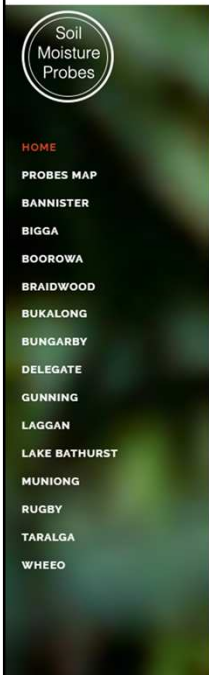


soilmoistureprobes.com.au



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SOUTHERN SOIL MOISTURE NETWORK

Welcome to the Soil Moisture Network for the Tablelands and Monaro region. The network of 14 soil moisture probes are strategically positioned across the landscape from Delegate and Cooma in the **south** to Braidwood, Gunning and Bigga in the **north**.

The network is a partnership between the **South East Local Land Services**, **Tablelands Farming Systems** and **Monaro Farming Systems** that aims to arm farmers and land managers with better soil moisture information to help measure and guide management decisions across critical times of the year.

USE THE MENU TO THE LEFT TO FIND OUT MORE ABOUT THE PROJECT AND TO OBTAIN INFORMATION ABOUT EACH PROBE SITE INCLUDING PADDOCK HISTORY

Click on the locations to access real time soil moisture and soil temperature measurements at various levels down to a depth of 1m. Each site also features an automatic rain gauge. **seasonal forecasting reports** are released each autumn and spring, providing information on pasture production over a three month period.



To access the site go to soilmoistureprobes.com.au

The home page just has some background information on the project.

Click on **Seasonal Reports** to access the latest **seasonal outlook report**. These reports are produced each autumn and spring.

The menu on the left lists the 14 probe sites in alphabetical order.



The first link on the left menu is **“Probes Map”**. This is a regional map – the pins show exactly where probes are. You can zoom in for further detail.

The pins are colour coded, depending on the amount of soil moisture in the top 60cm. The colour coding is based on a traffic light system. Green is indicating good moisture (>75% of total potential), red is dry (<25% of total potential) and amber is when soil moisture is between 25 and 75% of total potential. This colour coding system provides a quick snap shot of soil moisture status across the region.

If you click on the individual pins you can see some stats on rainfall and moisture.

Note that black pins are for new sites at Bookham and Murrumbateman. These will be available in the near future.

During September 2016 South East LLS installed 4 additional probes which aren't on the map – probes are located at Berry, Sutton Forest, Bungonia and Yass. These new probes will help fill in some of the gaps in the current system.

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

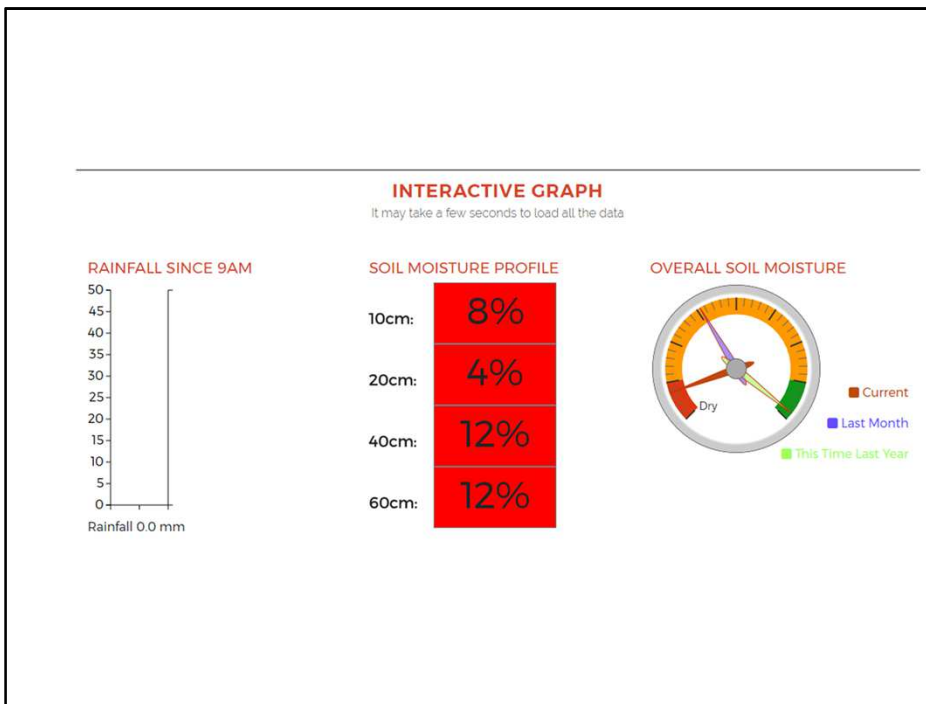
(refer to pasture section for further detail)



Click on the sites of interest using the menu on the left.

Once you've selected a site, at the top of the page you will immediately see some background information on the property and production system being run. The photos will expand if you click on them.

Information covering average annual rainfall, altitude, soil type and pasture type also features at the top of the page – this is designed to help you quickly get a feel of the probe site and put the data into context. This information is important when trying to work out which probe(s) are most relevant to you.



The next section (Interactive Graph) is where the soil moisture, soil temperature and rainfall data is displayed.

Rainfall since 9am – this simply shows the amount of rain that’s been recorded since 9am. All probe sites have an automatic rain gauge.

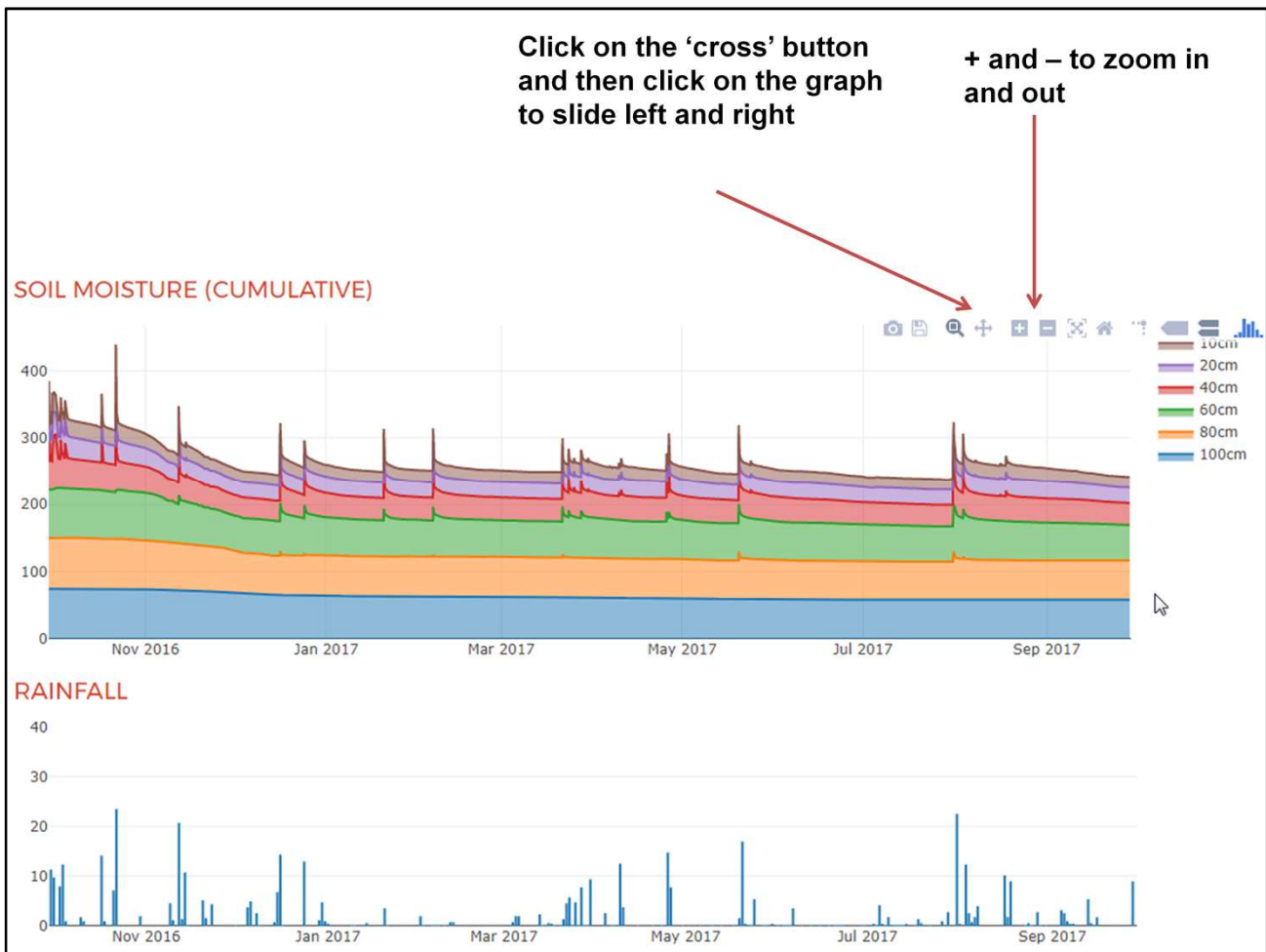
Soil moisture profile – this graphic shows the amount of **soil moisture as a %** at each sensor depth down to 60cm. The top 60cm is the critical range for pasture production.

The key thing to note is that these readings are **relative** and have been calibrated using probe readings over the last 12-15 months. Do calibrate the data we have looked at all the data collected to date and selected the highest (wettest) and lowest readings for each sensor depth. These readings become the upper and lower limits. The %age figure in the graphs indicates where the current reading sits in that range. For example, if the reading at a certain depth is 100%, then it’s equal to the wettest reading we’ve recorded (i.e. field capacity). If the reading is zero, then it’s equal to the driest reading we’ve seen do date. In the above example you can see that the profile at Gunning is very dry and approaching the driest levels we’ve recorded to date.

Because of the extremely wet conditions in the 2016 winter/ spring period we are confident that the upper limit is accurate. Numbers above 100% indicate that we’ve gone past field capacity and have reached saturation point.

On the dry end of the scale, it’s important to note that plants will go from green to dead before we hit zero. In other words, probes will always tell us there is some moisture, but a point is reached where plants can’t access it.

Fuel gauge reading – this just shows an overall summary of soil moisture in the top 60cm. The red needle is the current reading, the purple needle is this time last month and green needle is this time last year.



The **soil moisture (cumulative)** graph lets us see changes in soil moisture over time.

By referring to the **rainfall** graph directly below you can start to see the impact of rainfall events on soil moisture.

For example, if you look to the very left hand side of the above moisture graph you can see how much moisture the Gunning site had at the start of October 2016. The graph clearly shows how rainfall events in October and November kept topping the system up, but overall soil moisture was being run down. Pasture hayed off on 14 December.

In 2017 the season broke on 22 March and for Gunning it was a case of getting just enough rain, just in time. Key follow-up rain fall was recorded on ANZAC day and then around a month later on 20 May. Winter was extremely dry and we can see soil moisture slightly declining during this period before good rain on the last day of winter.

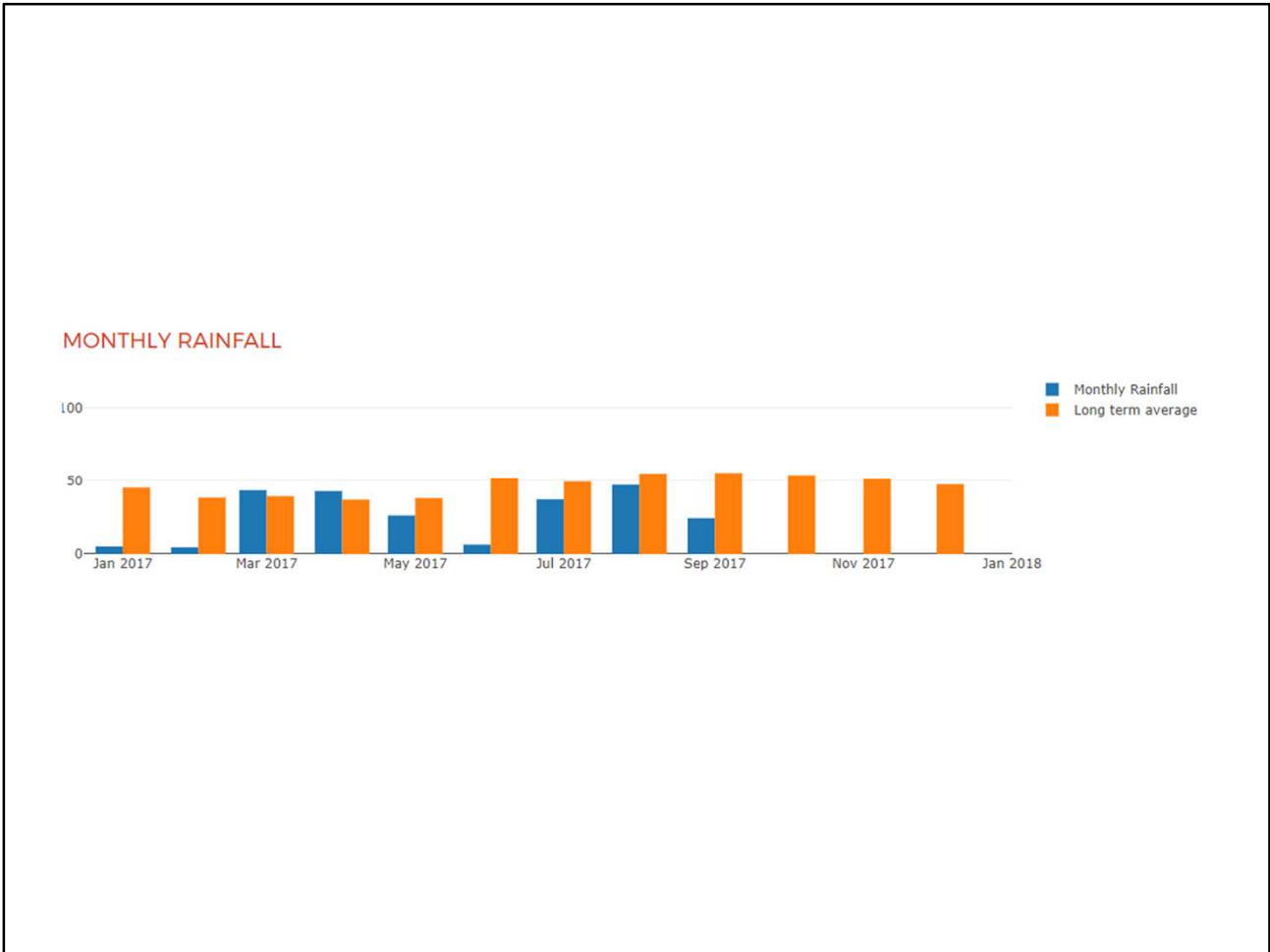
RAINFALL FOR 2017

Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.4	2				0.2		0.4				
2		0.2										
3						0.2	0.4	12.4				
4			0.8	2.6		0.2	0.2	2.6	3.2			
5		0.2	2			0.2	4.2	0.8	2.6			
6		0.2	2	0.2	0.2	3.6	0.4	1.8	1			
7		0.2		0.2			0.2	4	0.4			
8							1.8		0.4			
9	0.2	0.2		12.6		0.2						
10	0.2			3.8	0.2		0.2					
11		0.8					0.2					
12		0.8				0.2	0.2					
13			2.4		0.2		0.2		5.4			
14	0.6		0.2				0.4		0.6			
15				0.2		0.2						
16			0.6					10.2	1.8			
17			0.4		0.2		0.2	1.8				
18			0.2			0.2	1.4	9				
19					1.6		0.6					
20	3.6	0.2	0.2	0.2	17	0.2						
21	0.2	1.4			0.4	0.2						
22		4.6				0.2	0.2					
23			5.8	0.2	0.2	0.2		0.2				
24			0.2		5.4				0.6			
25			4.8	14.8					0.2			
26			0.2	7.8			1					
27			7.8		0.2			2.8				
28			0.2		0.2		2.8	0.2	9			
29			0.2			0.2						
30			9.4	0.2	0.4	0.2		0.2				
31							22.6					
Monthly Total	5.2	4.6	43.4	42.8	26.2	6.4	37.2	47.2	24.4	0	0	0
YTD	5.2	9.8	53.2	96	122.2	128.6	165.8	213	237.4	237.4	237.4	237.4

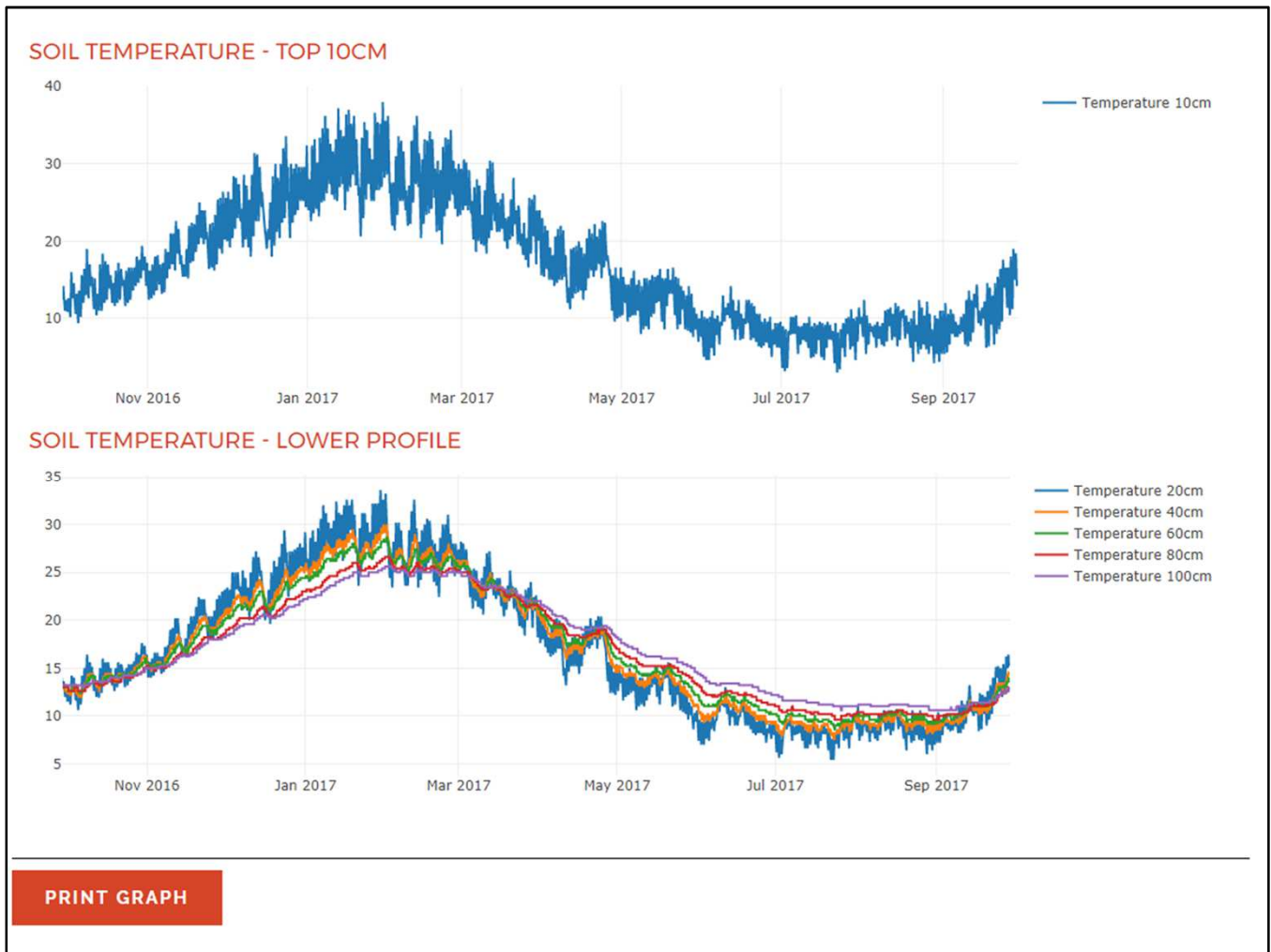
Each site also features a rainfall chart that updates automatically.

Green shaded cells highlight rainfall events that are 10-20mm. Red shading is 20mm +.

At the very bottom of the table you can see monthly totals and year to date totals.



Monthly rainfall graph – this just takes the monthly rainfall totals for the current year and graphs them against the long-term average.



Soil temperature graph – the top graph shows soil temperature at the 10cm sensor. The second graph shows soil temperature for all other depths.

- As can be seen, soil temperature fluctuates quite dramatically in response to day and night time temperature - this can be seen by the big 'zig zags'. Soil temp becomes more stable as you move down the profile, but we are still seeing quite a big change in soil temperature throughout the year down to 100cm.

The **Print Graph** button lets you print off all the graphs in a printer friendly format.

LANDSCAPE

Gently undulating, low rounded hills with slope grades typically 5-10%, areas of boulder outcrop common. Free draining site, not prone to saturation.

VEGETATION

White box (*E. albens*) and Red Gum (*E. blakeleyi*) grassy woodland, largely cleared.

SOIL

Summary morphology

Acidic, duplex soil with a strong red, moderately structured light clay subsoil, grading to highly weathered granite at >90cm. The A horizon is a light reddish brown, massive sandy loam.

Aust. soil classification

Haplic, mesotrophic red Chromosol

Factual key

Dr2.21

Soil landscape

Garland11

PROFILE MORPHOLOGY

Horizon	Depth (cm)	Texture	pH (field)
A1	0-2	Sandy loam	4.5
A2	2-35	Coarse sandy loam	5.0
B2	35-90+	Light clay	5.5



Below the interactive graph section there is additional information regarding **landscape, vegetation, soils and pasture**.

The **soil information** is quite detailed, but the main thing to take note of is how the soil changes with depth. For example, at the Gunning site we can see that this soil is a sandy loam top soil sitting on top of a light clay sub-soil. This tells us that the top 35cm is fairly limited in its capacity to store moisture and as such will tend to wet up and dry out quite quickly.