



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

Medical Entomology Quarterly Report

Wheatbelt Health Region: Oct - Dec 2022



Ross River virus disease case data summary

Western Australia: Oct - Dec 2022

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 16 January 2023.

Ross River virus (RRV)

Western Australia

24 RRV cases were notified across WA, including 12 that were notified by doctor for this quarter. Follow-up data is available for 3 of these cases.

The number of cases across WA was significantly below the long term mean for all months this quarter.

The long term mean RRV cases is 769 per year and 186 for this quarter, based on all notified RRV cases across WA since July 2002.

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 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.

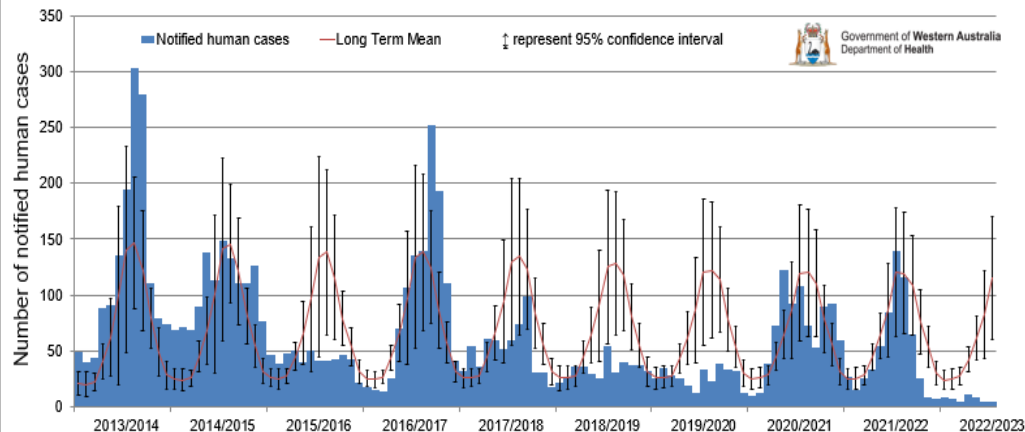
Serologically confirmed doctor-notified and laboratory reported cases of Ross River virus disease each month in WA, July 2022 - June 2023 #

* Compiled by the Medical Entomology, WA Department of Health

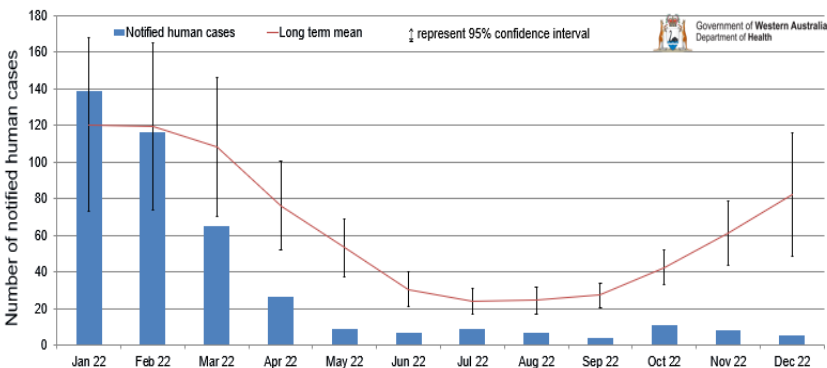
| REGION | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Total | Crude Rate | Age Std Rate |
|---|----------|----------|----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|------------|--------------|
| KIMBERLEY | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 13.9 | 16.9 |
| PILBARA | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 4.8 | 5.7 |
| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| WHEATBELT | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2.9 | 2.2 |
| METRO | 4 | 1 | 1 | 3 | 1 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 16 | 0.9 | 0.8 |
| SW - PEEL | 2 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 2.1 | 2.2 |
| SW - LESCHENAU LT | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 6.7 | 6.2 |
| SW - Geographe | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 10.2 | 7.7 |
| 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 | 2 | 0 | 0 | 0 | 0 | 0 | 18 | 3.9 | |
| GREAT SOUTHERN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| GOLDFIELDS-ESPERANCE | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5.6 | 6.0 |
| WA UNDETERMINED | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| INTERSTATE | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | | |
| WA TOTAL (does not include interstate) | 9 | 7 | 4 | 11 | 8 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 49 | | |

* 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

Wheatbelt Health Region: Oct - Dec 2022



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 16 January 2023.

Ross River virus (RRV)

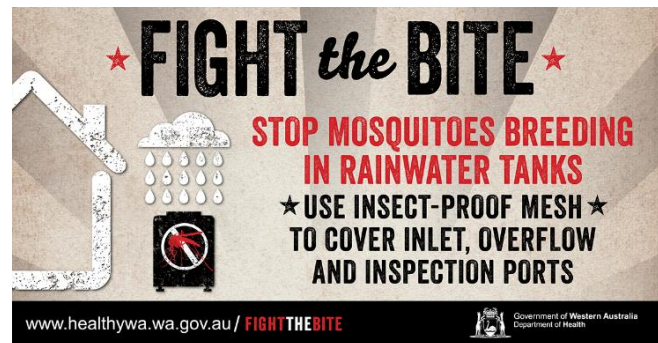
Wheatbelt Health Region

2 RRV cases were notified this quarter by lab only. No follow up data is available.

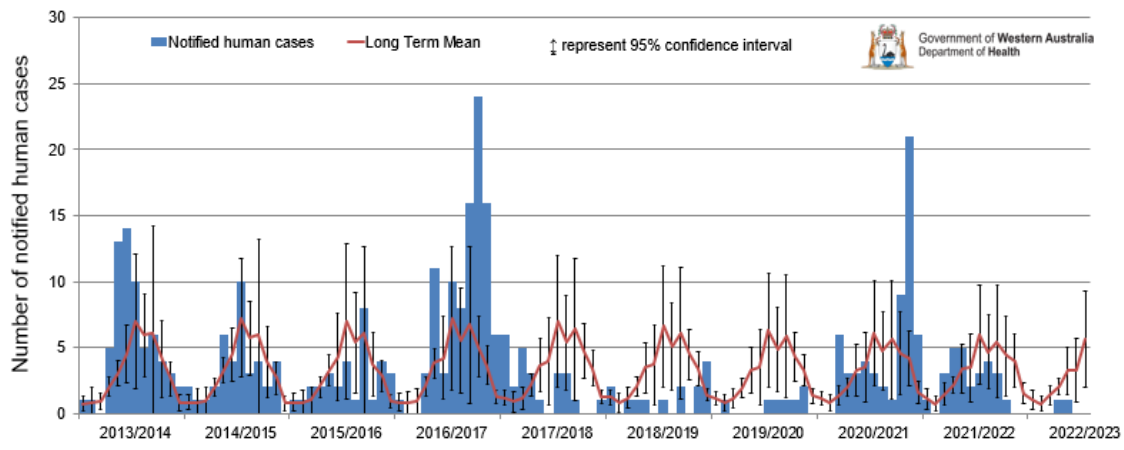
The number of cases was significantly below the long term mean for this quarter.

The long term mean for RRV cases is 38 per year and less than 4 per month for this quarter.

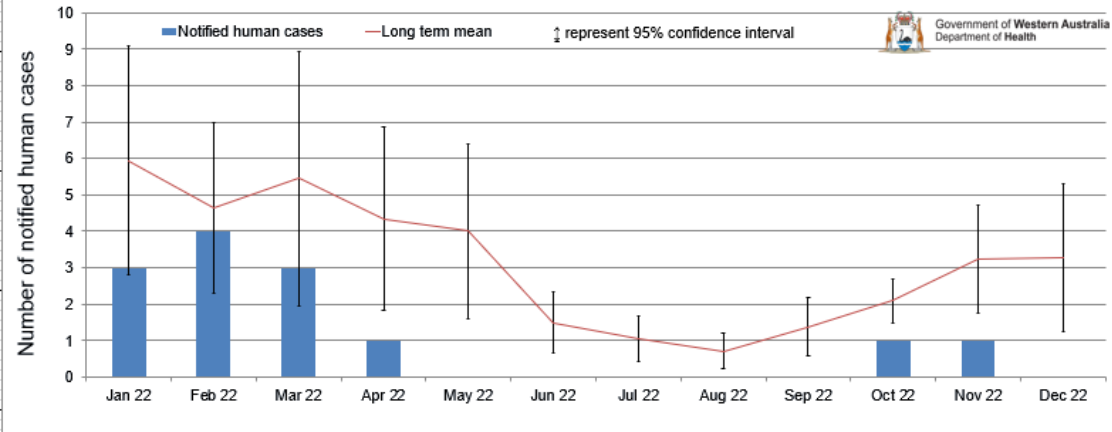
| RRV 2022 | Oct | Nov | Dec | Total |
|---------------------|----------|----------|-----|----------|
| Wheatbelt | 1 | 1 | | 2 |
| Brookton (S) | | 1 | | 1 |
| BROOKTON | | 1 | | 1 |
| Gingin (S) | 1 | | | 1 |
| GINGIN | 1 | | | 1 |
| Total | 1 | 1 | | 2 |



Cases of Ross River virus in WA Wheatbelt Health Region



Cases of Ross River virus in WA Wheatbelt Health Region



Barmah Forest virus disease case data summary

Wheatbelt Health Region and State summary: Oct - Dec 2022

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 16 January 2023.

Barmah Forest virus (BFV) in WA

9 BFV cases were notified in WA, including 7 also notified by doctor. Follow-up data is available for the cases in Cable Beach and Middleton Beach only.

The number of cases was above the long term mean in Oct and Dec, but below in Nov.

The long term mean for BFV cases is 29 per year and 7 cases for this quarter, based on all notified BFV cases across WA since July 2014.

Doctor Notification Rate: 78%

Follow-up Response Rate for Dr notified cases: 29%

| BFV 2022 | Oct | Nov | Dec | Total |
|-----------------------------------|----------|----------|----------|----------|
| Great Southern | 1 | | | 1 |
| Albany (C) | 1 | | | 1 |
| MIDDLETON BEACH | 1 | | | 1 |
| Kimberley | 2 | | 1 | 3 |
| Broome (S) | 1 | | | 1 |
| CABLE BEACH | 1 | | | 1 |
| Halls Creek (S) | | | 1 | 1 |
| HALLS CREEK | | | 1 | 1 |
| Wyndham-East Kimberley (S) | 1 | | | 1 |
| KUNUNURRA | 1 | | | 1 |
| Metro | | | 1 | 1 |
| Bayswater (C) | | | 1 | 1 |
| MORLEY | | | 1 | 1 |
| Midwest | 1 | | | 1 |
| Greater Geraldton (C) | 1 | | | 1 |
| BLUFF POINT | 1 | | | 1 |
| SW - Peel | 1 | | 1 | 2 |
| Mandurah (C) | 1 | | 1 | 2 |
| BOUVARD | | | 1 | 1 |
| SILVER SANDS | 1 | | | 1 |
| Wheatbelt | | 1 | | 1 |
| Narrogin (S) | | 1 | | 1 |
| HIGHBURY | | 1 | | 1 |
| Total | 5 | 1 | 3 | 9 |

Barmah Forest virus (BFV) Wheatbelt Health Region

One BFV case was notified in Narrogin by lab only. No follow up data is available. The long term mean for BFV cases is less than 2 per year and less than one case per month for this quarter.

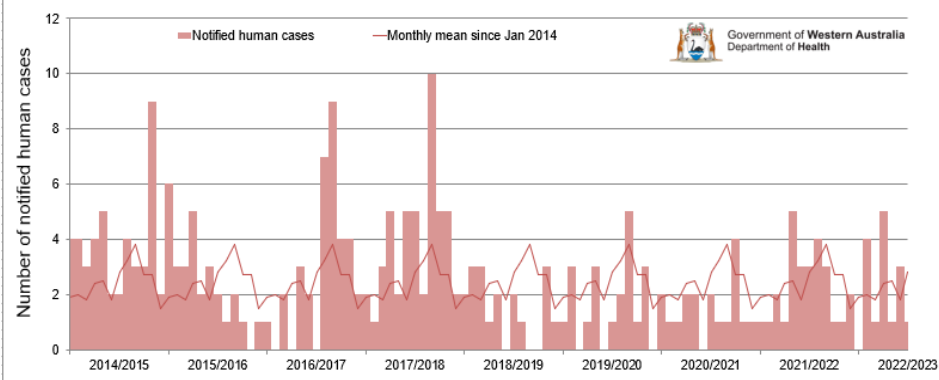
Serologically confirmed doctor-notified and laboratory reported cases of Barmah Forest virus disease each month in WA, July 2022 - June 2023 #

* 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 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 8.3 | 7.6 |
| 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 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| 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 | 0 | 0 | 0 | 0 | 1 | 1.5 | 0.8 |
| METRO | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0.1 | 0.1 |
| SW - FREEL | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1.4 | 1.1 |
| SW - LESCHENAUILLT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| SW - Geographic | 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 | 0 | 0 | 0 | 0 | 4 | 0.9 | |
| 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 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.9 | 2.3 |
| 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 | 1 | 0 | 0 | 0 | 0 | 0 | 15 | | |

* 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 Oct to Dec 2022

About Australian Climate (bom.gov.au)

Oct 2022: WA Cool and Very wet for the eastern half

Wettest October since 2011, and the fifth-wettest October on record (since records began in 1900). Rainfall was 133% above average (more than double) for WA as a whole. The eastern third of the state, from the Kimberley to Eucla, as well as the South East Coastal, and South Coastal areas, received very much above average October rainfall. Many locations recorded their wettest October. Monthly rainfall totals were below average for parts of the Gascoyne, Central West and Lower West districts, including Perth. It was the coolest October since 2001 for WA as a whole. The state wide mean minimum temperature was the coolest since 2003.

Nov 2022: WA Cool and Fourth wettest November on record

Also the wettest November since 2011, more than twice the average for WA as a whole. Highest on record November rainfall was recorded for parts of the Kimberley district. Monthly rainfall totals were below average for much of the Pilbara, northern Gascoyne, and northern Goldfields districts. Daytime temperatures were cooler than average across most of the state, with the southwest Kimberley and eastern Pilbara recording the lowest mean maxima on record. It was the coolest November since 1992 for WA as a whole. Nights were cooler than average for most of the north and west of WA, and it was the coolest state wide November nights since 1976 for Western Australia.

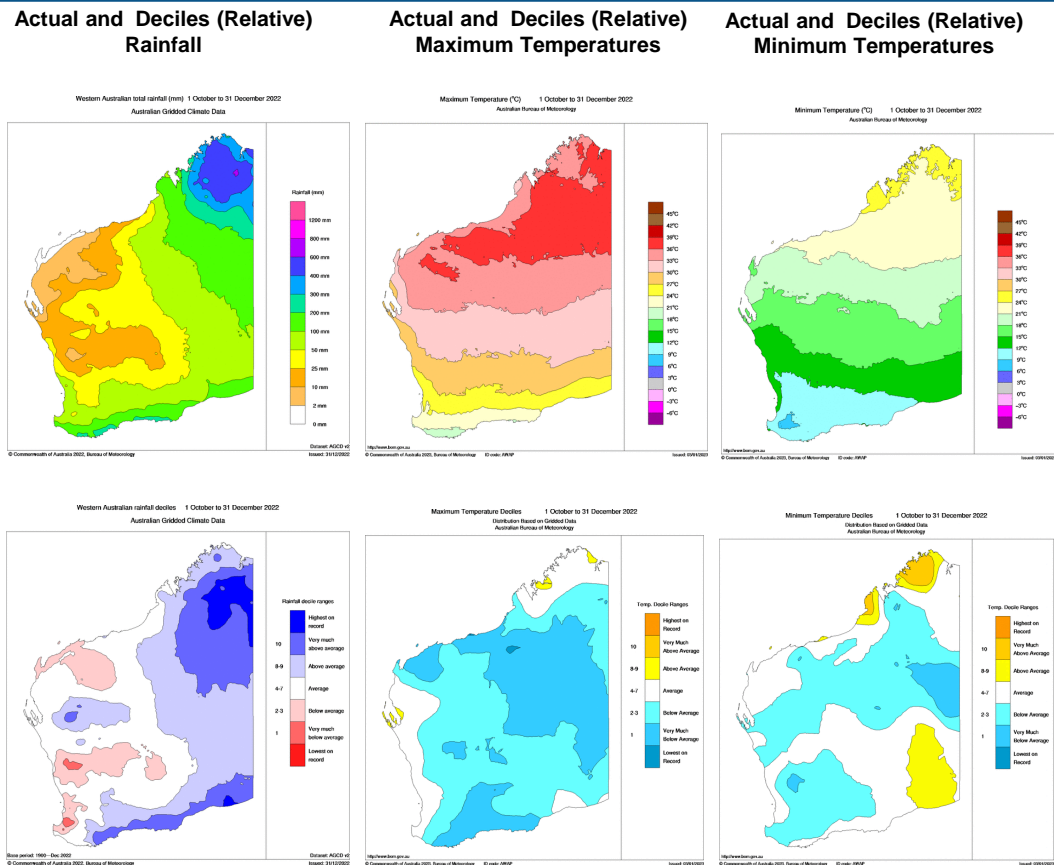
Dec 2022: WA Wet in the north, dry in the south

Warmer and wetter overall, but **particularly wet for parts of Gascoyne and Kimberley districts** and average to drier in the south, **very much drier in the far south west**. Warmer days across Gascoyne and west Kimberley districts and cooler days across South East and South Coastal districts. Nights were warmer as a whole, and much warmer in inland eastern Pilbara. From 20-24 Dec mod/heavy local rainfall in southern Pilbara and inland Gascoyne. Ex-Tropical Cyclone Ellie moved into WA on 28 Dec resulting in widespread heavy to intense rainfall and flooding in the Kimberley region especially around Fitzroy Crossing and Halls Creek. Wettest days on record in the Kimberley region with 101.1mm Mt Amhurst and 138.6mm at Gibb River (previously 94.0mm and 131.6mm).

A La Nina event was active for all months, Indian Ocean Dipole (IOD) was negative in Oct/Nov returning to neutral in Dec 2022 and the Southern Annular Mode (SAM) was strongly positive. 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 Second wettest spring on record. Spring rainfall was more than double the 1961-1990 average for WA as a whole and the second highest on record. Parts of the Kimberley and Northern Interior districts recorded highest spring rainfall on record.

WA Coolest spring since 1992. Mean maximum temperatures for spring were very much below average for most of the state, and lowest in record for part of the Pilbara district. For Western Australia overall the mean maximum temperature for November was the lowest since 1992. Mean minimum temperatures for November were slightly below average for Western Australia as a whole.



Increased risk of mosquito borne disease

In WA, between Oct to Dec 2022, there have been no notified cases of potentially fatal mosquito borne disease, and no virus activity detected through sentinel chicken or mosquito surveillance activities. However, MVE has been detected in mosquitoes in VIC and NSW in recent weeks.

The risk of mosquito borne disease is increased especially in the north, central and east of WA, following heavy rainfall and flooding creating conditions conducive for increased mosquito breeding and virus activity.

Japanese Encephalitis (JE) virus is closely related to MVE and Kunjin viruses, and despite surveillance activities has not been detected in WA to date. JE has been active close to the WA/NT border in 2022, and three JE human cases have been notified this 2022/2023 mosquito season in Australia (notified in Nov and Dec in SA, VIC and NSW). The possibility that JE may be present in WA at undetected levels can't be ruled out. The community should be encouraged to prevent mosquito bites [Fight the Bite campaign \(health.wa.gov.au\)](https://www.health.wa.gov.au/health-topics/communicable-diseases/japanese-encephalitis)

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

For more info see [Australian Climate Influences](https://www.bom.gov.au/climate/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.

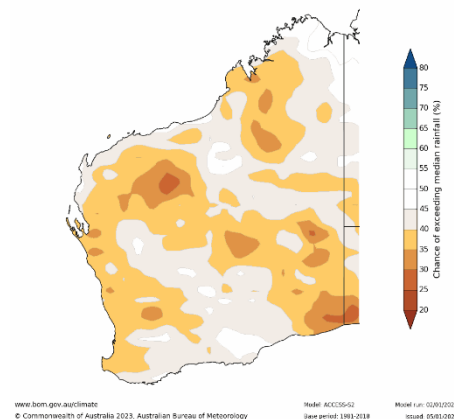
Positive SAM: warmer and drier conditions. Boosted by La Nina conditions.

Negative SAM: cooler and wetter conditions.

Drier than average for south west and central areas.

Rainfall: likely to be drier for most parts of WA, including the south west, south coast and central areas.

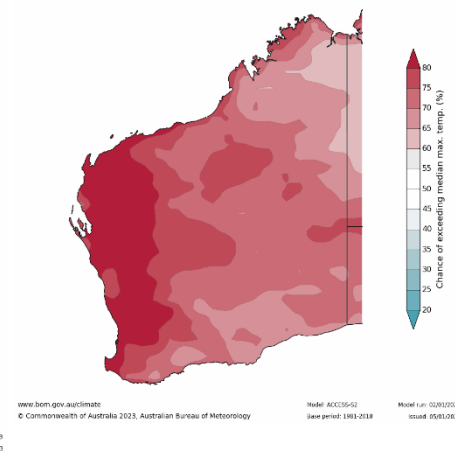
Chance of exceeding the median rainfall for February to April 2023



Hotter days and nights for most of WA

Daytime maximum temperatures are very likely to be warmer than median for all WA.

Chance of exceeding the median maximum temperature for February to April 2023



Climate Driver Update

La Niña event current but easing in the tropical Pacific, should return to neutral in early 2023. Typically this increases the chances of a wetter summer in the north of WA.

IOD is currently neutral, having little affect on climate.

SAM is strongly positive having a drying influence on the south west of Australia. Likely to continue till mid January.

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. In recent decades, there has also been a trend towards a greater proportion of rainfall from high intensity short duration rainfall events, especially across northern Australia during their wet season.

Chance of exceeding the median minimum temperature for February to April 2023

