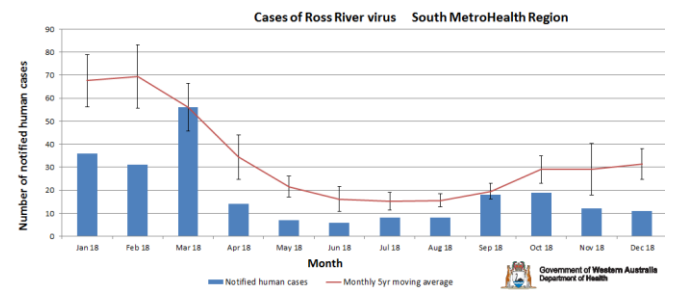
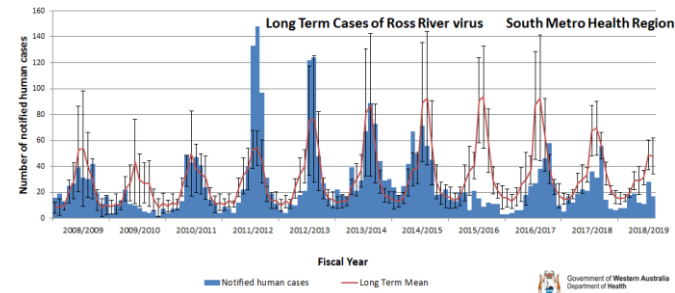




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Ross River virus (RRV) There were a total of 76 cases with 28 cases from metro (6 notified by doctor and one follow up survey received) and 46 cases from SW Peel (16 notified by doctor with 5 follow up surveys received). The monthly number of RRV cases has been significantly lower than the long term monthly mean for all months except September when the number was within the normal range.



Barmah Forest virus (BFV)

There were two BFV cases reported during this period. Only one of these cases was notified by doctor. No follow up data are available. The long term monthly mean is less than two BFV cases per month.

BFV 2018	Jul	Aug	Sep	Oct	Nov	Dec	Total
Metro					1		1
Melville (C)					1		1
LEEMING					1		1
SW - Peel		1					1
Murray (S)			1				1
STAKE HILL			1				1
Total		1			1		2

RRV 2018	Month	Jul	Aug	Sep	Oct	Nov	Dec	Total
Metro		3	1	5	9	7	3	28
Armadale (C)					1	1	1	3
BEDFORDALE					1	1		2
PIARA WATERS							1	1
Canning (C)		1		1		2		4
LYNWOOD		1						1
QUEENS PARK				1				1
WILLETTON						2		2
Cockburn (C)		1		3	3	2		9
ATWELL				1				1
BIBRA LAKE		1			1			2
MUNSTER						1		1
SOUTH LAKE					2			2
SUCCESS				1		1		2
YANGEBUP				1				1
Fremantle (C)		1					2	3
BEACONSFIELD		1						1
FREMANTLE							1	1
SOUTH								
FREMANTLE							1	1
Gosnells (C)					2	2		4
BECKENHAM						1		1
HUNTINGDALE					1			1
LANGFORD						1		1
SOUTHERN RIVER				1				1
Melville (C)					2			2
ARDROSS					1			1
BATEMAN					1			1
Kwinana (C)			1	1	1			3
PARMELIA			1					1
WANDI				1				1
WELLARD					1			1

RRV 2018 ctd	Jul	Aug	Sep	Oct	Nov	Dec	Total
SW - Peel	5	7	13	10	5	8	48
Mandurah (C)	3	3	3	7	2	7	25
COODANUP	1					1	2
DAWESVILLE			1			1	2
DUDLEY PARK			1	1		1	3
FALCON	1					1	2
GREENFIELDS					1		1
HERRON						2	2
LAKELANDS				2			2
MADORA BAY	1	1					2
MANDURAH						1	1
MEADOW SPRINGS			3	3			6
PARKLANDS					1		1
SAN REMO				1			1
Murray (S)	1	1	4		2		8
BARRAGUP	1		1		1		3
RAVENSWOOD			1				1
SOUTH YUNDERUP			1	2			3
WEST PINJARRA					1		1
Rockingham (C)	1	3	5	2			11
BALDIVIS				1	1		2
COOLOONGUP					1		1
PORT KENNEDY			1				1
ROCKINGHAM		1	1				2
SAFETY BAY			1				1
SINGLETON	1	1	1				3
WARNBRO			1				1
Serpentine-Jarrahdale (S)			1	1	1		3
CARDUP				1			1
KEYSBROOK			1				1
HOPELAND					1		1
Waroona (S)						1	1
WAROONA						1	1
Total	8	8	18	19	12	11	76

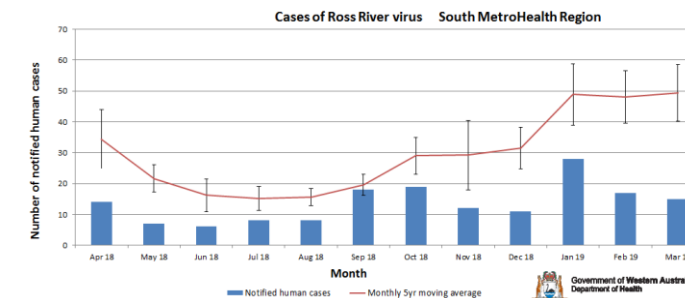
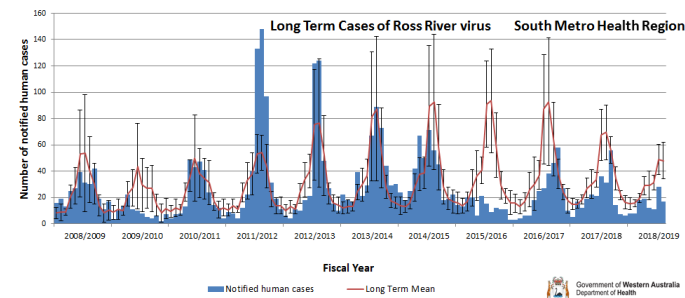


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Ross River virus (RRV) There were a total of 24 cases from the metro region (5 were notified by doctor, 2 follow up surveys received) and 36 cases from SW-Peel (17 were notified by doctor, 7 follow up surveys were received). The monthly number of RRV cases has been significantly lower than the long term monthly mean since October 2018.

RRV 2019	Month				Total
	Jan	Feb	Mar		
Metro	11	8	5		24
Armadale (C)	1				1
ROLEYSTONE	1				1
Canning (C)		1			1
LYNWOOD		1			1
Cockburn (C)	2	2	1		5
ATWELL	1				1
BIBRA LAKE			1		1
COOLBELLUP		2			2
HAMMOND PARK	1				1
Gosnells (C)	5	3	2		10
BECKENHAM	1	1			2
CANNING VALE	2	1	2		5
KENWICK	1				1
THORNIE	1	1			2
Melville (C)	1				1
PALMYRA	1				1
South Perth (C)	1				1
COMO	1				1
Victoria Park (T)			1		1
VICTORIA PARK			1		1
Kwinana (C)	1	2	1		4
BERTRAM	1				1
CALISTA		1			1
WANDI		1			1
WELLARD			1		1

RRV 2019 ctd	Jan	Feb	Mar	Total
SW - Peel	17	9	10	36
Mandurah (C)	7	2	4	13
BOUVARD	1			1
COODANUP	1			1
DUDLEY PARK			1	1
ERSKINE	1			1
FALCON	1			1
GREENFIELDS	3		1	4
HALLS HEAD			1	1
LAKELANDS		1		1
MANDURAH			1	1
WANNANUP		1		1
Murray (S)	4	1		5
BARRAGUP	1			1
PINJARRA	2			2
SOUTH YUNDERUP		1		1
MEELON	1			1
Rockingham (C)	3	5	5	13
BALDIVIS	1	4	5	10
ROCKINGHAM	1			1
WAIKIKI	1			1
WARNBRO		1		1
Serpentine-Jarrahdale (S)	1	1		2
MUNDIJONG		1		1
HOPELAND	1			1
Waroona (S)	2		1	3
PRESTON BEACH	2			2
WAROONA			1	1
Total	28	17	15	60



Barmah Forest virus (BFV)

There have been no cases of BFV reported in this quarter. The last case reported was in November 2018 from Leeming. The long term mean for BFV cases in the South Metro region is up to one case per month.



El Niño conditions are associated with a decrease in rainfall and tidal activity.

La Niña brings wetter and warmer-than-normal weather which can increase mosquitoes and mosquito borne diseases.

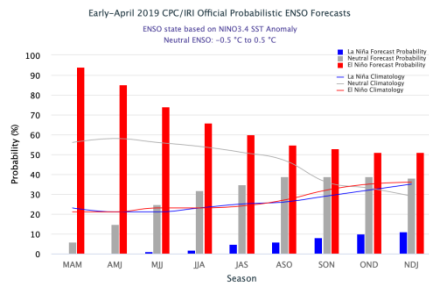
ENSO Wrap-Up issued by Australian BOM 30 April 2019
Outlooks indicate short-lived El Niño likely

The Bureau's *ENSO Outlook* remains at **El Niño ALERT**. This means the chance of El Niño developing in 2019 is approximately 70%. Although the surface of the tropical Pacific Ocean remains warmer than average, water below the surface of the ocean has been gradually cooling. A cooling of water at depth can lead to a cooling of the ocean surface, which may reduce the length of an event if one develops. Most climate models indicate surface warmth in the Pacific Ocean will remain at El Niño-like levels at least through May. The longer the ocean surface warmth remains, the more likely it is that the atmosphere will respond, and El Niño will develop. **If El Niño does develop in May, it's likely to be short lived.** El Niño typically brings drier than average conditions for eastern Australia during winter–spring, and warmer days across the southern two-thirds of the country. **The Indian Ocean Dipole (IOD) is currently neutral.** Climate outlooks indicate the IOD is likely to remain neutral for the remainder of autumn. However, by September half of the models predict a positive IOD will form, with the rest indicating neutral conditions will persist. A positive IOD typically means drier than average conditions for southern and central Australia during winter-spring.

IRI ENSO Forecast issued 19 April 2019

(International Research Institute for Climate and society)

ENSO Alert System Status: **El Niño Advisory** A weak El Niño is likely to continue through the Northern Hemisphere summer 2019 (65% chance) and possibly autumn (50-55% chance).



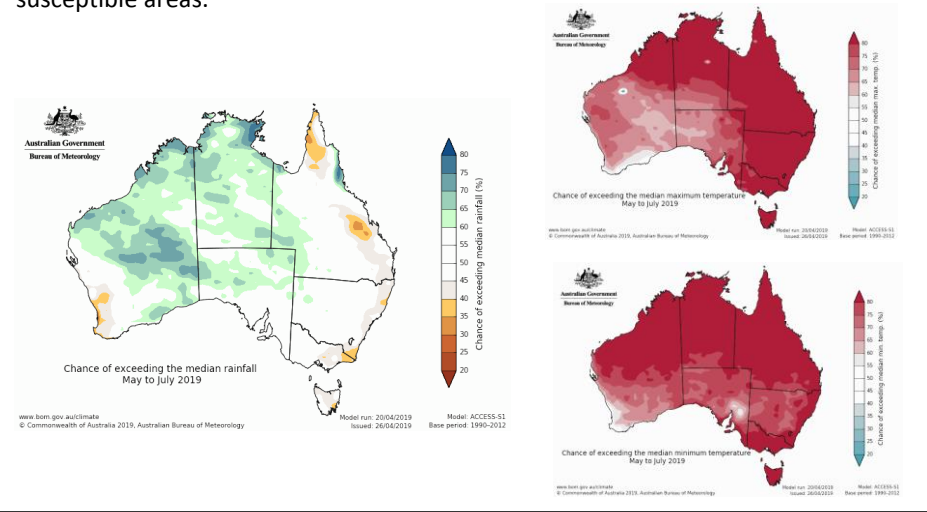
Climate outlook issued by Australian BOM 26 April 2019

Drier May in the east, wetter May–July for western and central Australia

While May is likely to be drier, the three months from May to July show most of southern Australia have no strong tendency towards above or below average rainfall. A wetter than average three months is likely for large parts of northwestern and central Australia, but many of these areas typically receive little or no rainfall at this time of the year, meaning only a small amount of rainfall is needed to exceed the median.

Warmer than average days and nights likely for most of Australia

Warmer than average days and nights during May to July are very likely (greater than 80% chance) for large parts of northern Australia, with chances reducing in the southwest. For northern Australia, the chances of being warmer than average are very high; greater than 80%. However, the forecast for drier than average conditions could bring more cloud-free nights, increasing the risk of frost in susceptible areas.



For further information contact

Medical Entomology

PO Box 8172, Perth Business Centre WA 6849

Phone: (08) 9285 5500

Fax: (08) 9383 1819

Email: medical.entomology@health.wa.gov.au

