



Government of **Western Australia**  
Department of **Health**

# Medical Entomology Quarterly Report

## East Metropolitan Health Region: Apr - Jun 2023



# Ross River virus disease case data summary

## Western Australia State Summary: Apr - Jun 2023

Data reflected in this summary of mosquito-borne disease is taken from the Western Australia Notifiable Infectious Disease Database (WANIDD) and includes enhanced surveillance data (ESD) collected by Population Health Units and local governments (LGs) (only locations with notified cases of disease are shown in tables and figures). Data current as at 7 August 2023.

### Ross River virus (RRV)

#### Western Australia (WA)

76 RRV cases were notified across WA for this quarter, including 40 that were notified by doctor. Follow-up data is available for 9 of these cases confirming most likely places of exposure and date of onset of symptoms.

For WA, the number of RRV cases was significantly below the long term mean for all months this quarter.

For WA, the long term mean for RRV cases is 757 per year and 156 for this quarter, based on all notified RRV cases in WA since July 2002.

Doctor Notification Rate: 53%\*

Follow-up Response Rate for Dr notified cases : 23%\*\*

\*calculated as number of Dr notified cases divided by number of lab notified cases

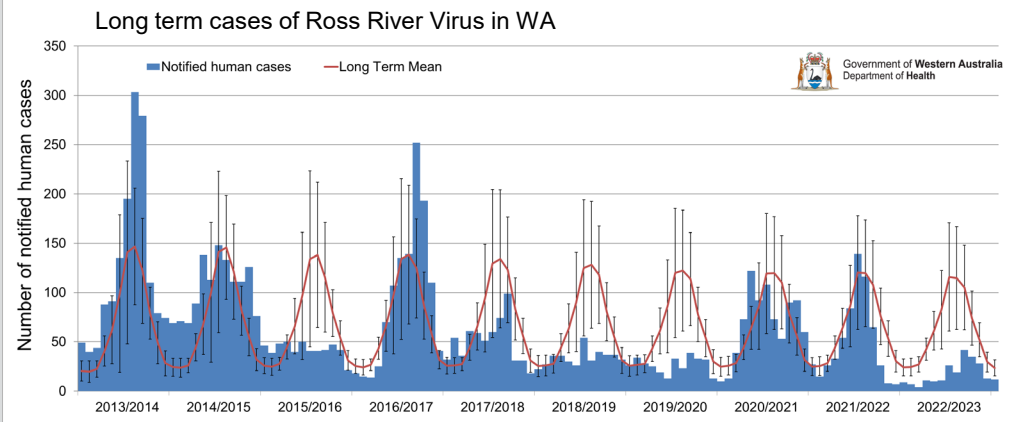
\*\*calculated as number of follow up surveys (ESD) received divided by number of Dr notified cases. ESD usually changes 90% date of onset and 50% place of exposure.

**Serologically confirmed doctor-notified and laboratory reported cases of Ross River virus disease each month in WA, July 2022 - June 2023 #**

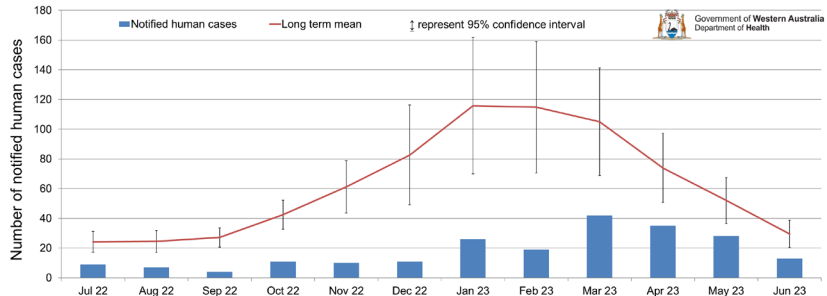
\* Compiled by the Medical Entomology, WA Department of Health

REGION	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total	* Crude Rate	Age Std Rate
KIMBERLEY	2	1	0	2	2	1	2	8	13	6	6	2	45	124.8	129.6
PILBARA	0	1	0	2	0	1	2	2	2	1	0	0	13	20.7	19.2
GASCOYNE	0	2	0	0	0	0	0	0	0	0	0	0	2	21.6	23.9
MIDWEST	0	0	0	0	0	0	0	2	2	3	2	0	9	15.0	12.8
WHEATBELT	0	0	0	1	1	0	3	2	1	0	0	0	8	11.7	10.0
METRO	4	1	1	3	1	6	9	2	7	4	4	6	48	2.6	2.5
SW - PEEL	2	2	0	1	0	0	3	1	8	17	12	1	47	16.6	17.0
SW - LESCHENAULT	0	0	2	0	1	0	0	0	1	0	0	1	5	6.7	4.8
SW - Geographe	1	0	0	2	3	0	1	0	1	1	0	2	11	18.7	17.6
SW - ELSEWHERE	0	0	0	0	1	0	1	0	1	0	0	0	3	6.2	7.4
SOUTH WEST(Total)	3	2	2	3	5	0	5	1	11	18	12	4	66	14.2	
GREAT SOUTHERN	0	0	0	0	0	0	2	1	5	2	2	0	12	19.6	14.9
GOLDFIELDS-ESPERANCE	0	0	1	0	1	3	3	1	1	0	1	1	12	22.3	21.3
WA UNDETERMINED	0	0	0	0	0	0	0	0	0	0	0	0	0		
INTERSTATE	1	0	1	0	0	0	1	0	1	0	1	1	6		
<b>WA TOTAL (does not include interstate)</b>	<b>9</b>	<b>7</b>	<b>4</b>	<b>11</b>	<b>10</b>	<b>11</b>	<b>26</b>	<b>19</b>	<b>42</b>	<b>35</b>	<b>28</b>	<b>13</b>	<b>215</b>		

\* Crude Rate per 100, 000 population. Age Standardised Rate per 100, 000 population compared to Australian Standard Population, to eliminate the effect of differences in population age structures between geographic areas.



Cases of Ross River virus in WA



# Ross River virus disease case data summary

## East Metropolitan Health Region: Apr - Jun 2023

Data reflected in this summary of mosquito-borne disease is taken from the Western Australia Notifiable Infectious Disease Database (WANIDD) and includes enhanced surveillance data (ESD) collected by Population Health Units and local governments (only locations with notified cases of disease are shown in tables and figures). Data current as at 7 August 2023.



### Ross River virus (RRV) East Metropolitan Health Region

6 RRV cases were notified by lab, including 4 notified by doctor this quarter. Follow-up data is available for one case, confirming most likely exposure in Bentley.

For this region, the number of cases was significantly below the long term mean for this quarter.

For this region, the long term mean for RRV cases is 124 per year, and about 24 cases in this quarter.

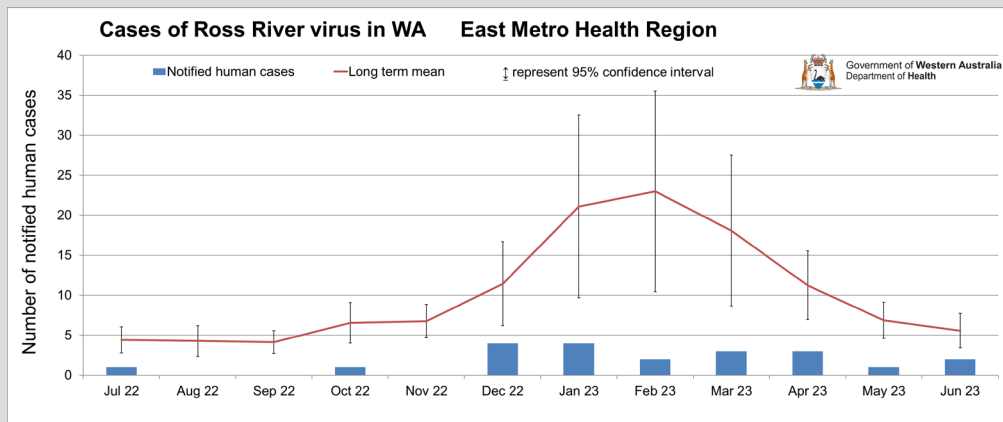
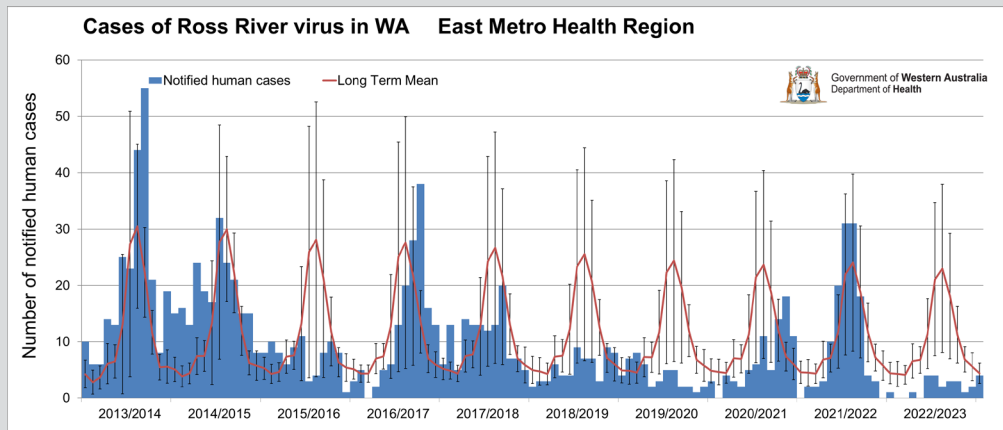
Doctor Notification Rate: 67%\*

Follow-up Response Rate for Dr notified cases: 25%\*\*

\*calculated as number of Dr notified cases divided by number of lab notified cases.

\*\*calculated by number of follow up surveys (ESD) received divided by number of Dr notified cases. Follow-up can only be requested for Dr notified cases.

RRV 2023 East Metro	Apr	May	Jun	Total
<b>Metro</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>5</b>
<b>Canning (C)</b>			<b>1</b>	<b>1</b>
BENTLEY			<b>1</b>	<b>1</b>
<b>Mundaring (S)</b>	<b>1</b>			<b>1</b>
MIDVALE	<b>1</b>			<b>1</b>
<b>Swan (C)</b>	<b>1</b>		<b>1</b>	<b>2</b>
ELLENBROOK	<b>1</b>		<b>1</b>	<b>2</b>
<b>Kalamunda (C)</b>		<b>1</b>		<b>1</b>
GOOSEBERRY HILL		<b>1</b>		<b>1</b>
<b>SW - Peel</b>	<b>1</b>			<b>1</b>
<b>Serpentine-Jarrahdale (S)</b>	<b>1</b>			<b>1</b>
SERPENTINE	<b>1</b>			<b>1</b>
<b>Total</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>6</b>



# Barmah Forest virus disease case data summary

## State Summary and East Metropolitan Health Region : Apr - Jun 2023

Data reflected in this summary of mosquito-borne disease is taken from the Western Australia Notifiable Infectious Disease Database (WANIDD) and includes enhanced surveillance data (ESD) collected by Population Health Units and local governments (only locations with notified cases of disease are shown in tables and figures). Data current as at 7 August 2023.

### Barmah Forest virus (BFV) in WA

12 BFV cases were notified by lab, with only 1 notified by doctor. Follow-up data is not available. Across WA, the number of cases was within 1 or 2 cases of the monthly mean for this quarter.

For WA, the long term mean for BFV cases is 29 per year, and 7 for this quarter.

Doctor Notification Rate: 8%, Follow-up Response Rate for Dr notified cases: 0%

BFV 2023 WA	Apr	May	Jun	Total
<b>Goldfields-Esperance</b>	<b>1</b>			<b>1</b>
<b>Kalgoorlie-Boulder (C)</b>	<b>1</b>			<b>1</b>
KALGOORLIE	1			1
<b>Kimberley</b>	<b>4</b>	<b>1</b>		<b>5</b>
<b>Broome (S)</b>	<b>1</b>	<b>1</b>		<b>2</b>
DJUGUN	1			1
WATERBANK		1		1
<b>Halls Creek (S)</b>	<b>2</b>			<b>2</b>
HALLS CREEK	2			2
<b>Wyndham-East Kimberley (S)</b>	<b>1</b>			<b>1</b>
KUNUNURRA	1			1
<b>Midwest</b>			<b>1</b>	<b>1</b>
<b>Yalgoo (S)</b>			<b>1</b>	<b>1</b>
YALGOO			1	1
<b>SW - Elsewhere</b>			<b>1</b>	<b>1</b>
<b>Augusta-Margaret River (S)</b>			<b>1</b>	<b>1</b>
AUGUSTA			1	1
<b>SW - Peel</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
<b>Mandurah (C)</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>
CODANUP	1			1
DAWESVILLE			1	1
HALLS HEAD		1		1
<b>Wheatbelt</b>			<b>1</b>	<b>1</b>
<b>Kellerberrin (S)</b>			<b>1</b>	<b>1</b>
KELLERBERRIN			1	1
<b>Total</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>12</b>

### Barmah Forest virus (BFV) East Metropolitan Health Region

No BFV cases were notified this quarter.

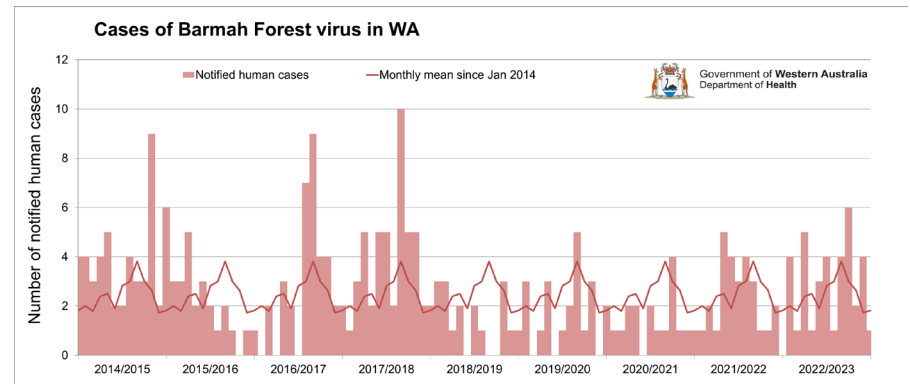
For this region, the long term mean for BFV cases is less than 2 per year and less than one for this quarter.

Serologically confirmed doctor-notified and laboratory reported cases of Barmah Forest virus disease each month in WA, July 2022 - June 2023 #

*\* Compiled by the Medical Entomology, WA Department of Health*

REGION	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total	Crude Rate *	Age Std Rate
KIMBERLEY	0	0	0	2	0	1	1	1	2	4	1	0	12	33.3	34.5
PILBARA	0	1	0	0	0	0	0	0	0	0	0	0	1	1.6	1.0
GASCOYNE	0	0	0	0	0	0	0	0	1	0	0	0	1	10.8	10.5
MIDWEST	0	0	0	1	0	0	0	0	0	0	0	1	2	3.3	3.5
WHEATBELT	0	0	0	1	0	0	0	0	1	0	0	1	3	4.4	3.0
METRO	0	0	0	0	0	1	2	0	0	0	0	0	3	0.2	0.2
SW - PEEL	0	1	1	1	0	1	0	0	0	1	1	1	7	2.5	2.1
SW - LESCHENAULT	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
SW - Geographe	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
SW - ELSEWHERE	0	0	0	0	0	0	0	0	0	0	0	1	1	2.1	1.1
SOUTH WEST (Total)	0	1	1	1	0	1	0	0	0	1	1	2	8	1.7	
GREAT SOUTHERN	0	1	0	1	0	0	0	0	0	0	0	0	2	3.3	1.8
GOLDFIELDS-ESPERANCE	0	1	0	0	0	0	1	0	0	1	0	0	3	5.6	5.9
WA UNDETERMINED	0	0	0	0	0	0	0	0	0	0	0	0	0		
INTERSTATE	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>WA TOTAL (does not include interstate)</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>35</b>		

\* Crude Rate per 100, 000 population. Age Standardised Rate per 100, 000 population compared to Australian Standard Population, to eliminate the effect of differences in population age structures between geographic areas.





# Climate Summary Apr to Jun 2023

[About Australian Climate \(bom.gov.au\)](http://bom.gov.au)

El Niño watch continued from April until June when El Niño alert was activated. Indian Ocean Dipole (IOD) was neutral for all months.

Southern Annular Mode (SAM) was neutral in April, then neutral/positive in May, neutral in June. A positive SAM often has a drying influence for parts of south-west and south-east Australia.

Generally La Nina affects the north east of WA, the IOD has more influence on the southern half of WA and the SAM has more influence on the south of WA.

## Apr 2023: Very wet in the north and southwest

April rainfall was above average for the eastern two-thirds of WA and the state's southwest. In contrast, little to nil rainfall was recorded in the western Pilbara, Gascoyne and Central West districts. Severe tropical cyclone Ilsa at mid-April, combined with an additional low pressure system resulting in many sites in the north and south-west of the state had their wettest April on record, or wettest April for over 20 years. Days were above average for western and northern half of Western Australia, but mean maxima were generally close to average in the southeast of the state. Mean minimum temperatures were below average in the western parts and close to average for the remainder of the state.

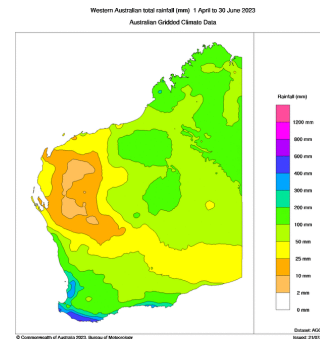
## May 2023: Dry and cool for most of WA

May rainfall was below average across WA, and very much below average rainfall was observed for most of the southern two-thirds of the state. Mean maximum temperatures were above average for the western parts of the state, whilst most of the Kimberley observed below average mean maxima. Mean minimum temperatures below average in the Kimberley and Northern Interior, the eastern SWLD, and along the Eucla coast. The inland southwest of the state experienced a freezing cold morning, with minus 3 °C on the 27th, resulting in a number of lowest May temperature records. Several sites along the Kimberley and Pilbara coast had their lowest May temperature on record. Mean minimum temperatures at Broome Airport and Derby Aero in the west Kimberley coast were more than 3 °C below average, the lowest May mean minimum since 1976.

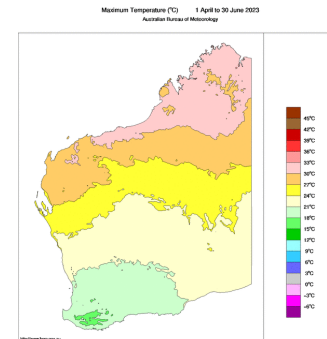
## June 2023: Wet and warm in the north, wet and cool in south coastal regions

Rainfall was very much above average in the Kimberley and eastern parts of the Northern Interior, and along the south coastal regions. However, it was below to very much below average in the Gascoyne and northern Goldfields. Many sites in the south coastal regions saw June 2023 as their wettest (or top 3 wettest) June on record. A number of sites in the Kimberley experienced an unseasonal wet June for at least 20 years. Several sites in the Central Wheat Belt and southern Goldfields also had their wettest June since 1990s. Mean maximum temperatures were below average in the southwest and central parts of the state, whilst the Kimberley saw above average average mean maxima. Mean minimum temperatures were below average for most of the western half and central parts of WA, and it was close to average for the remainder of the state.

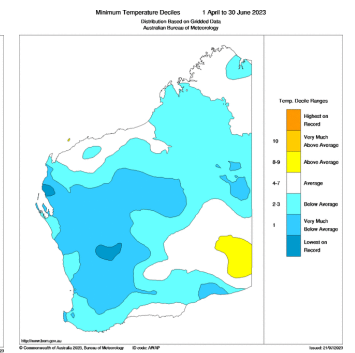
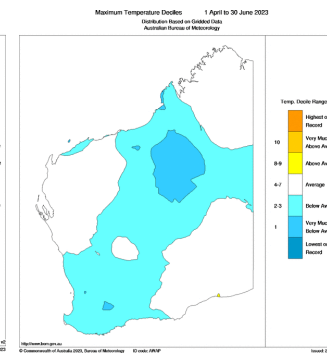
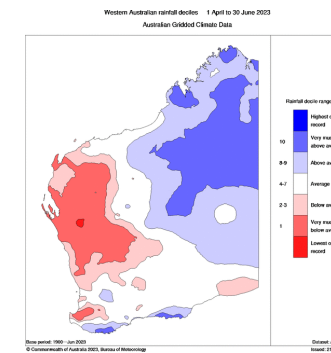
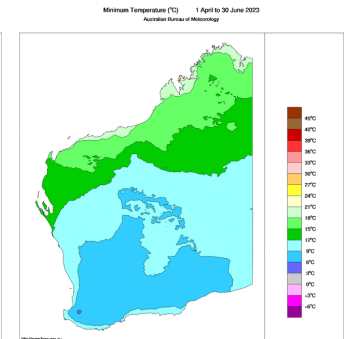
### Actual and Deciles (Relative) Rainfall



### Actual and Deciles (Relative) Maximum Temperatures



### Actual and Deciles (Relative) Minimum Temperatures



## Risk of mosquito borne disease continues across the Kimberley and Pilbara regions.

Mosquito numbers should be reducing following cooler, drier conditions over July. However, virus detection in sentinel chickens in the Kimberley and Pilbara in June demonstrates there is continued disease risk in the north of the state. People should continue to take appropriate precautions to prevent mosquito bites to prevent disease.

There were four confirmed cases of MVE notified in WA between Apr to Jun 2023, one being fatal and 3 acquired in the Kimberley or Pilbara regions. The other case was acquired interstate. There has been an additional, confirmed other flavivirus from the Kimberley region in May.

More recently, another MVE case was notified in July 2023 which prompted a [Media Release 14 July 2023](#).

In 2023 there have been 8 confirmed cases of MVE, of these, 6 infections were acquired in WA and 2 of these cases were fatal.

Surveillance activities in 2023 show that MVE, Kunjin, RRV and BFV viruses have been detected across a wide area of WA. Prior exposure to JEV has also been detected in feral pigs and sentinel chickens in the Kimberley and Pilbara (Newman only) regions.

**Major Climate Drivers in WA:** Weather forecasts based on interactions between oceanic and atmospheric conditions.

For more info see [Australian Climate Influences](#)

**El Niño/ La Niña (ENSO Pacific Ocean)** mainly affects north and east of WA

**El Niño:** Typically associated with drier conditions, decreased tidal activity and warmer days in south. Late start to northern wet season with less cyclones and less flooding.

**La Niña:** Typically associated with wetter, cooler days and warmer nights (due to increased cloud cover). Earlier start to the northern wet season with more tropical cyclones. More conducive to mosquito breeding and possible mosquito-borne virus activity.

**Indian Ocean Dipole (IOD)** mainly affects mid two thirds of WA.

**Positive IOD:** Typically associated with reduced winter/spring rainfall, warmer conditions in the south, and cooler in the north.

**Negative IOD:** Typically associated with wetter winter/spring, cooler days in the south, warmer in the north with increased chances of rainfall/flooding.

**Southern Annular Mode (SAM)** mainly affects south of WA, affect varies by season - still under research – trending towards more positive less effect in summer.

**Positive SAM:** warmer and drier conditions. Boosted by La Nina conditions.

**Negative SAM:** cooler and wetter conditions.

## Climate outlook for Western Australia

### Sep to Nov 2023

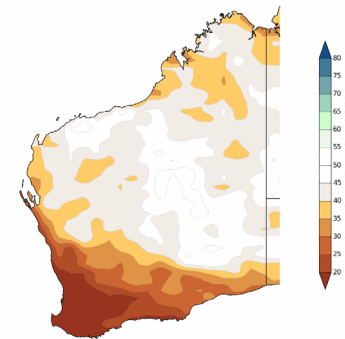
#### Australian Bureau of Meteorology Outlooks for September to November 2023

Issued 14 Aug 2023 [Australian climate outlooks \(bom.gov.au\)](#)

Drier than average for most of WA

Warmer than average days for all of WA

Chance of exceeding the median rainfall for September to November 2023

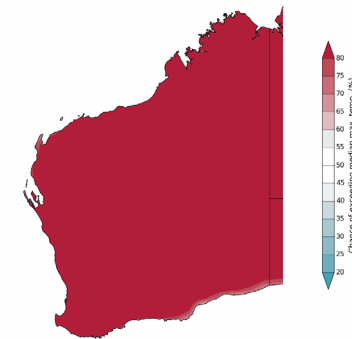


www.bom.gov.au/climate  
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Model: ACCESS-G2  
Base period: 1961-2018

Model run: 07/08/2023  
Issued: 10/08/2023

Chance of exceeding the median maximum temperature for September to November 2023



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Model: ACCESS-G2  
Base period: 1961-2018

Model run: 07/08/2023  
Issued: 10/08/2023

#### Climate Driver Update

**El Niño Alert continues and development likely in the coming weeks.**

**IOD:** A positive IOD event is likely to develop in late winter or early spring. A positive IOD can suppress winter–spring rainfall over much of central and south-east Australia, and if combined with El Niño, the drying effect is typically stronger and more widespread across Australia.

**SAM** is currently positive and expected to return to neutral in the coming weeks.

**Longer-term trends:** Australia's climate has warmed by ~1.47 °C in the period 1910–2021, leading to an increase in the frequency of extreme heat events. Southern Australia has seen a reduction of 10 to 20% in cool season (April–October) rainfall in recent decades.

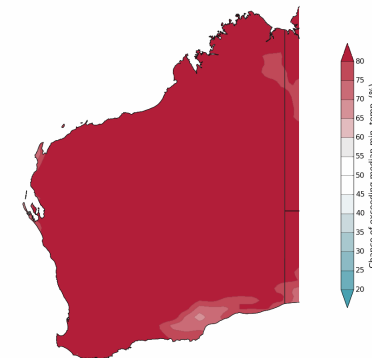
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Model: ACCESS-G2  
Base period: 1961-2018

Model run: 07/08/2023  
Issued: 10/08/2023

Warmer than average nights for most of WA

Chance of exceeding the median minimum temperature for September to November 2023



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Model: ACCESS-G2  
Base period: 1961-2018

Model run: 07/08/2023  
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