DustWatch Report

June 2018

Dust activity	Low due to rain and lack of strong winds
Wind strength	Low; average for this time of the year
Groundcover	Lowest winter level since 2008 and 2009 in western LLS
Rainfall	Some reasonable falls in the south; very dry elsewhere
Land management	Winter crops emerging in the south

Dust activity

Dust activity was low in June 2018 (Figure 2). This was partly due to the lack of strong winds but mainly caused by ongoing light rainfall in the south. Figure 1 shows the monthly average hours of wind above 40 km/h (red line) and 50 km/h (blue line) for the DustWatch sites since 2005.

If average conditions persist, strong winds will increase in July/August. Considering the extremely dry conditions and very low groundcover across parts of New South Wales there is the possibility of dust storms in the spring of 2018.

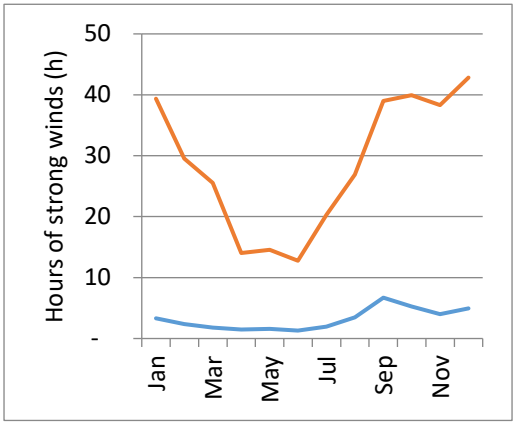

Figure 1: Hours of wind exceeding 40 km/h (red) and 50km/h (blue)

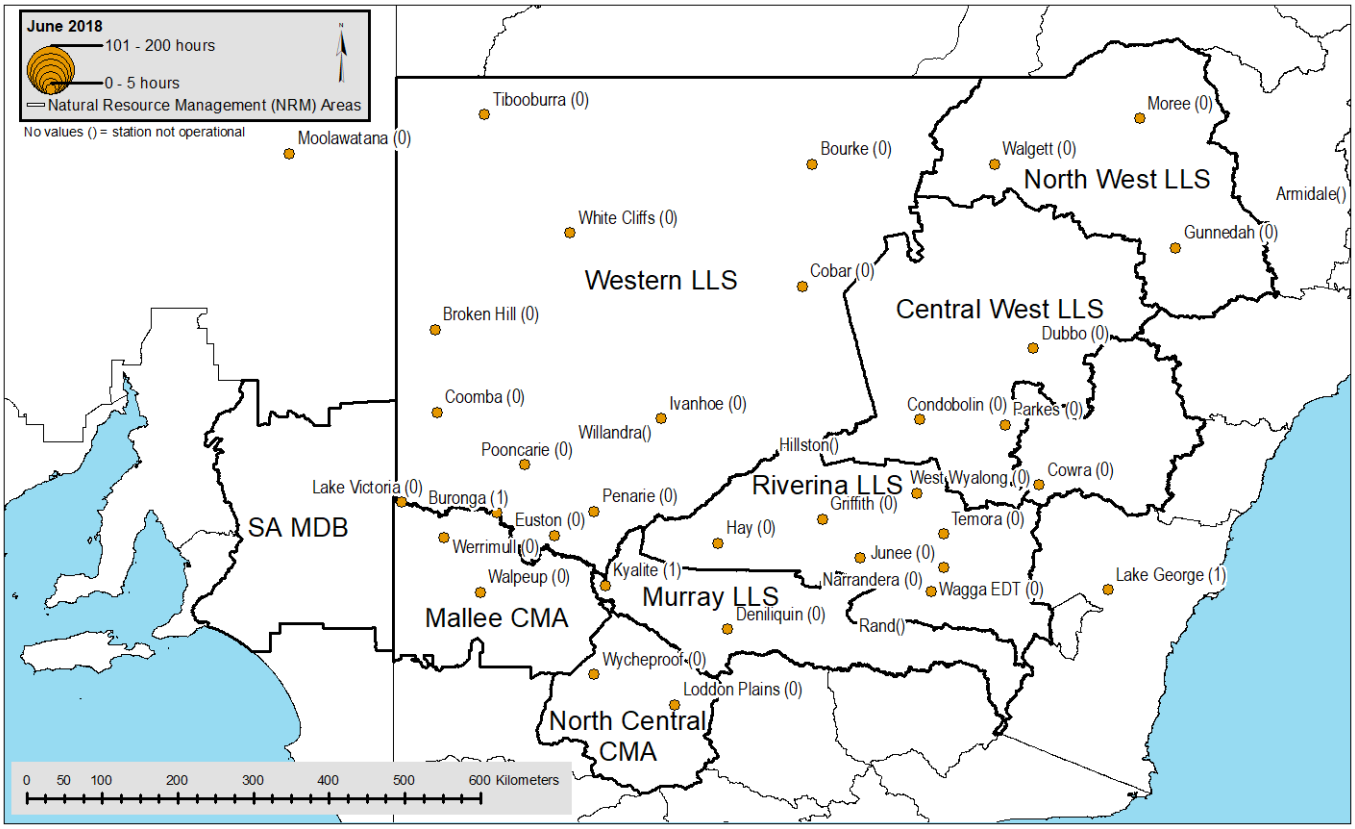

Figure 2: Hours of dust activity (number in brackets) at each DustWatch site in June 2018

Groundcover

The area above 50% groundcover (Figure 3) has remained steady or has slightly increased from May 2018. It has most likely reached its peak for the 2018 winter recovery (Table 1). Groundcover is estimated as the amount seen from above. It is distinct from biomass (the fodder available to animals), which is exceptionally low across most of the state (NSW State Seasonal Update – June 2018).

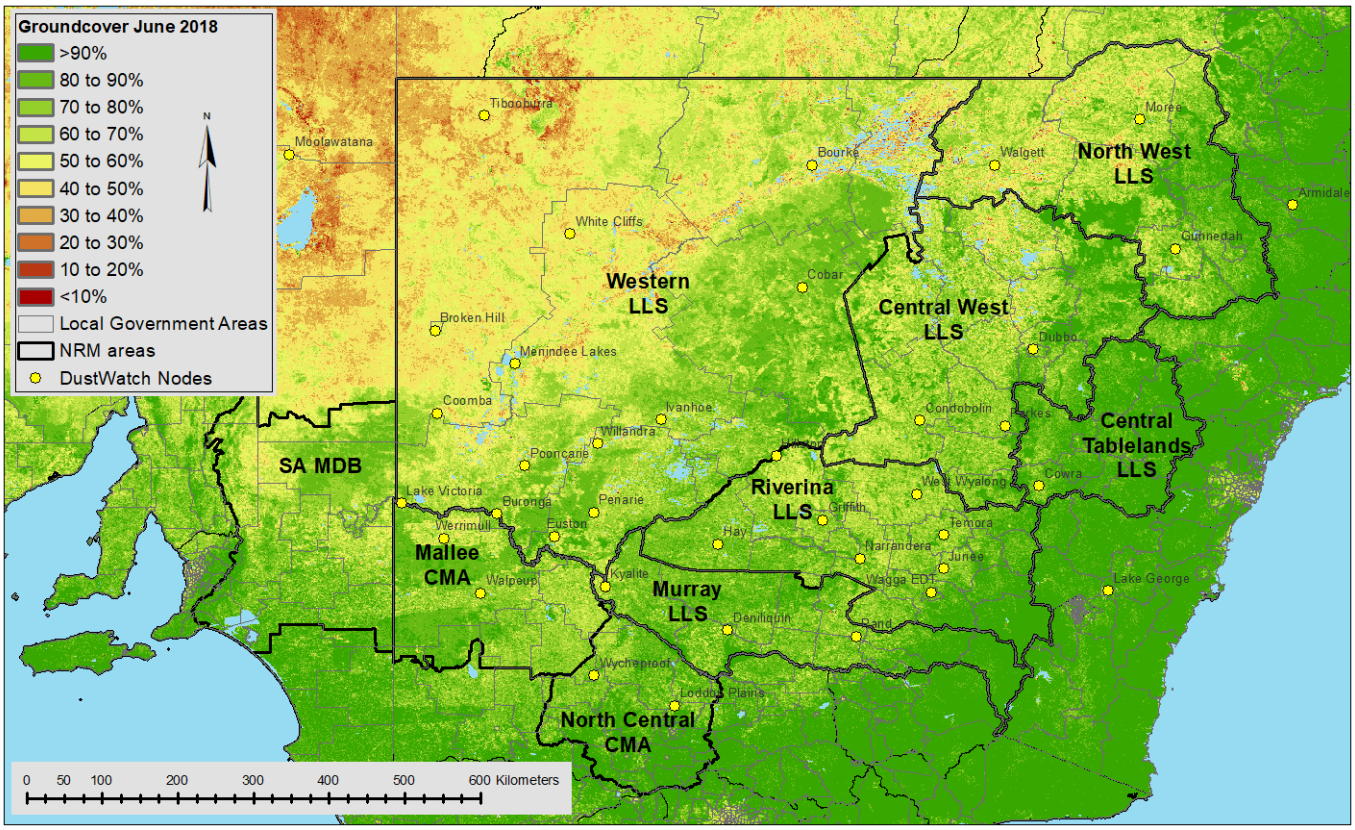

Figure 3: Groundcover for June 2018 as determined from MODIS by CSIRO

Table 1: Percentage of each NRM with groundcover >50% for July 2017 to June 2018 as determined from MODIS

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Jul 2017	99	99	100	100	98	100	99	81	100
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

Groundcover change

Changes in absolute groundcover values were very small (less than 20%) between March 2018 and June 2018 and in contrast to previous years where groundcover normally increases (Figure 4). Similarly, the area with greater than 50% groundcover has not increased to levels observed in June in previous years. The June groundcover peak value for the Local Land Services Western region has declined in the past three years (red line in Figure 5). This means that the winter recovery of cover has not been this low since the very dry years of 2006, 2008 and 2009. The area protected from wind erosion is likely to decline for the remainder of the calendar year and dust storms are a real possibility.

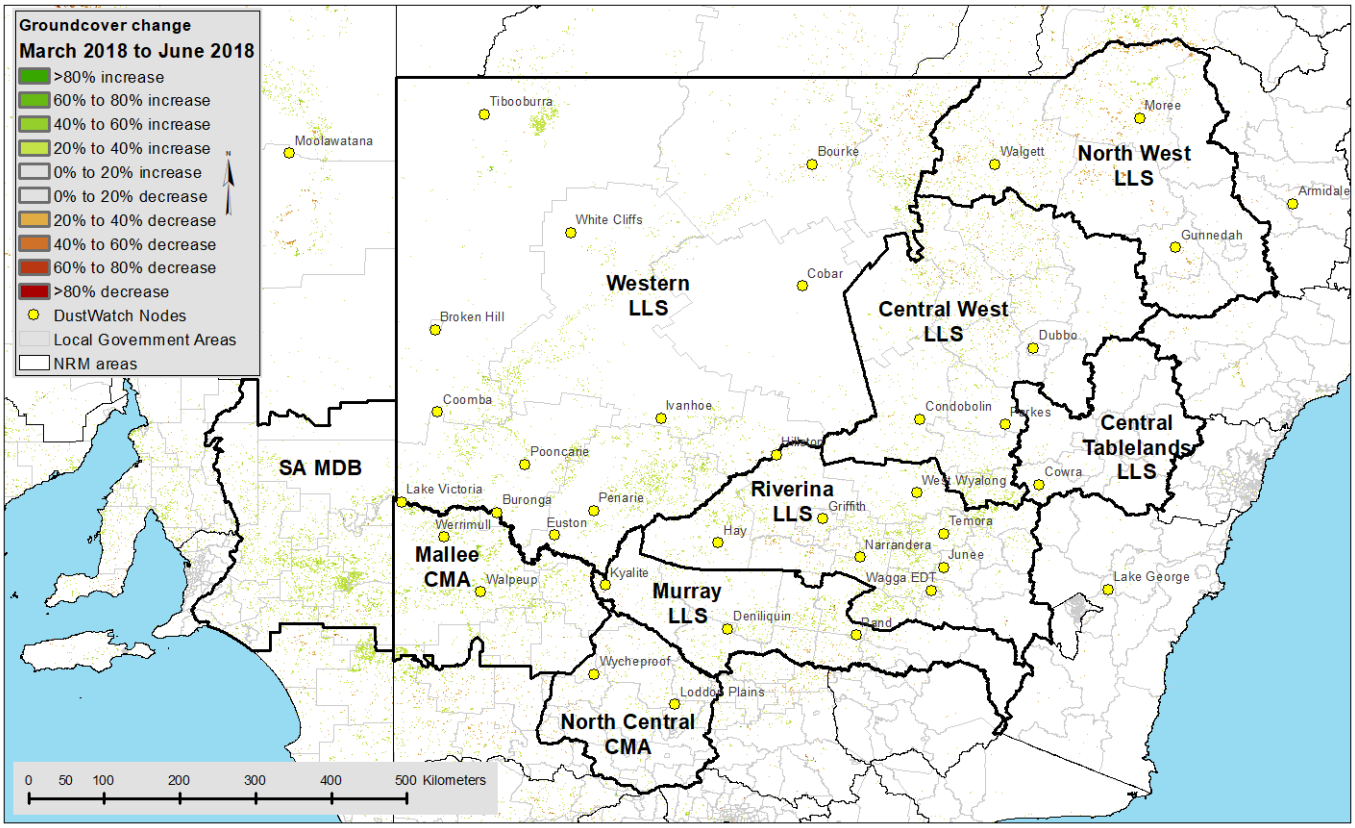

Figure 4: Groundcover change between March 2017 and June 2018 as determined from MODIS

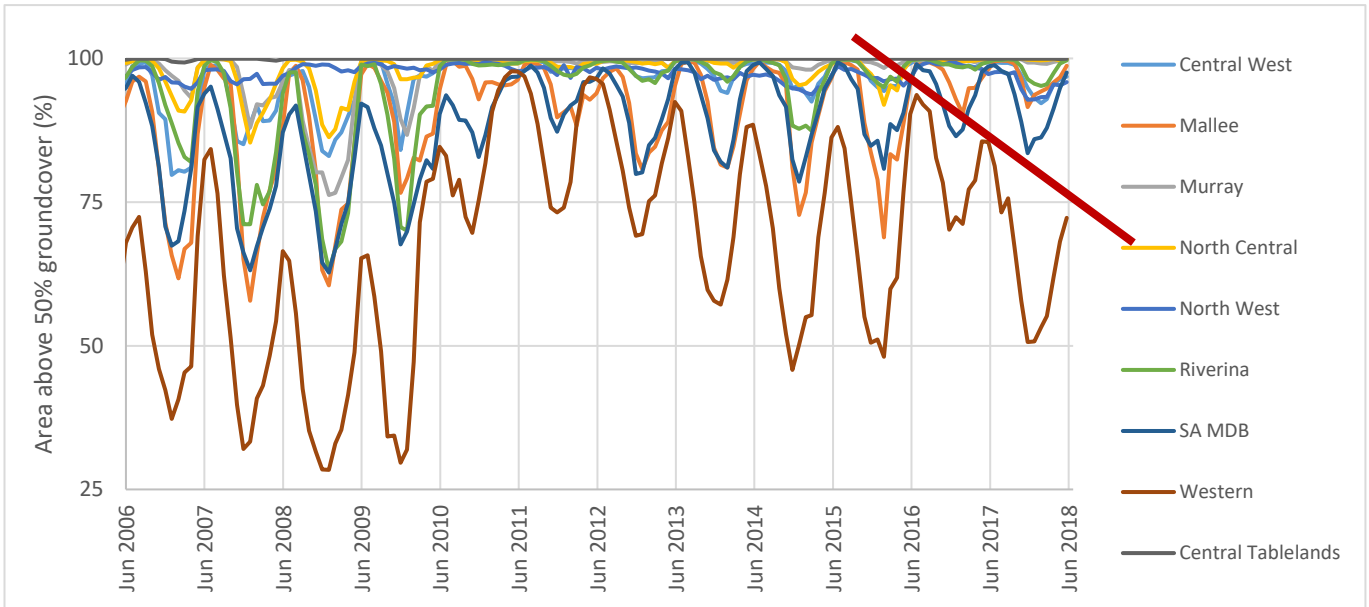

Figure 5: Percentage area of NRM with more than 50% cover since June 2006 as determined from MODIS

Rainfall

June 2018 saw some reasonable falls above 25 millimetres across central and southern New South Wales (Figure 6). The southern falls were spread across the first three weeks of June 2018, whereas the falls in the central west occurred later in the month.

The even spread of light rain across southern NSW and Victoria supressed any wind erosion.

Rainfall across the state in June 2018 was either average or below average (Figure 7a). This brings almost all of New South Wales, in fact, almost all of Australia, into the below average rainfall deciles for the last three months (Figure 7b).

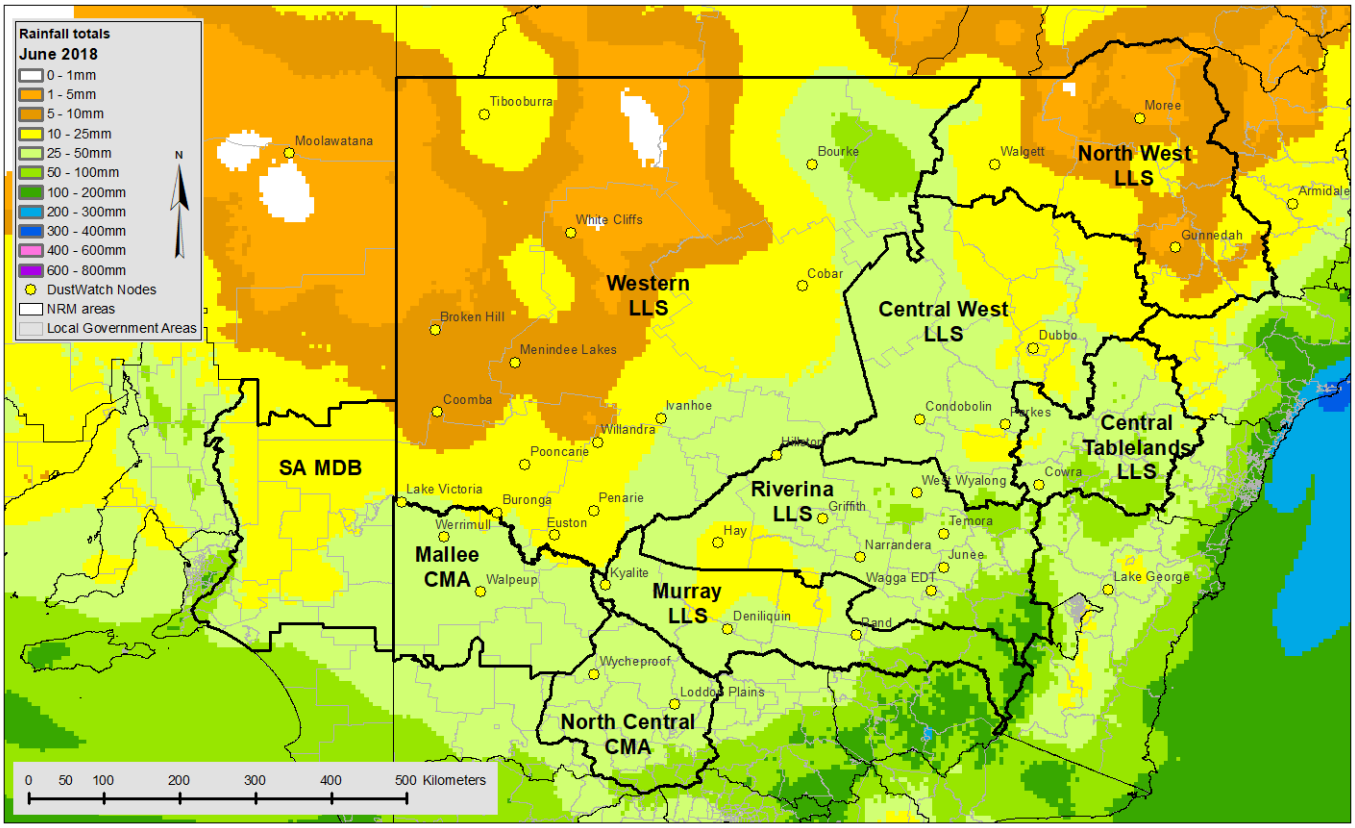

Figure 6: Rainfall totals for June 2018 (source: Bureau of Meteorology)

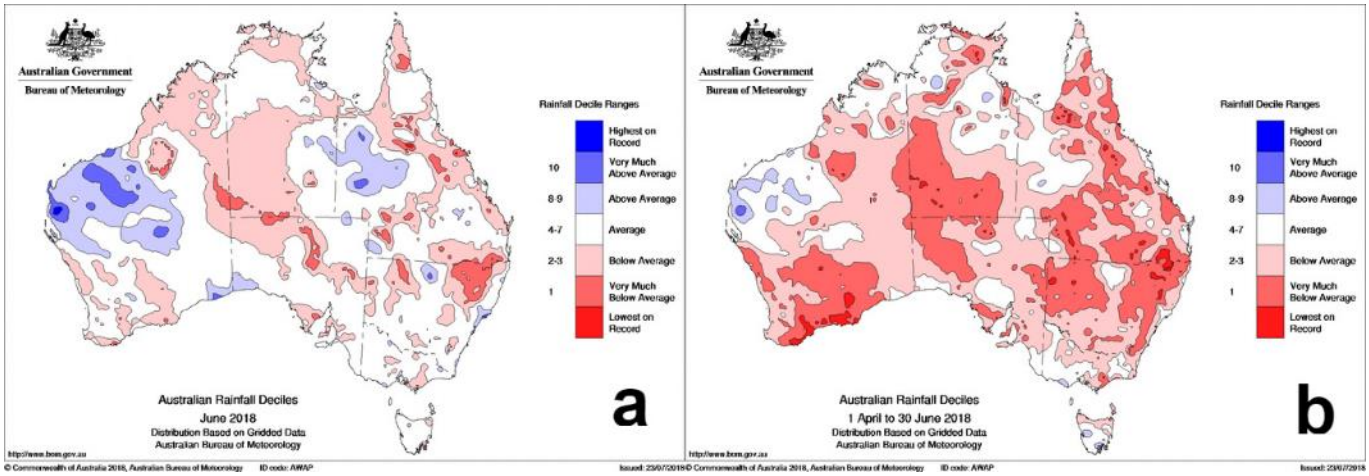

Figure 7: Rainfall deciles for June 2018 (a) and 1 April 2018 to 31 June 2018 (b)

VIIRS fires and MODIS satellite image

The number of fires in June 2018 (2644 pixels with temperature anomalies) was less than last June (4345) but much more than June 2016 (692). Fires in June 2018 were not restricted to the wheat/sheep belt, with dry conditions and lightning strike the likely cause of the fires in the western grazing areas.

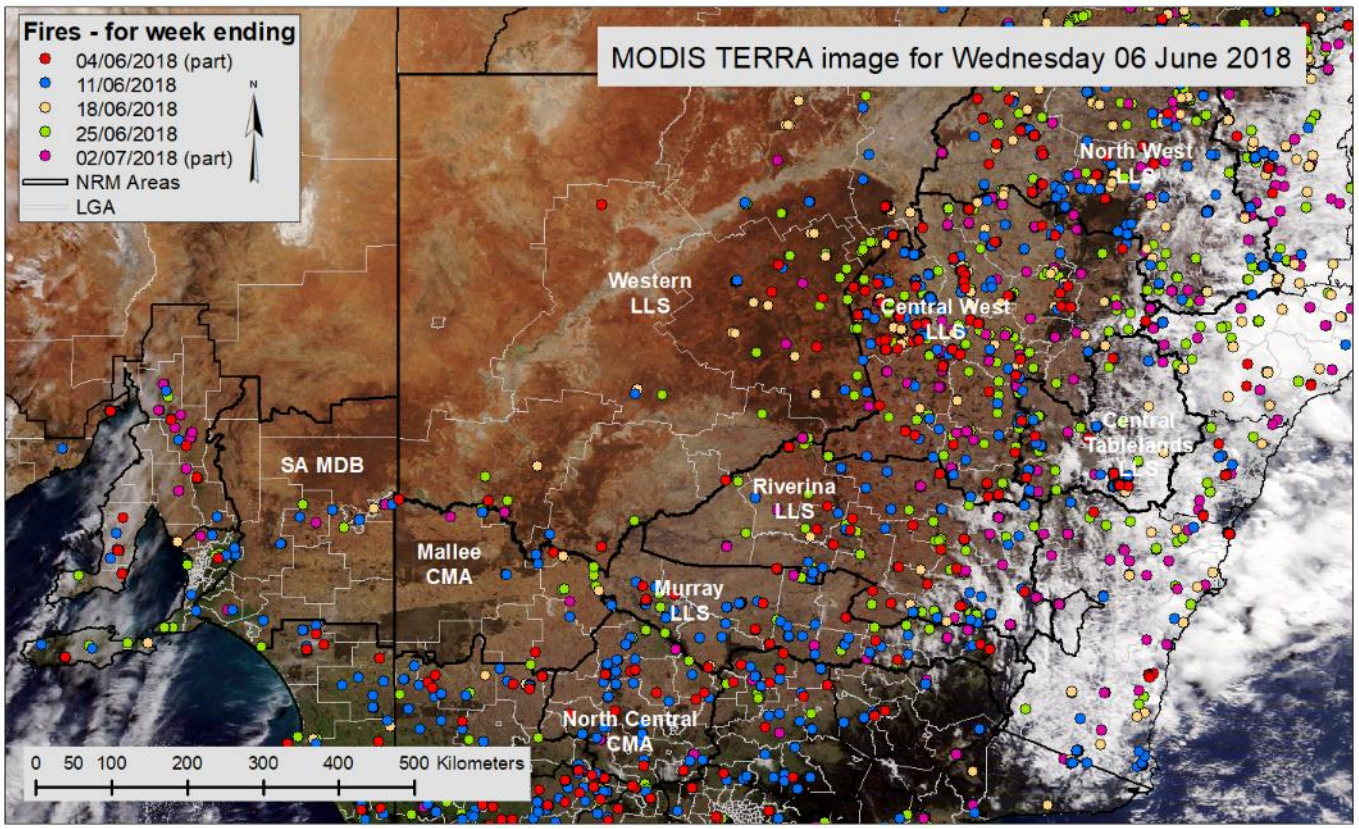

Figure 8: Pixels (375m) with active burning fires in June 2018 as determined from VIIRS satellite

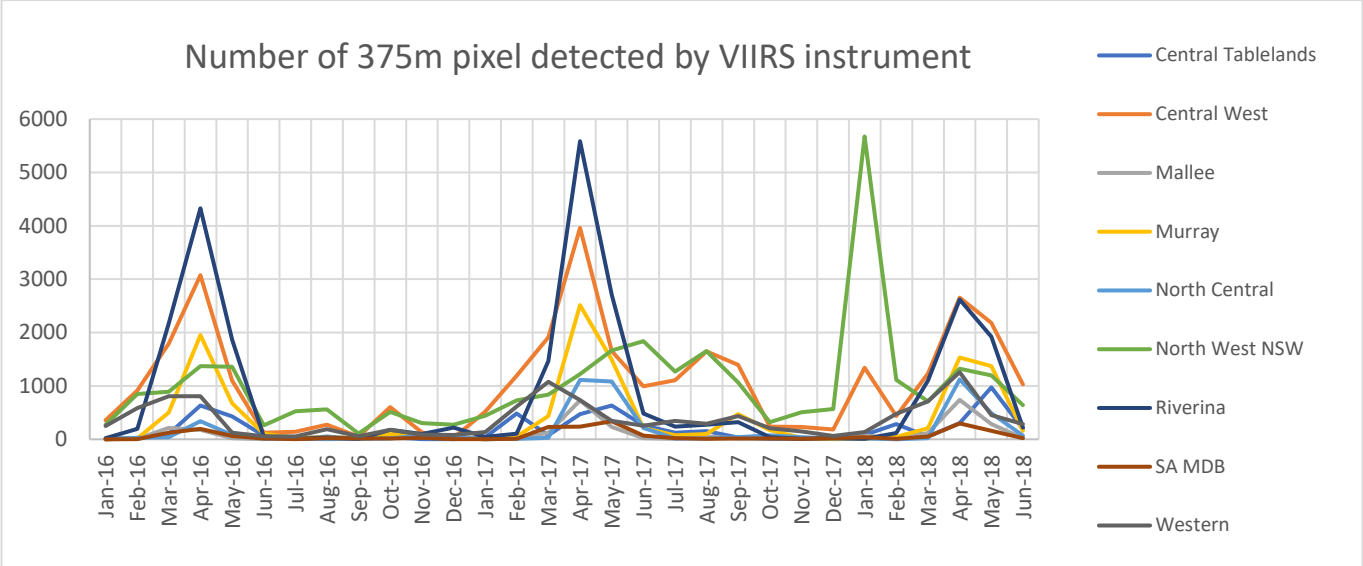

Figure 9: Number of 375 m pixels with active burning fires between January 2016 and June 2018.

From the engine room

June 2018 saw a new DustWatch station opened at Armidale in the NSW Tablelands. This site is co-located with the new Office of Environment and Heritage air quality monitoring station which is operated to Australian standards. This provides us with a very valuable comparison of DustWatch and air quality data. We will keep you posted on the outcome in a few months.

Photo 1: Armidale Air Quality monitoring site with added DustWatch equipment (below arrow). Photo: Stephan Heidenreich

The DustWatch team Contact us at dustwatch@environment.nsw.gov.au

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.
ISSN - 2206-3161 **OEH2018/0006**

Australian Government | National Landcare Programme