

Groundcover

The area with ground cover above 50% (green and yellow colours in Figure 2) has expanded further west with a substantial increase visible in the Local Land Services Western Region from 48% in February 2021 to 59% in March 2021 (Table 1). Good rainfall in the north of the State (Figure 5) combined with favourable temperatures has boosted Autumn plant growth. In contrast, areas in the Victorian Mallee and south of Broken Hill missed out on recent rain and are not seeing groundcover improvement.

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

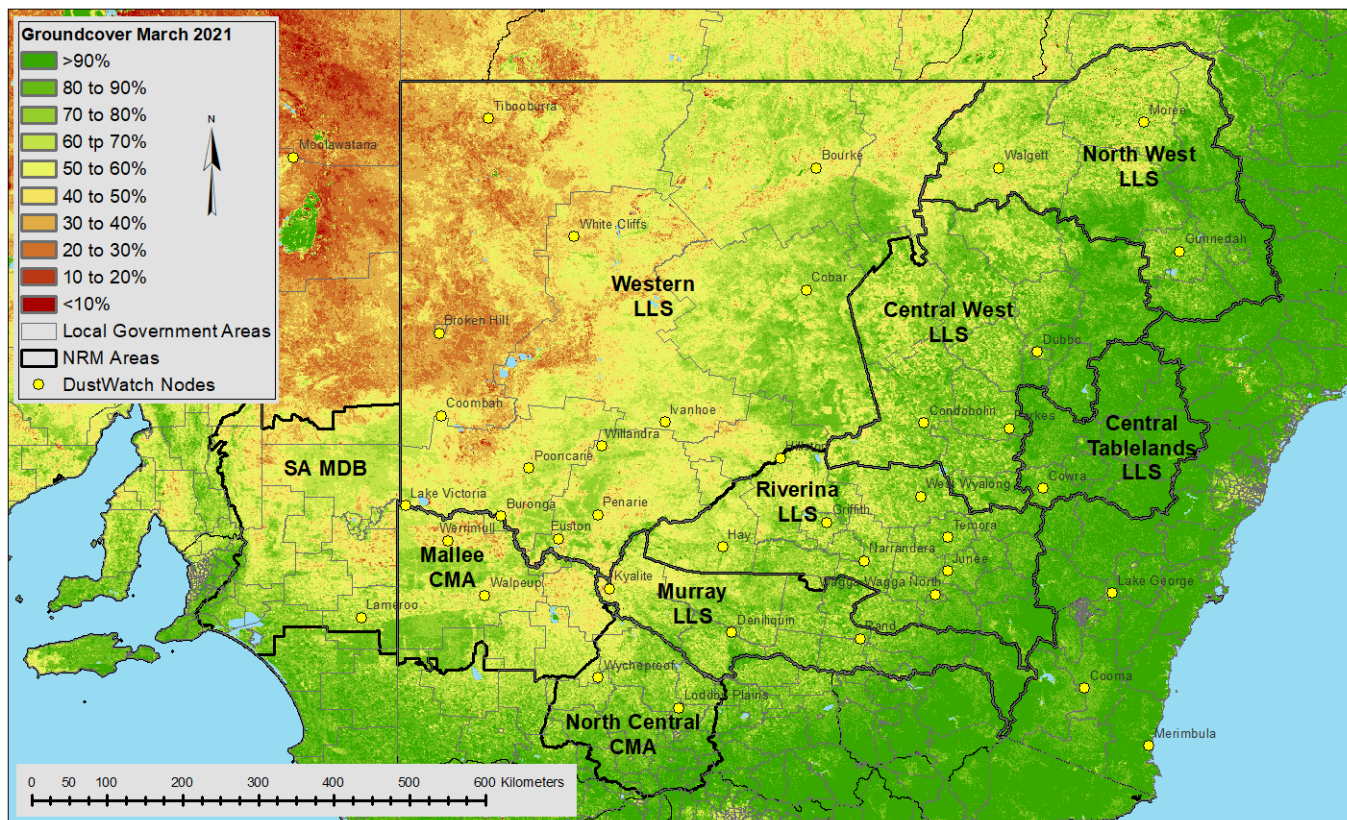


Figure 2 Groundcover for March 2020 as determined from MODIS by CSIRO

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

| Date | Central West | Mallee | Murray | North Central | North West | Riverina | SA MDB | Western | Central Tablelands |
|----------|--------------|---------|---------|---------------|------------|----------|---------|---------|--------------------|
| 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 |
| Feb 2021 | 97 | 72 | 96 | 98 | 94 | 96 | 73 | 48 | 100 |
| Mar 2021 | 98 | 82 | 97 | 99 | 95 | 97 | 80 | 59 | 100 |

Groundcover change

Comparing ground cover in March 2020 to March 2021 shows widespread improvement across all Natural Resource Management Areas covered by this report (green colours in Figure 3).

Improvements in ground cover are less prominent than those seen in the February 2021 report, recognising that the bulk of the recovery from the drought occurred in early 2020 (red oval in Figure 4).

Isolated paddocks in the Victorian North Central and Mallee Catchment Management Areas are lower in ground cover than 12 months ago (red colours in Figure 3). These areas missed out on recent rainfall (Figure 5), and some are back in the below-average rainfall categories (Figures 6a+b).

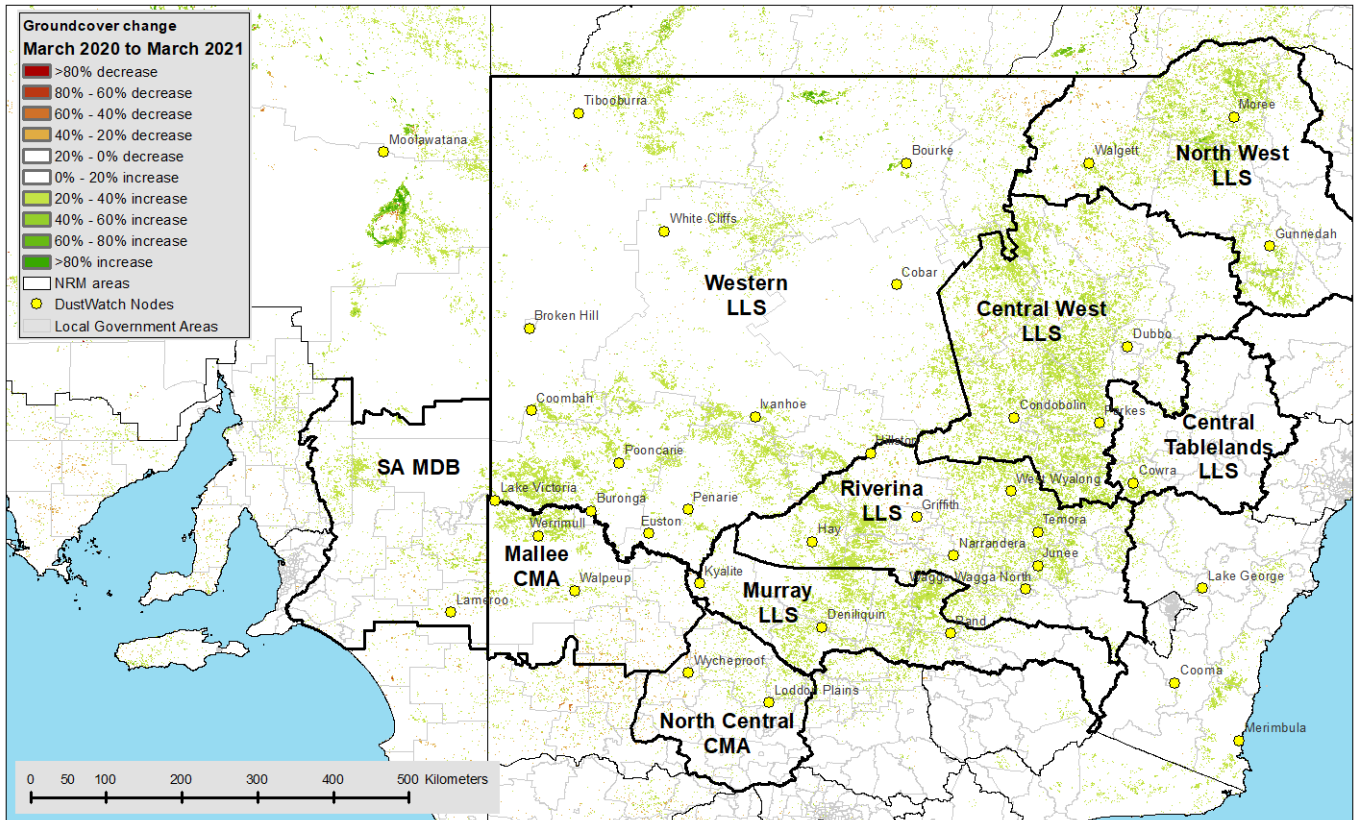


Figure 3 Groundcover difference between March 2020 and March 2021 as determined from MODIS

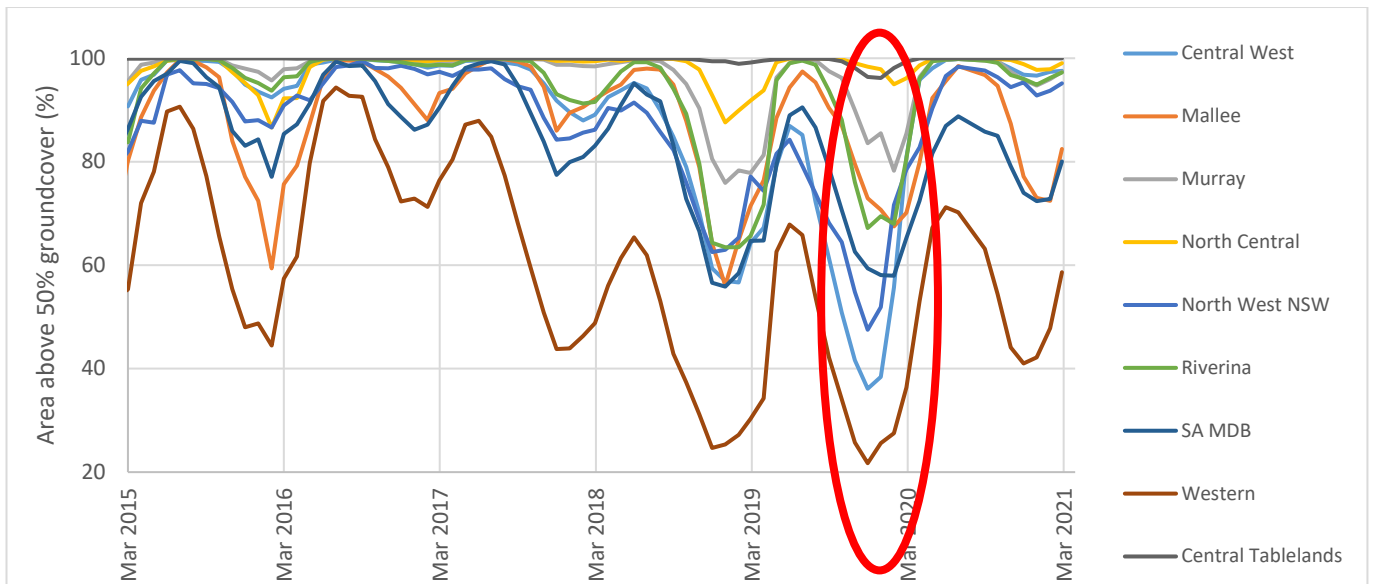


Figure 4 Area (%) of NRM with more than 50% cover since March 2016 as determined from MODIS

Rainfall

Very substantial rainfall was recorded across the northern and eastern parts of New South Wales (Figure 5). Most areas east of a line from Tibooburra to Wagga Wagga recorded in excess of 100mm, with areas around Moree and along the east coast recording in excess of 200mm, leading to local flooding.

In contrast, the south-west of the State recorded very little rain for March 2021, with a similar picture across the borders into Victoria and South Australia.

According to the NSW Department of Primary Industries, most of New South Wales is now drought-free, but isolated areas in the north, far and south-west are in the Drought Affected category. Updates on the latest drought status across the State can be found at [Latest NSW Drought maps](#).

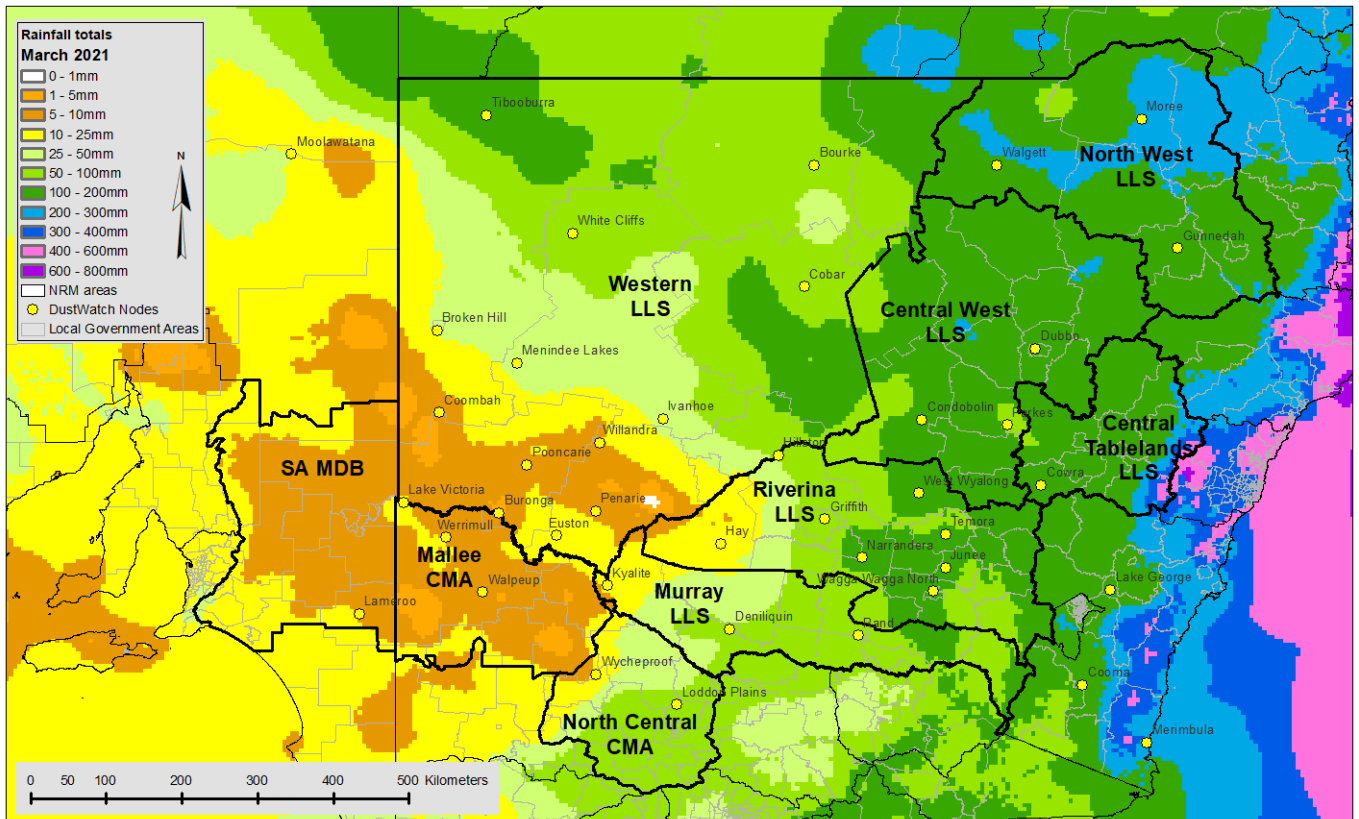


Figure 5 Rainfall totals for March 2021 (source: Bureau of Meteorology)

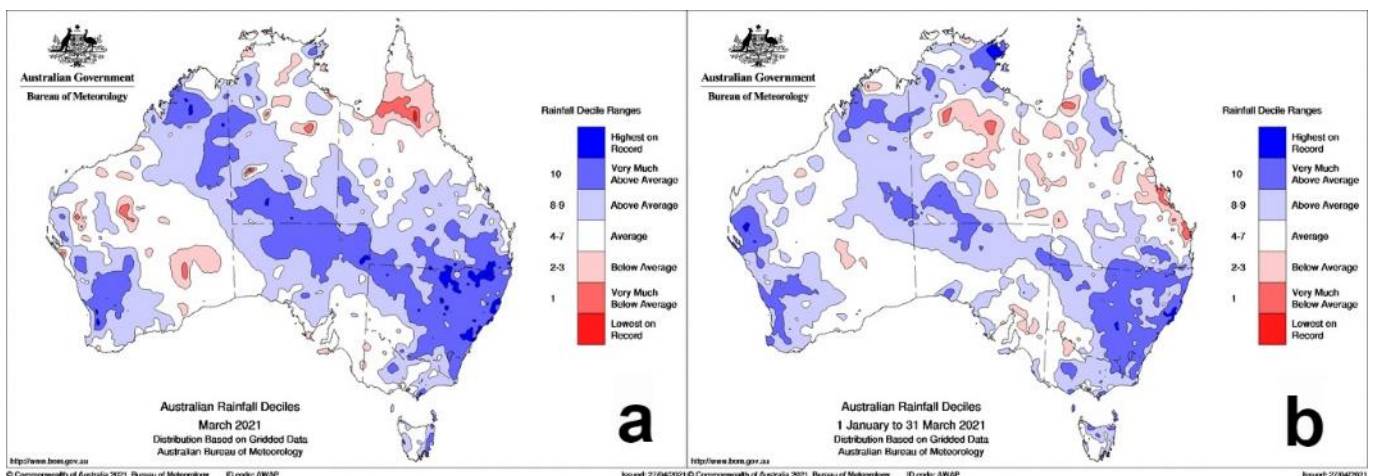


Figure 6 Rainfall deciles for March 2021 (a) and 1 January 2021 to 28 March 2021 (b)

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 4593 hot spots (375m pixel with temperature anomalies) in March 2021, almost three times the 1623 hot spots detected in February 2021 (Figures 7 and 8) and much less than the 1743 hot spots detected in March 2020. The image also shows a substantial dust storm in the Mallee region of South Australia and Victoria (red circle in Figure 7).

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.

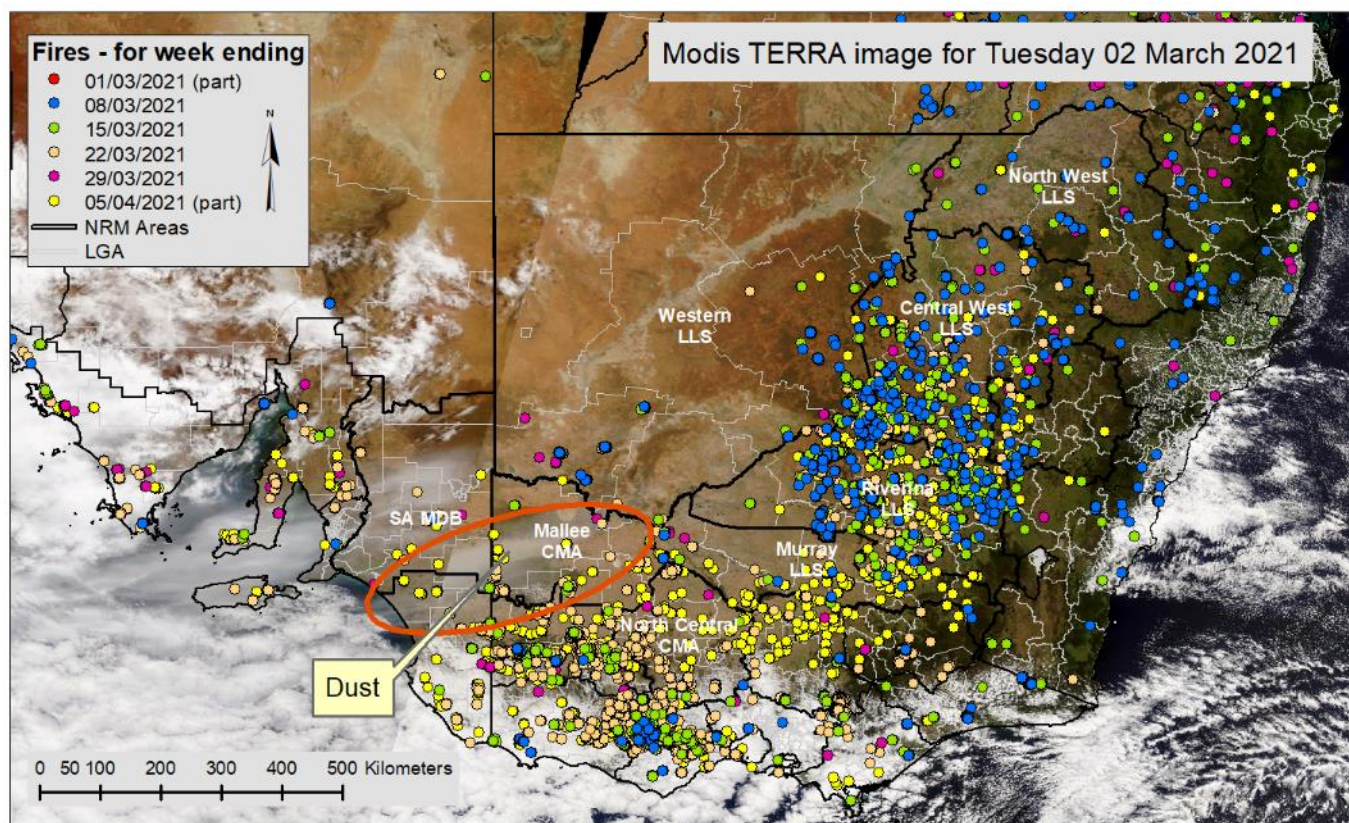


Figure 7 Pixels (375m) with active burning fires in March 2021 as determined from VIIRS satellite

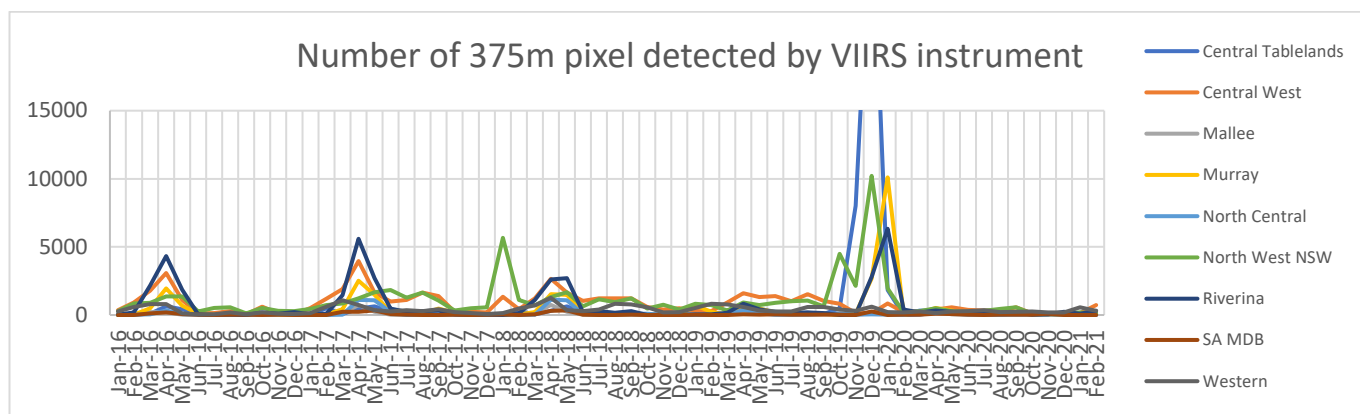


Figure 8 Number of 375m pixels with active burning fires between January 2016 and March 2021

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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Community-based wind erosion monitoring across Australia

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