DustWatch Report

February 2022

Dust activity	Dust activity increased despite drop in wind
Wind strength	Further reduced; below 15-year average
Groundcover	Stable across NSW; reducing in the Victorian Mallee
Rainfall	Below average in the south west; flooding on the coast

Dust activity

Dust activity increased by 60% from January 2022 despite a drop in hours of strong wind (Figure 1). The increase is predominantly in the south west of New South Wales and across the border in the South Australian and Victorian Mallee. The much below average rainfall in that area (Figure 7a and 7b) contributed to the unusual decrease in groundcover (Figure 3 and Table 1) and subsequent increase in dust activity (Figure 2).

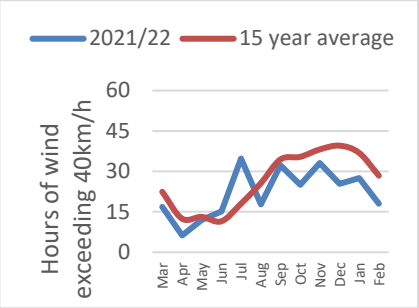

Figure 1 **Hours of wind exceeding 40km/h – average across all sites**

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

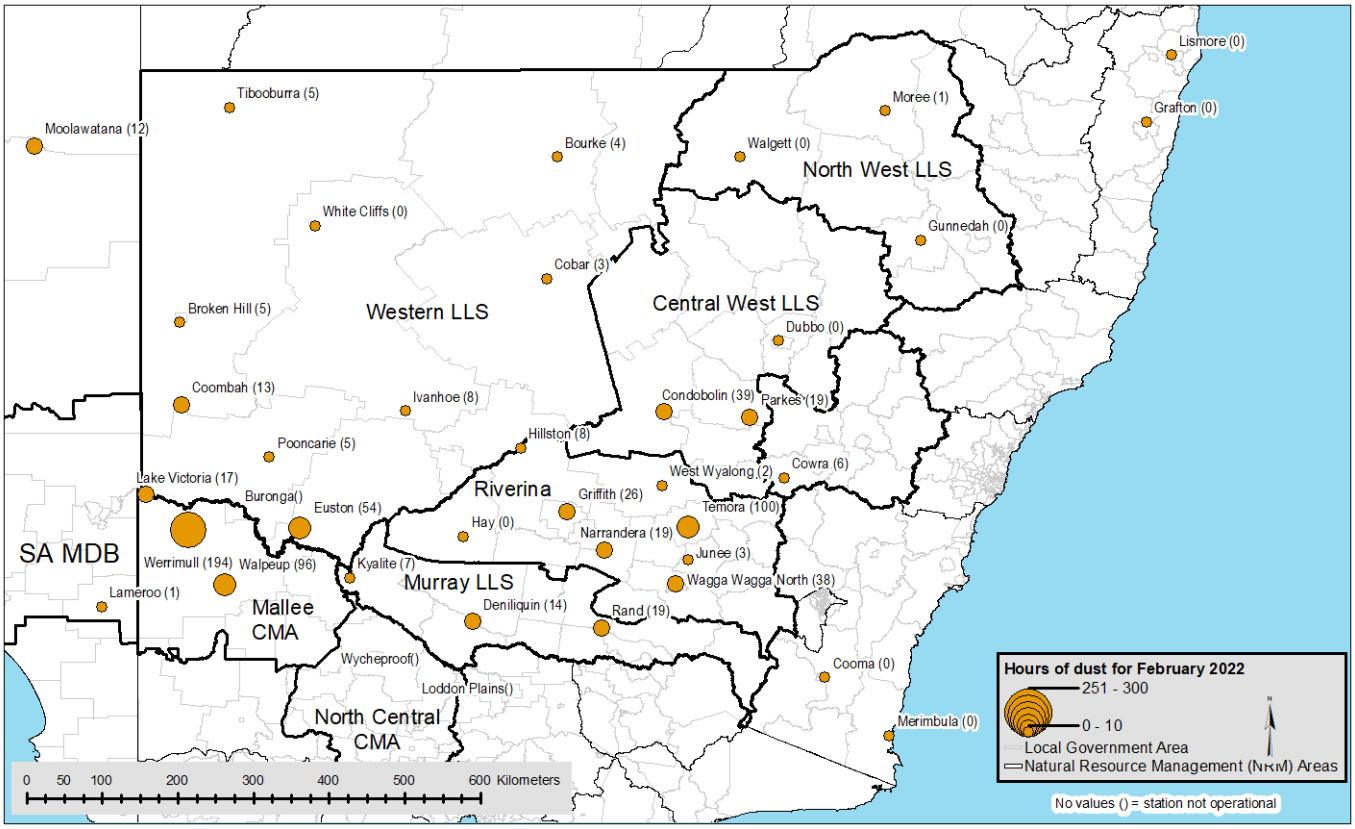

Figure 2 **Hours of dust activity (number in brackets) at each DustWatch site in February 2022**

Groundcover

The area with > 50% groundcover (green and yellow colours in Figure 3) has remained almost unchanged across New South Wales. Groundcover improvements such as the Darling River corridor in the Local Land Services Western Region are offset by reductions in groundcover such as south of Pooncarie (fire scar) and Tibooburra (Figure 4). Widespread reduction in groundcover is visible in the Victorian Mallee and South Australian Murray-Darling Basin, predominantly due to much below average rainfall (Figure 6).

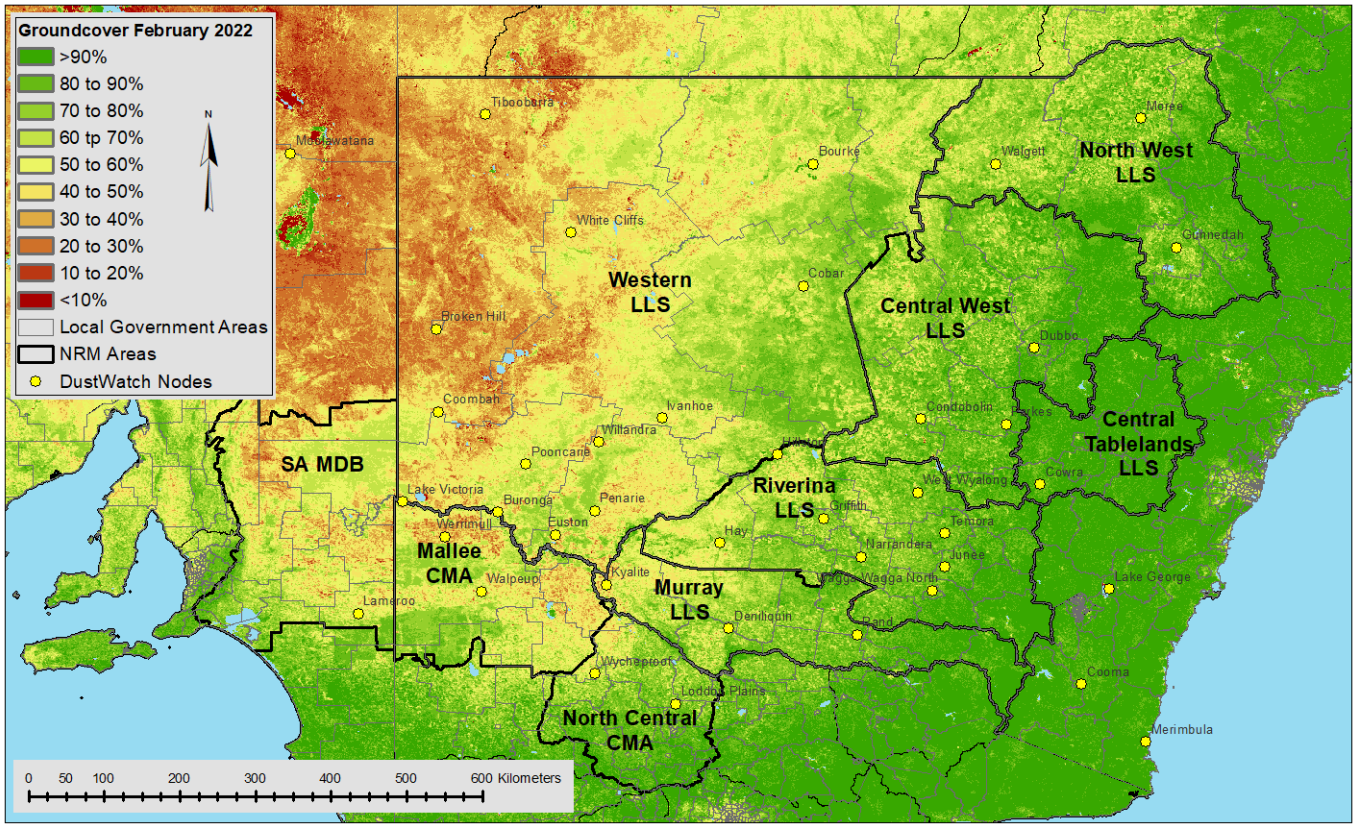

Figure 3 **Groundcover for February 2022 as determined from MODIS by CSIRO**

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

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Jan 2021	97	73	95	98	93	95	72	42	100
Feb 2021	97	72	96	98	94	96	73	48	100
Mar 2021	98	82	97	99	95	97	80	59	100
Apr 2021	98	87	98	99	91	98	85	67	100
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

Groundcover change

Groundcover change between October 2021 and February 2022 is a mix of groundcover improvements (green colours in Figure 4) such as the Darling River corridor downstream of Bourke, an area between Moree and Walgett and south of Griffith and isolated groundcover reductions (red colours in Figure 4) such as the ones visible in the Local Land Services Central West Region and more widespread in the Victorian and South Australian Mallee.

Most Natural Resource Management areas are improving in groundcover overall except the Victorian Mallee Catchment Management Area. It dropped from 76 to 71% above 50% groundcover (Table 1) from January to February 2022.

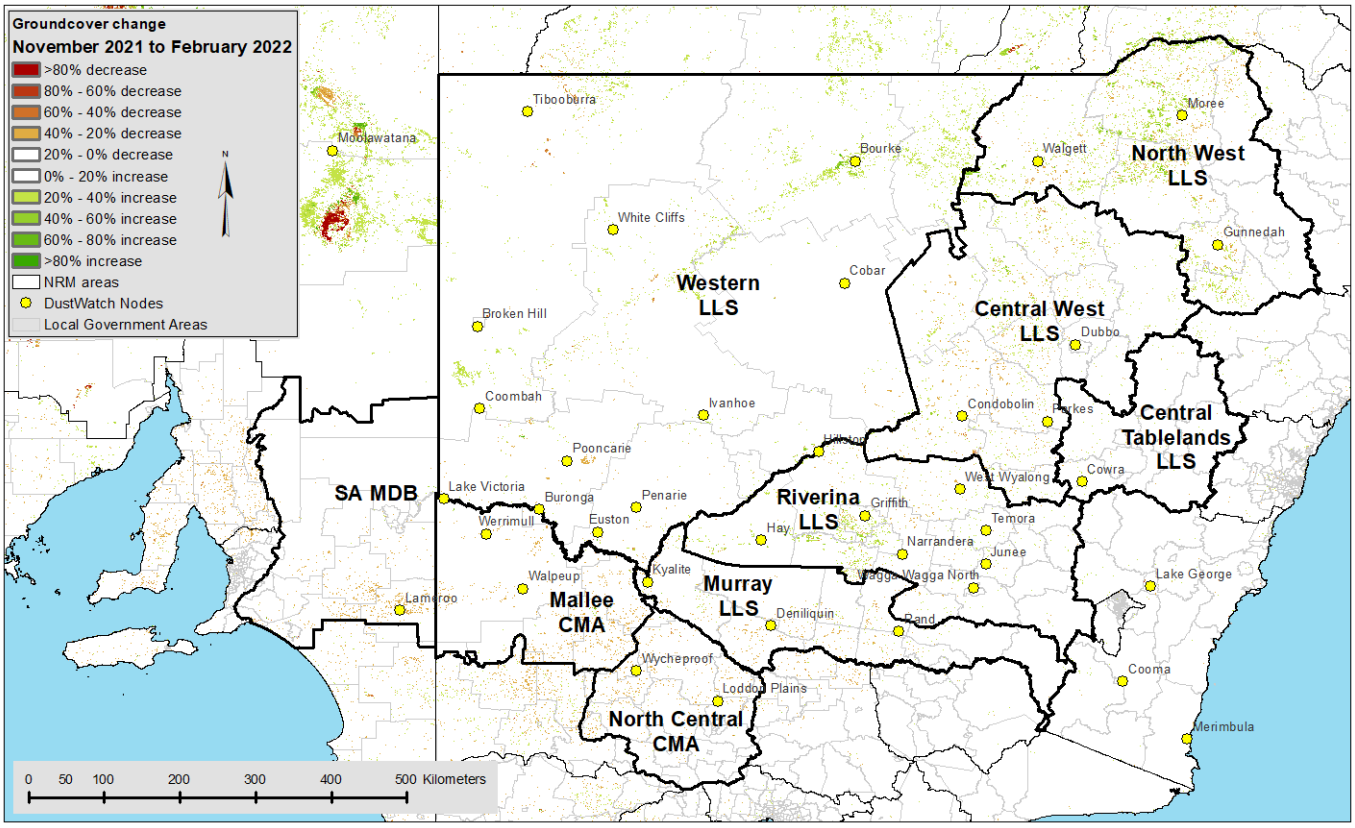

Figure 4 Groundcover difference between November 2021 and February 2022

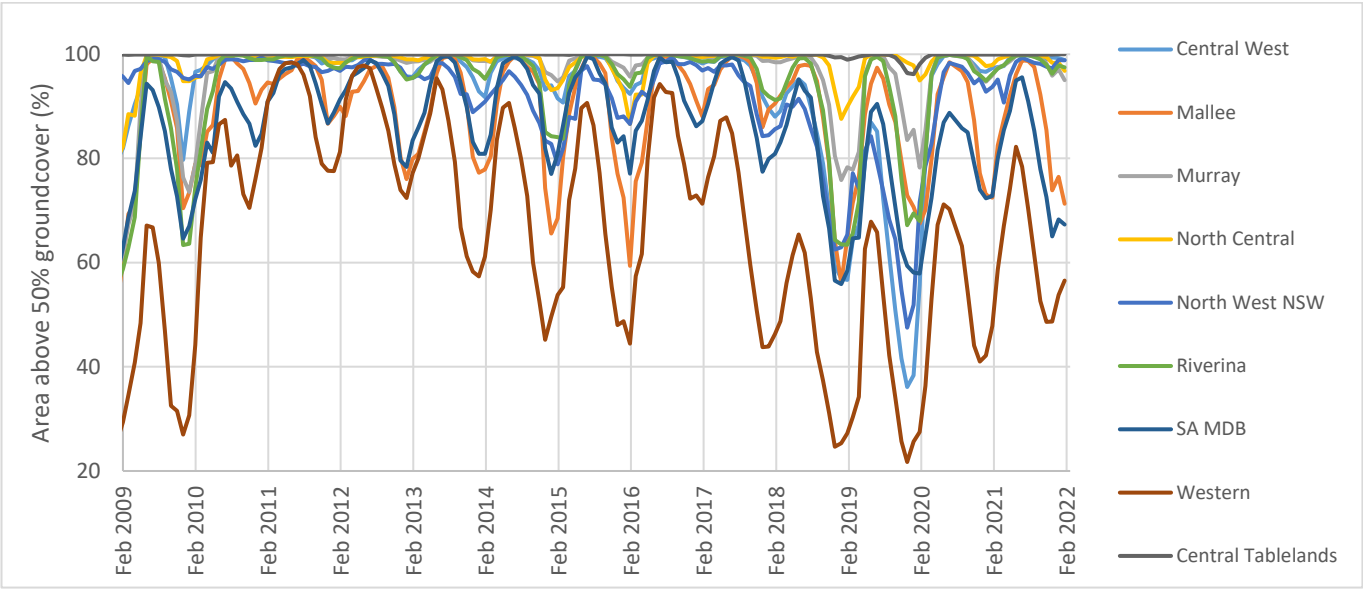

Figure 5 Area (%) of NRM with more than 50% cover since February 2009

Rainfall

Widespread and very heavy rainfall was recorded along the eastern coast causing severe flooding.

In contrast, inland New South Wales recorded very little rain with large areas in the south west and across the border into South Australia and Victoria, recording no rain at all (Figure 6).

This low rainfall is unusual for this time of the year, with some parts being in the driest 10% of Bureau of Meteorology records (Figure 7a). This has increased the 3-month rainfall deficit for these areas further, with small areas now the driest on record (Figure 7b).

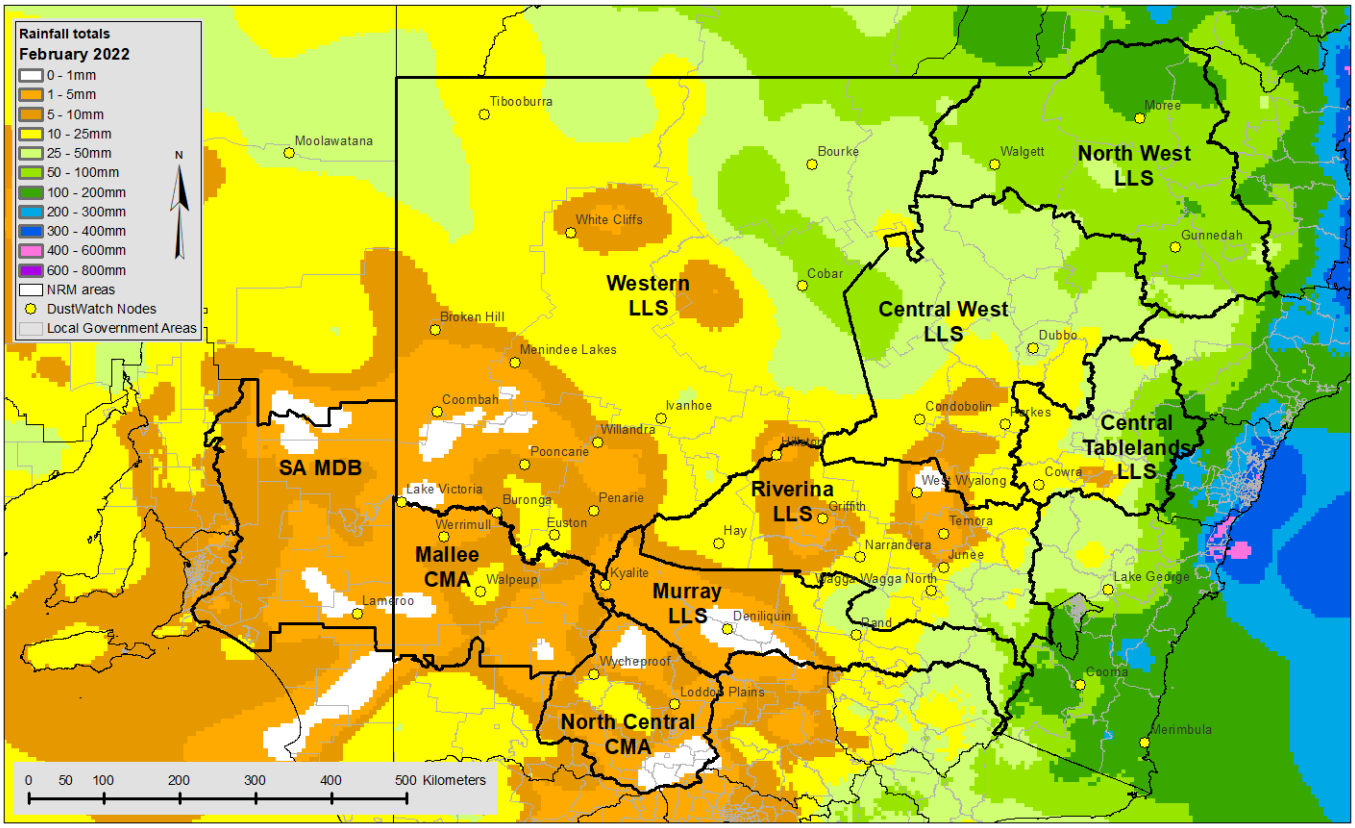

Figure 6 **Rainfall totals for February 2022 (source: Bureau of Meteorology)**

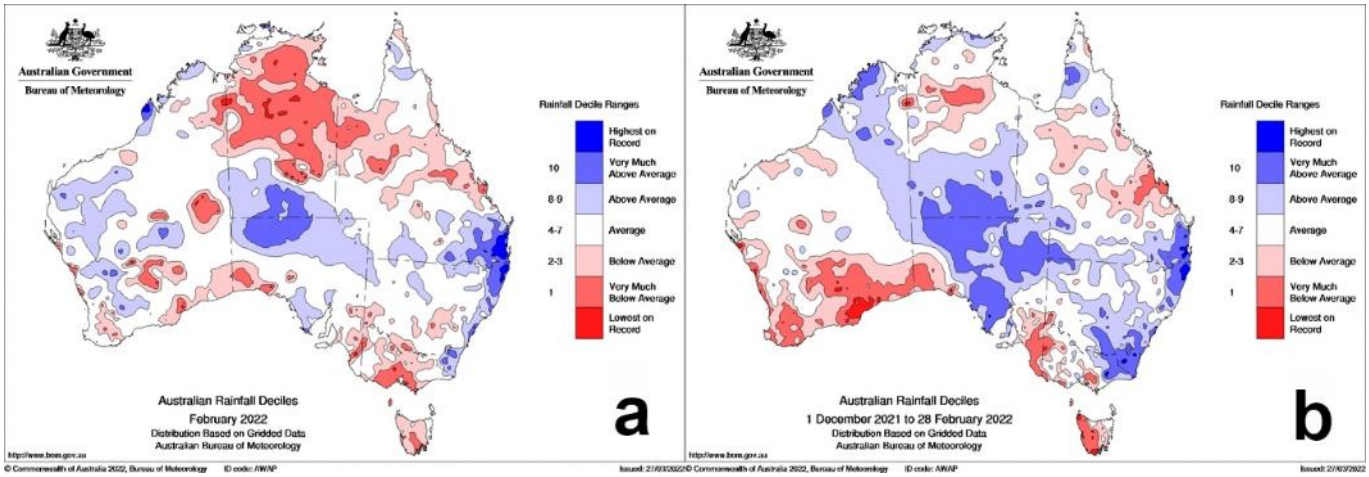

Figure 7 **Rainfall deciles for February 2022 (a) and 1 December 2021 to 28 February 2022 (b)**

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 1237 hot spots (375m pixel with temperature anomalies) in February 2022 (Figures 8 and 9), double the 661 hot spots detected in December 2021.

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.

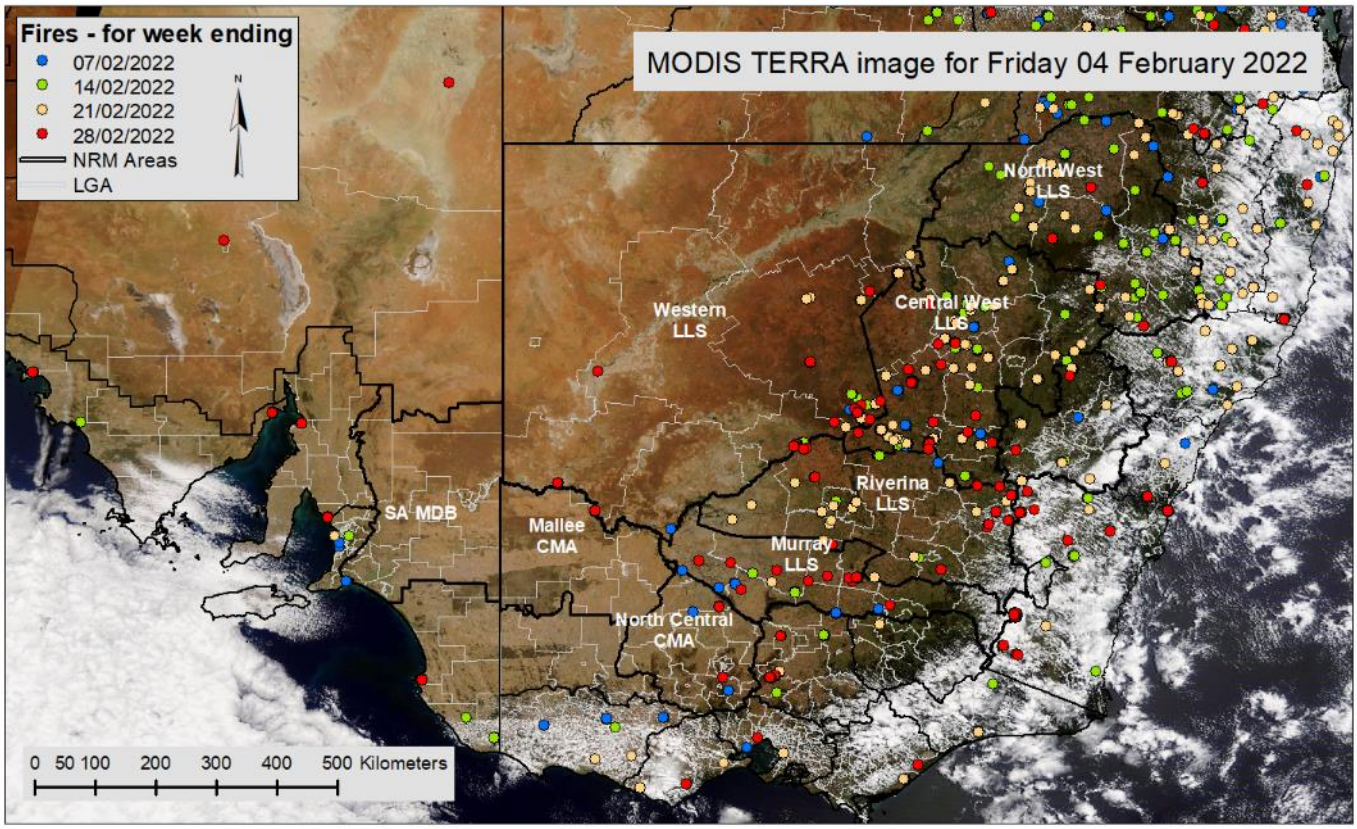

Figure 8 **Pixels (375m) with active burning fires in February 2022 as determined from VIIRS satellite**

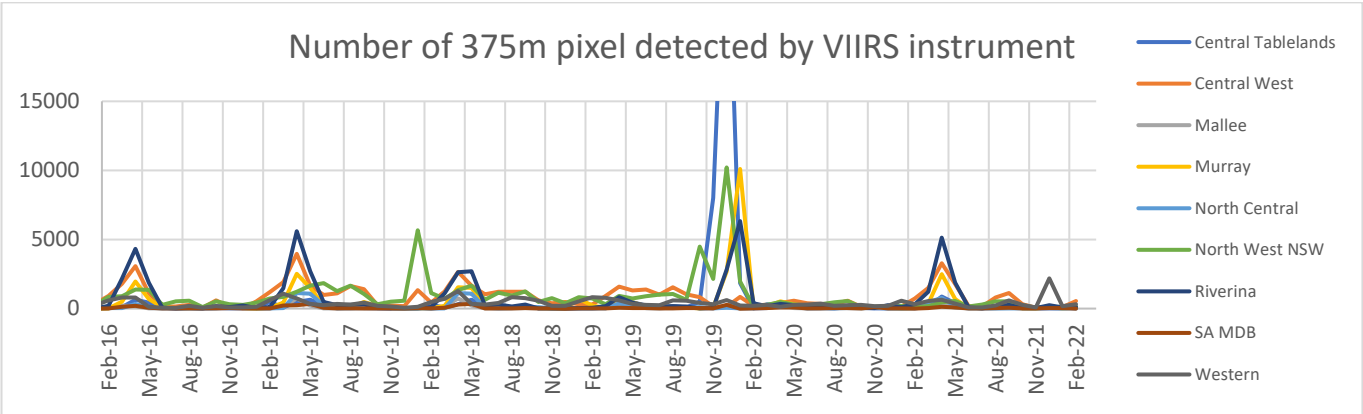

Figure 9 **Number of 375m pixels with active burning fires between February 2016 and February 2022**

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 Programme, 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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