

1. New Long-lead and Now-time indices used in tandem in 2025 to predict winter growing season rain for South-west, South-east and North-east (north of central NSW) Australia, by Dr David Stephens, Agrometeorology Australia.

Month	South-west cropping	South-east cropping	North-east cropping
Dec.2024	positive lead-index	negative lead-index	+rain short-term
Feb. 2025	positive winter rain	negative winter rain	positive winter rain
Mar. 2025	Positive winter rain	negative winter rain	Positive winter rain
Apr. 2025	Ave. to above ave.	Below average	Ave. to above Ave.
May 2025	Average winter rain	-winter rain	Average Qld, below ave. northern NSW

Table 1 Summary of 2025 winter season climate outlooks for South-west Australian wheat belt, South-east Australian wheat belt (south and west of central NSW) and north- east wheat belt (north of central NSW) leading into the May-October crop season.

a)

b)

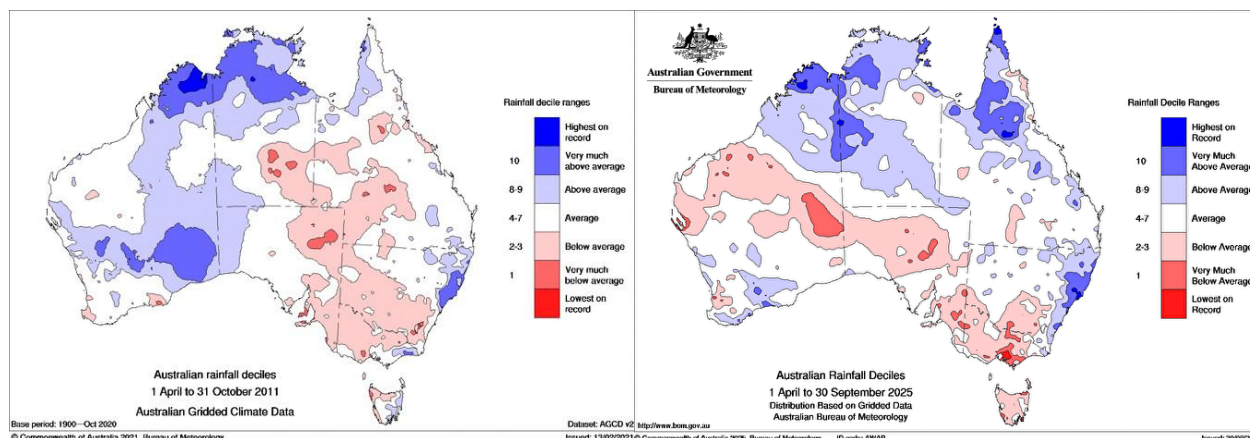


Figure 1 a) April to October rainfall deciles for Australia in 2011 (First and only analogue for 2025 cropping season issued on the 4th April 2025), b) actual April-September rainfall 2025 (*1 month shorter). Proper validation once October rain is all in.

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2 Long-lead winter forecasts using analogue years based on predicting ENSO State and the IOD, 2016-2024; New lead and now-time indices 2025.

Year	Long-lead Forecasts from Previous Year	February Forecasts	Actual May-October rain	WA Yield t/ha	EA Yield t/ha
2016	Above average (1/9/15)	Above Average	Average to below (WA) and major frost; above average (EA)	2.06	2.95
2017	Below (15/9/16)	Ave. to below	Average to below (WA, EA)	1.90	1.93
2018	Ave. (10/11/17)	Average	Average to below (WA), below (EA)	2.28	1.26
2019	Below (14/9/18)	Below Average	Below average	1.41	1.51
2020	Ave. to above (17/9/19)	Ave. to above	Average to below (WA), Average to above (EA)	2.0	2.93
2021	Ave. to above (14/10/20)	Ave. to above	Average to above (WA, EA) except in south-east South Australia.	2.61	2.89
2022	Ave. to Below (18/10/21)	Below Average	Average to above (WA) above (EA)	3.05	3.14
2023	Average 18/11/22	WA: Ave/below EA: Ave/above	Western Australia – below average Eastern Australia – Average to below	1.65	2.36
2024	Ave. to Above (23/11/2023)	Above east, Ave to above WA	Wet in north, Ave to below south (WA) SE Au below ; NE Au Ave. to above	2.69	2.57
New lead-index and now time rain indices operating in tandem (developed in 2024)					
2025	Lead-index: positive sw WA, negative se Aus (24/12/2024)	Positive sw WA Positive ne Au negative se Au	Average to above Western Australia Average to above north-east Australia Below South-east Australia.	2.70	2.10 SE 2.78 NE

Table 1: Summary of forecasts issued by Dr David Stephens for the previous decade. Forecasts begin in the year before and are updated in early February. Rainfall and wheat yields are summarized for Western Australia (WA) and eastern Australia (EA) prior to 2025. In 2025 forecasts were issued for 3 regions for the first time (se WA – southwest Western Australia, se Au – southeastern Australia, ne Au – northeastern Australian cropping region north of central NSW). Ave. = Average. Note: the timing of rainfall also has a big influence on yields.

Figure 2 (below): Maps summarizing long-lead forecasts issued in February of the winter growing season by Dr David Stephens: a) In Department of Agriculture and Food Western Australia (DAFWA) 2001-2007, 2) Australian Export Grains Innovation Centre (AEGIC) 2016; Agrometeorology Australia 2017-2025. In some years an updated forecast between March-May is added which more strongly related to what followed.

Figure 3 (below): as for Figure 2, except for November to April summer forecasts issued in early November.

Predicted

Actual

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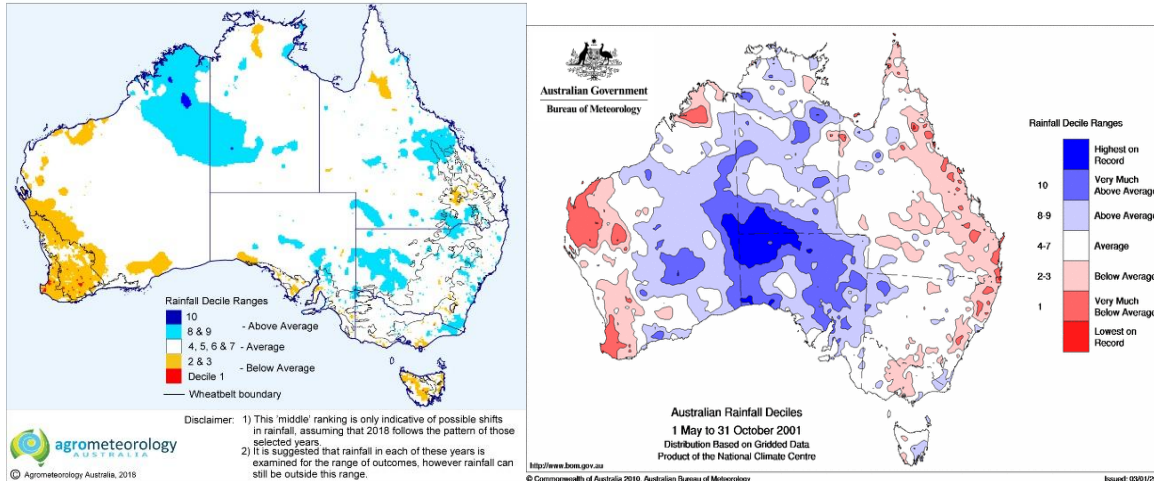
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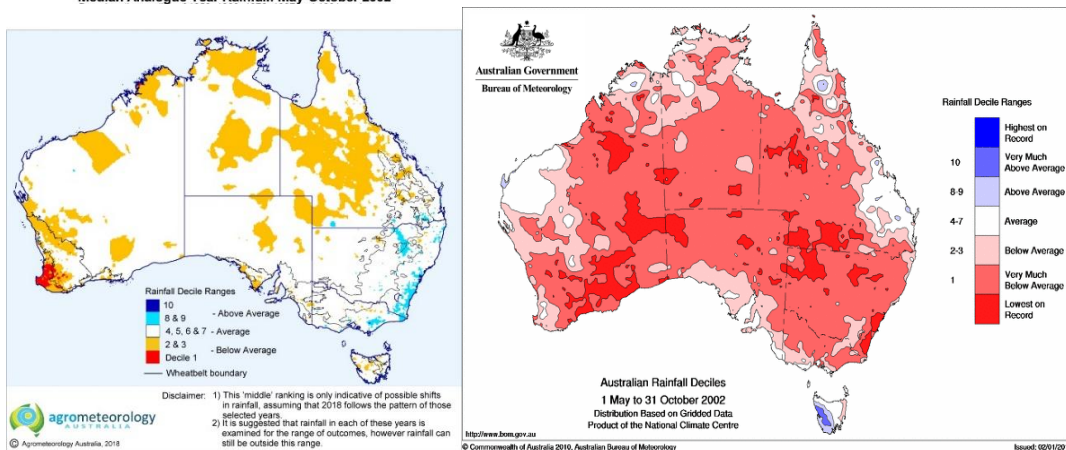
a) 2001 February Forecast: May-October “Below average for Western Australia” (Published Department of Agriculture, WA. 2001 State Grower Crop Updates).

Median Analogue Year Rainfall: May-October 2001



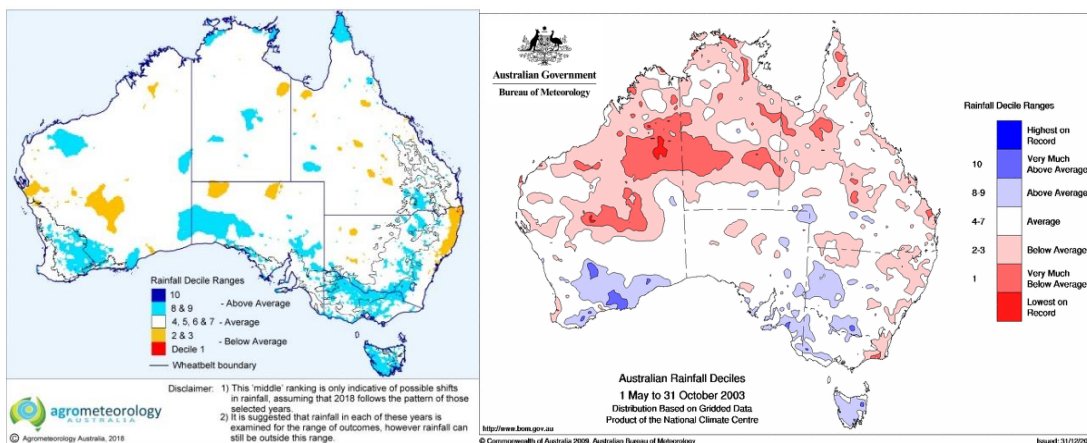
b) 2002 February Forecast: May-October “Average to well below” (Department of Agric. WA. 2002 Crop Updates). A drought warning was issued for Australia in the June 2002 Profarmer Magazine.

Median Analogue Year Rainfall: May-October 2002



c) 2003 February Forecast: May-October (Depart. Agric. WA, 2003) “Average to above average”

Median Analogue Year Rainfall: May-October 2003



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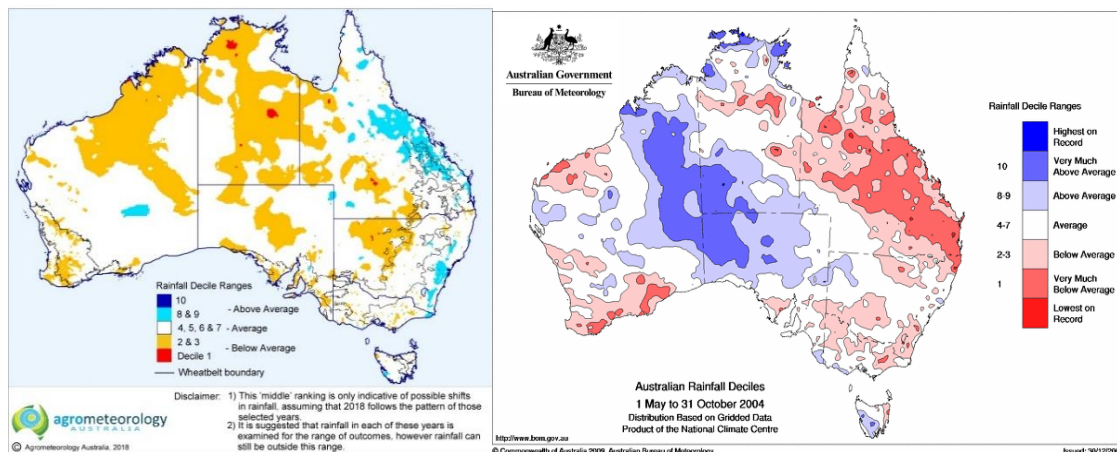
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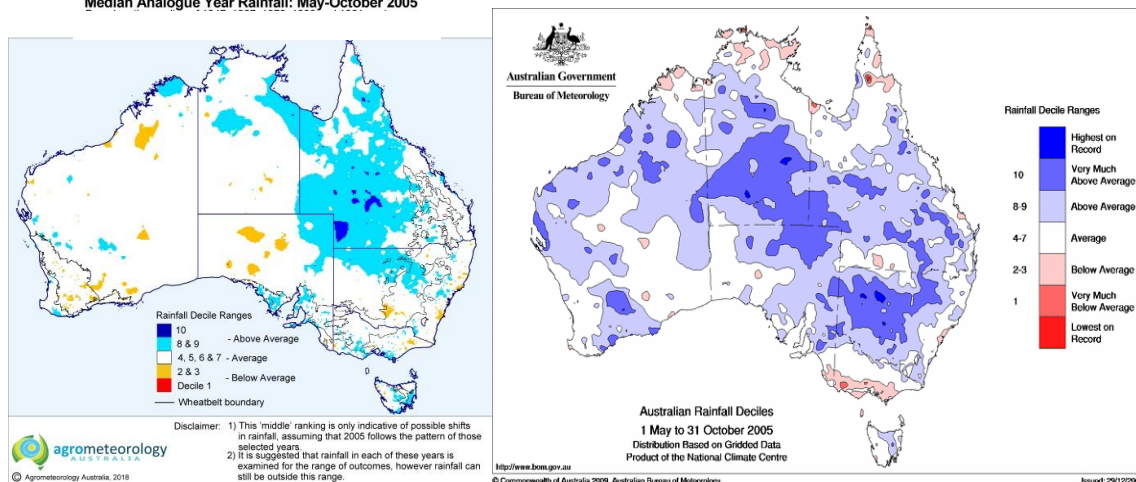
d) 2004 February Forecast: May-October (Department of Agriculture, WA. 2004 State Agribusiness Crop Update) “Average to below average”

Median Analogue Year Rainfall: May-October 2004



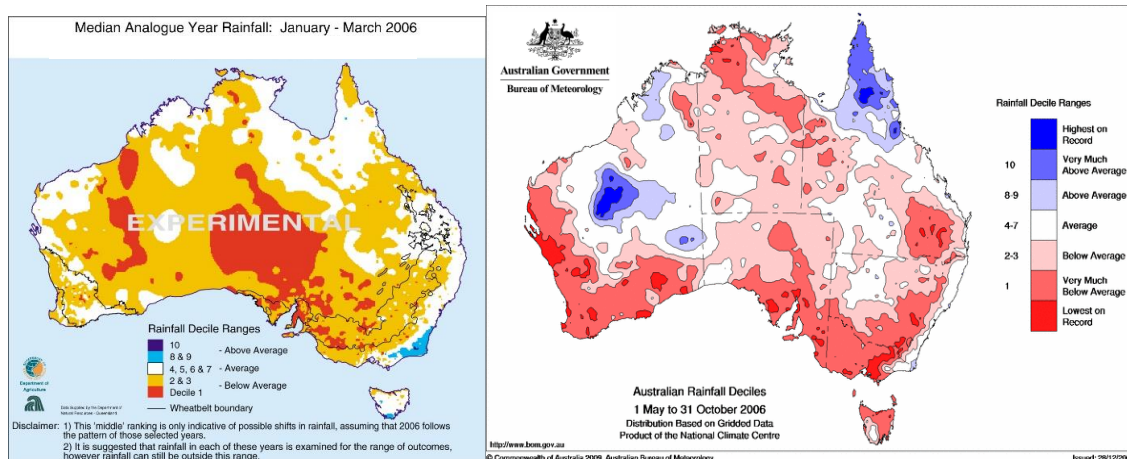
e) 2005 February Forecast: May-October (Department of Agriculture, Western Australia. 2005 State Agribusiness Crop Update) “Average to above average”

Median Analogue Year Rainfall: May-October 2005



f) 2006 February Forecast: May-October (Department of Agriculture, WA. Agribusiness Crop Updates 2006) “Below to well below”

Median Analogue Year Rainfall: January - March 2006



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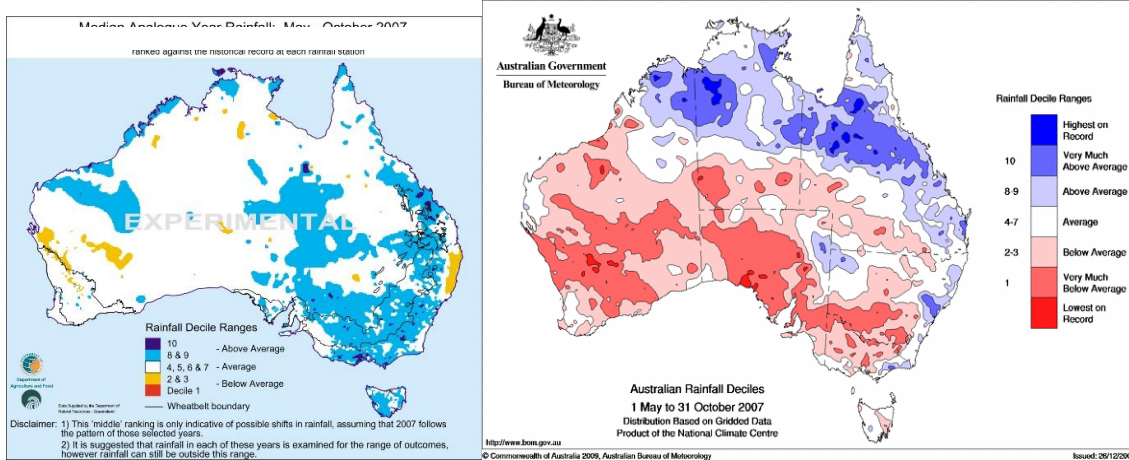
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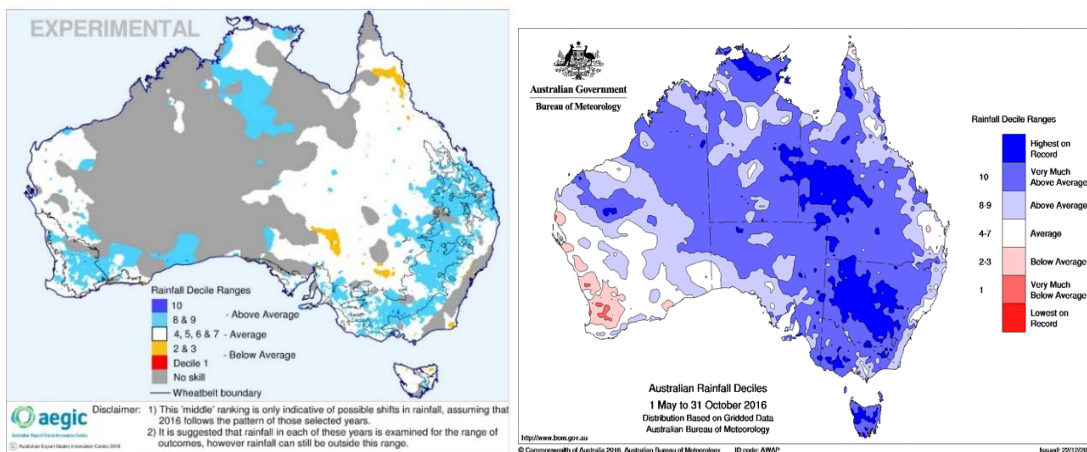
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g) 2007 February Forecast (Department of Agriculture and Food, WA. Agribusiness Crop Updates 2007): May-October “Average to above average”



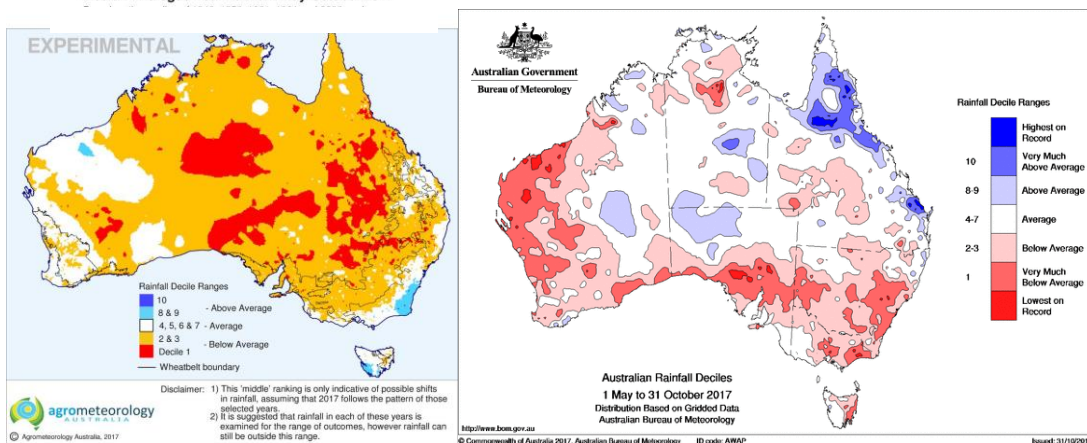
h) 2016 February Forecast (AEGIC): May-October (Crop Prospects Report April 17th 2016) “Average to above average”. Note: excellent seeding rains in March/April set up a bumper crop in WA.

Median Analogue Year Rainfall: May-October 2016



i) 2017 February Forecast (Agromet Australia): May-October “Below Average”

Median Analogue Year Rainfall: May-October 2017



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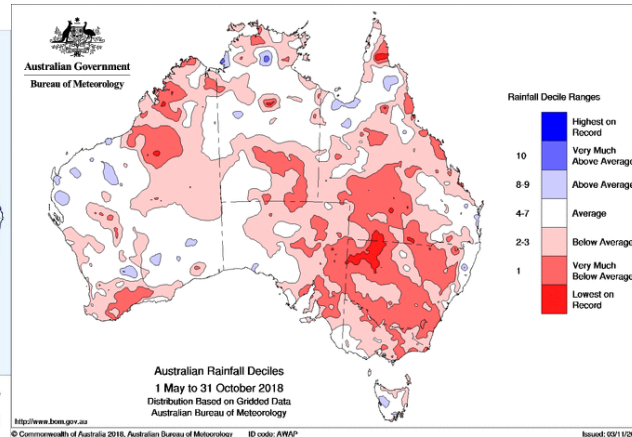
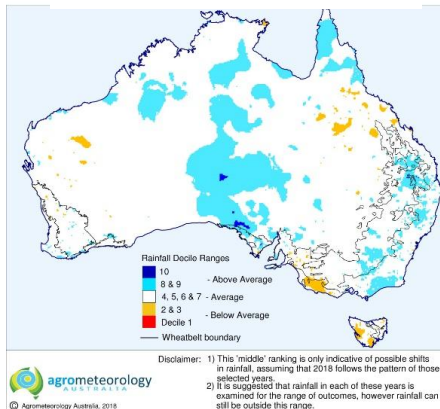
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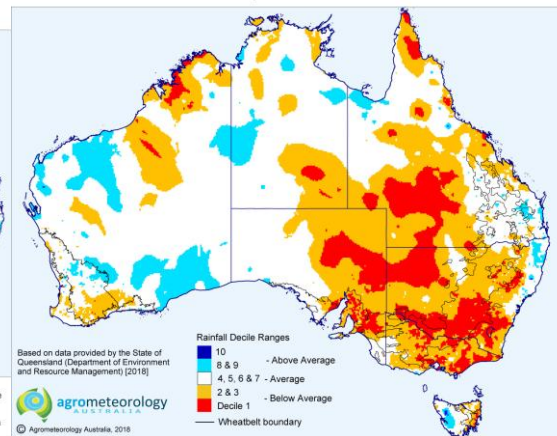
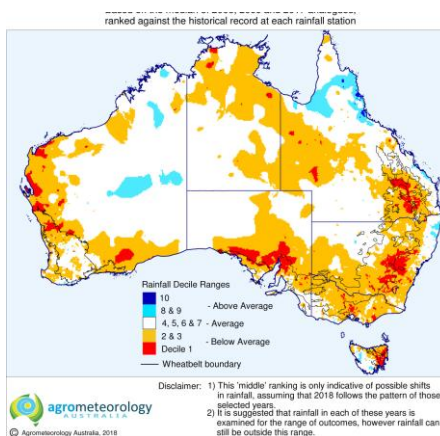
j) 2018 February Forecast (Agromet Aust): May-October: "Average". (Note: much drier forecast was issued in seeding on the 15th May 2018 which is shown below)

Median Analogue Year Rainfall: May- October 2018



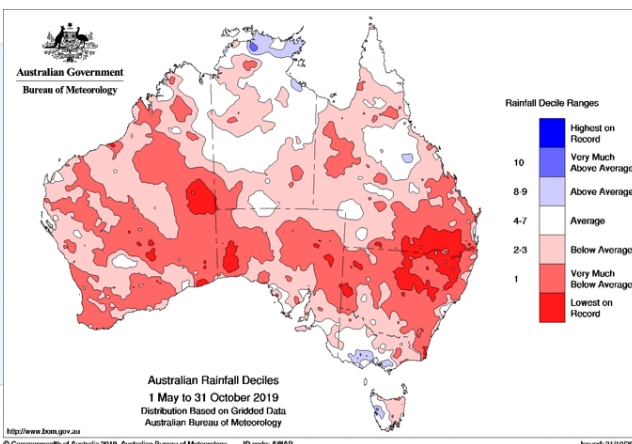
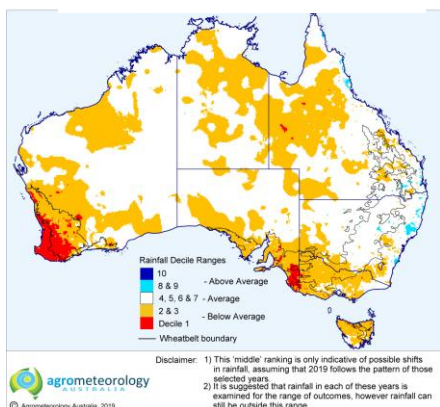
k) 2018 (B) mid-May Forecast (Agromet): June-October: "Below to well below average"

Australia Rainfall Decile Rankings
For the period June-October 2018



l) 2019 (A) February Forecast (Agromet): May-October: "Below average". (Note: less confidence stated in average in NSW and Qld). A drier forecast was issued 4th April 2019, see below)

Median Analogue Year Rainfall: May-October 2019



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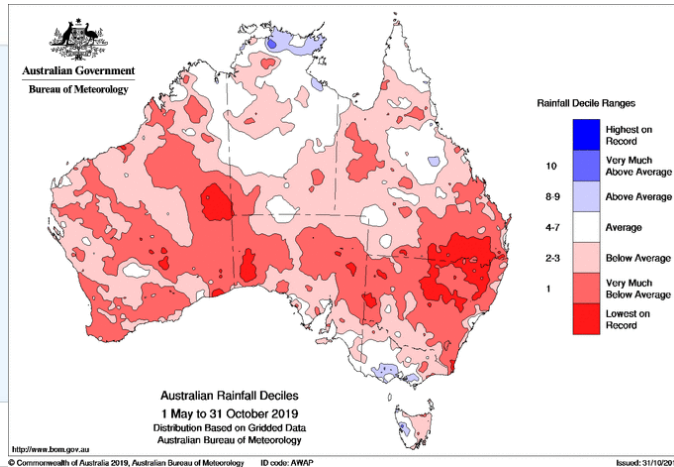
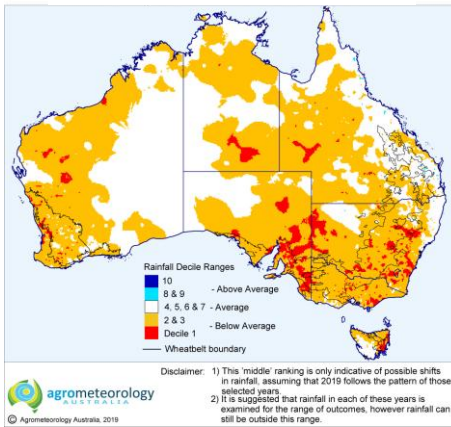
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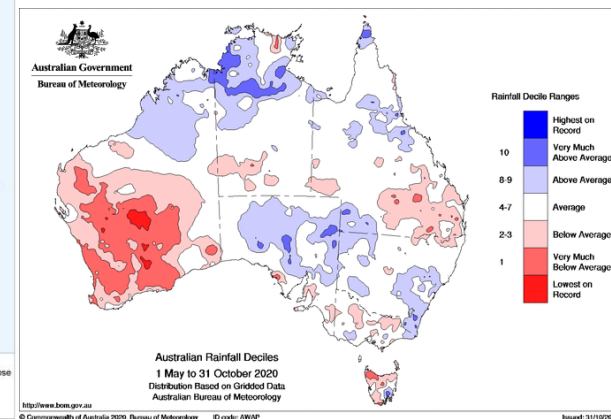
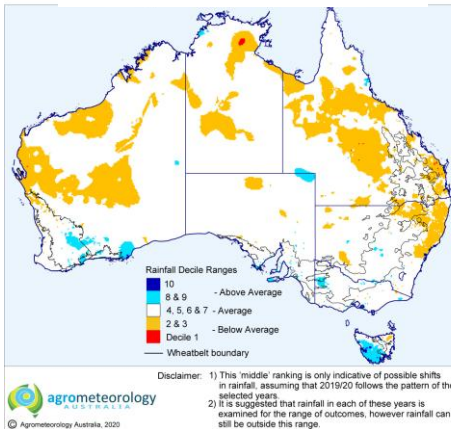
m) 2019 (B) early April Forecast: May-October (Agromet): “Below to well below average”

Median Analogue Year Rainfall: May-October 2019



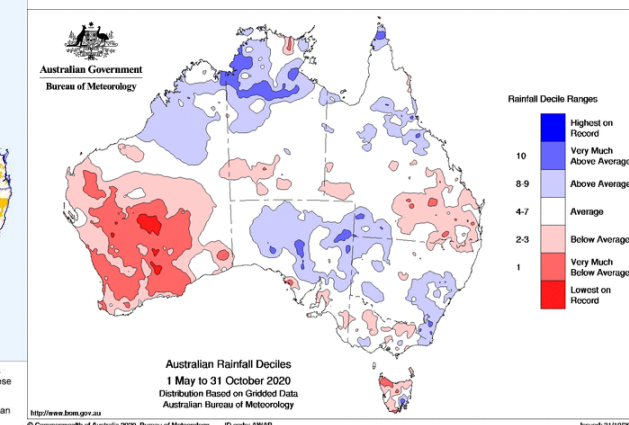
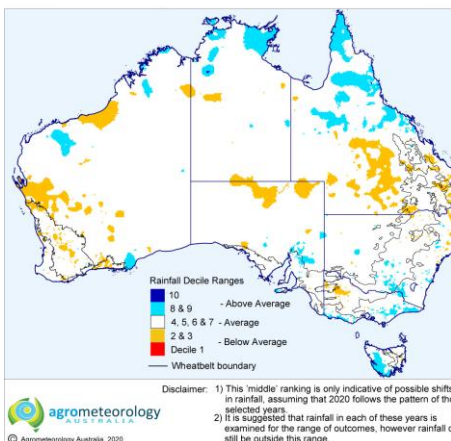
n) 2020 (A) February Forecast (Agromet): May-October: “Average to above average, below in northern WA and Queensland. A slightly drier forecast was issued in early May for Western Australia and slightly more positive for New South Wales (see below)”

Median Analogue Year Rainfall: May-October 2020



o) 2020 (B) early May (Agromet): May-October: “Average to below average in Western Australia and average to above in southern New South Wales and northern wheatbelt of South Australia”

Median Analogue Year Rainfall: May-October 2020



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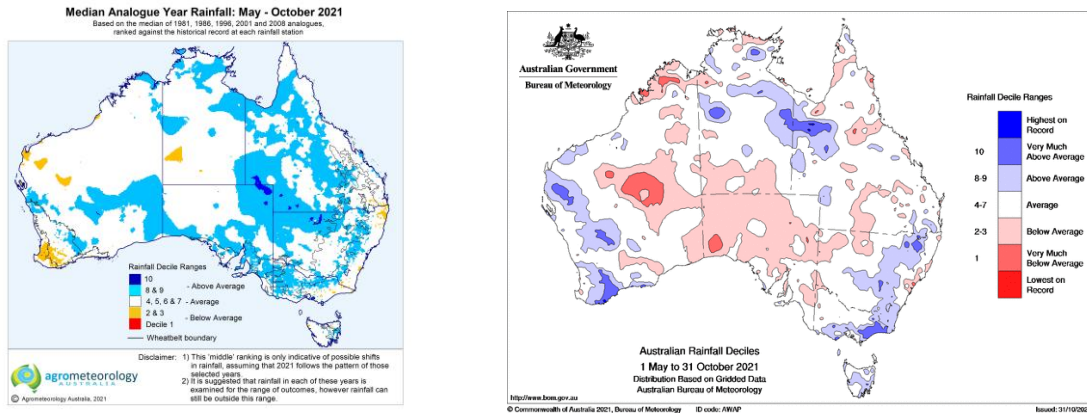
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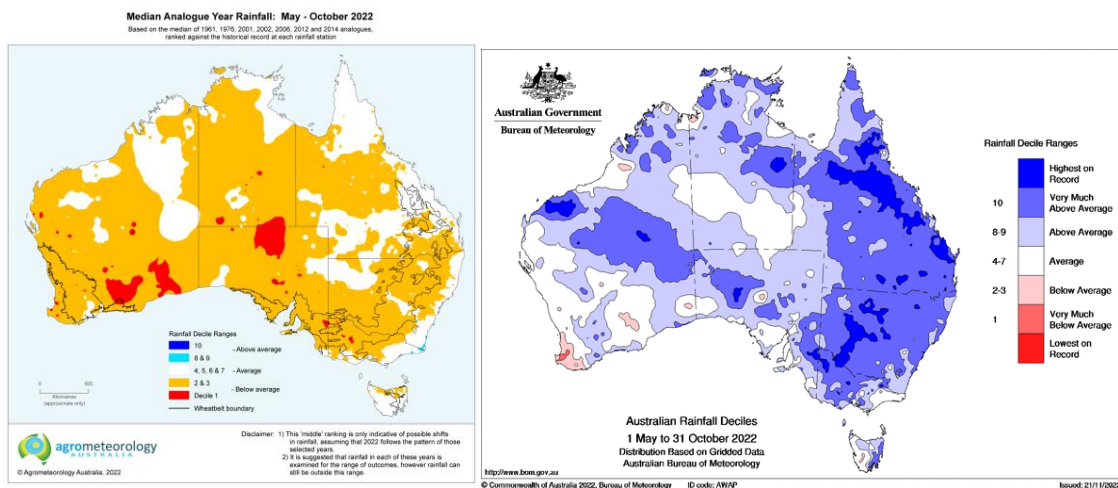
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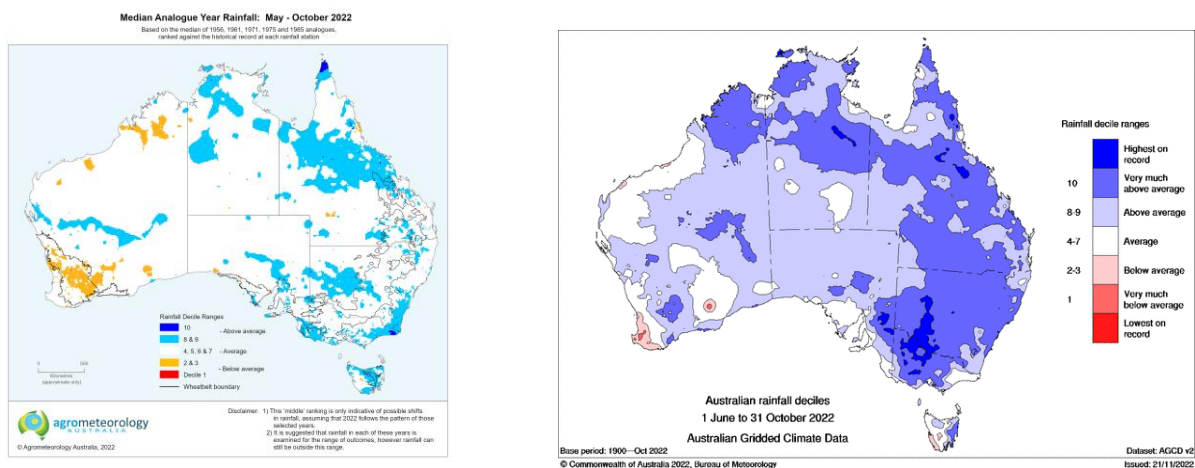
p) 2021 (A) February Forecast (Agromet): May-October: “Average to above average, except far south-west of Western Australia”.



q) 2022 (A) February Forecast (Agromet): May-October: “below Average”.



r) 2022 (B) early May (Agromet): May-October: “Average to below average in Western Australia and average to above in eastern Australia”



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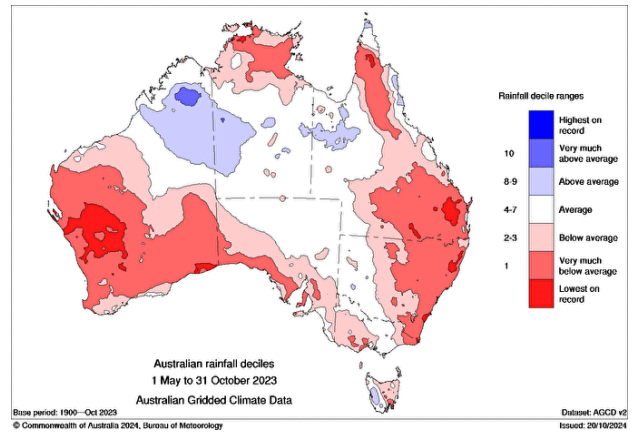
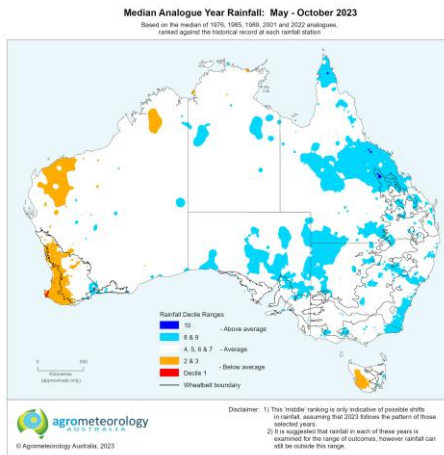
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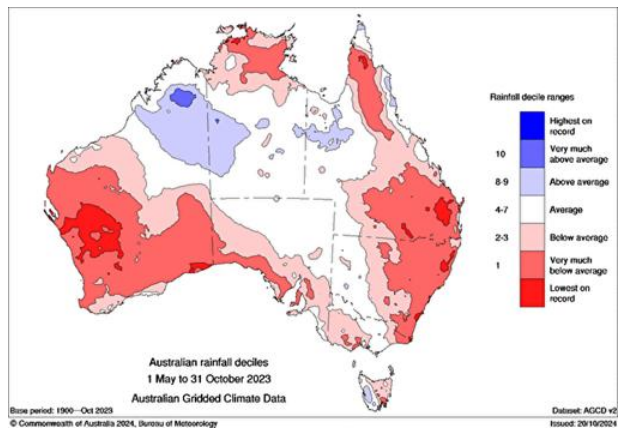
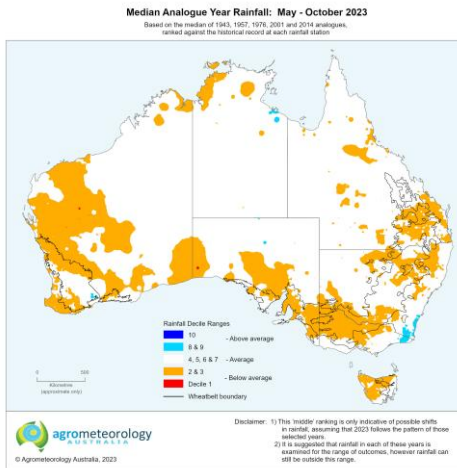
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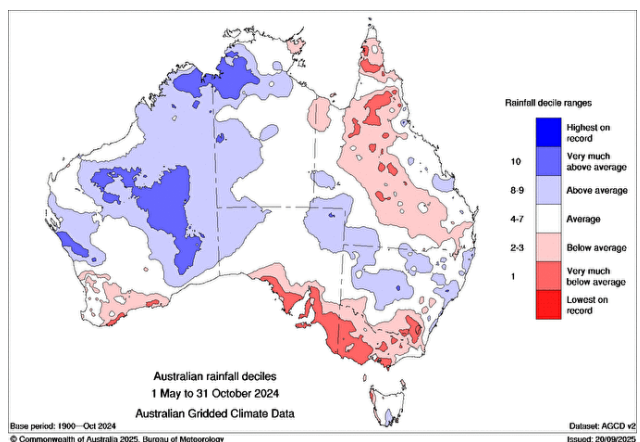
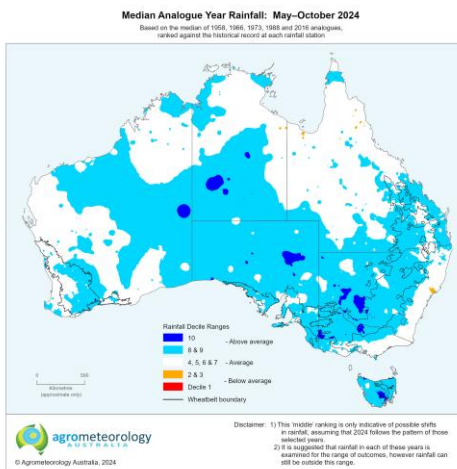
s) 2023 (A) February Forecast (Agromet): May-October: “Ave-dry in West, Ave-wet in east”.



t) 2023 (B) early March (Agromet): May-October: “Average to below average”



u) 2024 February Forecast (Agromet): May-October: “Average to above Average”.



Note: maps in Fig. 1a-e have been reproduced from the analogue years issued previously.

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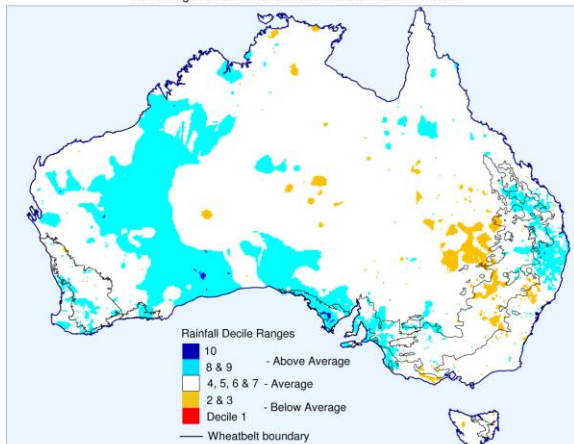
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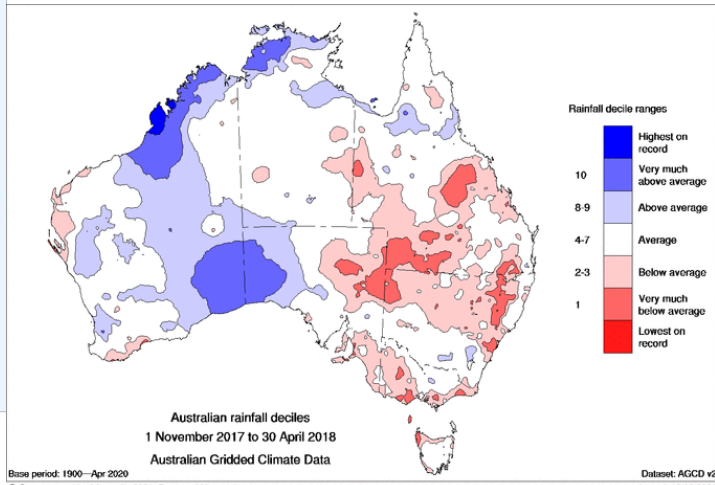
2. Summer Season (November to April) forecasts issued by Agrometeorology Australia early In November.

a) 2017 November Forecast: “Average to above average, drier central/north NSW”

Median Analogue Year Rainfall: November 2017- April 2018
Based on the median of 1946/47, 1959/60, 1961/62, 1980/81 and 2005/06 analogues, ranked against the historical record at each rainfall station

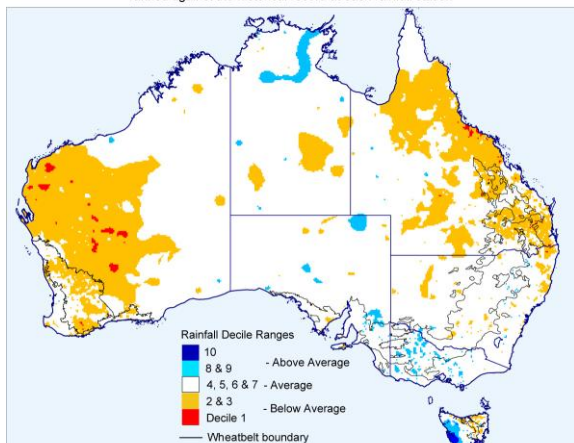


Disclaimer: 1) This 'middle' ranking is only indicative of possible shifts in rainfall, assuming that 2017 follows the pattern of those selected years.
2) It is suggested that rainfall in each of these years is examined for the range of outcomes, however rainfall can still be outside this range.

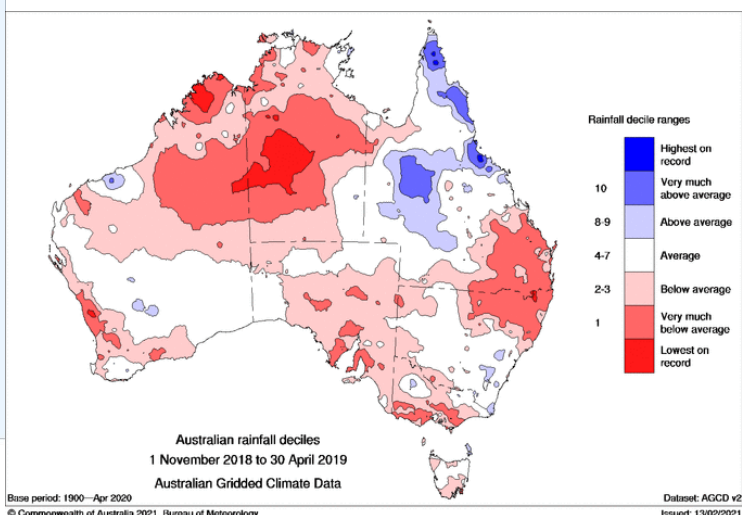


b) 2018 November Forecast: “Average to below average, some wetter in south-east”

Median Analogue Year Rainfall: November 2018-April 2019
Based on the median of 1968/69, 1976/77, 1986/87, 2002/03 and 2004/05 analogues, ranked against the historical record at each rainfall station



Disclaimer: 1) This 'middle' ranking is only indicative of possible shifts in rainfall, assuming that 2018 follows the pattern of those selected years.
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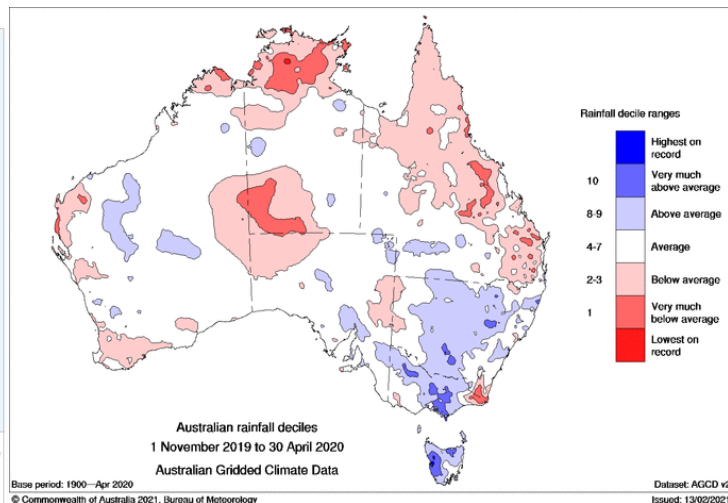
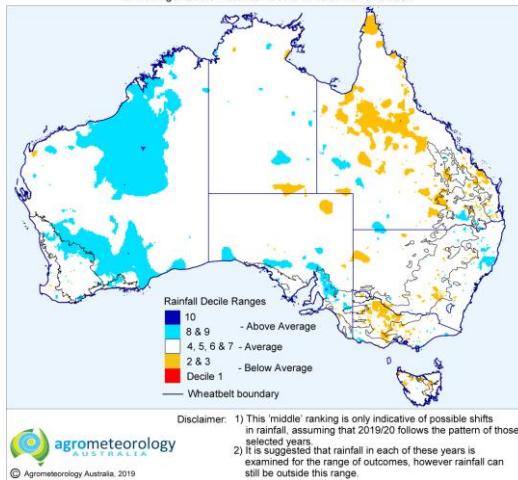
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c) 2019 November Forecast: “lean to wetter in west, drier in northeast and Victoria”

Median Analogue Year Rainfall: November 2019-April 2020

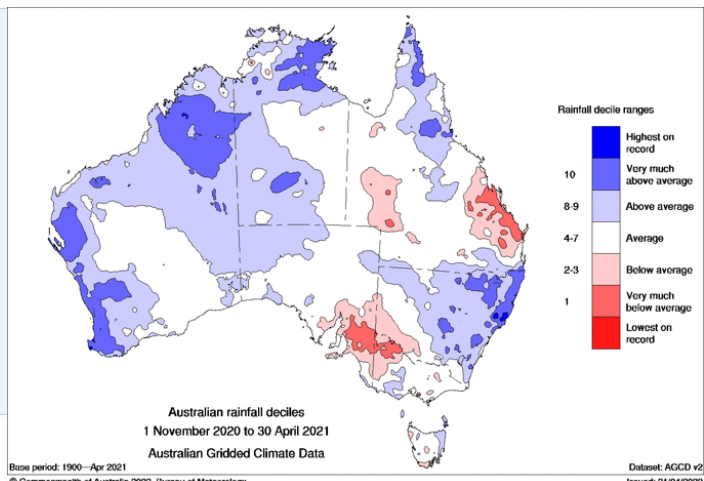
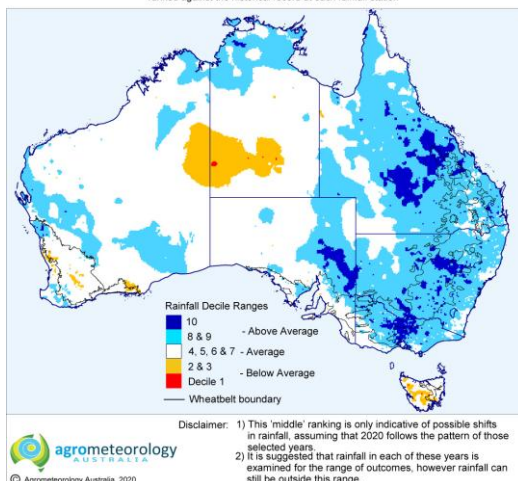
Based on the median of 1940/41, 1977/78, 1994/95, 2006/07 and 2012/13 analogues, ranked against the historical record at each rainfall station



d) 2020 November Forecast: “Above average over much of the country”

Median Analogue Year Rainfall: November 2020 - April 2021

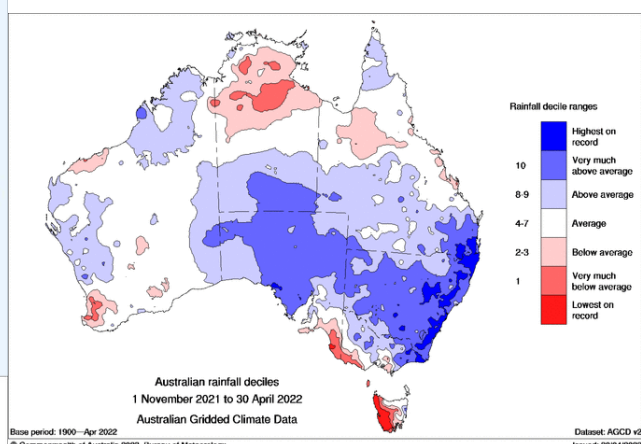
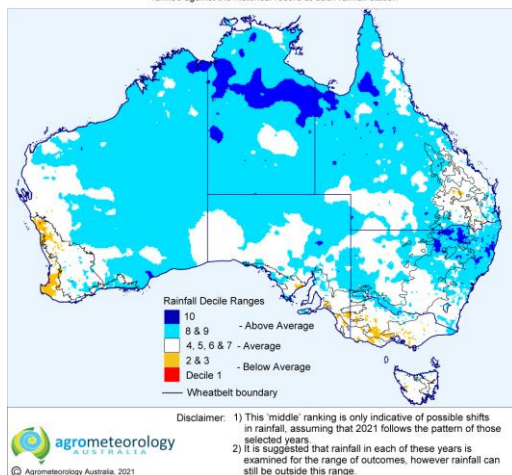
Based on the median of 1949/50, 1954/55, 1995/96, 2007/08 and 2010/11 analogues, ranked against the historical record at each rainfall station



e) 2021 November Forecast: “Above average over much of the country”

Median Analogue Year Rainfall: November 2021 - April 2022

Based on the median of 1975/76, 2000/01, 2008/09, 2011/12 and 2013/14 analogues, ranked against the historical record at each rainfall station



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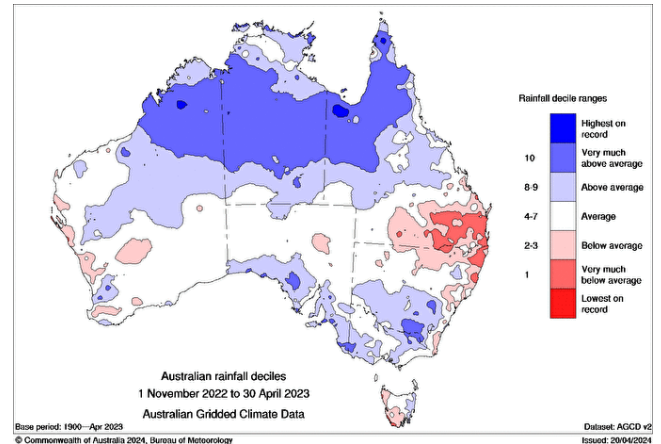
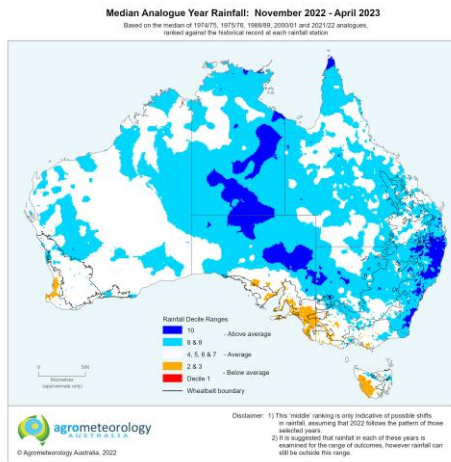
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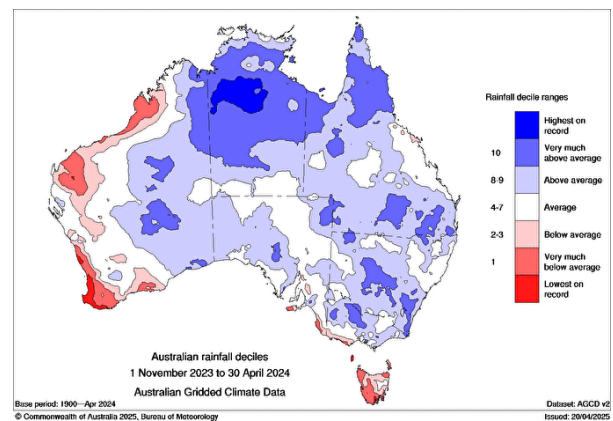
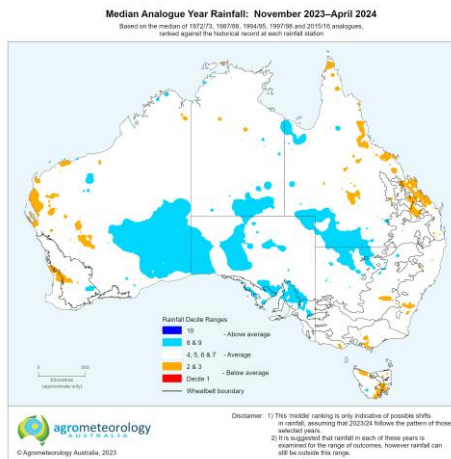
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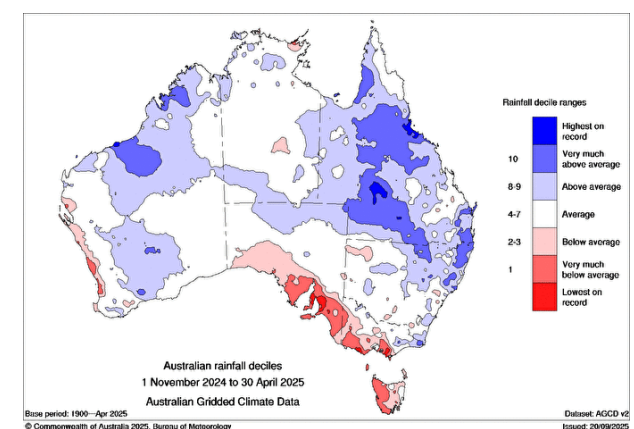
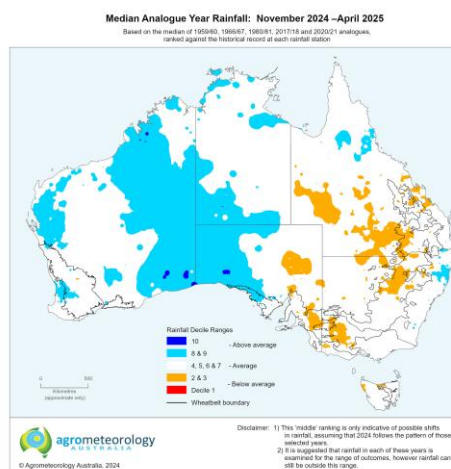
f) 2022 November Forecast: “Above average, except far southwestern regions”



g) 2023 November Forecast: “Wetter in the centre, drier in some coastal regions”



h) 2024 November Forecast: “Average to above Ave. in west, lingering dry in southeast”



References:

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- Stephens, D.J., and M. Meuleners (2006). 2006 Seasonal Outlook, In Proceedings Agribusiness Crop Updates 2006, Perth, Western Australia.
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