

Dust activity	Reduced from last month; dust storm in Broken Hill
Wind strength	Reduced from last month; below average for December
Groundcover	Reduction rate is slowing; improvement in the west
Rainfall	Good falls in eastern and central NSW

Dust activity

Broken Hill was covered in thick dust once again. On 13 January 2021, very strong westerly winds picked up dust from the eastern side of the Flinders Ranges around Lake Frome. The dust was noticeable east of Broken Hill later that day and persisted into the early hours the following day. This dust storm was a stark reminder of the conditions 12 months ago at the height of the drought when events like this occurred almost daily.



Picture 1: Dust Storm on 13 January 2021 at Broken Hill (Photo: Caitlin Hickey/Broken Earth Café)

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

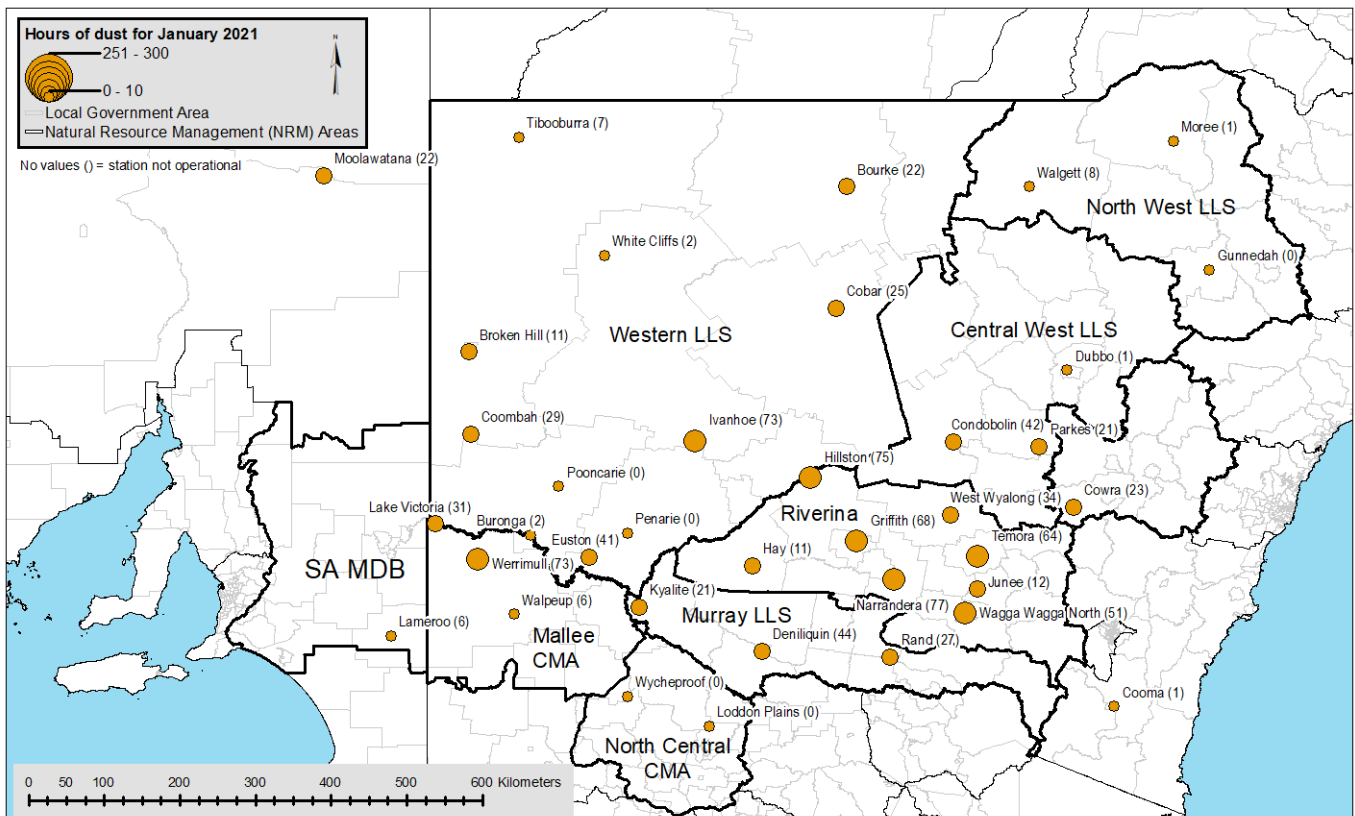


Figure 1 Hours of dust activity (number in brackets) at each DustWatch site in January 2021

Groundcover

The area with groundcover above 50% (green and yellow colours in Figure 2) has continued to decrease but at a slower rate than last month (Figure 2). The only exception is the Local Land Services Western Region, where groundcover has slightly improved in January 2021 (Table 1) following good rainfall in some areas (Figure 5).

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

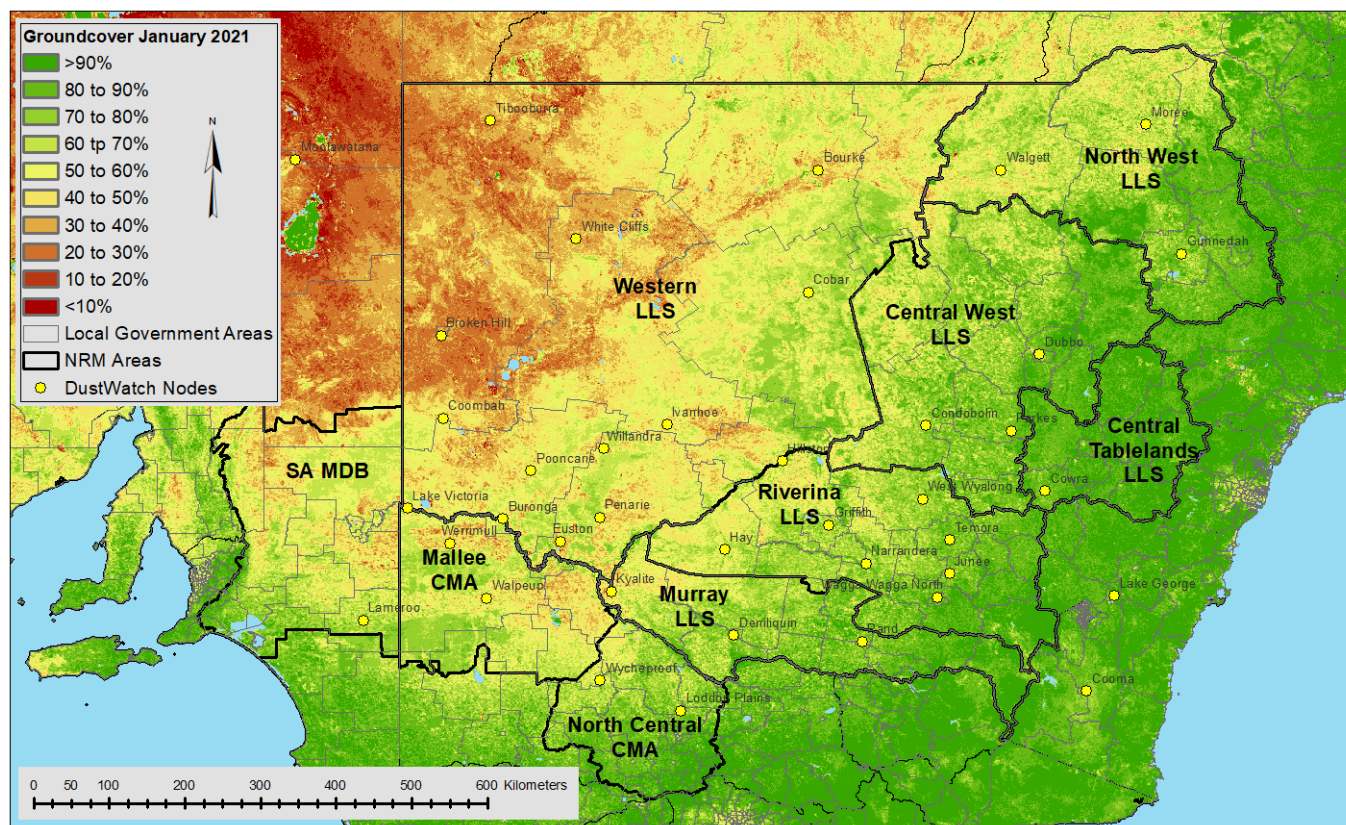


Figure 2 Groundcover for January 2020 as determined from MODIS by CSIRO

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

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Jan 2020	38	71	86	98	52	69	58	26	96
Feb 2020	56	67	78	95	72	68	58	28	98
Mar 2020	81	70	85	96	79	81	65	36	99
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

Groundcover change

Comparing groundcover in January 2020 to January 2021 shows a substantial improvement (green colours in Figures 3 and Figure 4) across most Natural Resource Management areas.

Most notably, the NSW wheat/sheep belt shows widespread increase in groundcover compared to 12 months ago.

Cropping districts in the Victorian Mallee are the only areas where groundcover is lower than last year (orange colours in Figures 3).

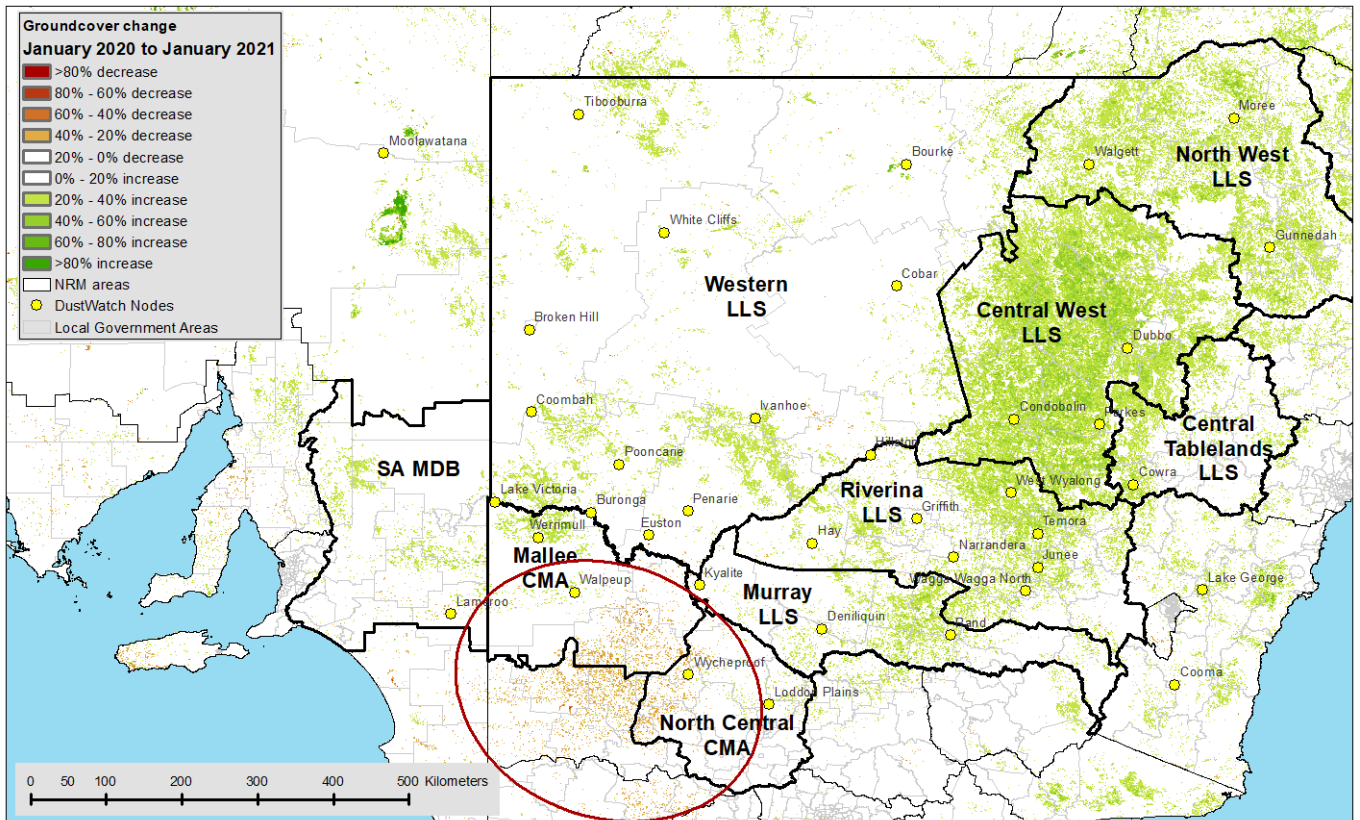


Figure 3 Groundcover difference between January 2020 and January 2021 as determined from MODIS

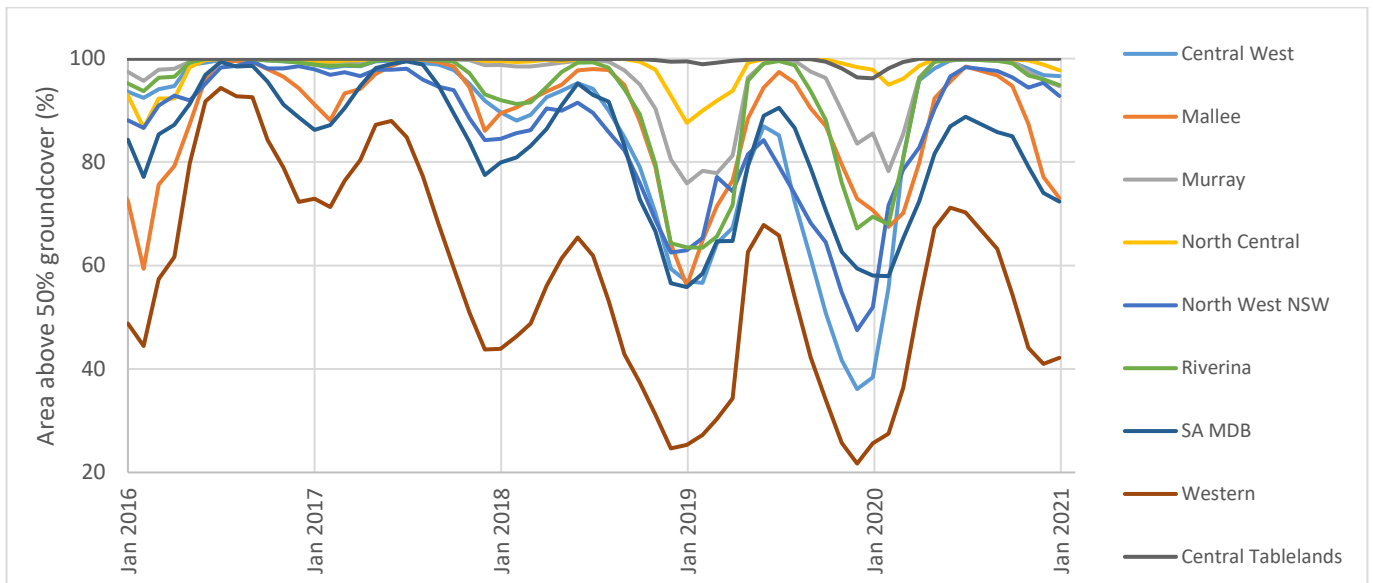


Figure 4 Area (%) of NRM with more than 50% cover since January 2016 as determined from MODIS

Rainfall

Parts of western NSW received good rainfall in January 2021, with areas between Condobolin and Hillston receiving in excess of 100mm. In contrast, north of Broken Hill, the area between Tibooburra and Bourke and between Walpeup and Wycheproof missed out on recent rainfall (Figure 5).

Rainfall in central NSW was well above average (blue colours in Figure 6a).

In the last three months, rainfall across New South Wales was mostly average, with small areas above average (Figure 6b).

According to the New South Wales Department of Primary Industries, most of New South Wales is now drought free. Updates on the latest drought status across the State can be found on their website at [Department of Industry: Latest NSW Drought maps](#).

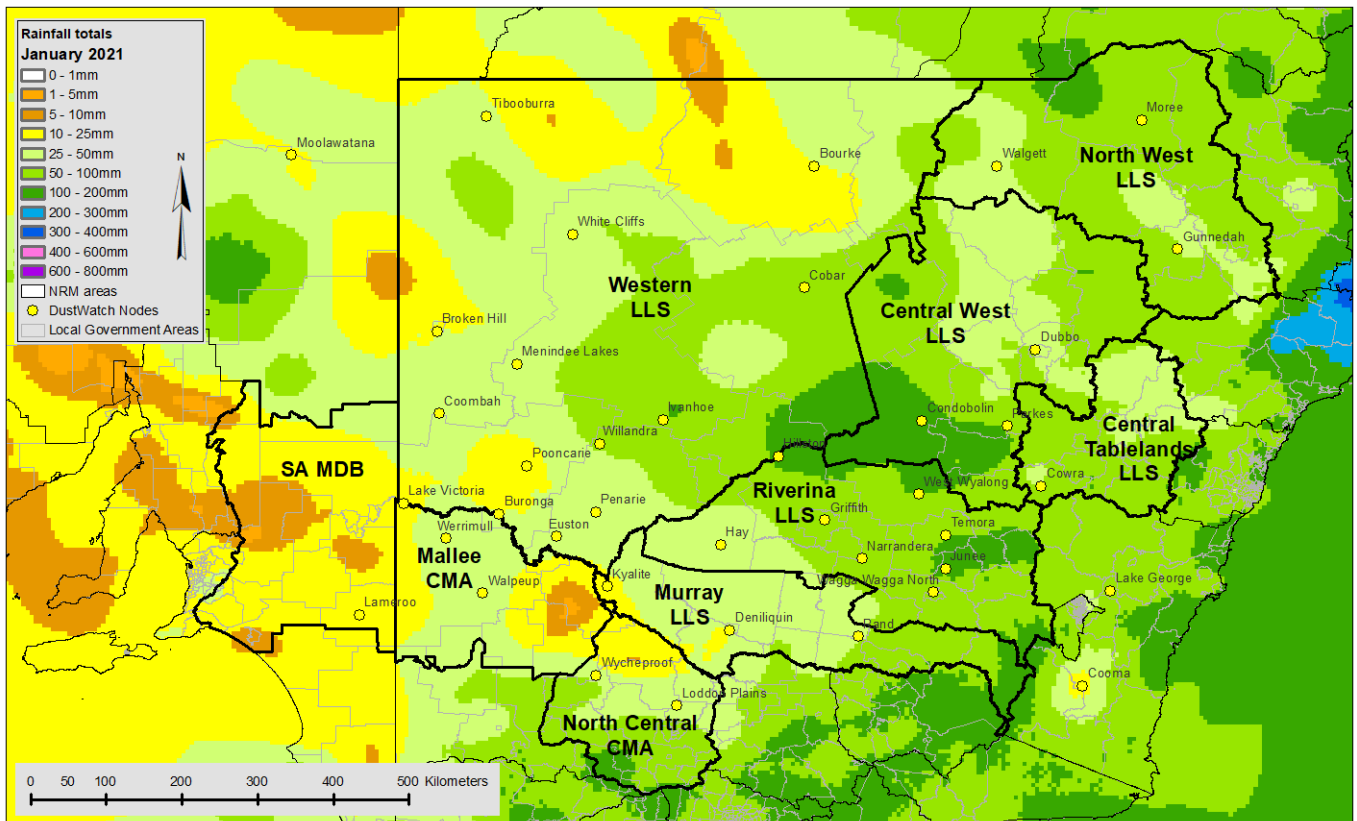


Figure 5 Rainfall totals for January 2021 (source: Bureau of Meteorology)

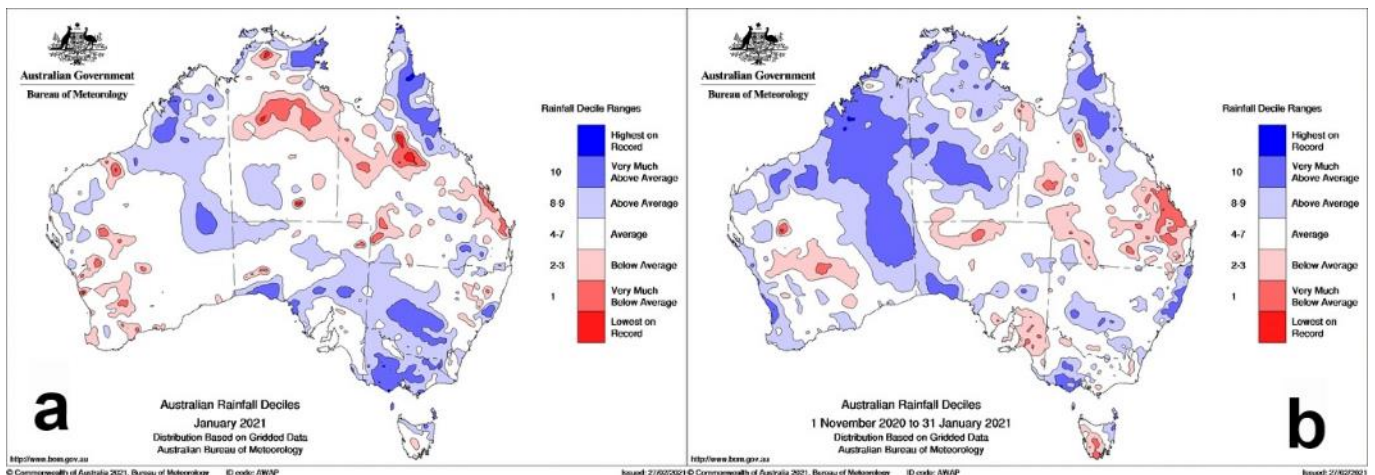


Figure 6 Rainfall deciles for January 2021 (a) and 1 November 2020 to 31 January 2021 (3 month – b)

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 1084 hot spots (375m pixel with temperature anomalies) in January 2021, slightly more than the 791 hot spots detected in December 2020 (Figures 7 and 8) but no comparison to the 21,399 detected during the bush fires in January 2020.

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, and cloud can obscure hot spots, thereby reducing the number of detections.

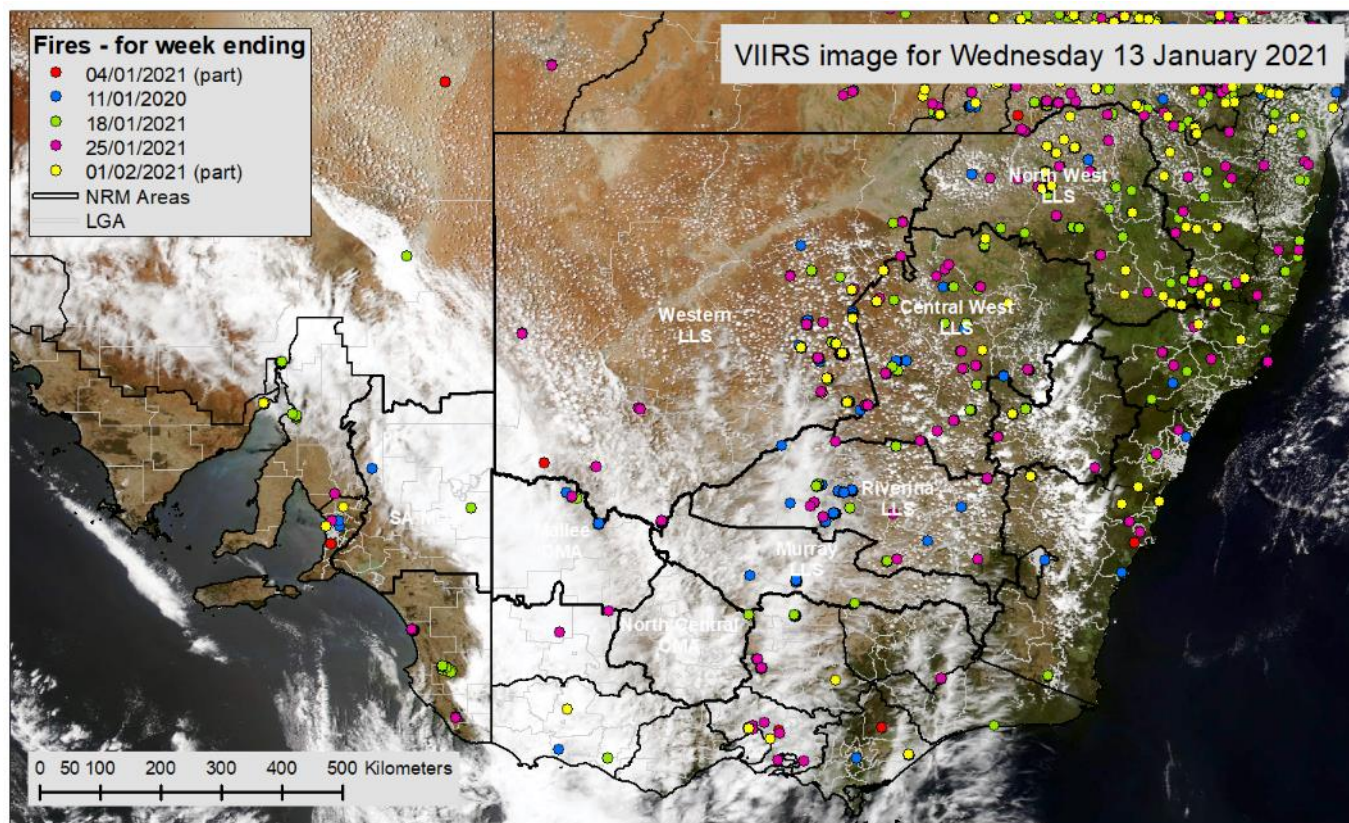


Figure 7 Pixels (375m) with active burning fires in January 2021 as determined from VIIRS satellite

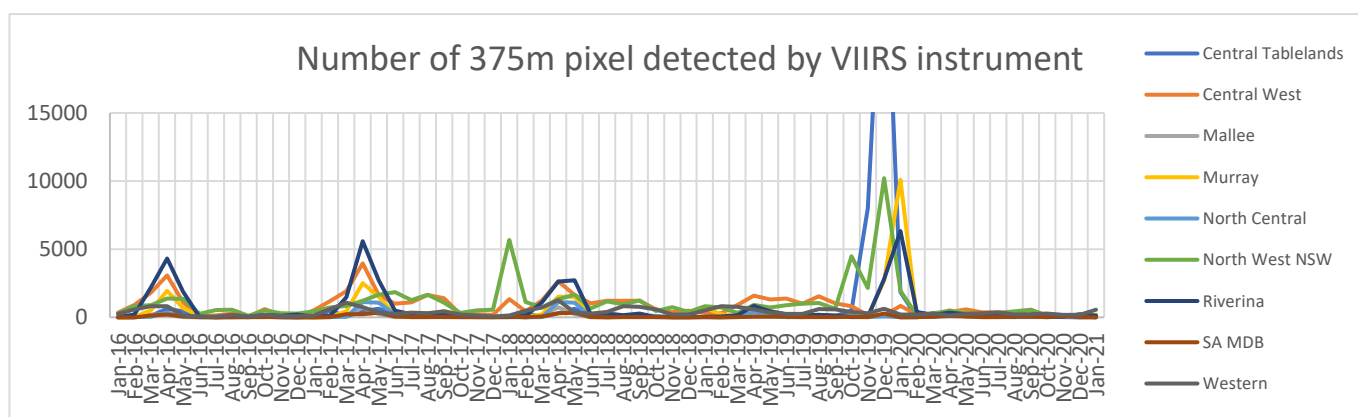


Figure 8 Number of 375m pixels with active burning fires between January 2016 and January 2020

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 CMA's 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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