



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

Medical Entomology Quarterly Report

East Metropolitan Health Region: Jan - Mar 2023



Ross River virus disease case data summary

Western Australia State Summary: Jan - Mar 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 2 May 2023.

Ross River virus (RRV)

Western Australia (WA)

76 RRV cases were notified across WA for this quarter, including 49 that were notified by doctor. Follow-up data is available for 20 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 335 for this quarter, based on all notified RRV cases in WA since July 2002.

Doctor Notification Rate: 64%*

Follow-up Response Rate for Dr notified cases : 41%**

*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.

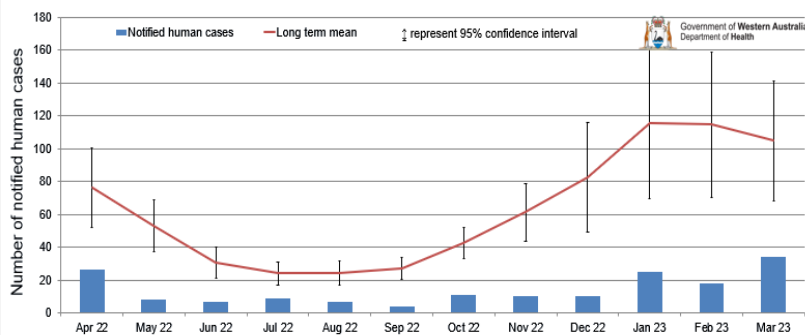
Serologically confirmed doctor-notified and laboratory reported cases of Ross River virus disease each month in WA, July 2022 - June 2023 #

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

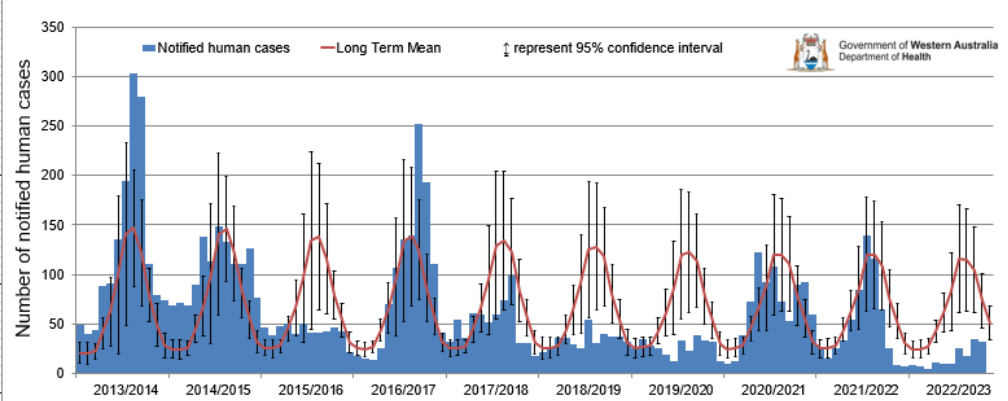
| REGION | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Total | Crude Rate | Age Std Rate |
|---|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|----------|------------|------------|--------------|
| KIMBERLEY | 2 | 1 | 0 | 2 | 2 | 1 | 2 | 8 | 13 | 5 | 0 | 0 | 36 | 99.9 | 102.9 |
| PILBARA | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 1 | 2 | 0 | 0 | 9 | 14.3 | 12.7 |
| 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 | 1 | 1 | 2 | 0 | 0 | 4 | 6.7 | 5.6 |
| WHEATBELT | 0 | 0 | 0 | 1 | 1 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 8 | 11.7 | 10.0 |
| METRO | 4 | 1 | 1 | 3 | 1 | 5 | 9 | 3 | 6 | 6 | 0 | 0 | 39 | 2.1 | 2.0 |
| SW - PEEL | 2 | 2 | 0 | 1 | 0 | 0 | 3 | 1 | 5 | 15 | 0 | 0 | 29 | 10.2 | 10.3 |
| SW - LESCHENAULT | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 6.7 | 5.6 |
| SW - Geographie | 1 | 0 | 0 | 2 | 3 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 9 | 15.3 | 14.3 |
| SW - ELSEWHERE | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.1 | 1.2 |
| SOUTH WEST (Total) | 3 | 2 | 2 | 4 | 5 | 0 | 4 | 1 | 7 | 16 | 0 | 0 | 44 | 9.5 | |
| GREAT SOUTHERN | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 0 | 0 | 7 | 11.4 | 10.3 |
| GOLDFIELDS-ESPERANCE | 0 | 0 | 1 | 0 | 1 | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 10 | 18.5 | 17.6 |
| 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 | 0 | 0 | 4 | | |
| WA TOTAL (does not include interstate) | 9 | 7 | 4 | 11 | 10 | 10 | 25 | 18 | 33 | 32 | 0 | 0 | 159 | | |

* 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



Cases of Ross River virus in WA



Ross River virus disease case data summary

East Metropolitan Health Region: Jan - Mar 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 2 May 2023.



Ross River virus (RRV) East Metropolitan Health Region

8 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 Perth.

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 62 cases in this quarter.

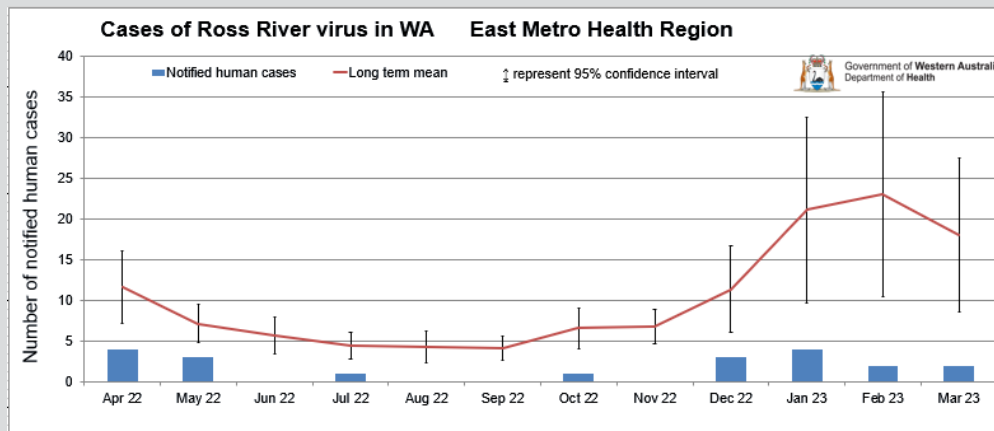
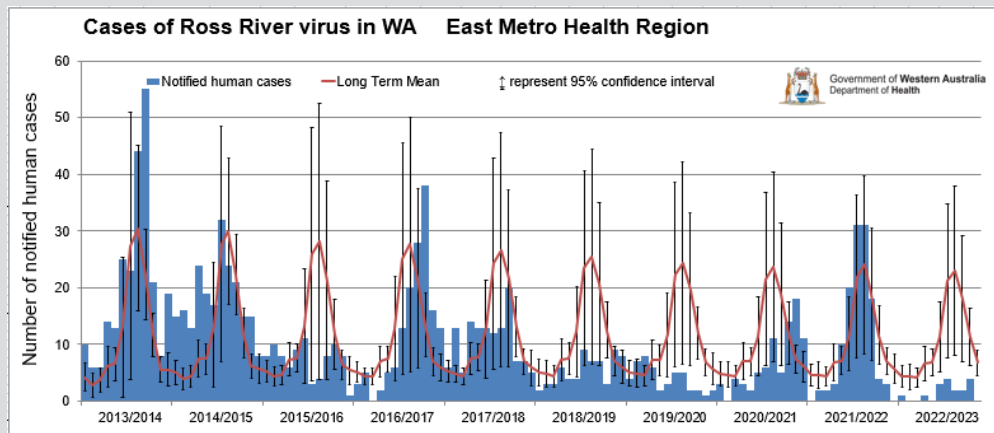
Doctor Notification Rate: 50%*

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 | Jan | Feb | Mar | Total |
|----------------------|----------|----------|----------|----------|
| Metro | 4 | 2 | 2 | 8 |
| Armadale (C) | | | 1 | 1 |
| SEVILLE GROVE | | | 1 | 1 |
| Mundaring (S) | 1 | | 1 | 2 |
| MOUNT HELENA | 1 | | | 1 |
| MUNDARING | | | 1 | 1 |
| Perth (C) | 1 | | | 1 |
| PERTH | 1 | | | 1 |
| Swan (C) | 1 | 2 | | 3 |
| CAVERSHAM | 1 | | | 1 |
| UPPER SWAN | | 1 | | 1 |
| BRABHAM | | 1 | | 1 |
| Kalamunda (C) | 1 | | | 1 |
| KALAMUNDA | 1 | | | 1 |
| Total | 4 | 2 | 2 | 8 |



Barmah Forest virus disease case data summary

State Summary and East Metropolitan Health Region : Jan - Mar 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 2 May 2023.

Barmah Forest virus (BFV) in WA

10 BFV cases were notified by lab, including 4 notified by doctor. Follow-up data is available and confirms most likely exposure for cases in Laverton and Gascoyne River. 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 10 for this quarter.

Doctor Notification Rate: 40%, Follow-up Response Rate for Dr notified cases: 50%

| BFV 2023 WA | Jan | Feb | Mar | Total |
|---------------------------------|----------|----------|----------|-----------|
| Gascoyne | | | 1 | 1 |
| Upper Gascoyne (S) | | | 1 | 1 |
| GASCOYNE RIVER | | | 1 | 1 |
| Goldfields-Esperance | 1 | | | 1 |
| Laverton (S) | 1 | | | 1 |
| LAVERTON | 1 | | | 1 |
| Kimberley | 1 | 1 | 2 | 4 |
| Broome (S) | | 1 | 1 | 2 |
| BROOME | | 1 | | 1 |
| CABLE BEACH | | | 1 | 1 |
| Derby-West Kimberley (S) | | | 1 | 1 |
| FITZROY CROSSING | | | 1 | 1 |
| Halls Creek (S) | 1 | | | 1 |
| HALLS CREEK | 1 | | | 1 |
| Metro | 2 | | | 2 |
| Stirling (C) | 1 | | | 1 |
| BALGA | 1 | | | 1 |
| Swan (C) | 1 | | | 1 |
| SOUTH GUILDFORD | 1 | | | 1 |
| SW - Peel | | | 1 | 1 |
| Mandurah (C) | | | 1 | 1 |
| DAWESVILLE | | | 1 | 1 |
| Wheatbelt | | | 1 | 1 |
| Goomalling (S) | | | 1 | 1 |
| GOOMALLING | | | 1 | 1 |
| Total | 4 | 1 | 5 | 10 |

Barmah Forest virus (BFV) East Metropolitan Health Region

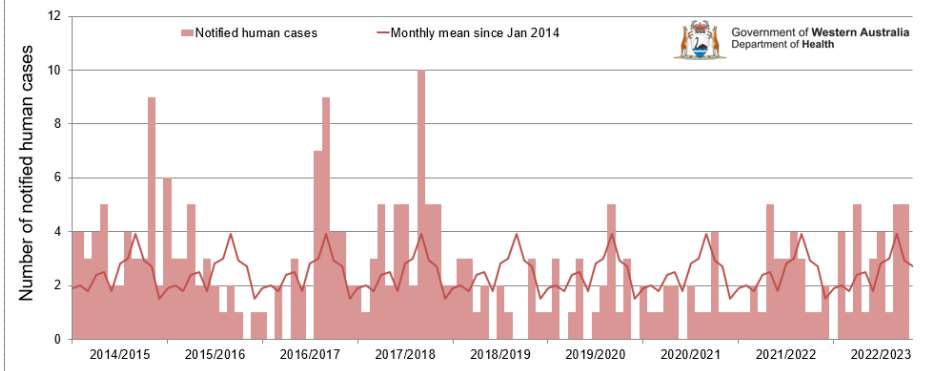
One case was notified in South Guildford by lab and doctor. No follow up data is available to confirm most likely exposure.

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 # | | | | | | | | | | | | | | Total | Crude Rate | Age Std Rate |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-------|------------|--------------|
| REGION | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | | | | |
| * Compiled by the Medical Entomology, WA Department of Health | | | | | | | | | | | | | | | | * |
| KIMBERLEY | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 2 | 4 | 0 | 0 | 11 | 30.5 | 30.2 | |
| 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 | 0 | 1 | 1.7 | 1.9 | |
| WHEATBELT | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 2.9 | 2.2 | |
| 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 | 1 | 0 | 0 | 0 | 5 | 1.8 | 1.4 | |
| SW - LESCHENAULT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | |
| SW - Geographical | 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 | 0 | 0 | 0.0 | 0.0 | |
| SOUTH WEST (Total) | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 1.1 | | |
| 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 | | | |
| WA TOTAL (does not include interstate) | 0 | 4 | 1 | 5 | 1 | 3 | 4 | 1 | 5 | 5 | 0 | 0 | 29 | | | |

* 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 Barmah Forest virus in WA



Climate Summary Jan to Mar 2023

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

Jan 2023: Very wet in the Kimberley, wet in the north and dry in central and southwest

Rainfall totals were very much above average for most of the Kimberley and adjacent Northern Interior, and above average in the west Pilbara and eastern Gascoyne. Rainfall was below average in the central and southwest coasts. Cooler than average days in the Kimberley region and north eastern WA, and along the south coast, while western parts were warmer than average. Ex-Tropical Cyclone Ellie was exceptionally long lived and brought significant rainfall and flooding to the Kimberley causing a record high 15.81m level in the Fitzroy River at Fitzroy Crossing and flooding of Roebuck Plain.

Feb 2023: Dry in southern parts and warmer days and nights for most of WA

Below average rainfall in southern parts of WA, with virtually no rain recorded in the southwest, while less than 10 mm rainfall totals were reported in the southeast. Pockets of above average rainfall in the north Kimberley and Pilbara, with Emma Gorge and Lake Argyle having their wettest February on record and in 54 years respectively. The southern two-thirds of WA had above average warmer days. For the state as a whole, it was the eleventh-warmest February on record. A broad area from the northwest down to the southeast of the state observed warmer nights, with average minimum temperatures in the state's southwest and northeast.

Mar 2023: Wet in the north, dry in the south and warmer days and nights for most of WA

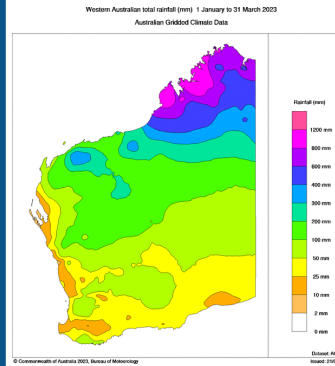
Rainfall was below the 1961–1990 average for WA as a whole, with parts of the west having above to very much above average rainfall, while there was below average rainfall across the Kimberley, eastern parts of the Interior district and small pockets elsewhere. Many sites had their highest March daily rainfall on record or their highest total March rainfall for at least 20 years. Across WA the mean maximum temperature was 1.67 °C above the 1961–1990 March average, and the mean minimum temperature was 0.83 °C above average. Doongan had its warmest March night (highest daily minimum temperature) on record. and Port Hedland had its highest March mean daily minimum temperature on record.

A La Nina event was active for Jan and Feb, switching to El Nino watch in March. Indian Ocean Dipole (IOD) was neutral for all months. Southern Annular Mode (SAM) was strongly positive in Jan, then neutral/positive in Feb, and negative/neutral in March. 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.

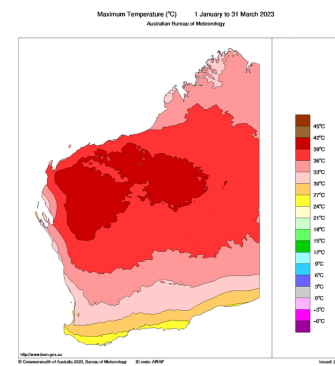
WA's 10th-wettest summer on record, but driest summer for the lower southwestern region. Above average rainfall in the Kimberley, adjacent Northern Interior, and pockets of the west Pilbara and east Gascoyne. In contrast, below average rainfall for the South West Land Division, and parts of the south-east.

WA summer warmer days and nights, but warmer in the west and cooler in the east. Most of the western half and central Goldfields observed **warmer days**, while the north eastern parts and the South East Coastal District recorded **cooler days**. **A broad area from the northwest to the southeast of the state, as well as a coastal strip of the Lower West District observed warmer nights.** In contrast, much of the southern Kimberley and the eastern parts of the Northern Interior experienced cooler nights.

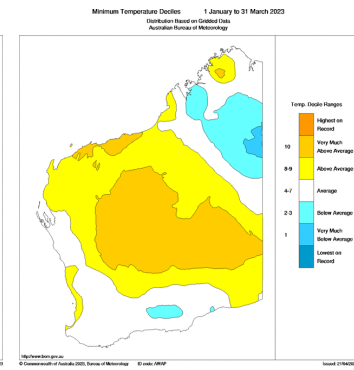
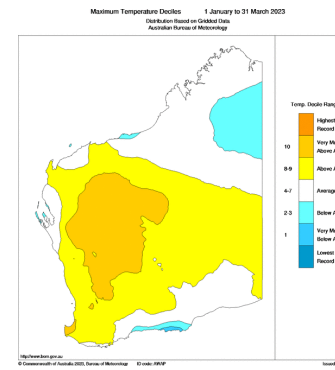
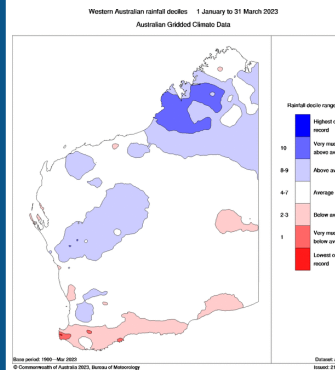
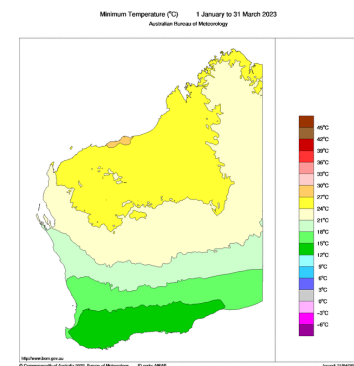
Actual and Deciles (Relative) Rainfall



Actual and Deciles (Relative) Maximum Temperatures



Actual and Deciles (Relative) Minimum Temperatures



Increased risk of mosquito borne disease continues across the Kimberley and Pilbara regions

There were two confirmed cases of MVE notified in WA between Jan to Mar 2023, one being fatal and acquired in the West Kimberley region during March. [Media Release 31 March 2023](#). The other case was acquired in VIC/SA. More recently, another MVE case was notified in April 2023 and was most likely acquired in the East Kimberley region. [Media Release 8 May 2023](#).

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.

People should take appropriate precautions to prevent mosquito bites to prevent disease. ([Media Release 6 April 2023](#)). [Fight the Bite campaign \(health.wa.gov.au\)](#)

The risk of mosquito borne disease continues to be increased across the Kimberley and Pilbara regions for coming months.

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.

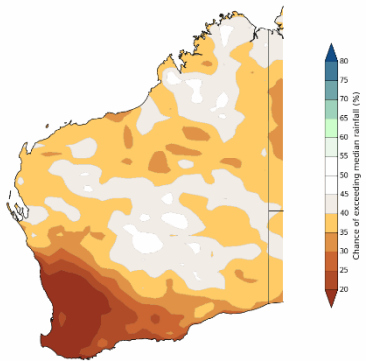
Negative SAM: cooler and wetter conditions.

Climate outlook for Western Australia May to July 2023

Australian Bureau of Meteorology Outlooks for June to August 2023
Issued 18 May 2023 [Australian climate outlooks \(bom.gov.au\)](#)

Drier than average for most of WA

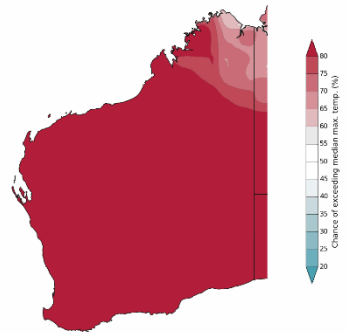
Chance of exceeding the median rainfall for June to August 2023



www.bom.gov.au/climate Model ACCESS-G2 Model run: 13/05/2023 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Base period: 1981-2018 Issue: 18/05/2023

Warmer than average days for most of WA

Chance of exceeding the median maximum temperature for June to August 2023



www.bom.gov.au/climate Model ACCESS-G2 Model run: 13/05/2023 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Base period: 1981-2018 Issue: 18/05/2023

Climate Driver Update

ENSO is currently neutral and most likely to persist through to July, with outlook at **El Niño WATCH.**

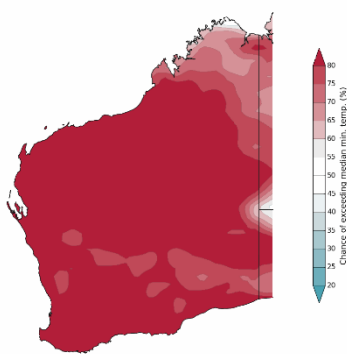
IOD is currently neutral, with outlook for positive IOD for May to July.

SAM is currently neutral, and outlook to remain so for 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.

Warmer than average nights for most of WA

Chance of exceeding the median minimum temperature for June to August 2023



www.bom.gov.au/climate Model ACCESS-G2 Model run: 13/05/2023 © Commonwealth of Australia 2023, Australian Bureau of Meteorology Base period: 1981-2018 Issue: 18/05/2023