DustWatch Report

June 2022

Dust activity	Very little dust activity due to good groundcover
Wind strength	Reduced strong winds, average for June
Groundcover	Improving following good autumn rainfall
Rainfall	Very dry across most of New South Wales

Dust activity

Dust activity across the network was minimal for June 2022 (Figure 2). Minor dust activity was detected around Cobar and Bourke and in Condobolin, but very little activity elsewhere. A wetter than average autumn (Figure 7b) has improved groundcover across the state, with even the Local Land Services Western Region exceeding 90% of its area with > 50% groundcover; a value not seen since 2016.

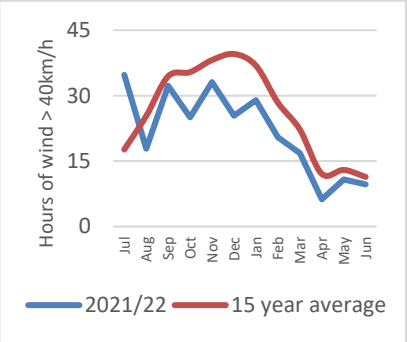

Figure 1 **Hours of wind exceeding 40km/h – average across all sites**

Note: Real time dust measurements from all our monitoring sites are at: Rural air quality network – live data

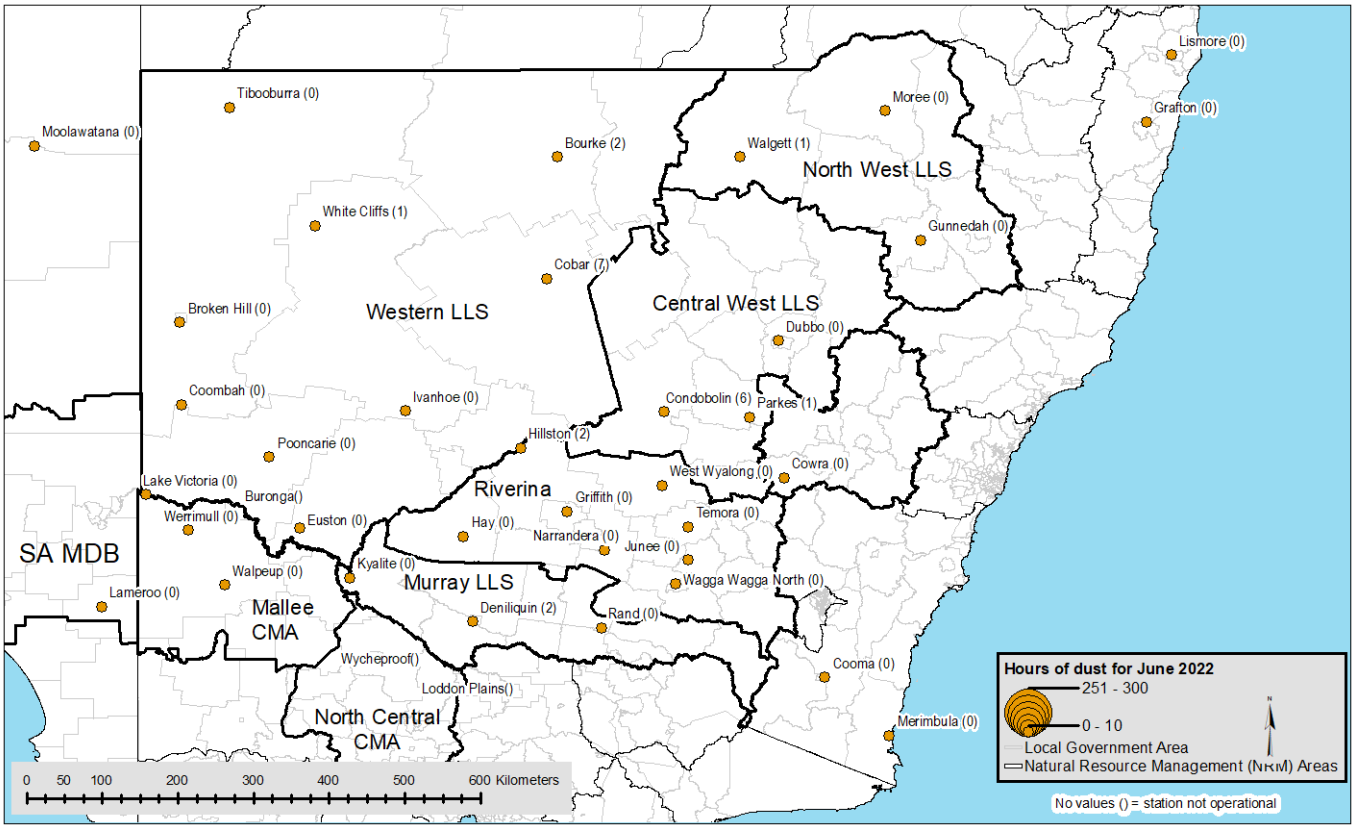

Figure 2 **Hours of dust activity (number in brackets) at each DustWatch site in June 2022**

Groundcover

The area with > 50% groundcover (green and yellow colours in Figure 3) has increased from May 2022 to values not seen since 2016 (Table 1 and Figure 5). This is due to the much above average autumn rainfall across most of New South Wales (Figure 7b). June 2022 rainfall was much below average, but soil moisture is still sufficient to sustain plant growth (DPI seasonal report June 2022).

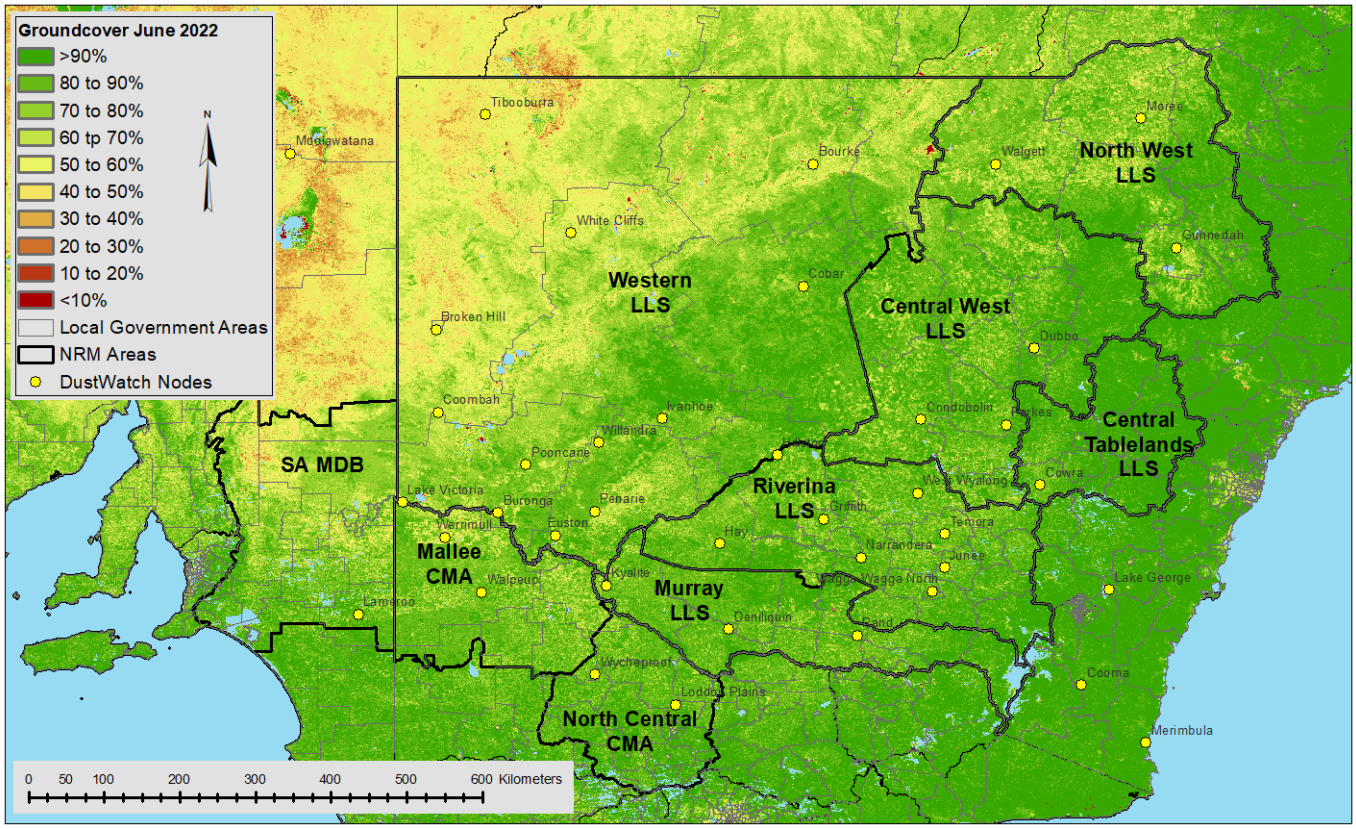

Figure 3 **Groundcover for June 2022 as determined from MODIS by CSIRO**

Table 1 **Percentage of each NRM with cover >50% for May 2021 to June 2022**

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
May 2021	99	92	99	100	96	99	89	74	100
Jun 2021	100	96	100	100	99	100	95	82	100
Jul 2021	100	99	100	100	99	100	96	78	100
Aug 2021	100	99	100	100	99	100	91	70	100
Sep 2021	100	98	100	100	98	100	85	61	100
Oct 2021	100	92	99	100	98	99	78	53	100
Nov 2021	99	85	98	99	98	98	73	49	100
Dec 2021	99	74	96	98	97	96	65	49	100
Jan 2022	99	76	97	98	99	98	68	54	100
Feb 2022	99	71	95	97	99	97	67	57	100
Mar 2022	99	75	96	98	99	98	71	60	100
Apr 2022	99	89	99	99	98	99	81	70	100
May 2022	100	95	100	100	99	100	88	82	100
Jun 2021	100	99	100	100	100	100	95	91	100

Groundcover change

The good rainfall in autumn 2022 enabled a sustained groundcover improvement in the western parts of New South Wales over the last three months (green colours in Figure 4). The Local Land Services Western Region improved from 60% of its area above 50% groundcover in March 2022 to 91% in June 2022. Values this high have not been seen in this region since 2016 (Figure 5).

In contrast, some isolated paddocks are visible along the sheep/wheat belt that show a groundcover reduction of > 20% (orange colours in Figure 4). These groundcover reductions are likely from very high values, e.g., 95% cover to 75% cover and pose no wind erosion risk.

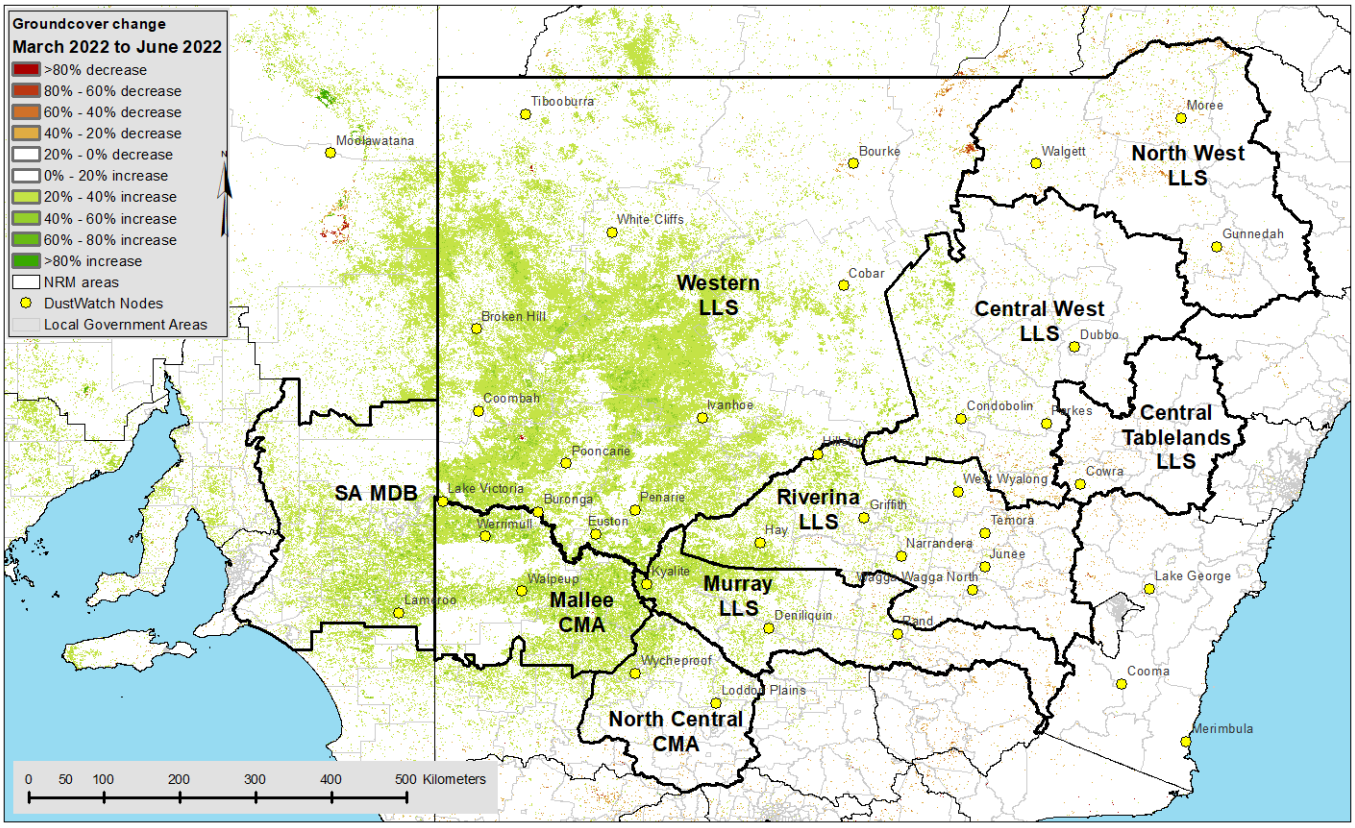

Figure 4 Groundcover difference between March 2022 and June 2022

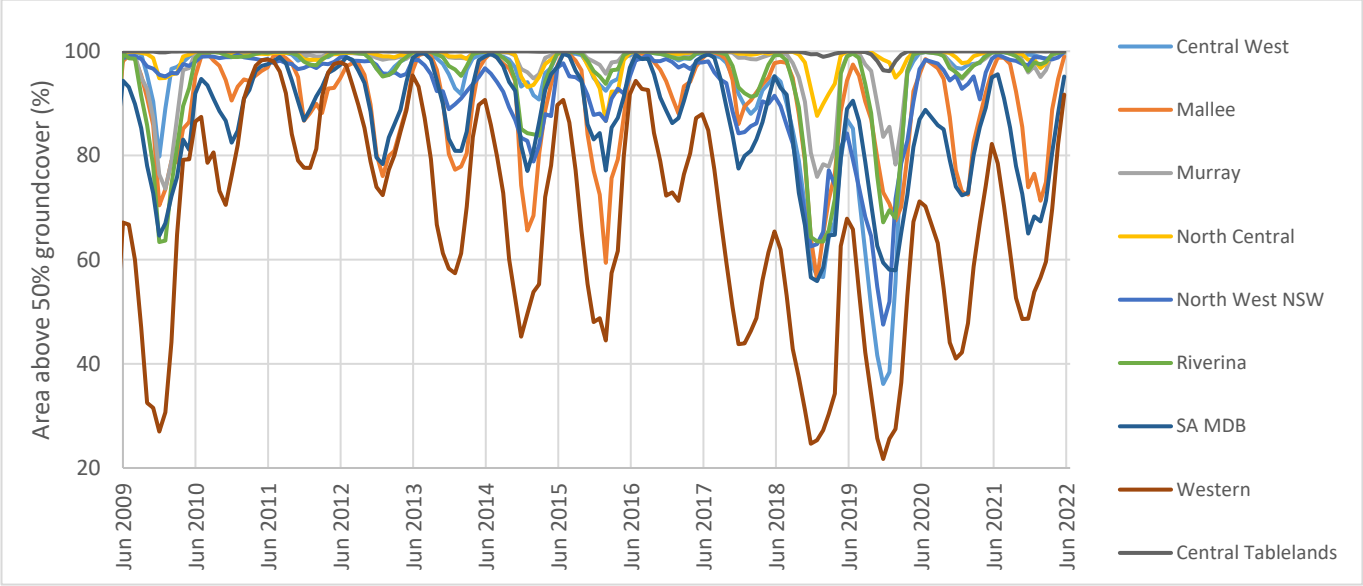

Figure 5 Area (%) of NRM with more than 50% cover since June 2009

Rainfall

2022 had a very dry start to the winter, with little rainfall recorded across the state and across the border into South Australia and Victoria. The only exception are the alpine areas east of Wagga Wagga that saw falls in excess of 100 mm (Figure 6).

Large parts of New South Wales were in the dries 10% of weather records for June (Figure 7a) which in turn has reduced the amount of the state that is in the wettest 10% of records for the last 3 months (Figure 7b).

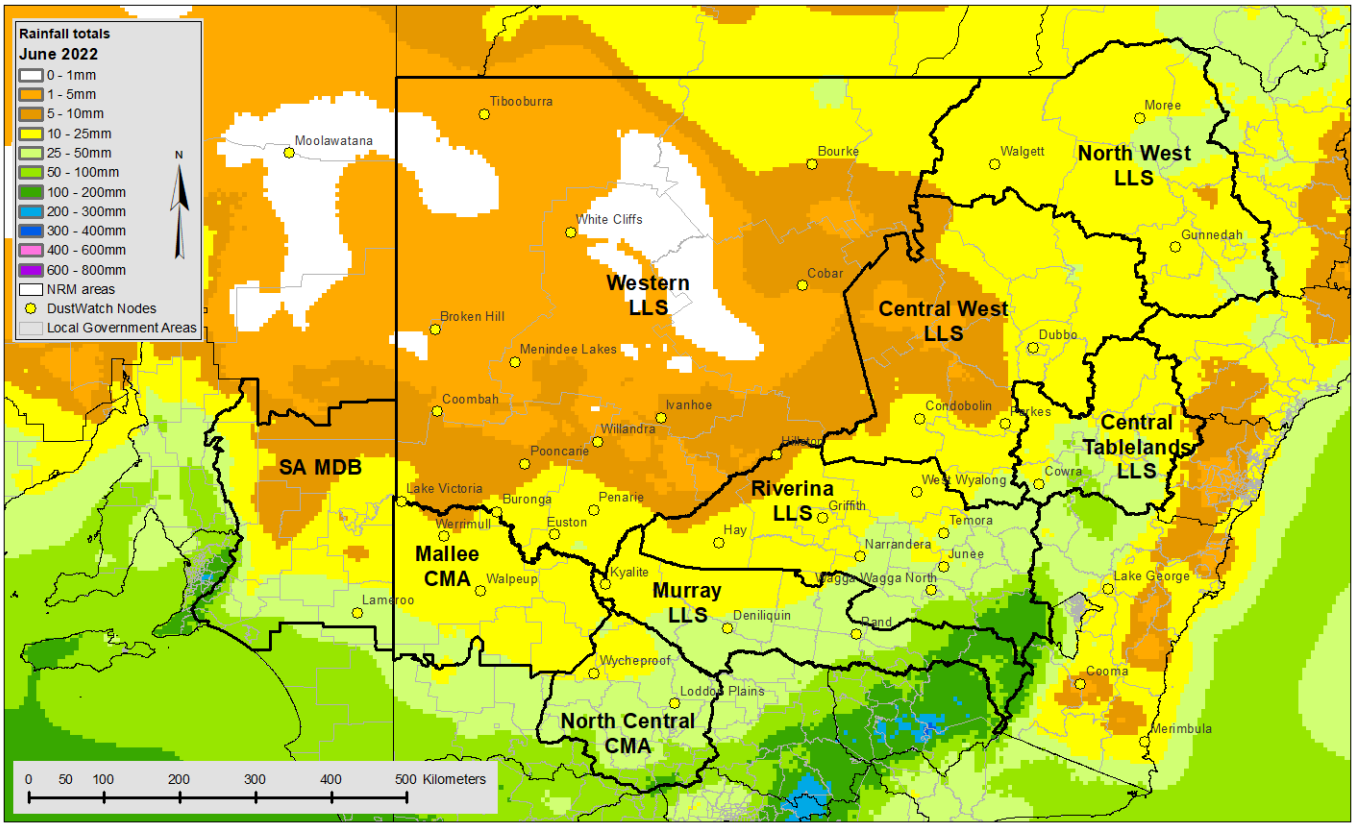

Figure 6 **Rainfall totals for June 2022 (source: Bureau of Meteorology)**

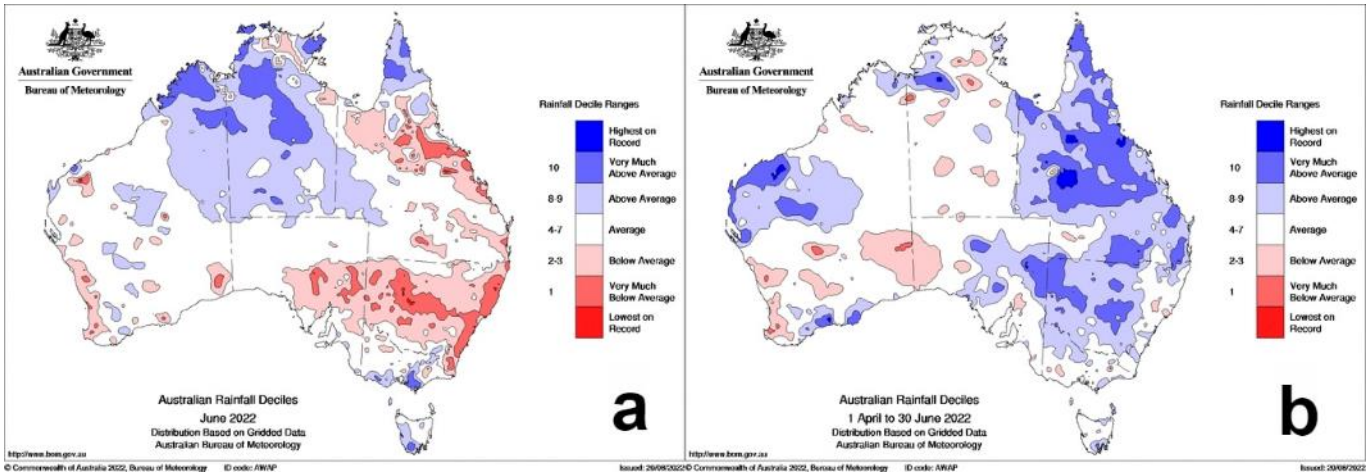

Figure 7 **Rainfall deciles for June 2022 (a) and 1 April 2022 to 30 June 2022 (b)**

VIIRS fires and satellite image

Haze from smoke and dust is difficult to separate. We use satellite imagery to manually classify every measurement into dust or smoke. The satellite detected 850 hot spots (375m pixel with temperature anomalies) in June 2022 (Figures 8 and 9), around 1/3 of the 2865 hot spots detected in May 2022. Most of the fires detected (462) occurred in the Local Land Services North West Region.

Note: **The number of hot spots is not equal to the number of fires**. Large fires have multiple hot spots, thereby increasing the number of detections. Cloud or fog can obscure hot spots, thereby reducing the number of detections.

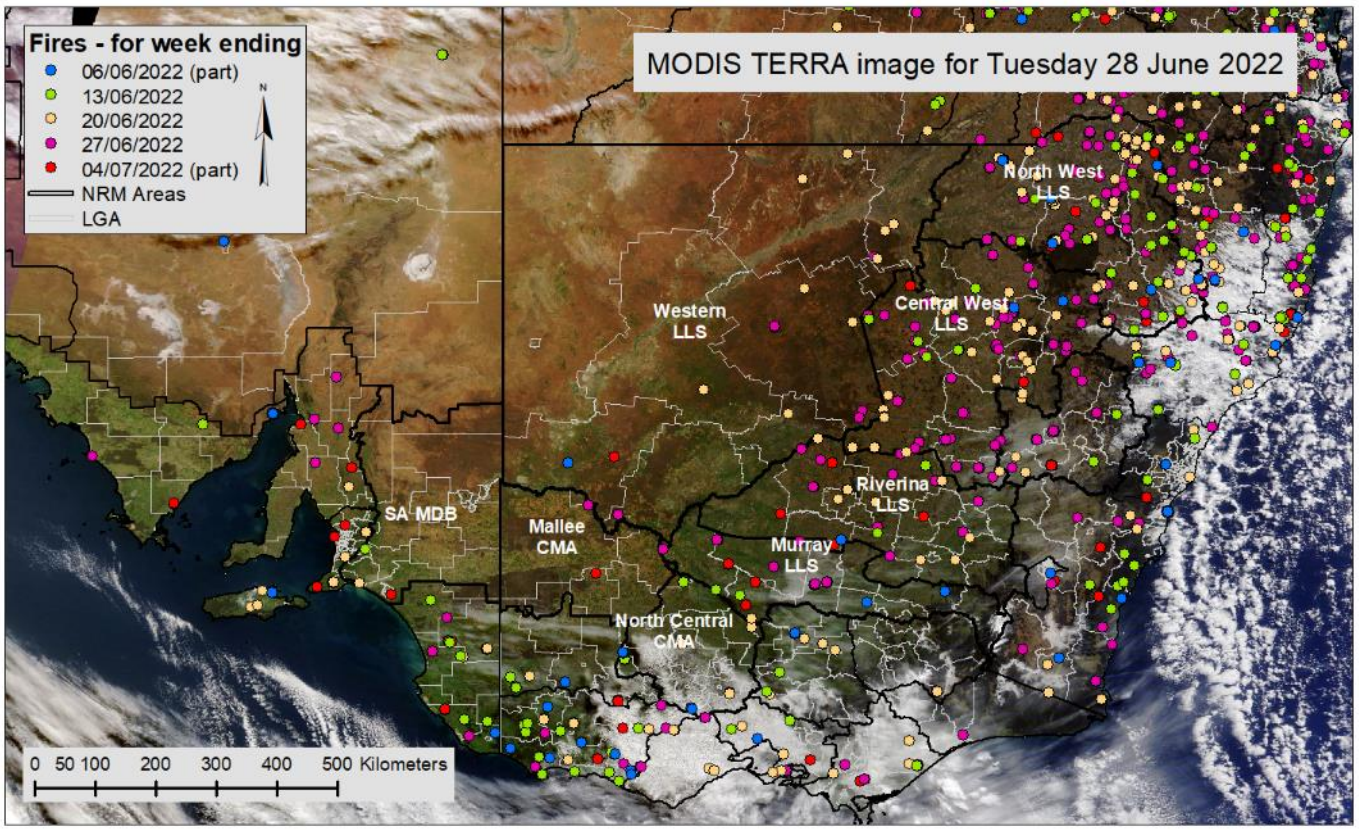

Figure 8 **Pixels (375m) with active burning fires in June 2022 as determined from VIIRS satellite**

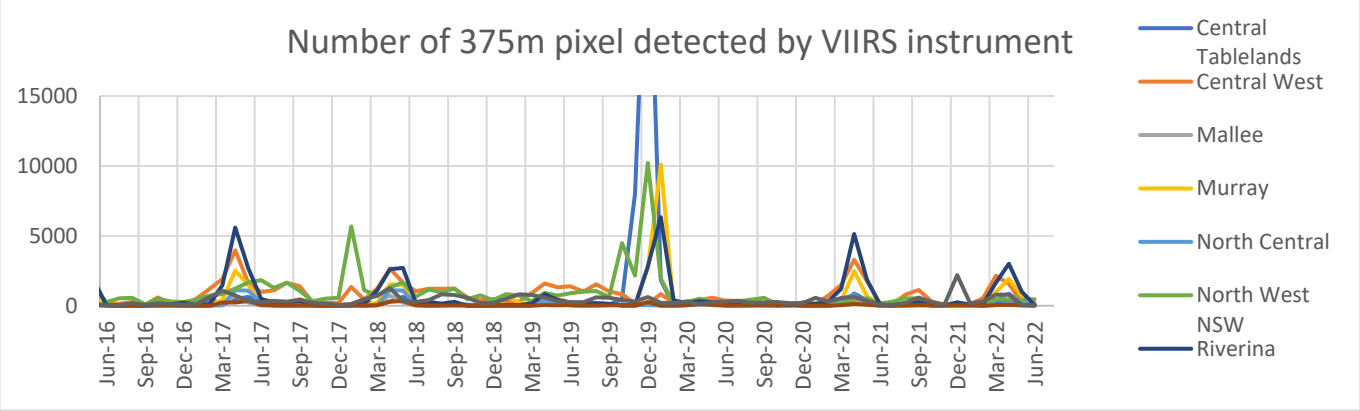

Figure 9 **Number of 375m pixels with active burning fires between June 2016 and June 2022**

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

Dust data supplied by the Department of Planning and Environment 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 Program, Western 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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