

Dust activity	Significant drop – less than half of April 2021
Wind strength	Double that of April 2021; average for May
Groundcover	Increasing across all NRM areas
Rainfall	Below average in the west, very wet in the south east

Dust activity

A substantial increase in groundcover (Table 1) has led to a drop in overall hours of dust in May 2021. Dust values are less than half of the hours recorded in April 2021 despite a significant increase in the hours of strong winds (>40km/h).

The much below-average rainfall over the past three months (Figure 6b) in the south west of New South Wales and across the border into Victoria and South Australia is reflected in the high dust hours in the Victorian Mallee and the Local Land Services Riverina and Murray regions (Figure 1)

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

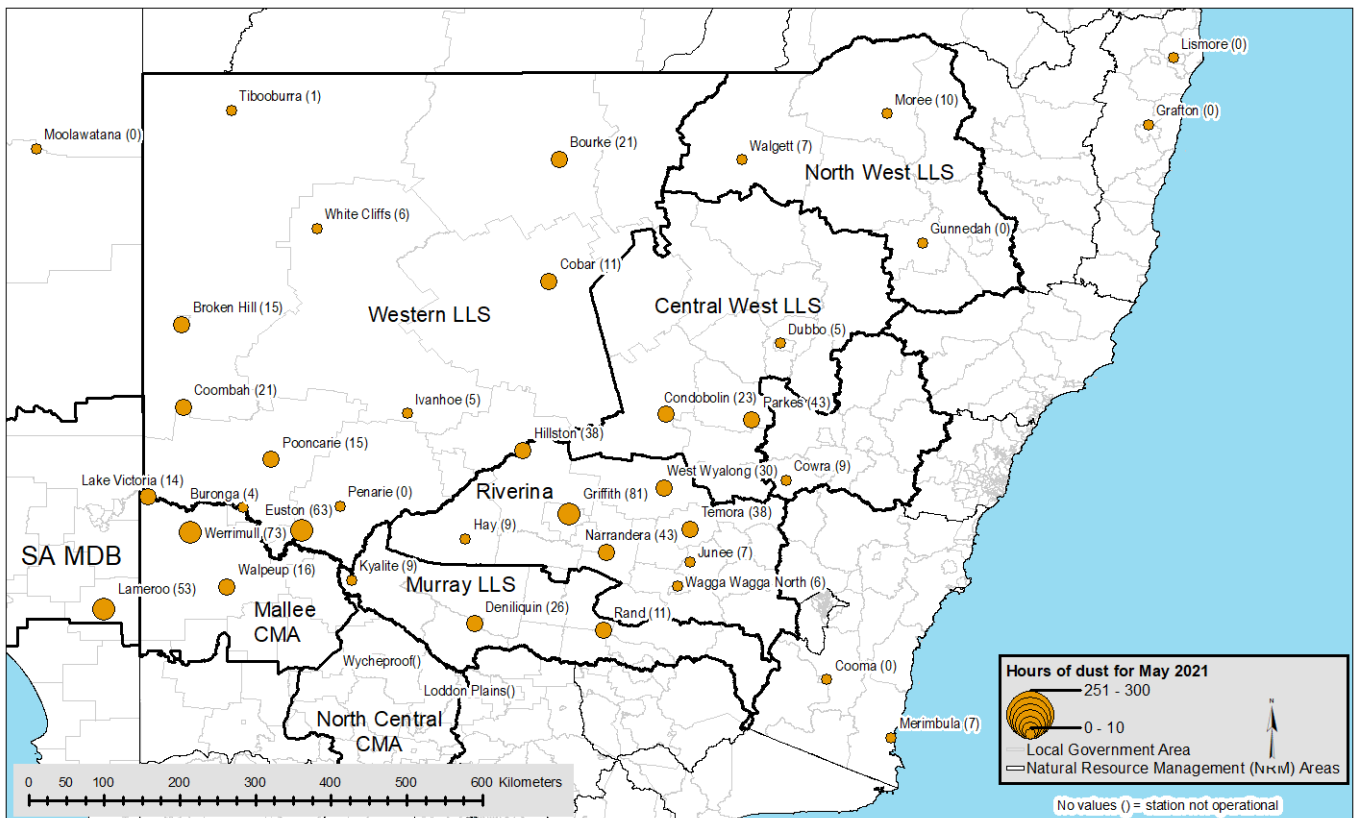


Figure 1 Hours of dust activity (number in brackets) at each DustWatch site in May 2021

Groundcover

The area with groundcover above 50% (green and yellow colours in Figure 2) has increased substantially from April 2021 (Table 1). Only small areas east of the Darling River are covered with less than 50% groundcover (orange and red colours in Figure 2). The Local Land Services North West Region for example only has 4% (~14,000ha) of its area below 50% groundcover. This would be predominantly cropping paddocks prepared for sowing.

*Data for August 2020 is not available due to a failure onboard the NASA satellite.

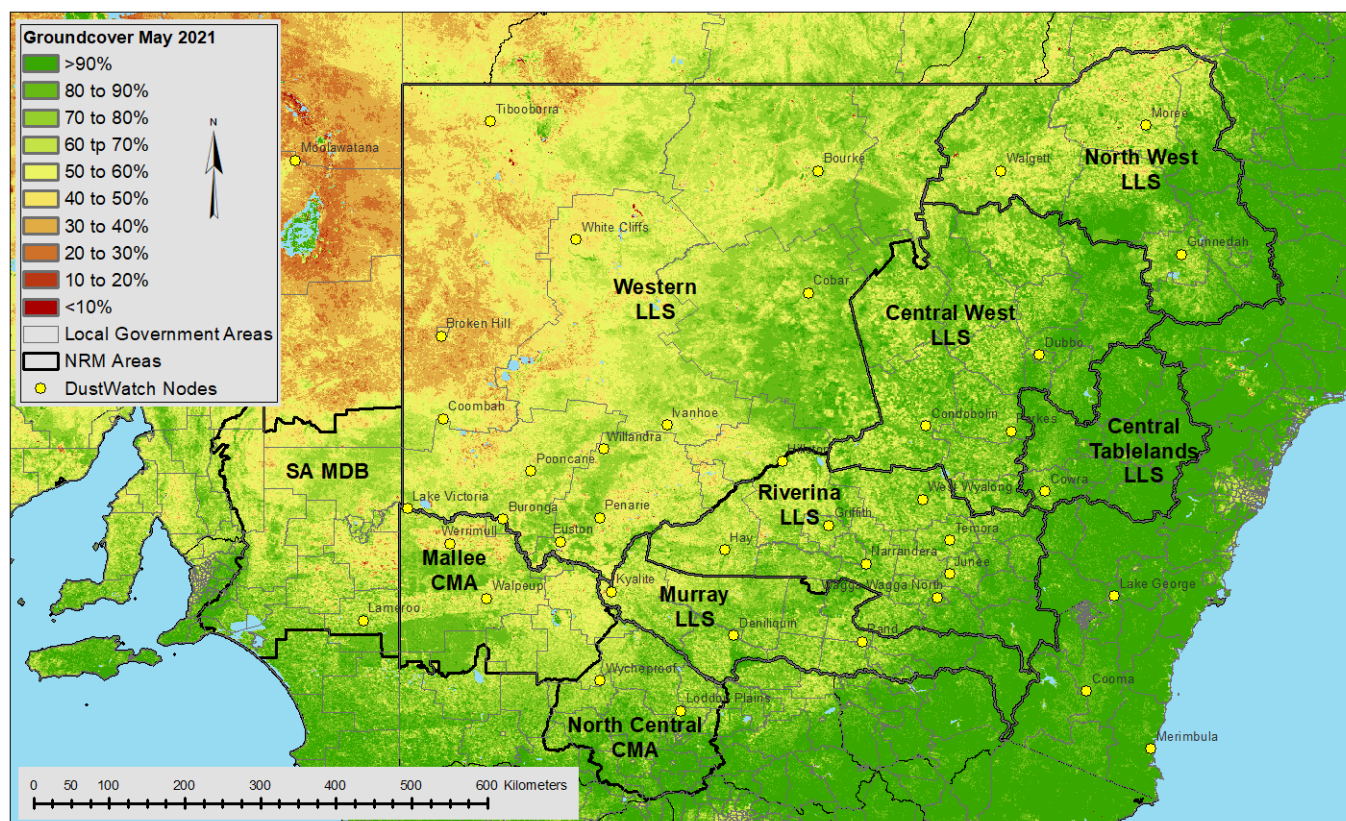


Figure 2 Groundcover for May 2020 as determined from MODIS by CSIRO

Table 1 Percentage of each NRM with cover >50% for April 2020 to May 2021

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Apr 2020	96	80	96	99	83	96	72	53	100
May 2020	98	92	99	100	90	99	82	67	100
Jun 2020	100	96	100	100	97	100	87	71	100
Jul 2020	100	98	100	100	98	100	89	70	100
Aug 2020	No data	No data	No data	No data	No data	No data	No data	No data	No data
Sep 2020	100	97	100	100	98	100	86	63	100
Oct 2020	99	95	99	100	96	99	85	54	100
Nov 2020	98	87	97	100	94	97	79	44	100
Dec 2020	97	77	96	99	95	96	74	41	100
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

Groundcover change

Comparing groundcover in February 2021 to May 2021 shows some good pasture growth (green colours in Figure 3) during autumn in the north west of the State following above-average rainfall in late summer/early autumn (Figure 6b).

There is some groundcover reduction (orange and red colours in Figure 3) visible in the wheat/sheep belt on New South Wales. This is particularly visible between Deniliquin and Rand in the Local Land Services Murray region. The likely cause is paddock preparation for the next cropping season.

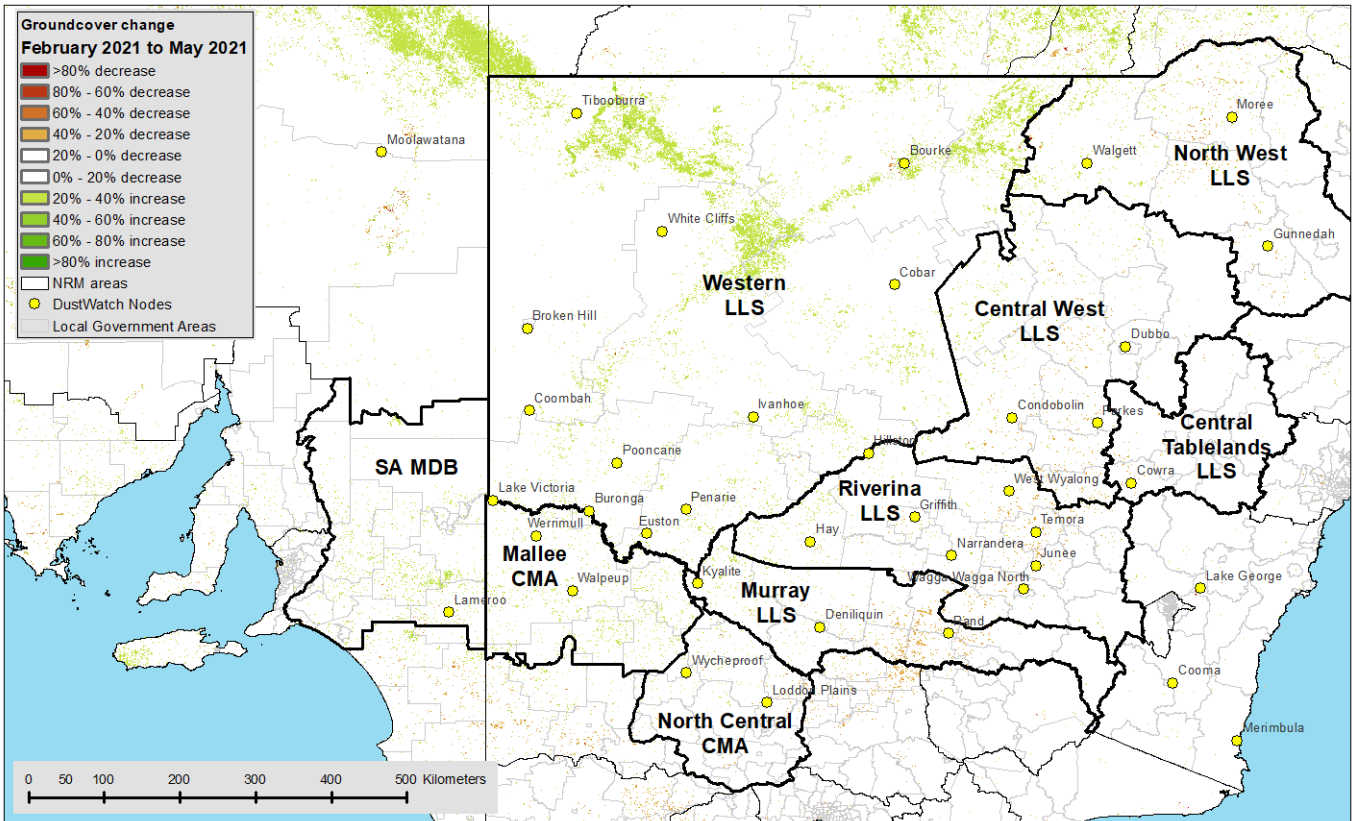


Figure 3 Groundcover difference between February 2021 and May 2021

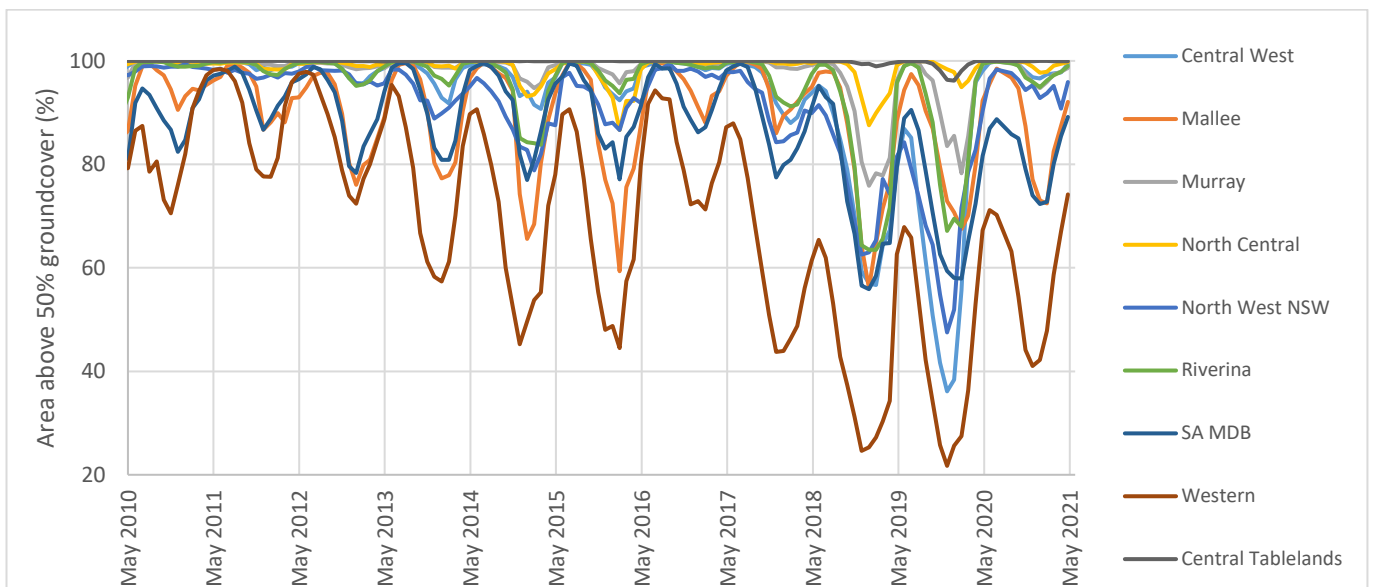


Figure 4 Area (%) of NRM with more than 50% cover since May 2010

Rainfall

There was very little rain across large parts of western NSW in May 2021 (Figure 5). This is unusual for May, and parts of far north west NSW were in the driest 10% of Bureau of Meteorology records (Figure 6a).

Substantial rain fell in the south east of the State with some areas exceeding 400mm in May 2021.

The split across New South Wales continues when looking at the last three months of rainfall records. Large areas in the north east are in the wettest 10% and large areas in the south west are in the driest 10% of records (Figure 6b).

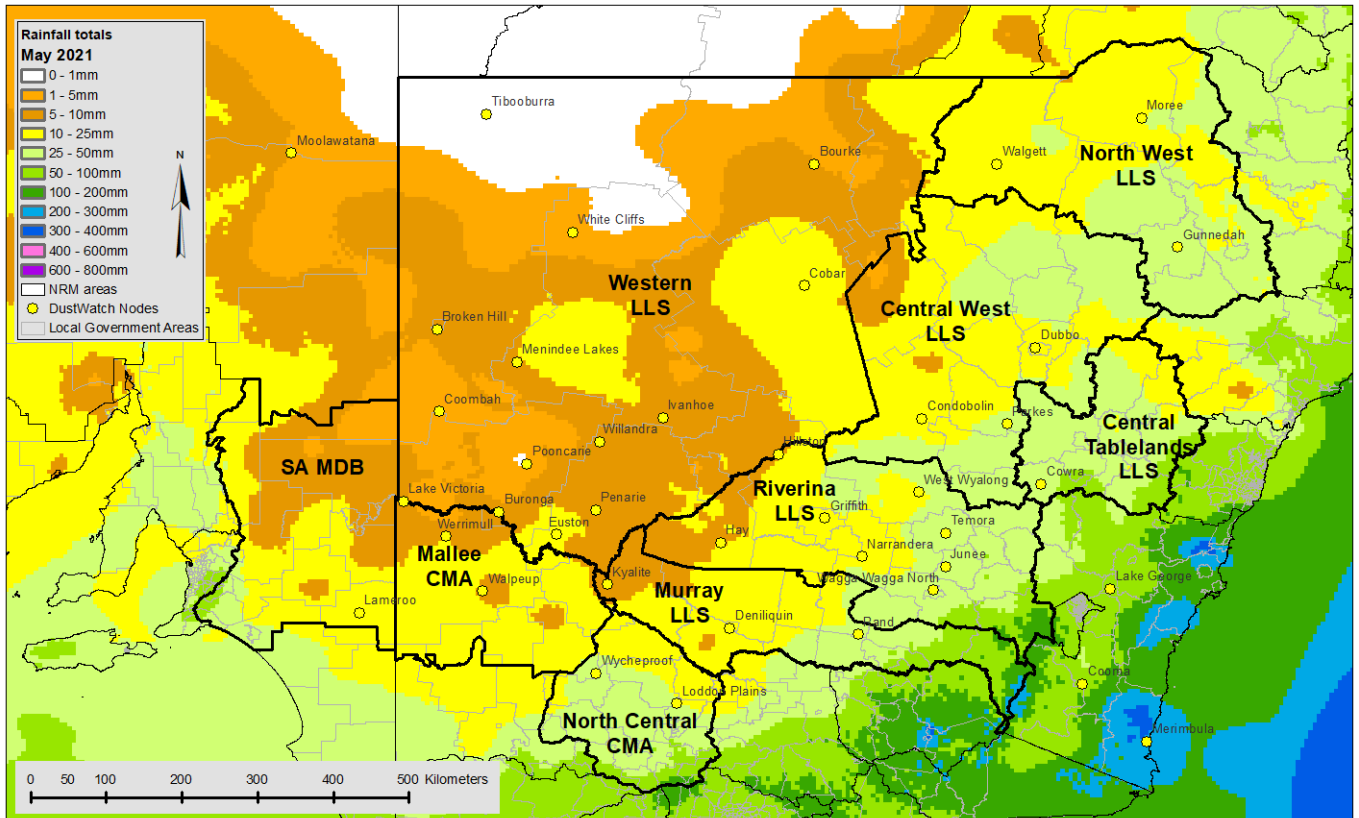


Figure 5 Rainfall totals for May 2021 (source: Bureau of Meteorology)

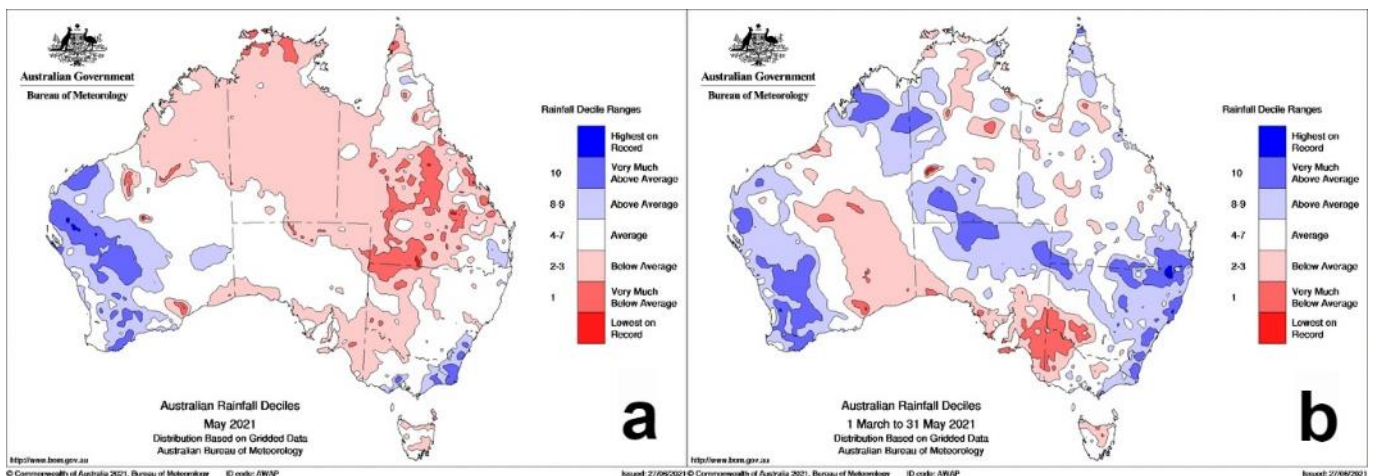


Figure 6 Rainfall deciles for May 2021 (a) and 1 January 2021 to 28 May 2021 (b)

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 5856 hot spots (375m pixel with temperature anomalies) in May 2021 (Figure 7). This is about one-third of the 14,045 hot spots detected in May 2021 (Figure 8).

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.

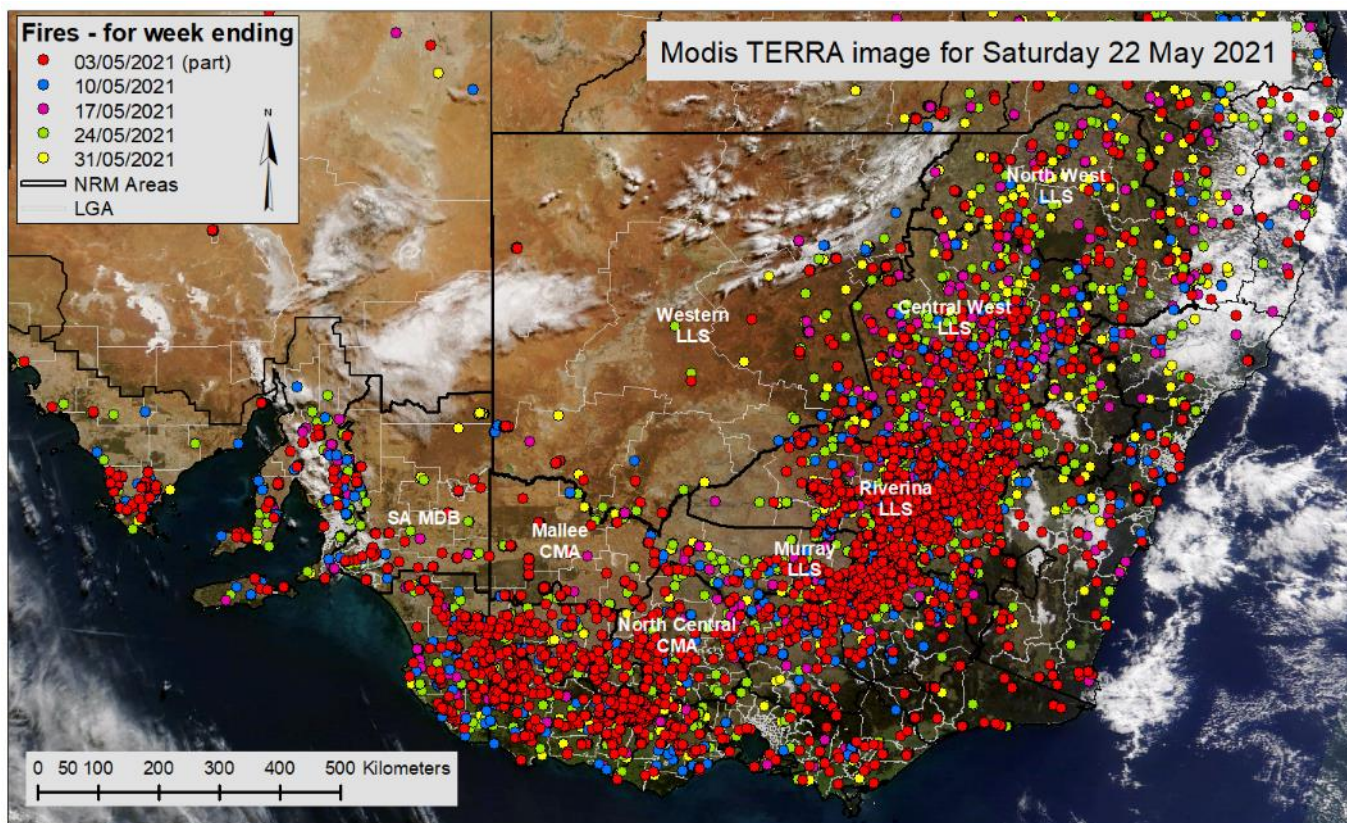


Figure 7 Pixels (375m) with active burning fires in May 2021 as determined from VIIRS satellite

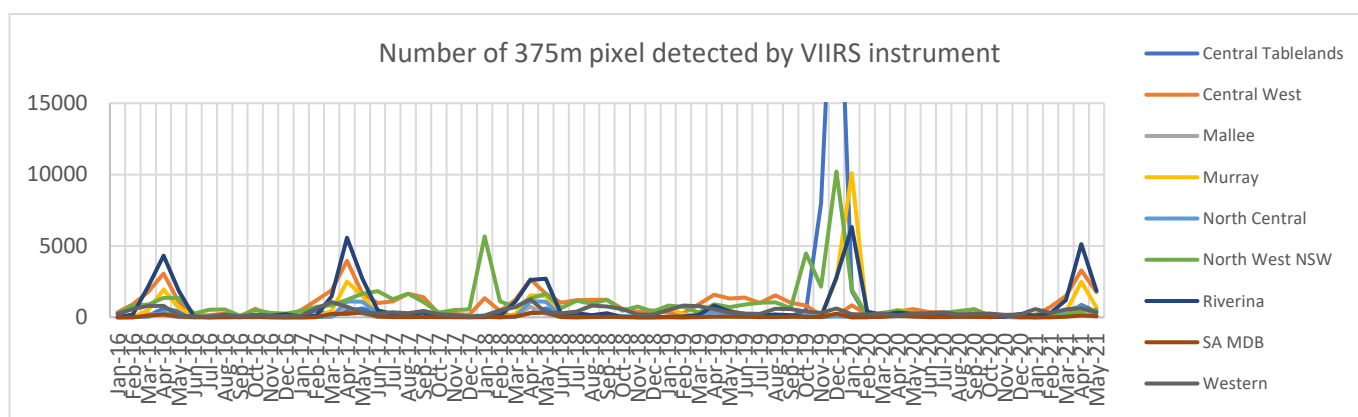


Figure 8 Number of 375m pixels with active burning fires between January 2016 and May 2021

The DustWatch team

Dust data supplied by the Department of Planning, Industry 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 Australia, 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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