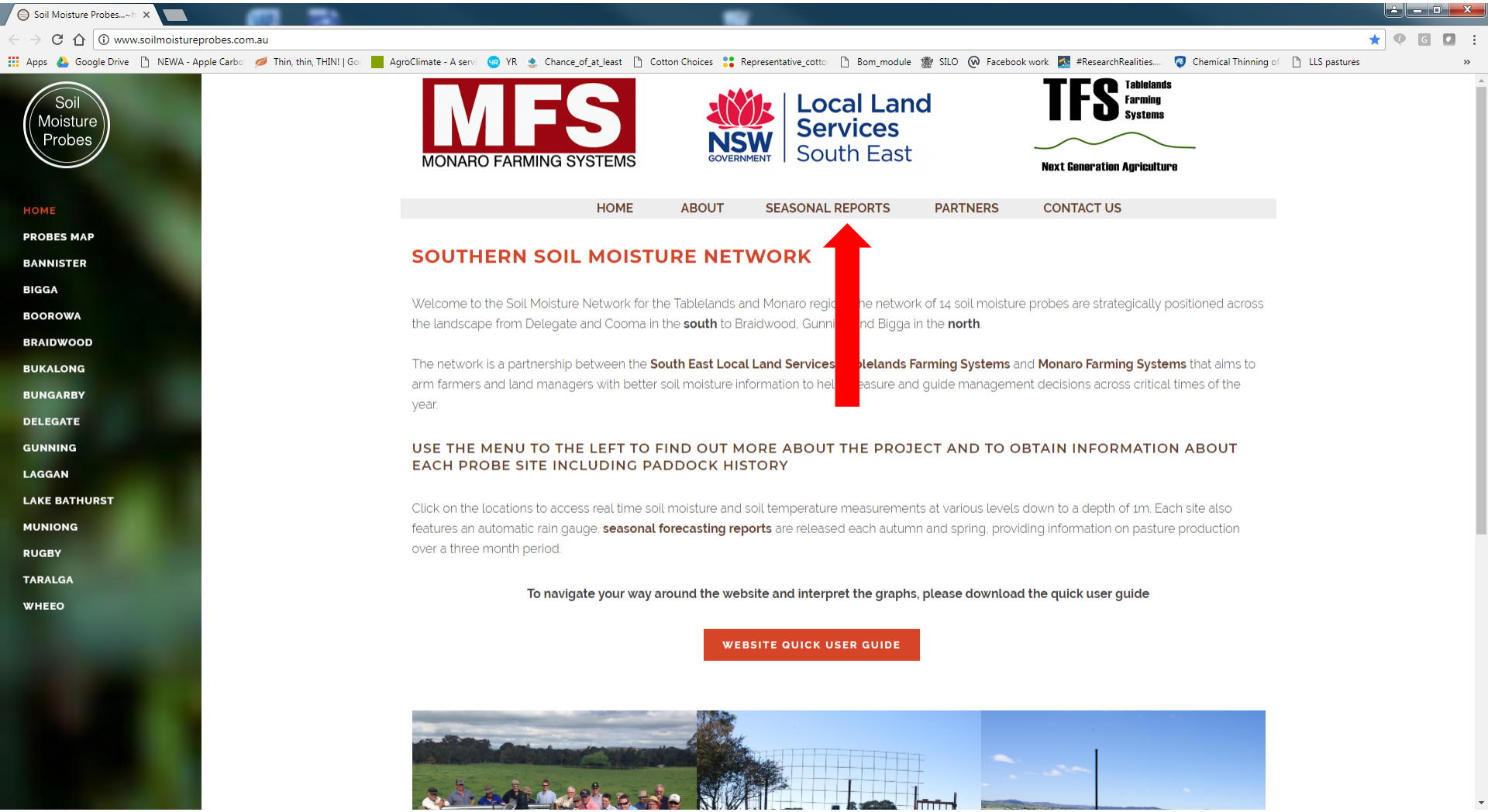
SOIL MOISTURE PROFILE

OVERALL SOIL MOISTURE



http://www.soilmoistureprobes.com.au

LLS here to help



Soil Moisture Probes...

www.soilmoistureprobes.com.au/seasonal-reports/

Apps | Google Drive | NEWA - Apple Carbo | Thin, thin, THIN! | Go | AgroClimate - A serv | YR | Chance_of_at_least | Cotton Choices | Representative_cotto | Bom_module | SILO | Facebook work | #ResearchRealities.... | Chemical Thinning of | LLS pastures

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INNOVATION TO SUPPORT ON-FARM DECISION MAKING

To support decision making, a three month 'seasonal outlook' for each of the 14 localities will be produced every autumn and spring. These reports are publically available and provide relevant information for each probe location.

South East Local Land Services and NSW Department of Primary Industries complete the reports for the benefit of the Southern Soil Moisture Network.

This project is part of the $25 million of National Landcare Programme investment that Local Land Services is delivering to boost farm gate productivity and improve economical health across NSW.

Seasonal Outlook – Autumn 2017
Seasonal Outlook – Spring 2017



Australian Government | National Landcare Programme

The 'Supporting Sustainable Farming Systems

PARTNERS:

TABLELANDS FARMING SYSTEMS
MONARO FARMING SYSTEMS INC.
LOCAL LAND SERVICES

WEBSITE USER GUIDE

Soil Moisture Probes

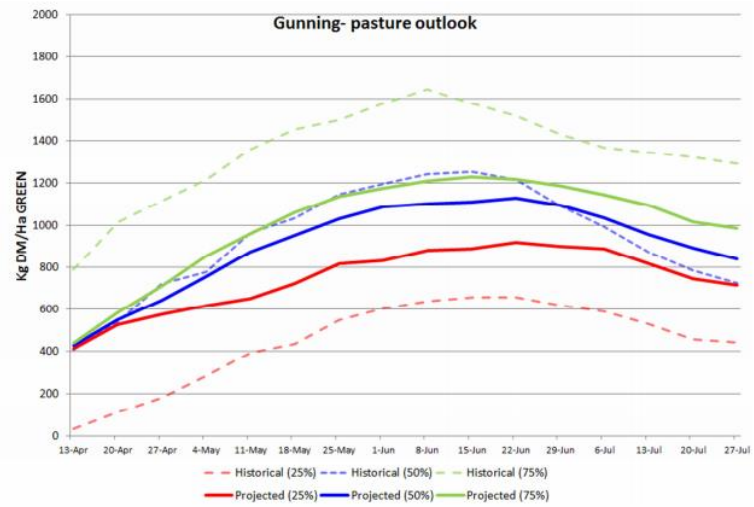
Autumn 2017

Seasonal outlook_autum

soilmoisturepro bes.com.au/wp-content/uploads/2017/09/Seasonal-outlook_autumn-2017.pdf

NEWA - Apple Carbo | Thin, thin, THIN! | Go | AgroClimate - A servi | YR | Chance_of_at_least | Cotton Choices | Representative_cotto | Bom_module | SILO | Facebook work | #ResearchRealities..... | Chemical Thinning of | LLS pastures

Gunning



- Green feed by mid-April was sitting around the long-term average. This can be seen on the left hand side of the graph where the starting position of around 400kg DM (green).
- At the time of writing this site had just received **23mm** (24-26 April). This rainfall is very timely as the graph shows soil moisture becoming a factor by late April. This is indicated by the separation of the solid lines.
- **The BOM outlook for May is very dry, with only a 41% chance of receiving at least 25mm. Past accuracy for this location at this time of year is high.**
- Given that this site has been a bit drier (compared to other sites) future rainfall is more important. The likelihood is that pasture supply will move below the "typical" year (dotted blue line) but not into a difficult position.
- **In summary, pasture at this site is expected to below average across the next three months but will remain in the 'normal' range.**

Required rainfall to drive pasture growth for Gunning

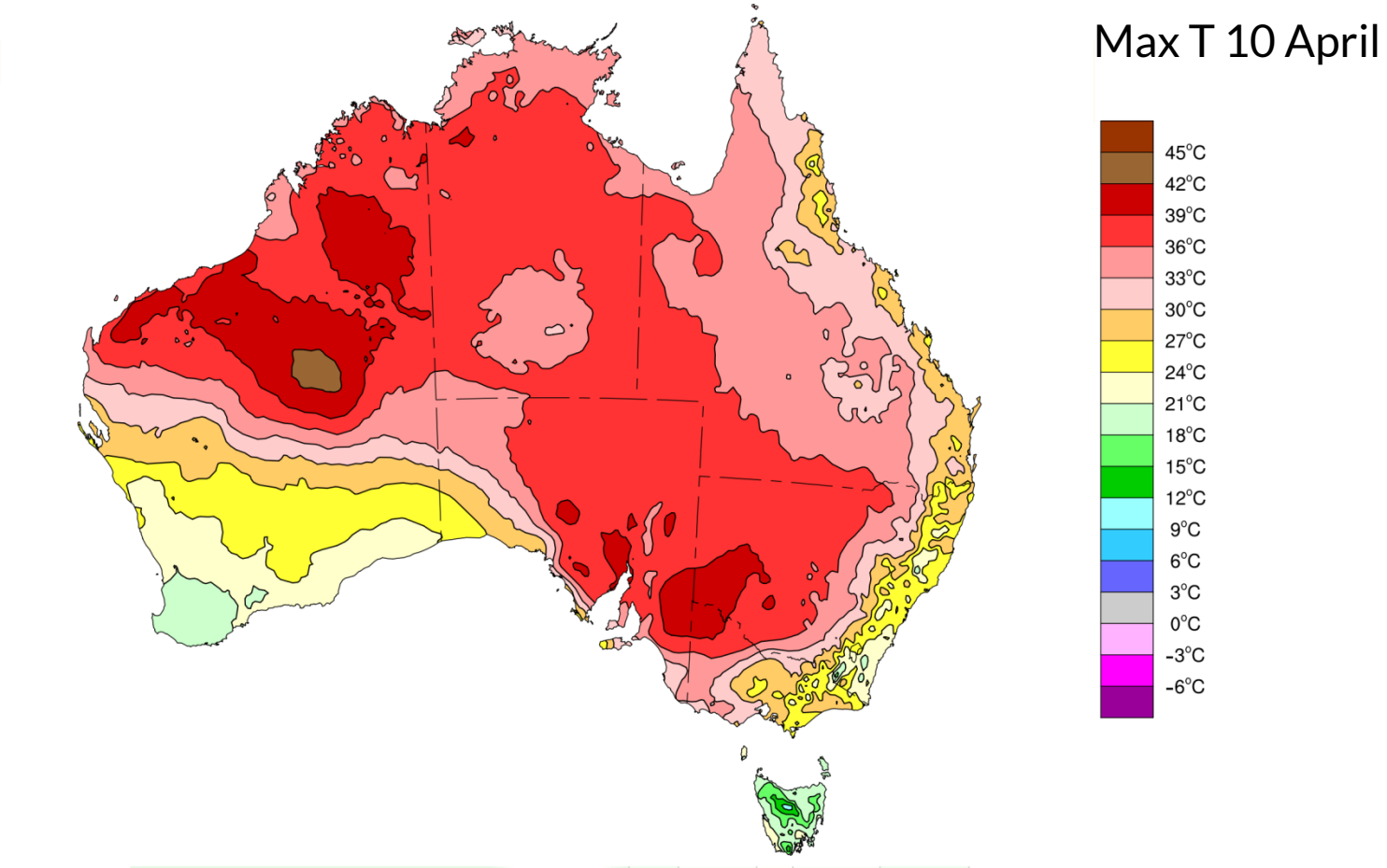
Month	Long term median	Required rainfall
		Blue line
May	39	23
June	52	25
July	49	36

Gunning assumptions

Enterprise	Self-replacing Merino flock lambing mid August
DSE rating	12.4 DSE
Pasture	Microlaena, sub clover and annual grasses
Elevation	590m

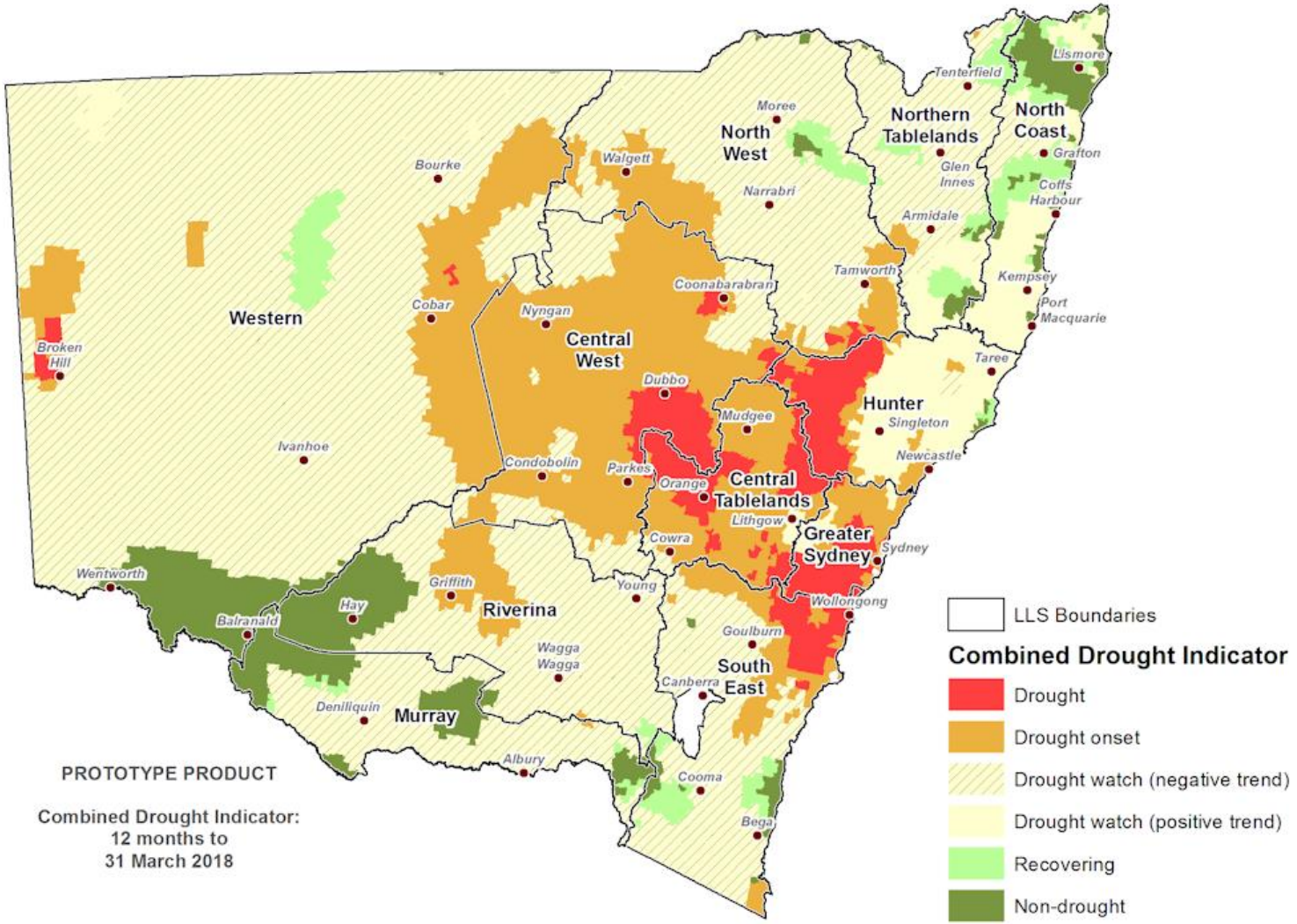
If time…?

If time… BoM



http://www.bom.gov.au/climate/current/statements/scs65.pdf

If time… NSW DPI conditions report



https://www.dpi.nsw.gov.au/climate-and-emergencies/droughthub/information-and-resources/seasonal-conditions/ssu/march-2018

My Thoughts

- Likely shift in pasture productivity windows
- Likely downward shift in total pasture production
  - Do I change my animals management (e.g. joining timing)
  - Do I modify my pasture mix?
  - Do I do a mixture of things?

- Climate is likely to be more variable
- What can I do to manage variability better?

- What is actually on the ground right now? Know what is knowable.
- SCF in combination with knowing current conditions could add value

- LLS seasonal conditions summary = Australian leaders
- LLS preparing local climate change info

Thank You

Rebecca.Darbyshire@dpi.nsw.gov.au