

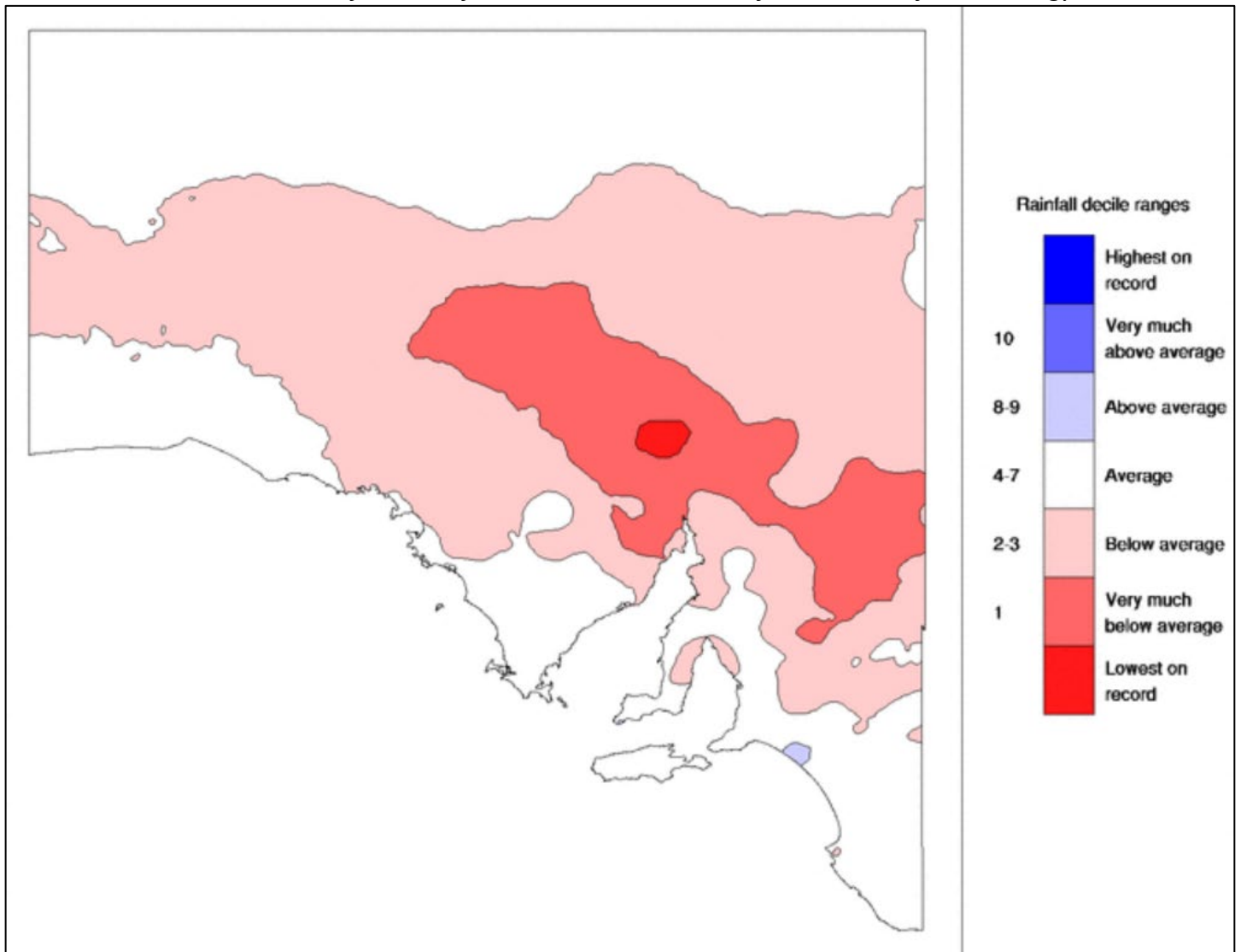
# CROP WATCH

## WINTER: JUNE - AUGUST 2022

**RAINFALL:** The region relies on having enough winter rainfall and flooding from the Bremer and Angas rivers to flush the soil profile of salts. There was excellent rain in June and August 2022. July was dry. Overall, winter rainfall was average (**FIG 1 - below**).

Soil moisture levels were good going into the growing season. Enough water was coming down the Bremer River for a small volume flood in some vineyards during August (see notes about Spring floods in the next section).

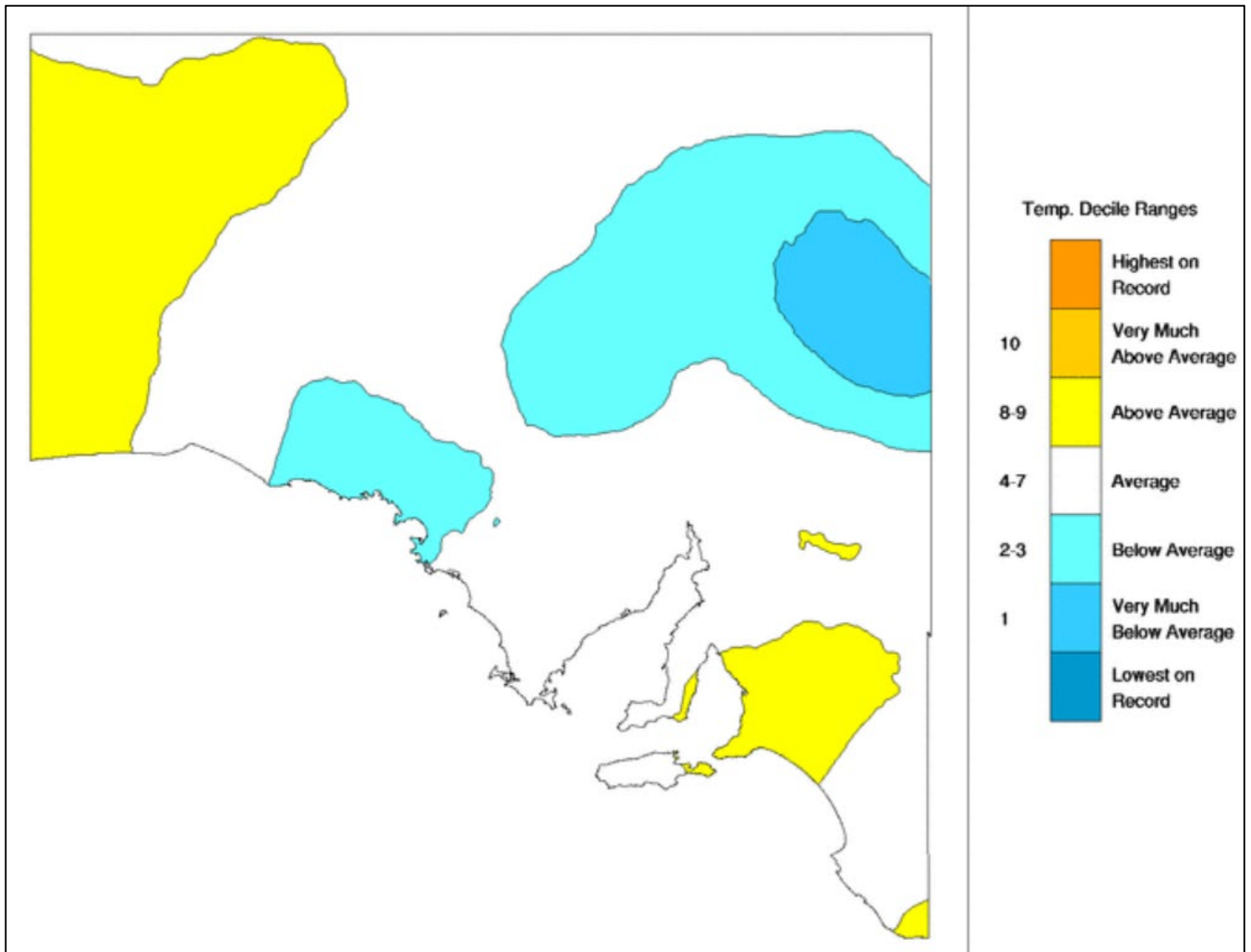
**FIG 1:** Winter Rainfall decile for South Australia – 2022 from Bureau of Meteorology.



# CROP WATCH

**TEMPERATURE:** During Winter, the maximum and minimum temperature (diurnal range) was greater than typical. Winter mean daytime temperatures were warmer than average, while nights were slightly colder than the winter average. Overall, winter temperatures were above average (**FIG 2 – below**), although this seemed to have no noticeable effect on the region’s grapevines.

**FIG 2:** Winter temperature decile for South Australia – 2022 from Bureau of Meteorology.



At the end of August there were several nights that were close to freezing, but critically, there were no frosts recorded in September. This prevented widespread frost burn and cold damage. Vintage 2021 and Vintage 2022 were both affected by frost in Spring. There was minor, if any, frost damage in Vintage 2023.

# CROP WATCH

LANGHORNE  
CREEK REGION  
WINE

**PEST & DISEASE:** It was noted that snail levels were high during late Winter.

CropWatch followed the advice from AWRI & Wine Australia to commence scouting for Grapevine Scale (and other related species) during August. CropWatch sites were checked during monitoring inspections for freshly hatched crawlers during early Spring.



Grapevine scale insects were found at bud burst in mid-September – **FIG 3** below, although it's likely that they were first hatched a few weeks before this time (mid-August), as using visual methods to detect scale crawlers is difficult.

**FIG 3:** Grapevine scale with attending ant – 5<sup>th</sup> of September, 2022. CropWatch Township site – Langhorne Creek.

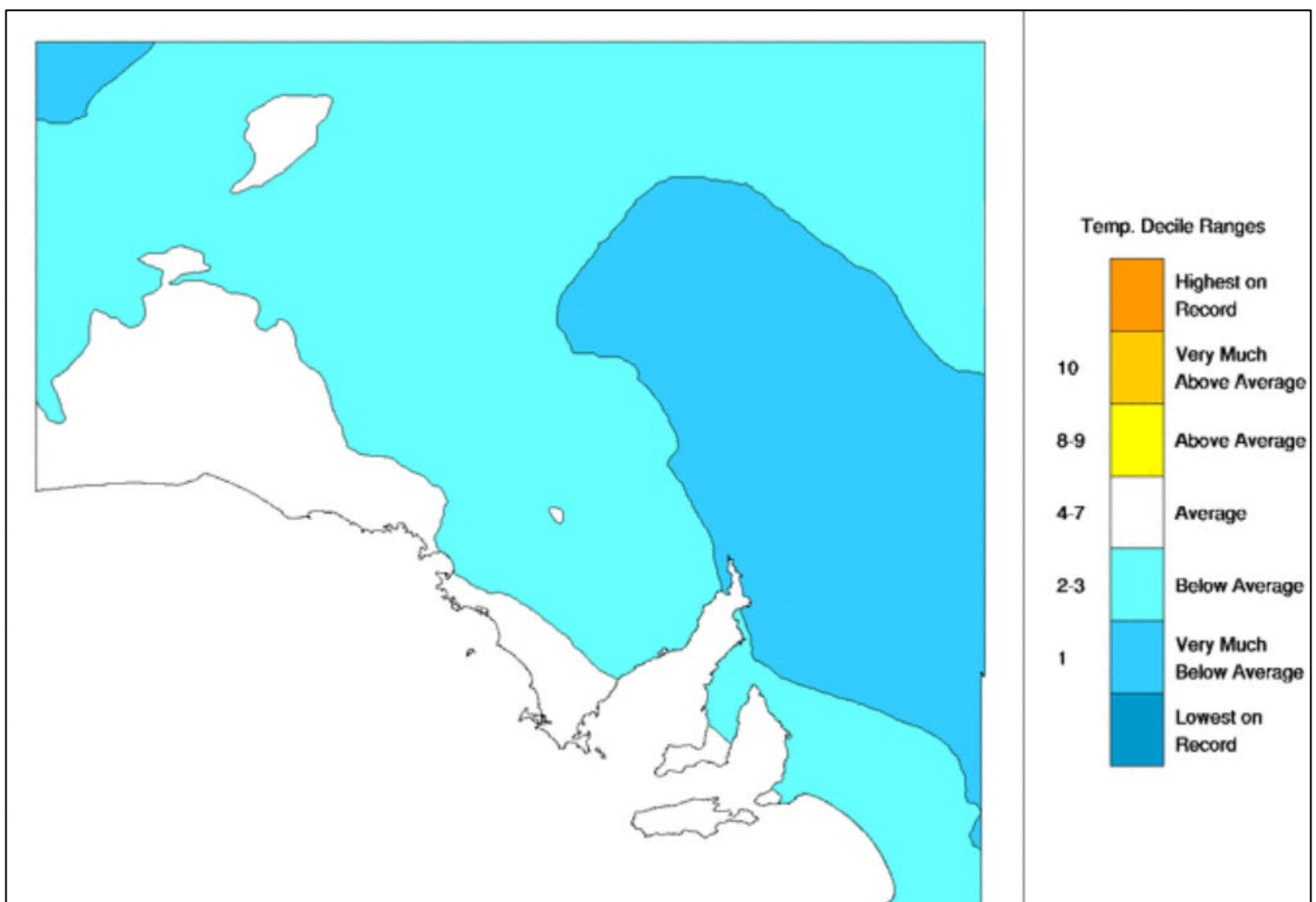
# CROP WATCH

## SPRING: SEPTEMBER – NOVEMBER 2022

The weather during Spring directly influences shoot growth, nutrient uptake and grape yield through fruit set.

**BUDBURST (E-L 4) WAS LATE:** It was generally cooler throughout September. Fortunately, vine scouting did not report damage from frost burn. The mean maximum temperature for South Australia was the lowest in September since 2016. Correspondingly, Budburst was later than Vintage 2022.

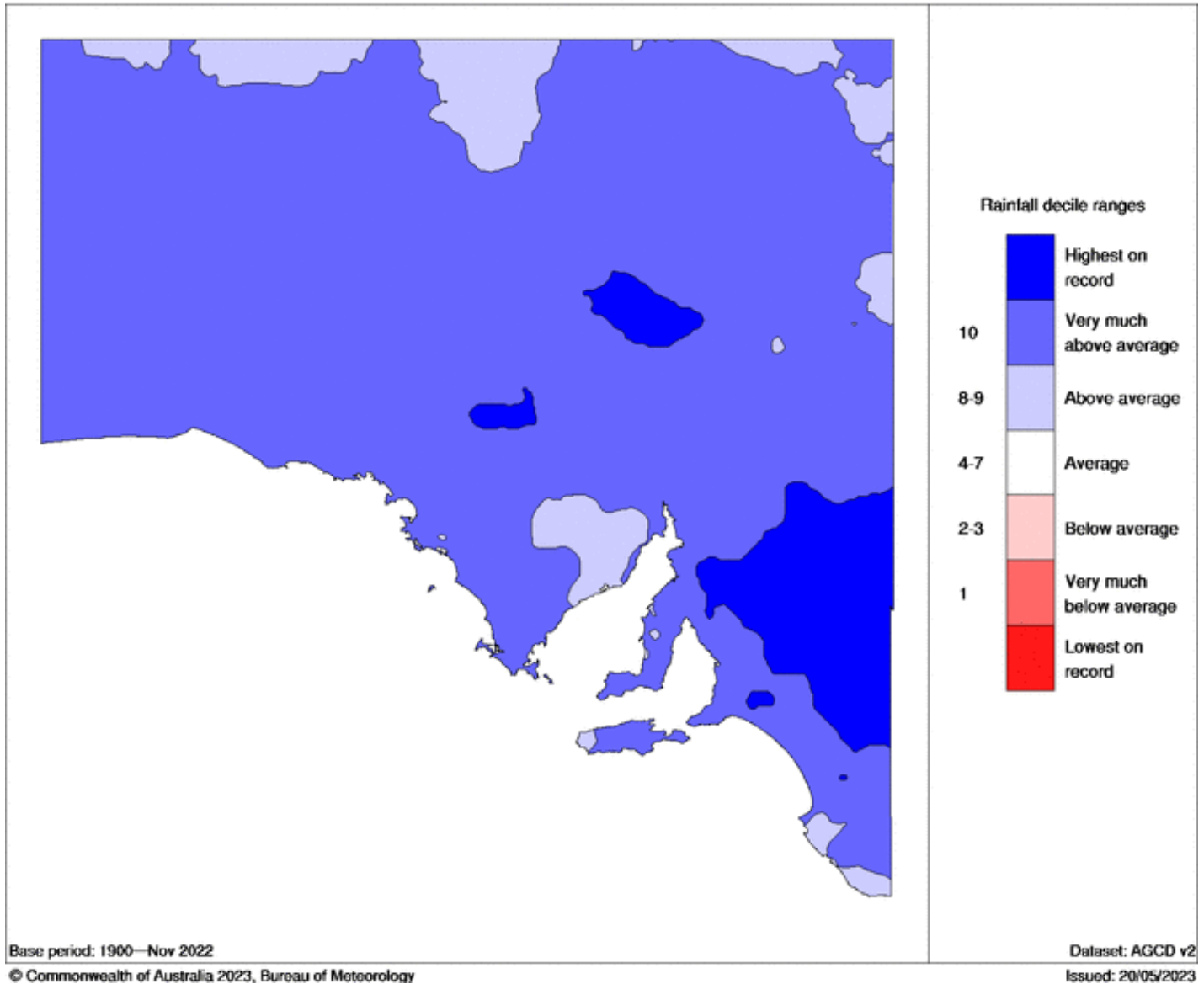
**FIG 4:** Spring temperature decile for South Australia – 2022 from Bureau of Meteorology.



**SHOOT GROWTH (E-L 5 TO 18) WAS SLOW:** From mid to late September (before flowering), the region experienced low-pressure weather systems, driving high rainfall and cold temperatures. Daytime temperatures for October were below average, which delayed shoot development and slowed shoot growth rates.

Heavy rainfall in October and November led to a “very much above-average” rain total (**FIG 5**). Correspondingly the heavy rain created high disease-pressure conditions.

**FIG 5:** South Australia rainfall deciles Spring 2022 – Bureau of Meteorology.



**LEAF BOTRYTIS & PHOMOPSIS DISEASES FOUND DURING WET SPRING WEATHER:** There were extensive *Leaf Botrytis* symptoms throughout October. Vineyard scouting reported significant infections (two to five infection sites per panel) throughout the Langhorne Creek region (**FIG 6**).

**FIG 6:** *Leaf Botrytis* infections on the edge of leaves at E-L 11 – 4 leaves separated.

# CROP WATCH

*Phomopsis* leaf and stem cankers were recorded (**FIG 7**), with some shoots breaking due to these infections during Summer.

*Phomopsis* develops during wet springs when spores are spread by rain splash. Infection appears as elongated cracks on shoots, leaf spots and bleached canes. Cool, wet weather and prolonged leaf wetness increase the appearance and severity of *Phomopsis* symptoms. Spores need moist conditions to germinate and infect the vine. Lengthy periods of cool, wet weather in Spring create the greatest potential for crop losses from *Phomopsis*.

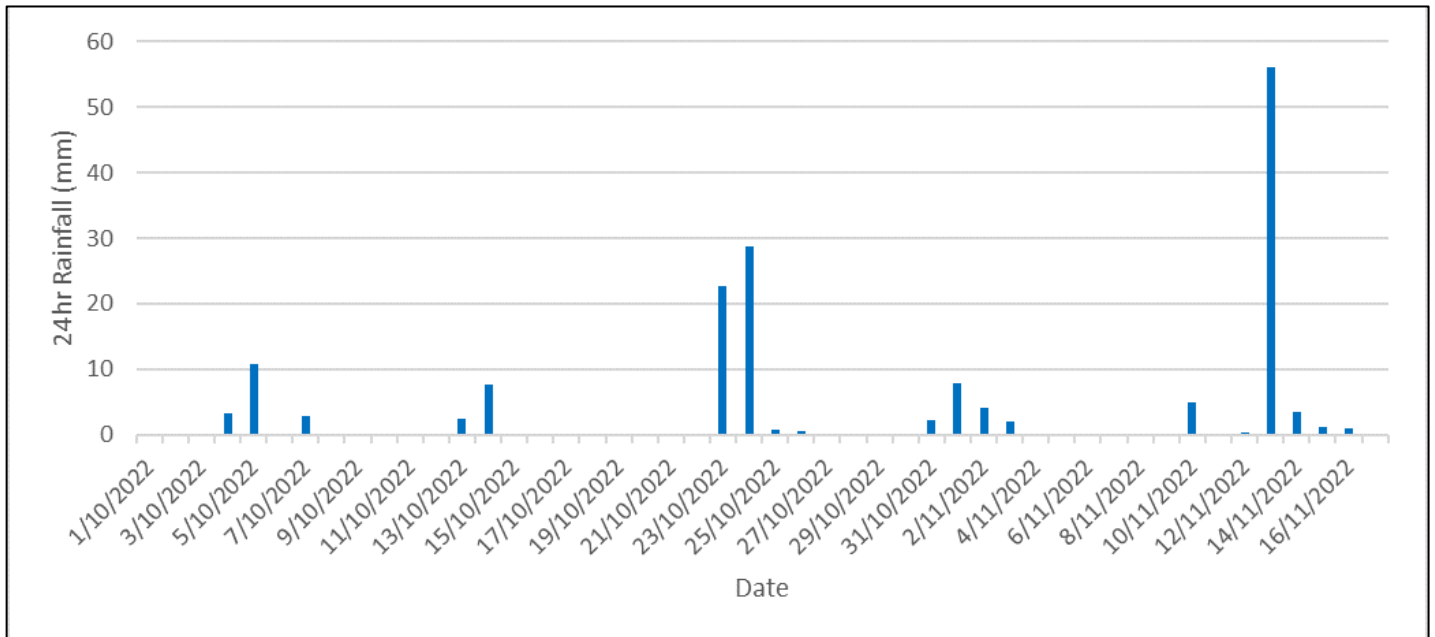
**FIG 7** (RIGHT): *Phomopsis* cane and leaf spot at E-L 15 (8 leaves separated).



# CROP WATCH

## NOVEMBER'S WEATHER CONDITIONS LED TO AN OUTBREAK OF DOWNY MILDEW:

Weather stations recorded a *Downy mildew* Primary Event (10:10:24) the 24th of October, 2022. There was an additional Primary *Downy* event on the 14th of November, 2022.



**FIG 8:** Daily rainfall totals (mm) recorded at the CropWatch Central Weather Station on Step Rd, Langhorne Creek October – 15<sup>th</sup> of November, 2022.

The 'peak' of Downy Mildew symptoms was visible in late November, after Downy had time to incubate post the rain events.

Downy was recorded, as oilspots over leaves (**FIG 9 & 10**), and as damage to bunches with observations from the CropWatch South East site, Chenin Blanc, and CropWatch Township, Malbec, losing bunches to infections (**FIG 11 & 12**).



**FIG 9 LEFT:** Downy Mildew oilspot symptoms in a white variety cv. Chardonnay – CropWatch West – 30/11/2022.



**FIG 10 RIGHT:** Downy Mildew oilspots cv. Shiraz, near CropWatch Lakeshore – 30/11/2022.

Note that these Downy infected vines had pale and sickly appearance. Downy mildew moves through the inside of vines with ‘feeding tubes’ taking nutrients from the vine itself.



**FIG 11 LEFT:** A ‘greasy’ bunch caused by a Downy Mildew infection cv. Chenin Blanc near CropWatch South East – 30/11/2022. This bunch withered and dried out to drop off as in **FIG 12** (next page).



# CROP WATCH

LANGHORNE REGION  
CREEK  
WINE



**FIG 12:** A bunch that has withered due to Downy Mildew infection cv. Malbec CropWatch Township – 30/11/2022.

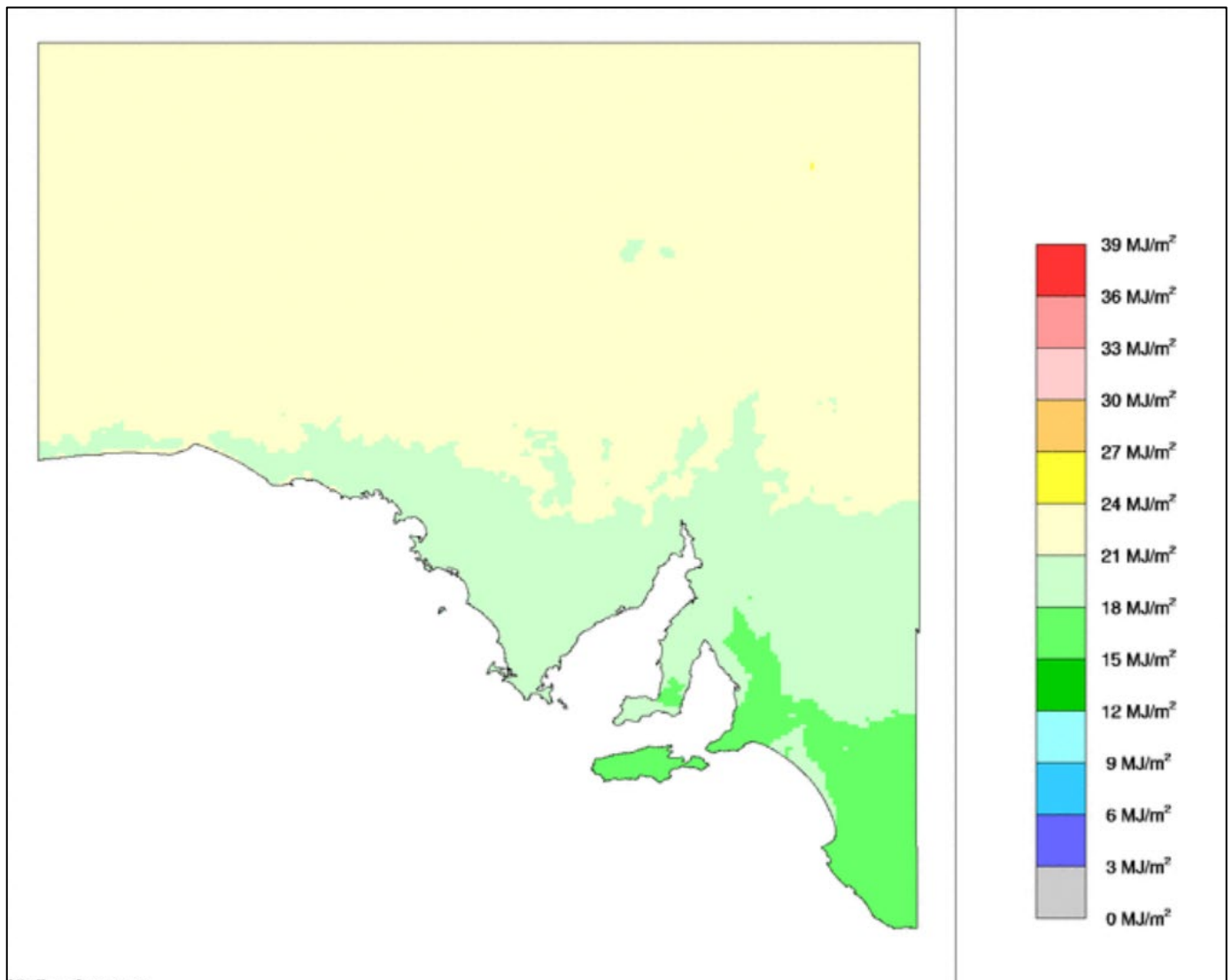
# CROP WATCH

**FLOWERING & BERRY SET (E-L 19 TO 32) WAS DELAYED:** Flowering began late in all varieties and took through to the start of December to be complete in Cabernet Sauvignon.

**CLOUDY WEATHER CONTRIBUTED TO THE SLOW SEASON:** The slow growth rates were generally down to colder daily minimum temperatures but secondary climatic factors like cloudy conditions also contributed. Clouds reduced the amount of uV light. As a result, each month this Spring had lower monthly light exposure levels available to vines (**FIG 13 – BELOW**).

**FIG 13:** Solar radiation levels for Adelaide (Kent Town)

Month	2022 Radiation uV MJm <sup>-2</sup>	Mean Radiation uV MJm <sup>-2</sup>	Percentage of the mean for 2022
September	13.1	15.4	- 15%
October	17.8	20.1	- 12%
November	21.6	24.1	- 17%



# CROP WATCH

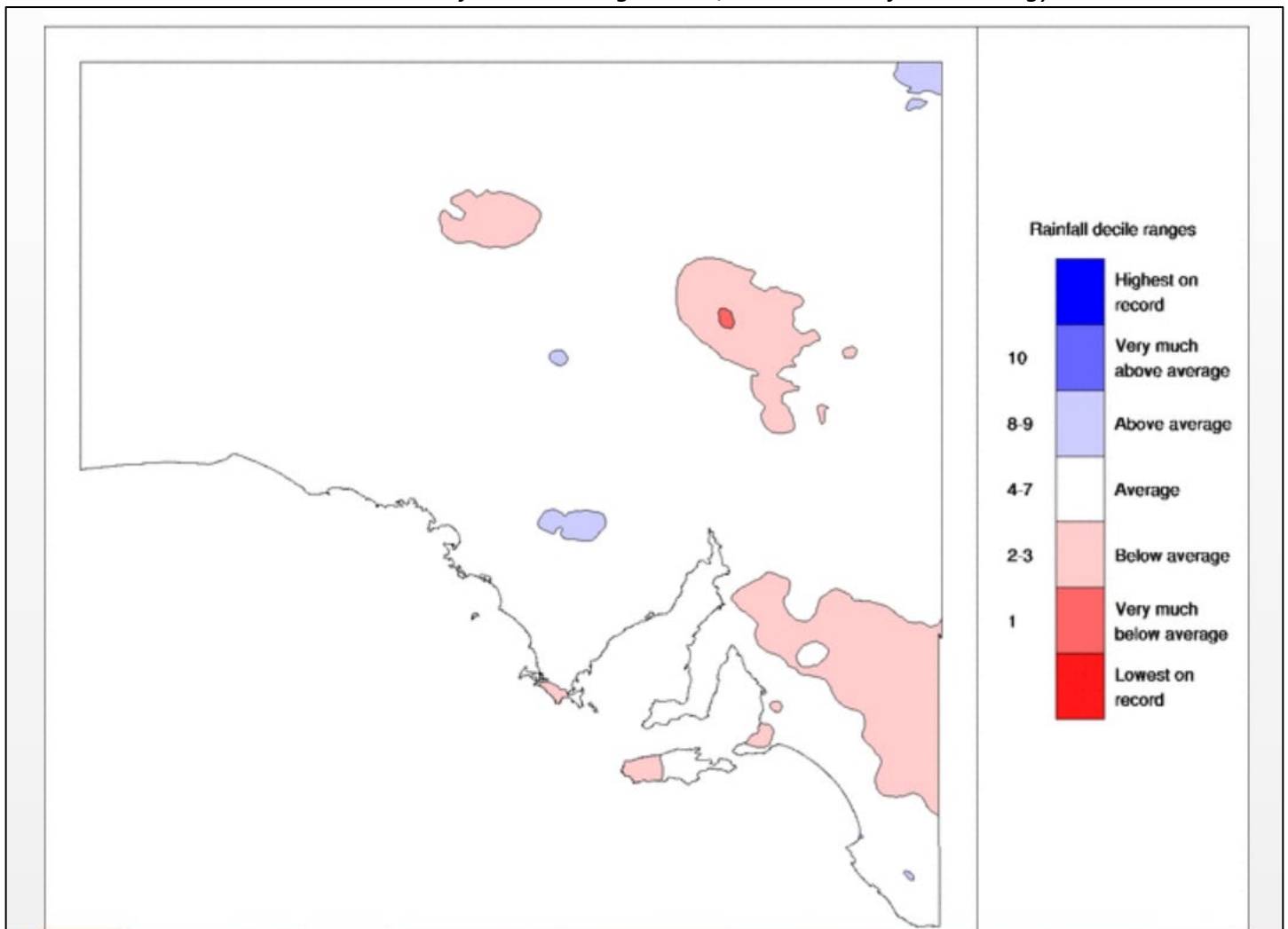
## SUMMER: DECEMBER 2022 – FEBRUARY 2023

The weather during Summer is critical to maximising wine grape quality. Balancing grapevine nutrition with shoot growth and canopy management with soil moisture & irrigation is critical through this time.

### CLIMATE STABILISES – AND “AN AVERAGE” SUMMER:

Rainfall totals in Summer were less than average across our region (and in the Adelaide Hills). For example, only 12.2 mm of rain was recorded in December, with 21.8 mm in January and 24 mm in February.

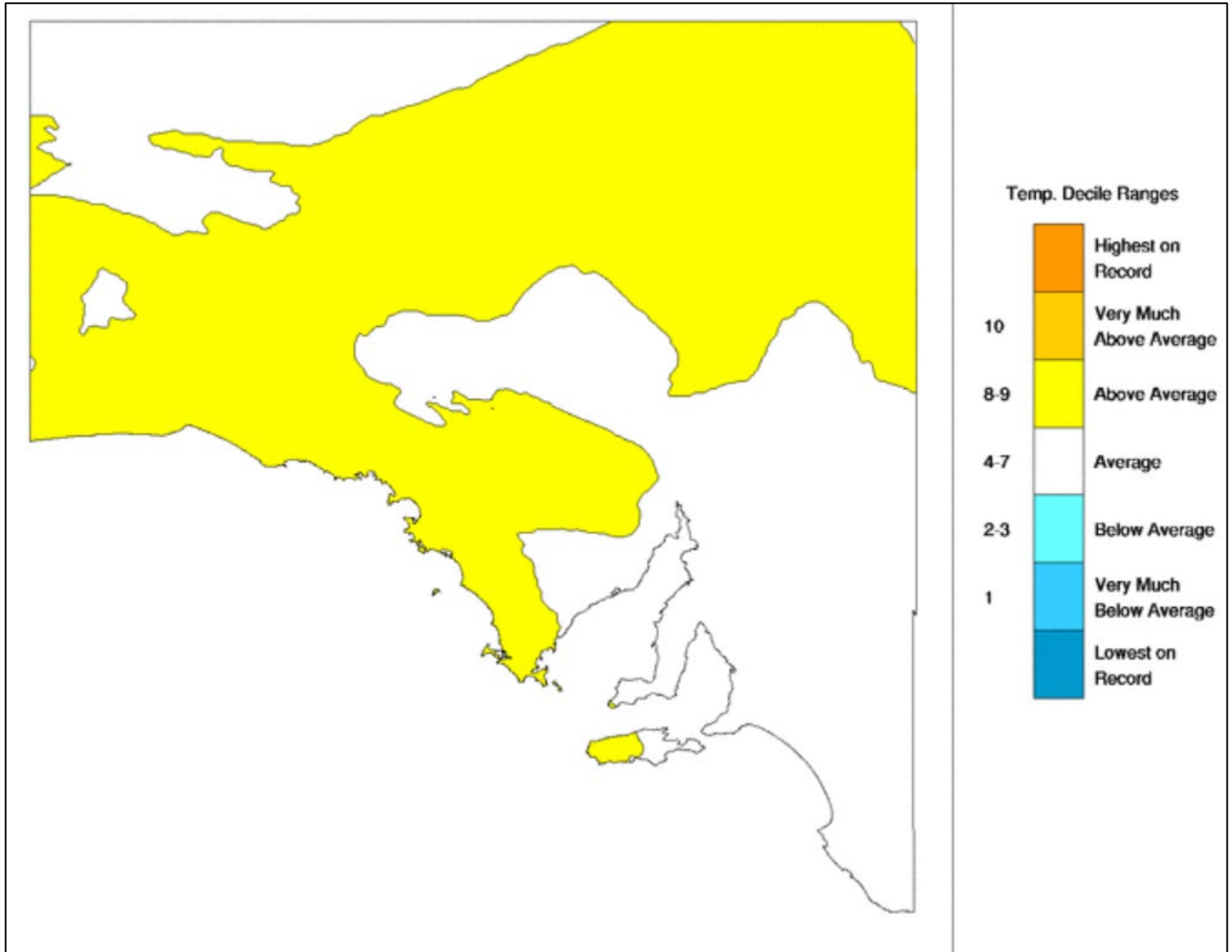
**FIG 14:** Summer Rainfall decile ranges 2022/23 – Bureau of Meteorology.



During Summer, using Strathalbyn BoM as a guide, maximum temperatures were average across our region, while minimum temperatures for the season tended to be close to average.

# CROP WATCH

**FIG 15:** SummerTemperature decile ranges 2022/23 – Bureau of Meteorology.



## DISEASE LEVELS REDUCED:

Fungal disease pressure reduced as December proved to be dry. There were no further *Downy mildew* Primary Events during December, which helped reduce the spread of *Downy mildew*. While drier conditions helped with disease control, vineyard scouting did record examples of *Powdery mildew* spreading primarily on leaves and newly set berries (FIG 16).

**FIG 16 (RIGHT):** A light infection of *Powdery mildew* on the base of a berry at E-L 32 Berries Peasize – 17/12/2022.



# CROP WATCH

## CATERPILLAR PEST LEVELS VARIED:

Light Brown Apple Moth (LBAM) caterpillar levels were low to moderate and did not reach levels greater than 2-3 caterpillars per vine in pest counts. LBAM activity appeared to reduce, with caterpillars controlled by one day over 40°C in December and then hot weather in mid-January.

The unrelated caterpillar pest, grapevine moth (GVM), was found in high numbers. Hot weather in January seemed not to affect their breeding. However, weather conditions appeared to suit the lifecycle of GVM this season. Caterpillars hatched during late February and, in many cases, produced high populations of caterpillars.

**FIG 17:** Grapevine Moth caterpillars defoliating vines at the CropWatch township site.



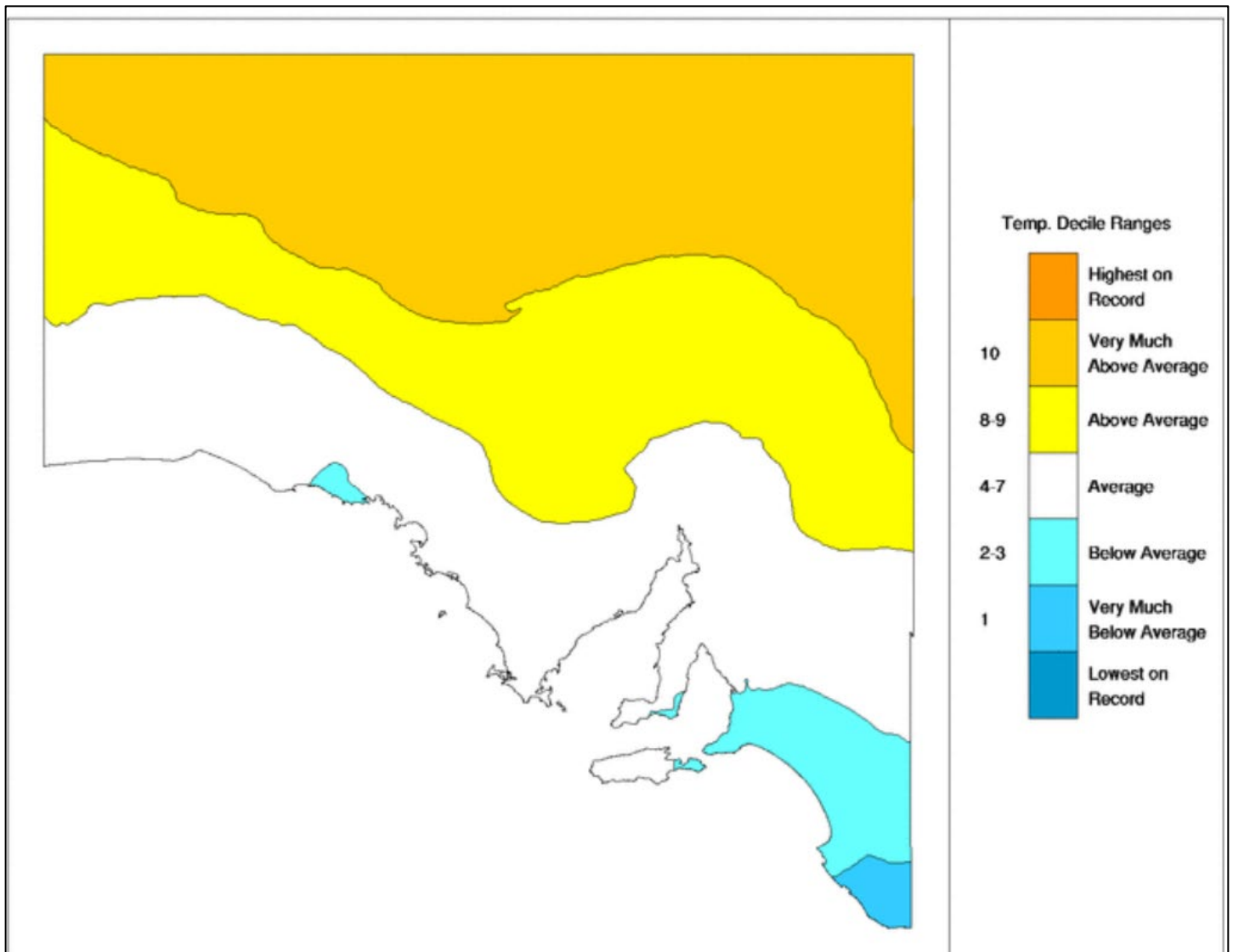
# CROP WATCH

## AUTUMN: MARCH – MAY 2023

**TEMPERATURE & RAINFALL DURING RIPENING:** During March, we experienced colder-than-average daily temperatures, which further delayed vine ripening. In general, the southern wine regions all experienced a mild March by ranging 2-3°C below the mean – **FIG 18**.

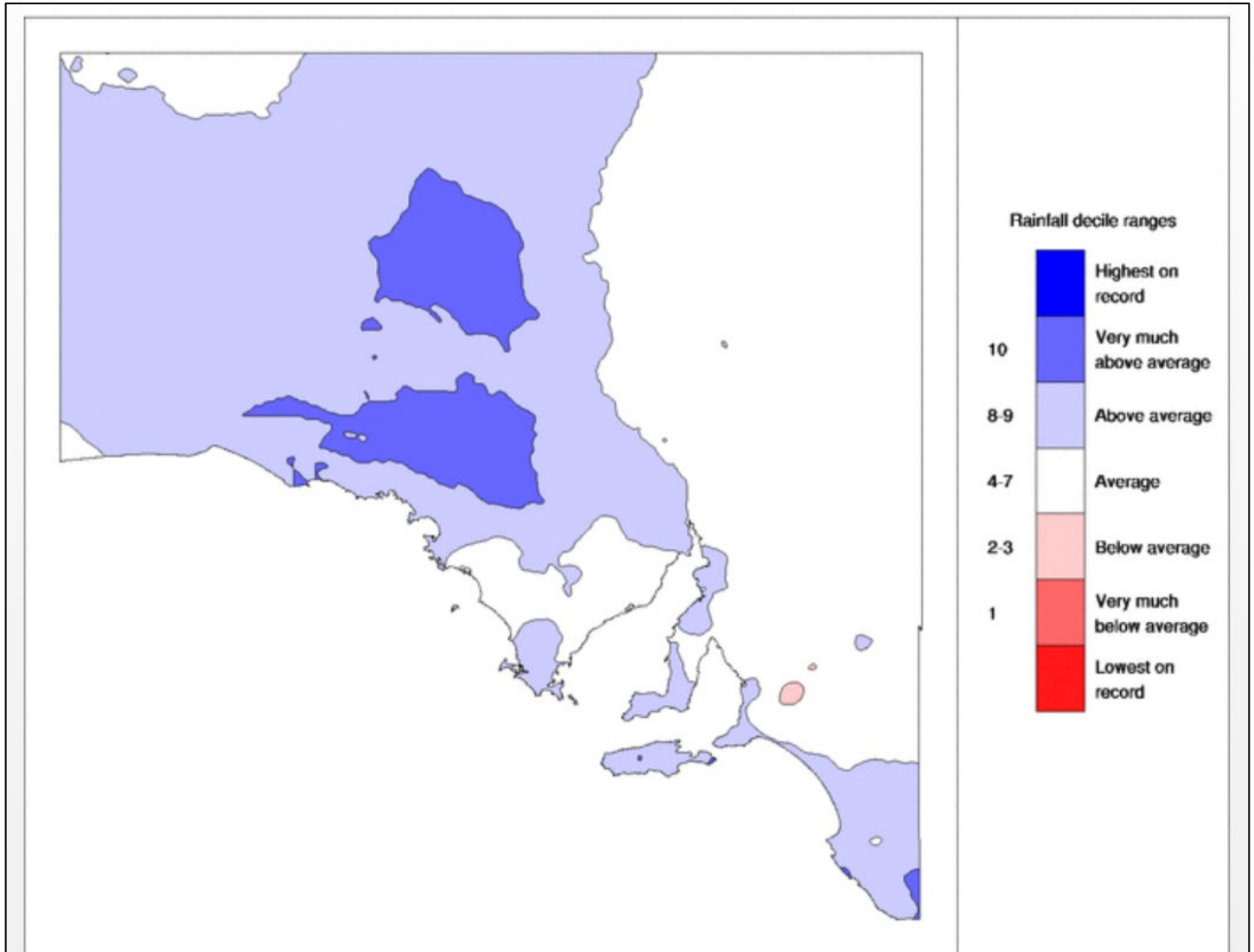
The minimum temperature for grapevine physiological activity is estimated to be 10°C, depending on variety, and several March overnight temperatures dipped below 10°C.

**FIG 18:** Temperature decile March 2023 – Bureau of Meteorology.



# CROP WATCH

**FIG 19:** Rainfall decile Autumn 2023 – Bureau of Meteorology.



## RIPENING BETWEEN RAIN PERIODS:

Rainfall in March and April was just on average – **FIG 19**.

The first wet period was from the 5<sup>th</sup> to the 8<sup>th</sup> of March, where we fortunately had less than 12mm of rain total (**FIG 20 – NEXT PAGE**). Then there was a gap in follow-up rain until the 26<sup>th</sup> of March, when 9.8mm fell.

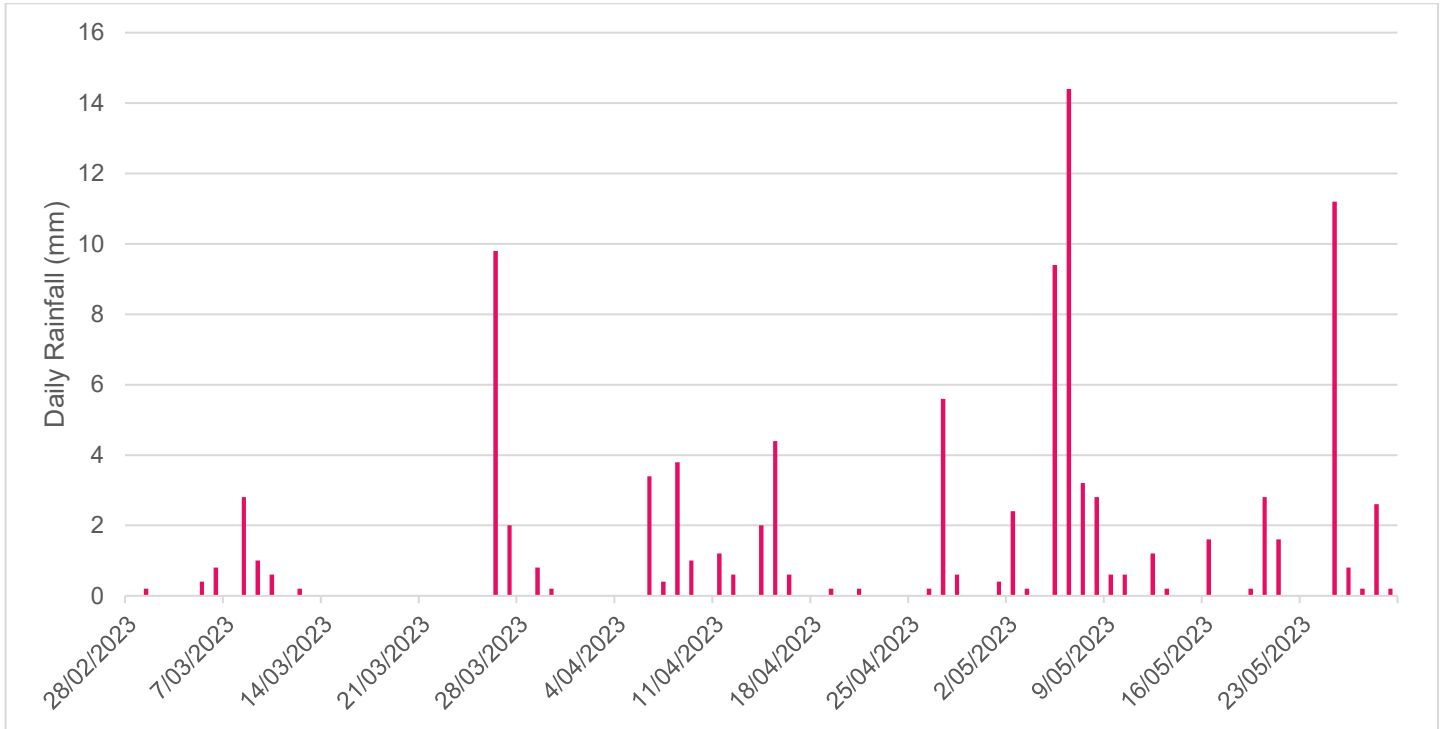
In between the rain events, some vineyards were able to be harvested. Most white varieties were harvested in this gap.

In early April, there were several days with drizzling rain before 4.4 mm fell on the 15<sup>th</sup> of April.

# CROP WATCH

LANGHORNE  
CREEK REGION  
WINE

**FIG 20:** Autumn 2023 Daily Rainfall CropWatch Langhorne Creek Central.



**FIG 21 ABOVE:** Bunch *Botrytis* cv. Shiraz – 4/5/2023.

**BOTRYTIS FOLLOWS RAIN:** Disease pressures from bunch rot were impacting to different degrees during April, but up to this late stage, there were still some suitable quality parcels of fruit. However, after each rain event, the *Botrytis* bunch rot levels increased.

Bunch rot levels did not reach those seen during Vintage 2011, but there were significant infections, especially in grapes that remained unpicked after rain the May rain events. Fruit after this point had berry skins breaking down and was compromised.

There were attempts to machine sort fruit during picking to remove *Botrytis*-infected fruit, but generally, the rain at the beginning of May was the last practical point to ripen fruit. The rain event signalled the natural end of the season.