

Dust activity	Dustiest August since 2005; Large dust storms
Wind strength	Second windiest August since 2005
Groundcover	Lowest since 2009
Rainfall	Some welcome rain in parts of NSW and VIC
Land management	Crops failing in the south-west of NSW

Dust activity

August 2018 had the highest dust activity for the month of August since DustWatch records began in 2005. The average dust hours for August 2018 across the 21 long-term DustWatch sites exceeded the 2009 result by 6.1 hours (Figures 1+2). Very strong pre-frontal northerly winds on 30 August and post-frontal westerlies on 31 August 2018 caused widespread raised dust. The event started in the dune fields and lakebeds of north-east South Australia and continued to pick up dust almost all the way to the east coast (Figure 10). The dust can be seen leaving the New South Wales coast the following morning (green insert Figure 10).

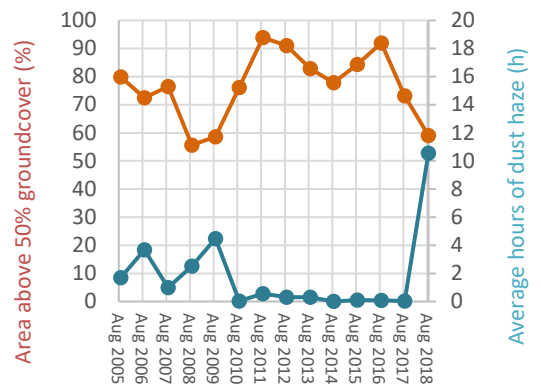


Figure 1 Area for Western LLS (Local Land Services) with above 50% groundcover (orange line) and monthly hours of dust (blue line) – August data only

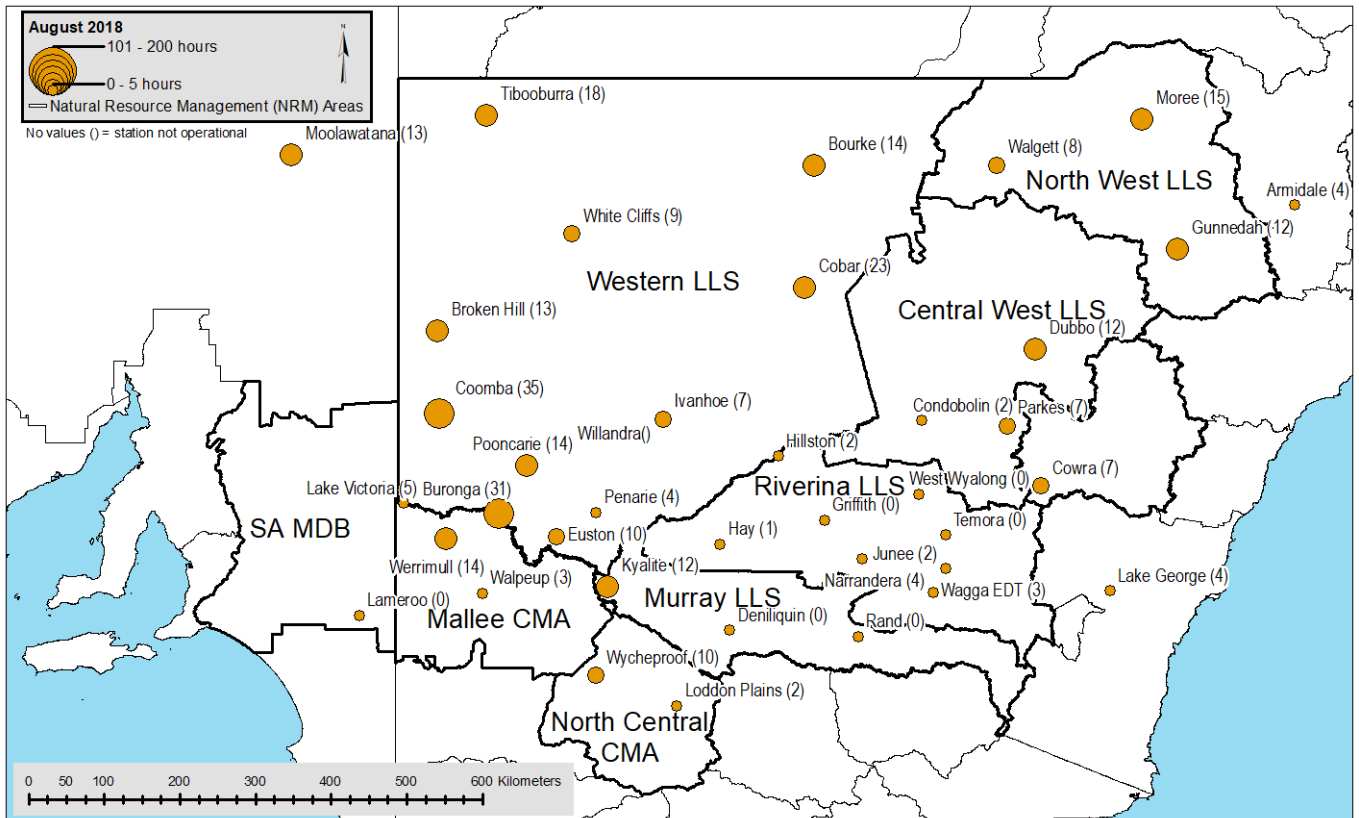


Figure 2 Hours of dust activity (number in brackets) at each DustWatch site in August 2018

Groundcover

The area above 50% groundcover (green colours in Figure 3) has decreased, especially west of the Darling River and around Gunnedah and Moree. The area above 50% groundcover in the Local Land Services Western region, for example, has dropped from 68% to 59% - the second lowest August value since records began in 2005 (Table 1). Only August 2008 recorded a lower figure (56%).

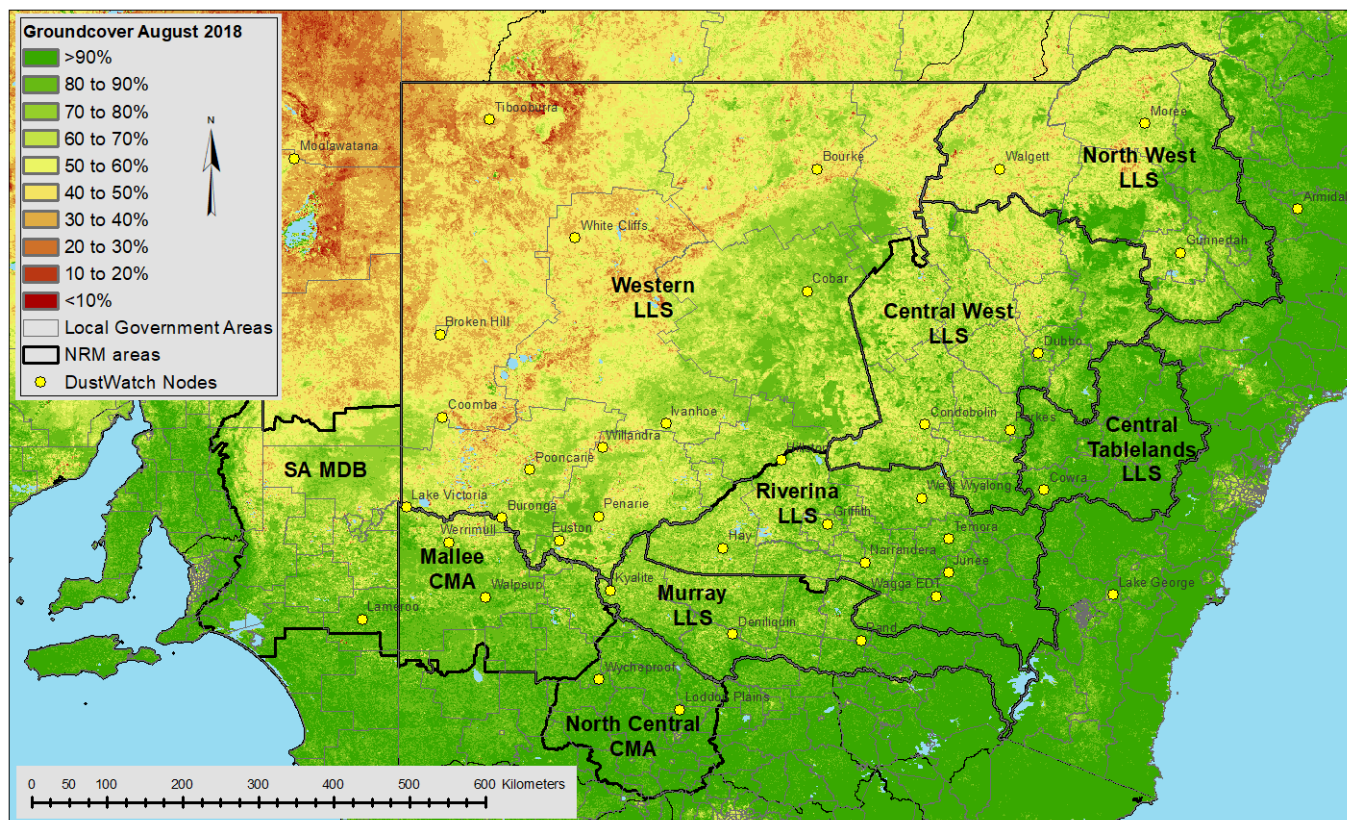


Figure 3 Groundcover for August 2018 as determined from MODIS by CSIRO

Table 1 Percentage of each NRM (natural resource management) region with groundcover >50% for August 2017 to August 2018 as determined from MODIS

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Aug 2017	99	100	100	100	98	100	98	73	100
Sep 2017	99	100	100	100	97	100	97	76	100
Oct 2017	99	99	100	100	98	100	94	67	100
Nov 2017	97	96	100	100	95	99	89	58	100
Dec 2017	95	92	99	100	93	96	84	51	100
Jan 2018	93	94	99	100	93	96	86	51	100
Feb 2018	92	94	99	100	93	95	86	53	100
Mar 2018	93	95	99	100	93	95	88	55	100
Apr 2018	96	96	99	100	95	97	91	62	100
May 2018	96	97	100	100	95	99	95	68	100
June 2018	97	99	100	100	96	100	98	72	100
July 2018	96	99	100	100	95	100	96	68	100
Aug 2018	93	98	100	100	93	99	94	59	100

Groundcover change

Groundcover has increased between May 2018 and August 2018 in the southern cropping country of New South Wales, in the Mallee and North Central areas of Victoria (Green colours in Figure 4). The increases in the cropping areas are not as large as they should be at this time of the year, indicating failing winter crops in some areas. Some groundcover reductions are visible in the north and west of New South Wales (red colours).

Groundcover change is mixed in the South Australian Murray Darling Basin area that is showing both increasing and decreasing areas of groundcover.

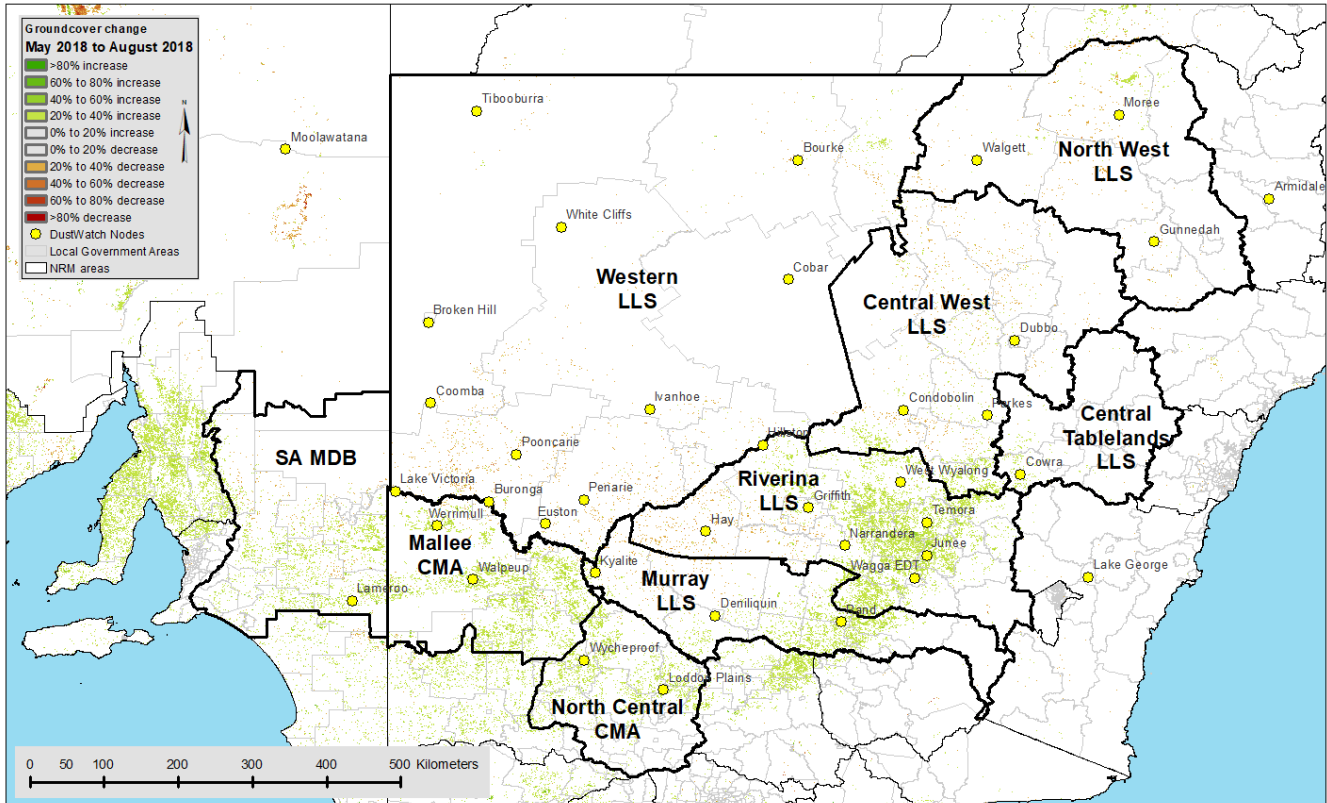


Figure 4 Groundcover change between May 2018 and August 2018 as determined from MODIS

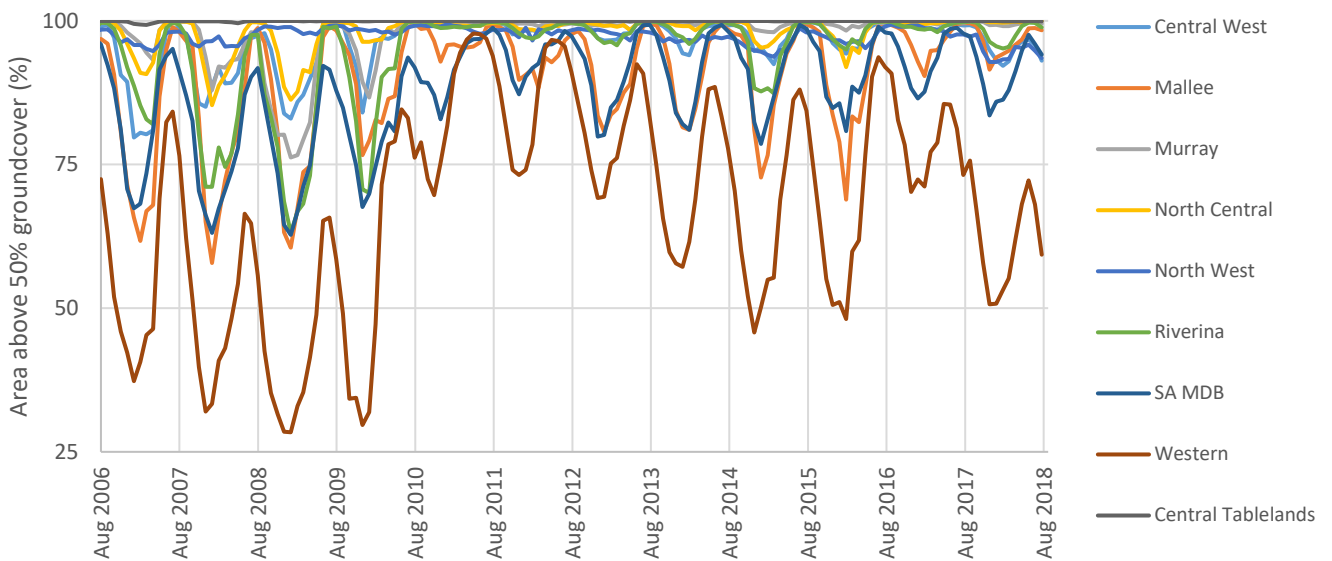


Figure 5 Percentage area of NRM with more than 50% cover since August 2005 as determined from MODIS

Comparing August 2018 with August 2017, Figure 6 shows much lower groundcover across New South Wales, particularly in the Local Land Services Western, North West and Central West regions. When comparing August 2018 to 2009, the year of the 'Red Dawn' dust storm, groundcover values are lower than 2009 in the north-east of the State, particularly in the Local Land Services North West and Central West regions (red colours in Figure 7). Groundcover is better in the south (green colours in Figure 7).

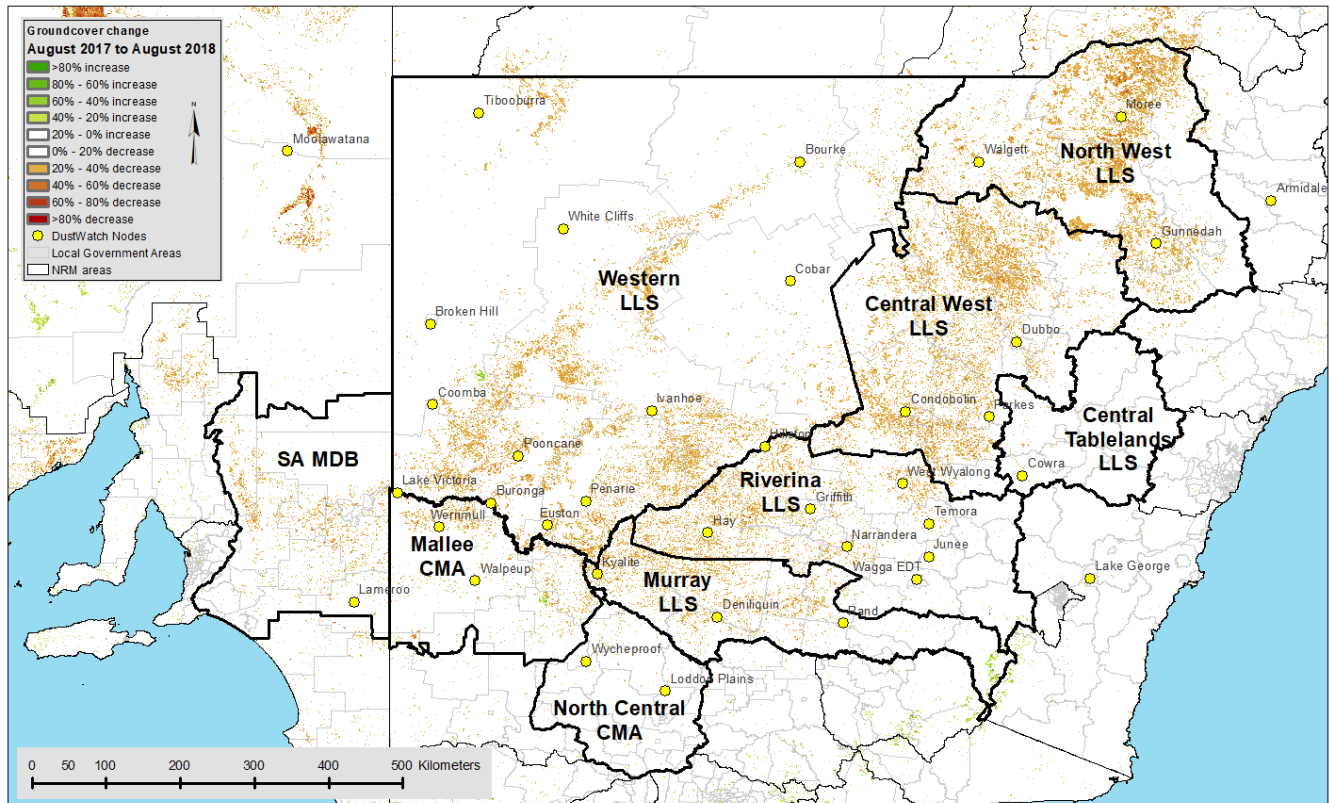


Figure 6 Groundcover change between August 2017 and August 2018 as determined from MODIS

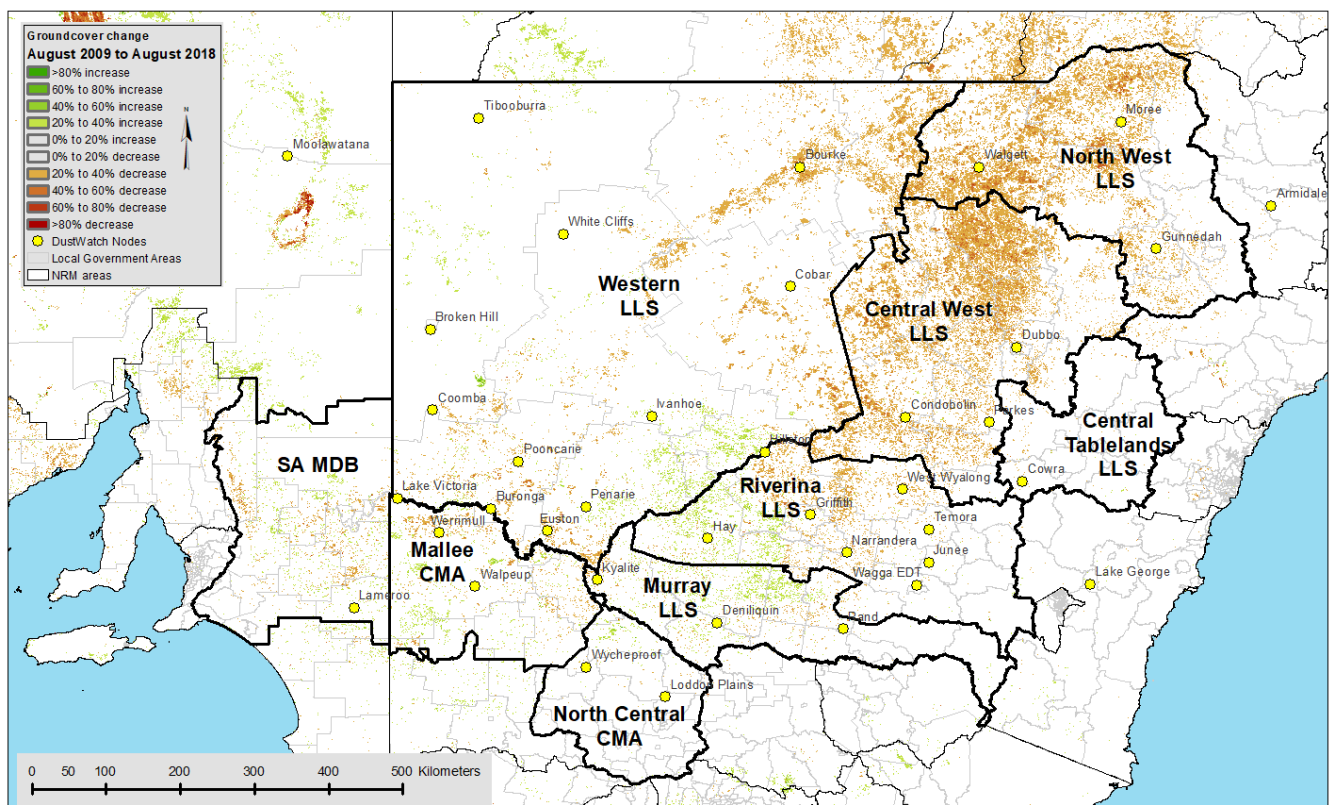


Figure 7 Groundcover change between August 2009 and August 2018 as determined from MODIS

Rainfall

Some welcome rainfall was recorded along parts of the wheat/sheep belt of New South Wales, in northern Victoria and eastern South Australia in August 2018 (Figure 8). Unfortunately, central and western NSW did not receive any substantial rain at all.

This leaves most of the state in drier than average conditions for the month of August (Figure 9a) and in the driest 10% of records for the last three months (Figure 9b).

The latest summary by the Department of Primary Industry has most of New South Wales drought declared: [Latest NSW Drought maps](#).

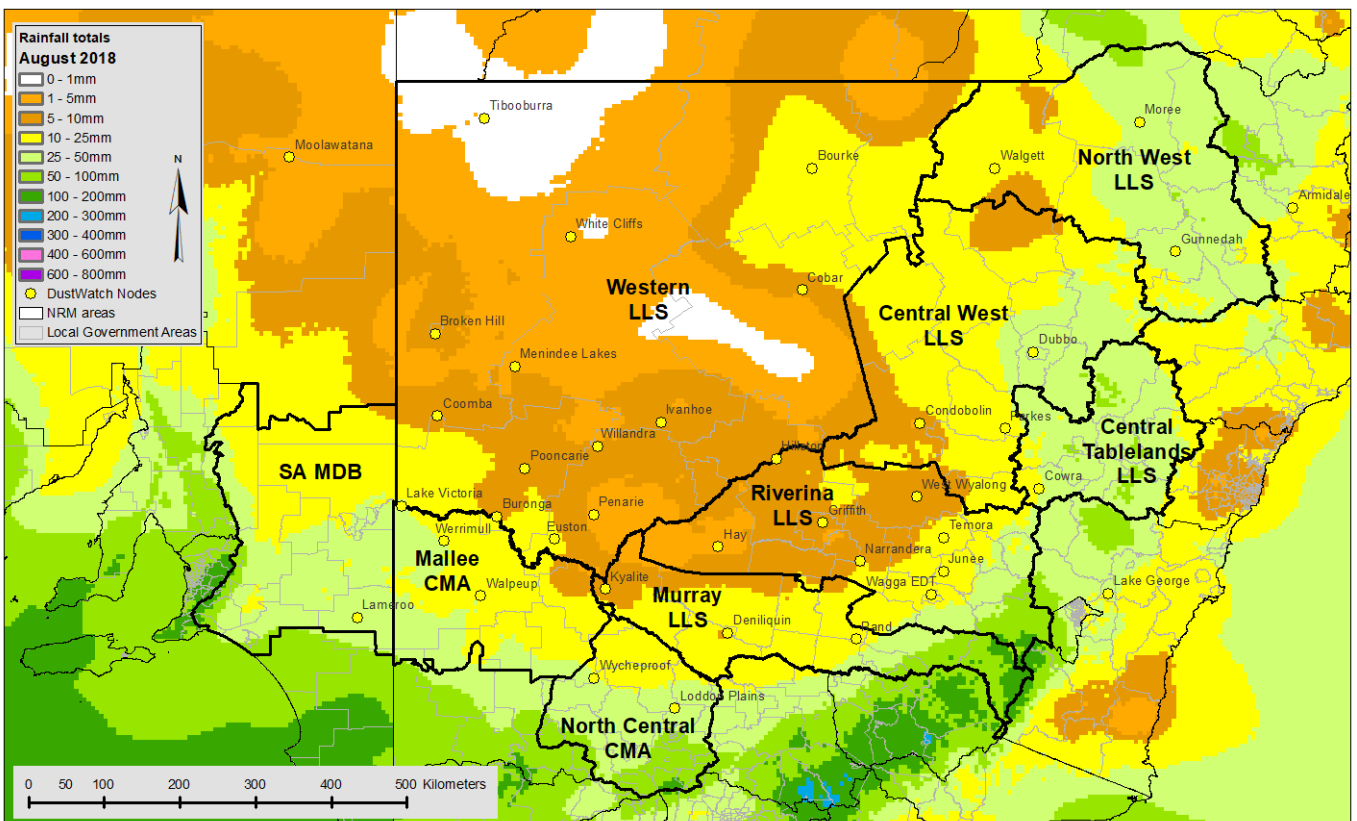


Figure 8 Rainfall totals for August 2018 (source: Bureau of Meteorology)

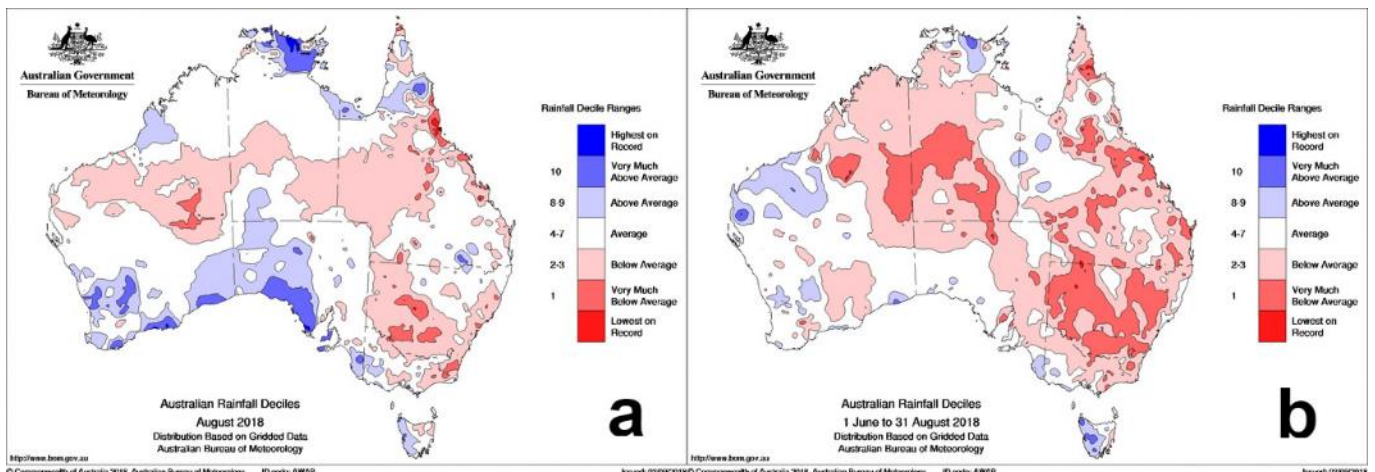


Figure 9 Rainfall deciles for August 2018 (a) and 1 June 2018 to 31 August 2018 (b)

VIIRS fires and MODIS satellite image

The number of fires in August 2018 (3393 pixels with temperature anomalies) was almost identical to last month (3298 pixels) with LLS Central West, North West and Western having the most fires.

The satellite image also shows the dust storm that occurred that day (Figure 10) with the green insert showing the same dust leaving the NSW east coast the following morning.

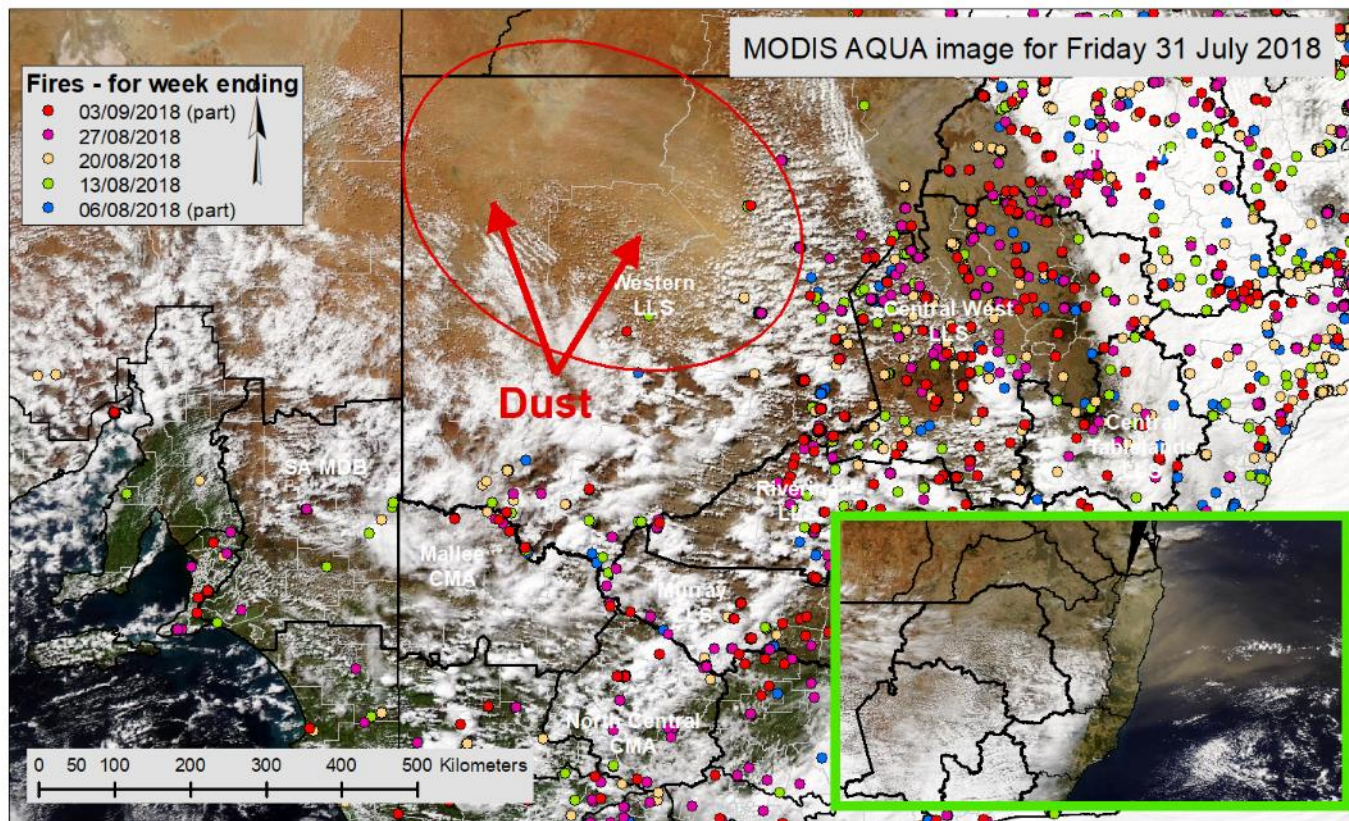


Figure 10 Pixels (375m) with active burning fires in August 2018 as determined from VIIRS satellite

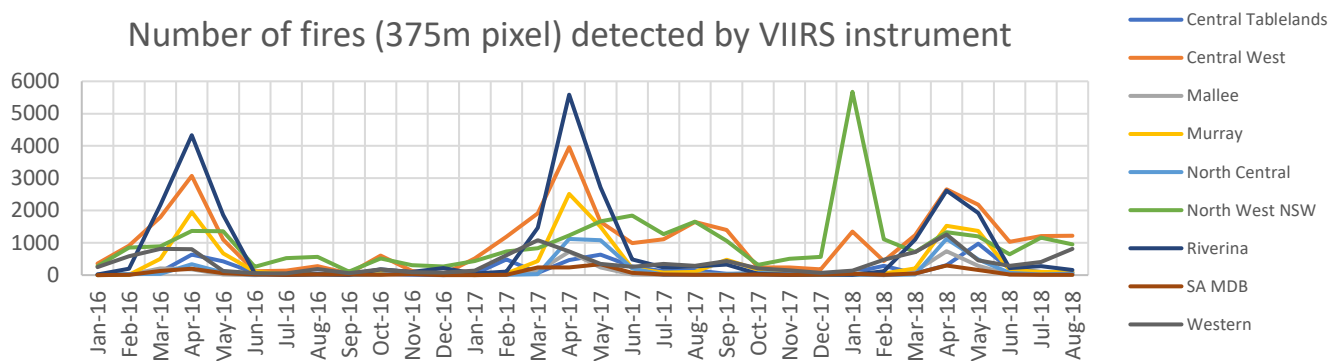


Figure 11 Number of 375 m pixels with active burning fires between January 2016 and August 2018.

The DustWatch team

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Dust data supplied by the Office of Environment and Heritage Rural Air Quality network. The MODIS image is courtesy of MODIS Rapid Response Project at NASA/GSFC; the VIIRS fire data is courtesy of the Fire Information for Resource Management System (FIRMS) and the rainfall maps are from the Australian Bureau of Meteorology. This project would not be possible without funding from: The National Landcare Programme, Riverina, Western, Central West, Central Tablelands and Murray Local Land Services (LLS) in NSW; the NSW EPA, the Mallee and North Central CMAs in Victoria and Murray Darling Basin NRM in South Australian, CSIRO, TERN and the Australian National University. We particularly thank our many DustWatch volunteers who provide observations and help maintain the instruments.

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