DustWatch Report

October 2022

Dust activity	Very little dust in NSW; some in SA and VIC
Wind strength	Very few hours of strong winds
Groundcover	Very good; unchanged from September 2022
Rainfall	Wettest October on BoM records

Dust activity

Dust activity was very subdued in October 2022 (Figure 2), mainly due to the very wet conditions. Wind strength (hours of wind > 40km/h; Figure 1) was very low for this time of the year, contributing to the low hours of dust. The only 2 noticeable exceptions are Moolawatana in South Australia where likely receding water level in the lake systems is exposing loose material and Werrimull in the Victorian Mallee where exposed sandhills with little groundcover are creating some dust.

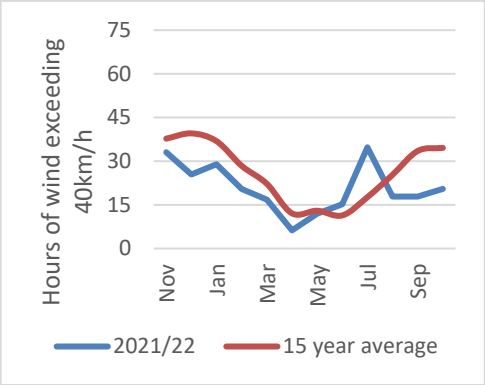

Figure 1 **Hours of wind exceeding 40km/h – average across all sites**

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

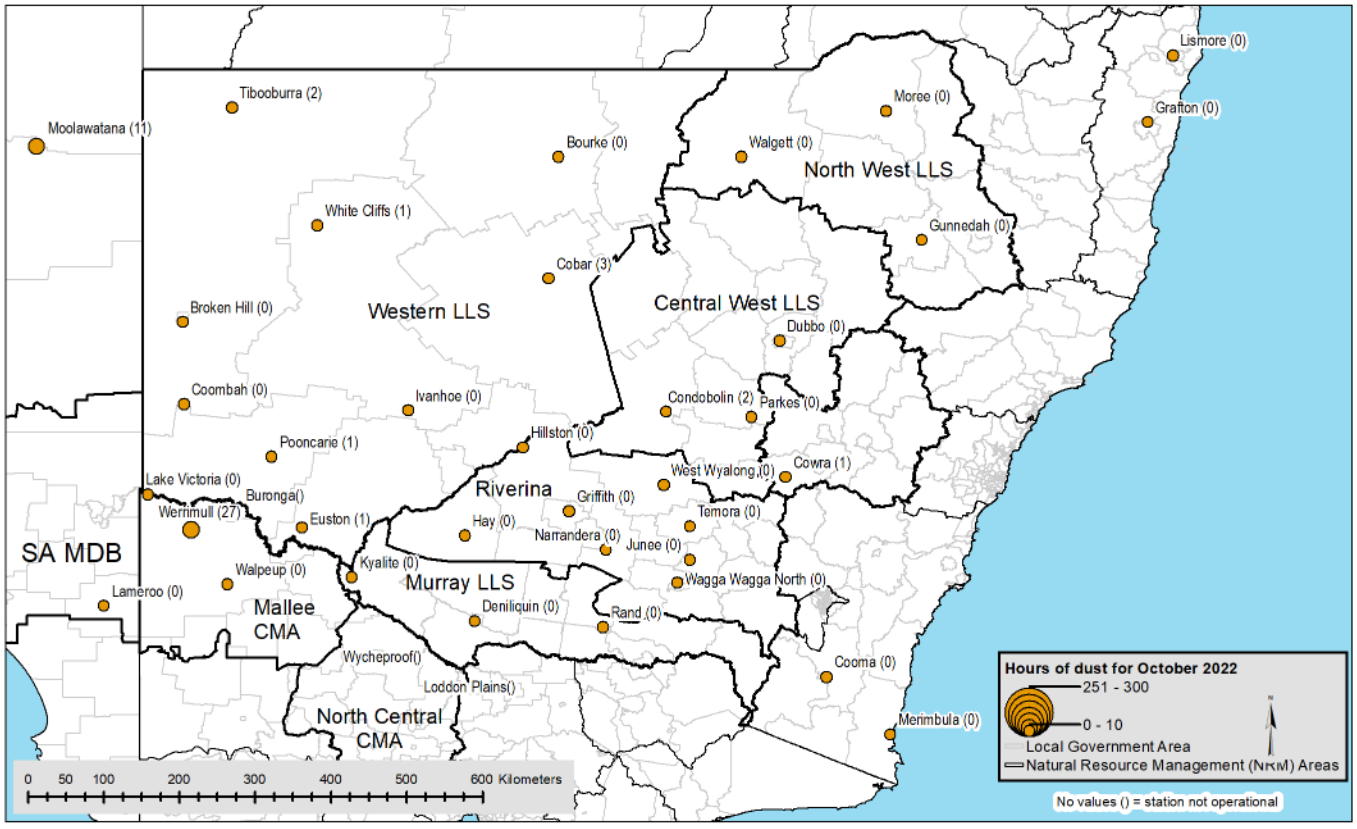

Figure 2 **Hours of dust activity (number in brackets) at each DustWatch site in October 2022**

Groundcover

The area with less than 50% groundcover (Figure 3) has remained almost unchanged between September 2022 and October 2022 (Table 1). Noticeably, the Local Land Services Western Region and the South Australian Murray Darling Basin both slightly increased in groundcover, which is very unusual for this time of the year and a reflection of the extremely wet conditions (Figure 7a+b).

Note: There are substantial areas across New South Wales in October 2022 that did not have enough cloud-free images to produce a reliable groundcover estimate. These areas are masked in light blue in Figure 3.

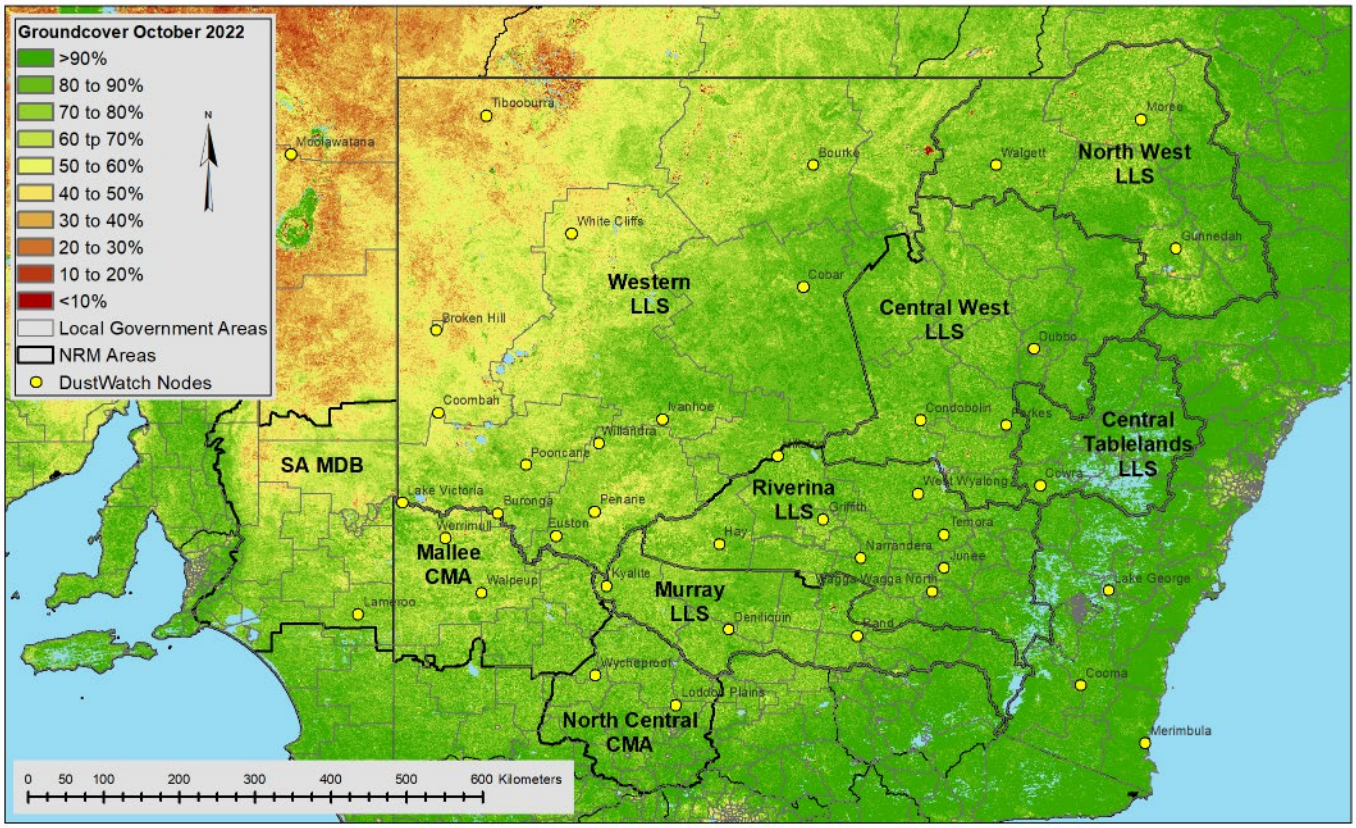

Figure 3 **Groundcover for October 2022 as determined from MODIS by CSIRO**

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

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
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	98	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 2022	100	99	100	100	99	100	95	92	100
Jul 2022	100	99	100	100	99	100	94	91	100
Aug 2022	100	100	100	100	99	100	92	89	100
Sep 2022	100	99	100	100	98	100	89	82	100
Oct 2022	100	98	100	100	99	100	91	83	100

Groundcover change

Overall groundcover figures have remained reasonably unchanged, but there are areas of groundcover decline (red and orange colours in Figure 4) in the far west of the state and the Victorian Mallee. These are offset by groundcover increases (green colours in Figure 4) predominantly in the Local Land Services North West Region and along the Darling River corridor.

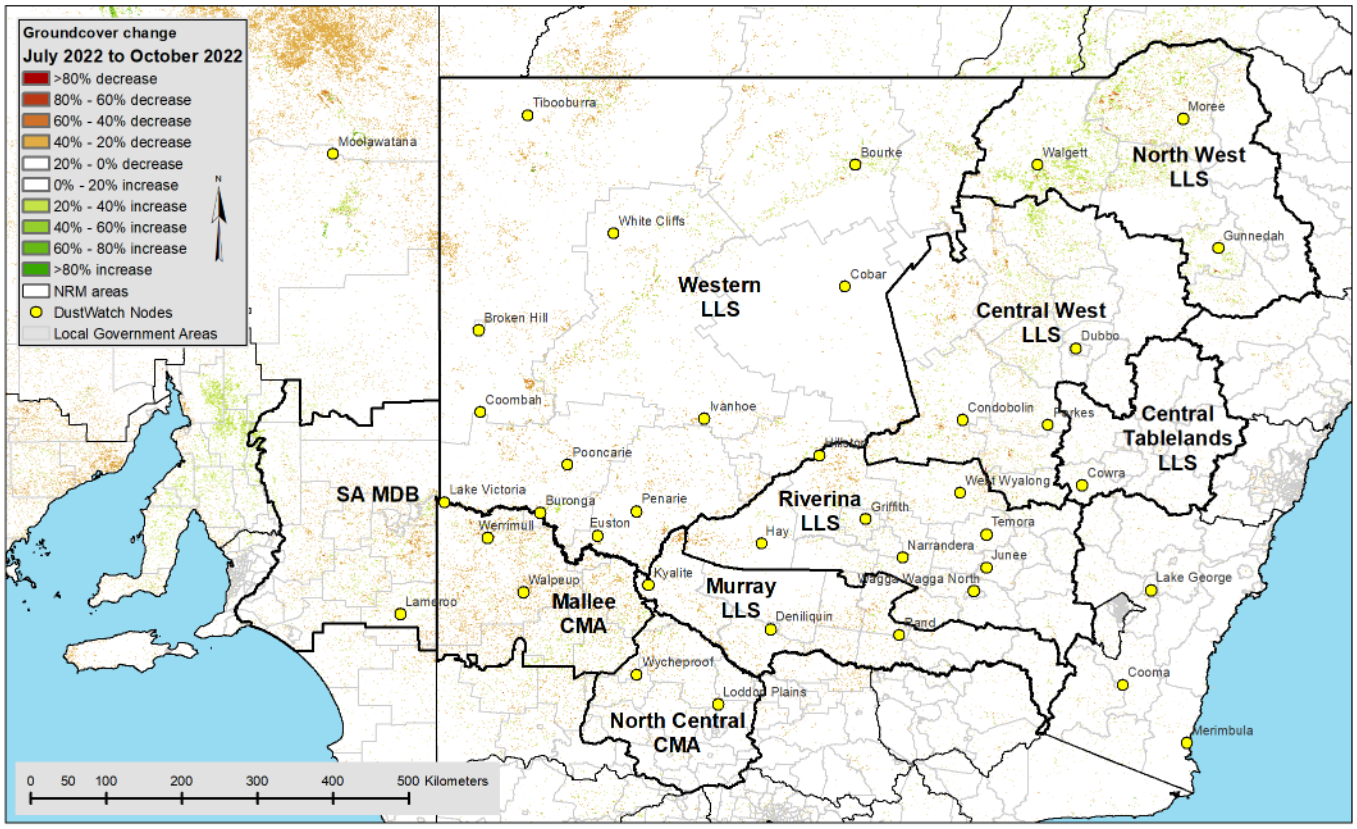

Figure 4 Groundcover difference between July 2022 and October 2022

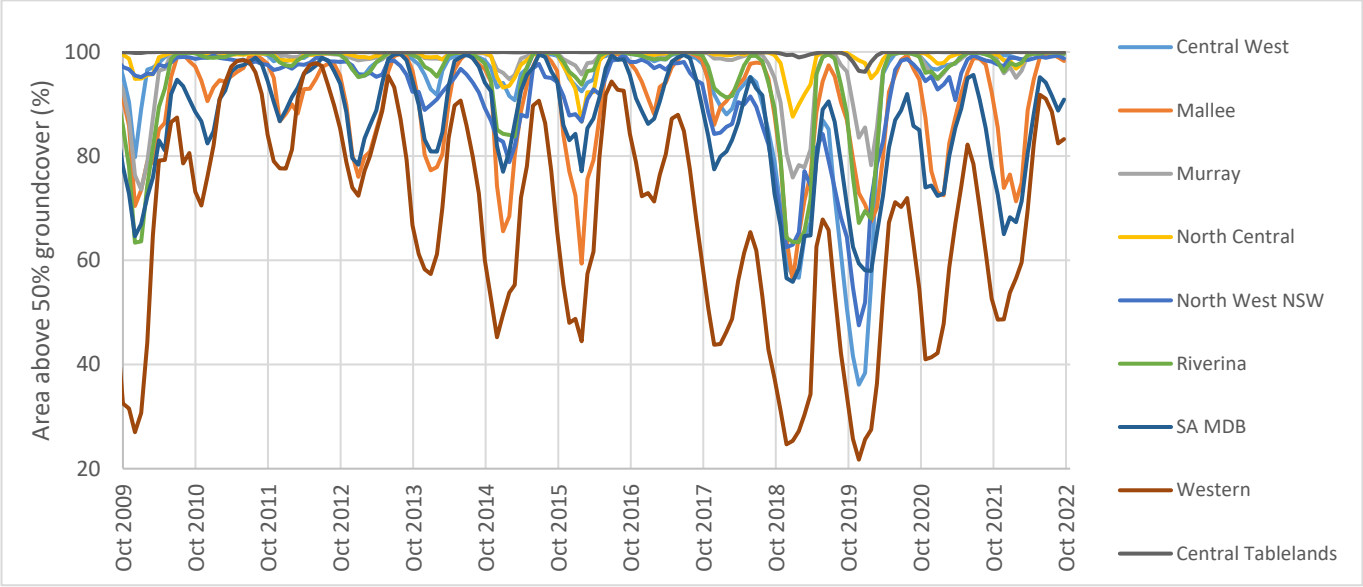

Figure 5 Area (%) of NRM with more than 50% cover since October 2009

Rainfall

October 2022 saw widespread rainfall in excess of 100 mm across the state (Figure 6). These falls made October 2022 the wettest October in New South Wales on Bureau of Meteorology records (Figure 7a).

For more details, see the October 2022 Climate summary of the Bureau of Meteorology (www.bom.gov.au/climate/current/month/nsw/archive/202210.summary.shtml).

This has moved most of New South Wales into the 'wettest on record' rainfall category for the 3 months August to October (Figure 7b).

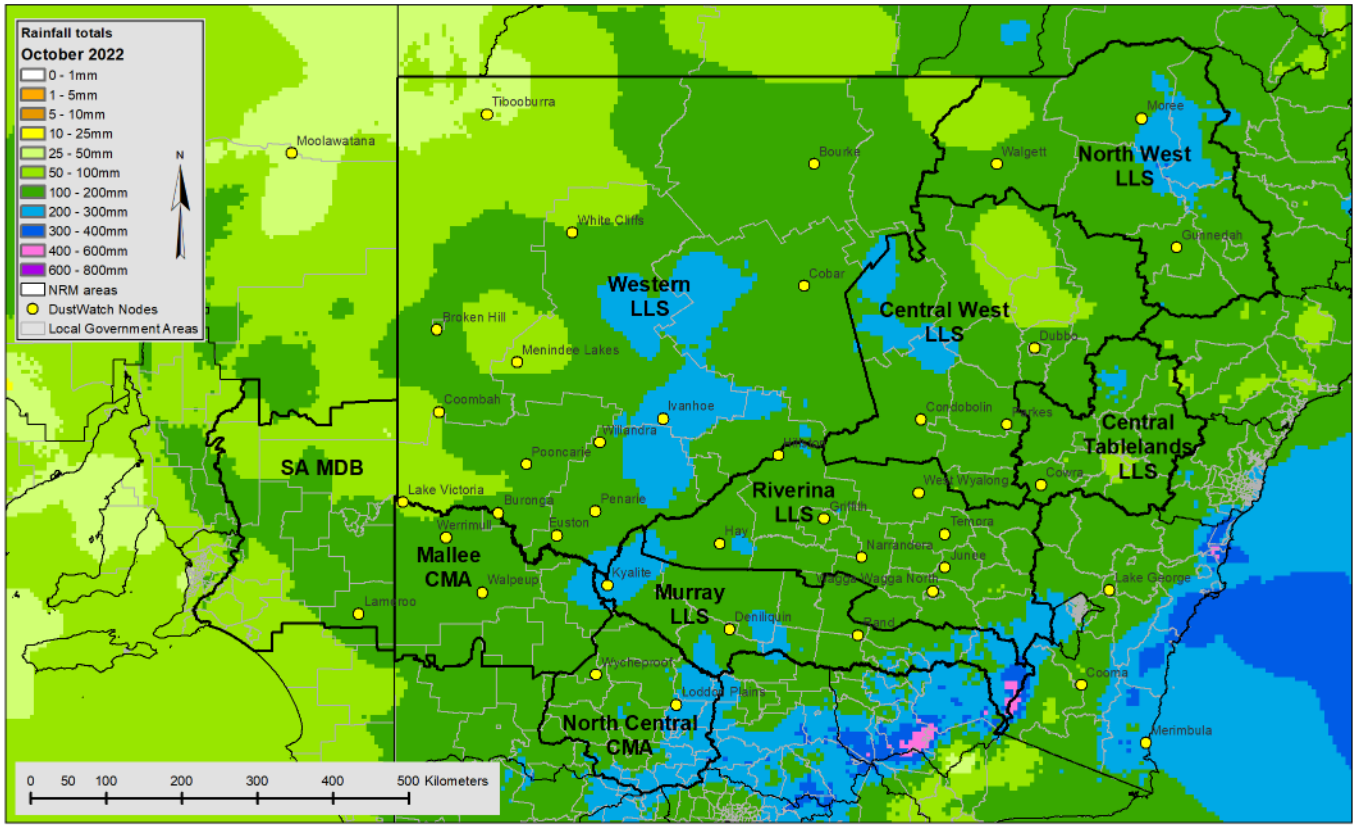

Figure 6 **Rainfall totals for October 2022 (source: Bureau of Meteorology)**

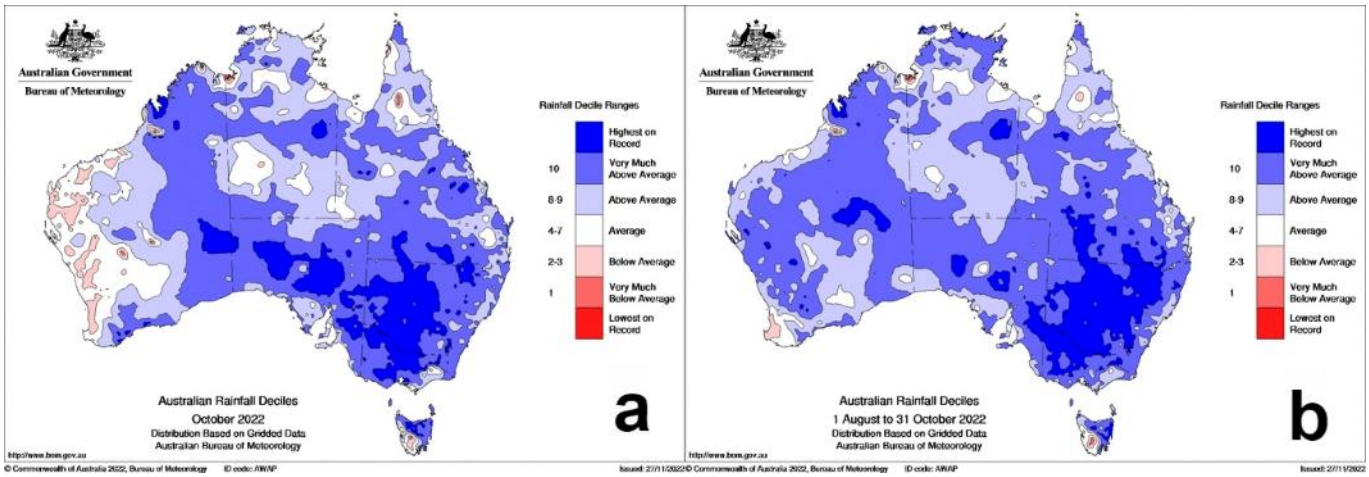

Figure 7 **Rainfall deciles for October 2022 (a) and 1 August 2022 to 31 October 2022 (b)**

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 675 hot spots (375 m pixel with temperature anomalies) in October 2022 (Figures 8 and 9), a small increase from the 605 hot spots detected in September 2022. Fires mainly occurred in north east NSW.

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.

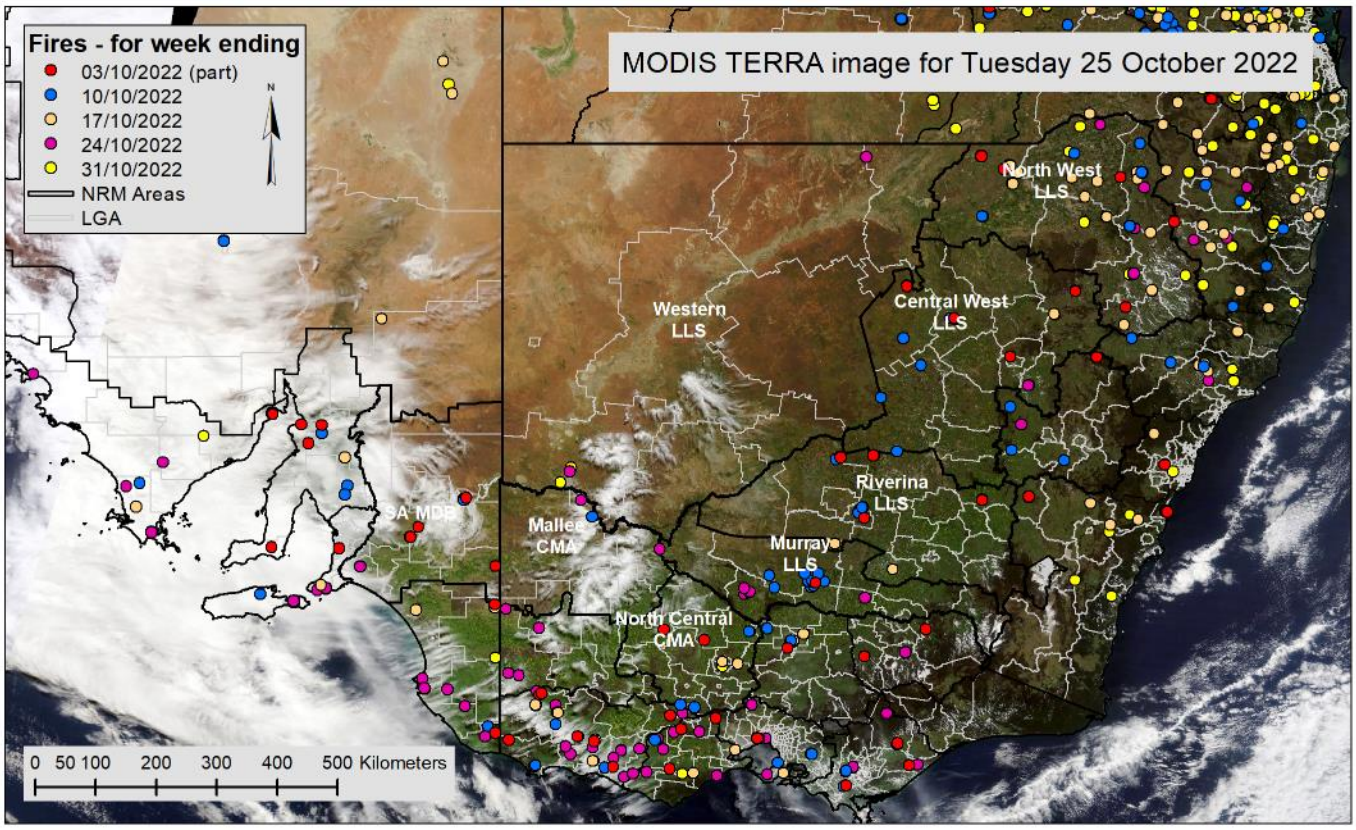

Figure 8 **Pixels (375m) with active burning fires in October 2022 as determined from VIIRS satellite**

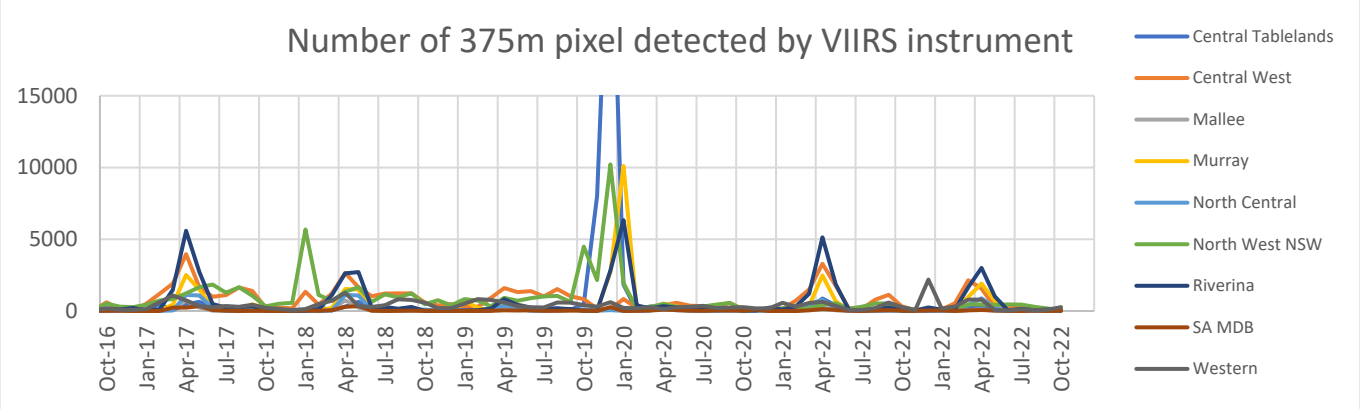

Figure 9 **Number of 375m pixels with active burning fires between October 2016 and October 2022**

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.

ISSN – 2206-3161
EHG 2022/0010

Australian Government | National Landcare Programme