DustWatch Report

May 2024

Community-based wind erosion monitoring across Australia

Dust activity	Decrease in dust; above average for May
Wind strength	Decrease from April, below average for May
Groundcover	Increases in regions, particularly the Western Local Land Services
Rainfall	Wetter than average for most of the state

Dust activity

Long-term sites averaged 4.9 hours of dust in May 2024. This is down from 8.1 hours of dust in April 2024 and is slightly above average for May. While dust was most prominent through the Riverina Local Land Services and Mallee and North Central Catchment Management Authority regions, overall dust figures at most sites were generally lower than in March. The decrease in dust is likely due to wetter than average conditions for much of the state (Figure 7a), leading to an increase or stabilisation in groundcover in all regions (Table 1). Below-average windspeeds throughout May 2024 are unlikely to have promoted dust transport (Figure 1).

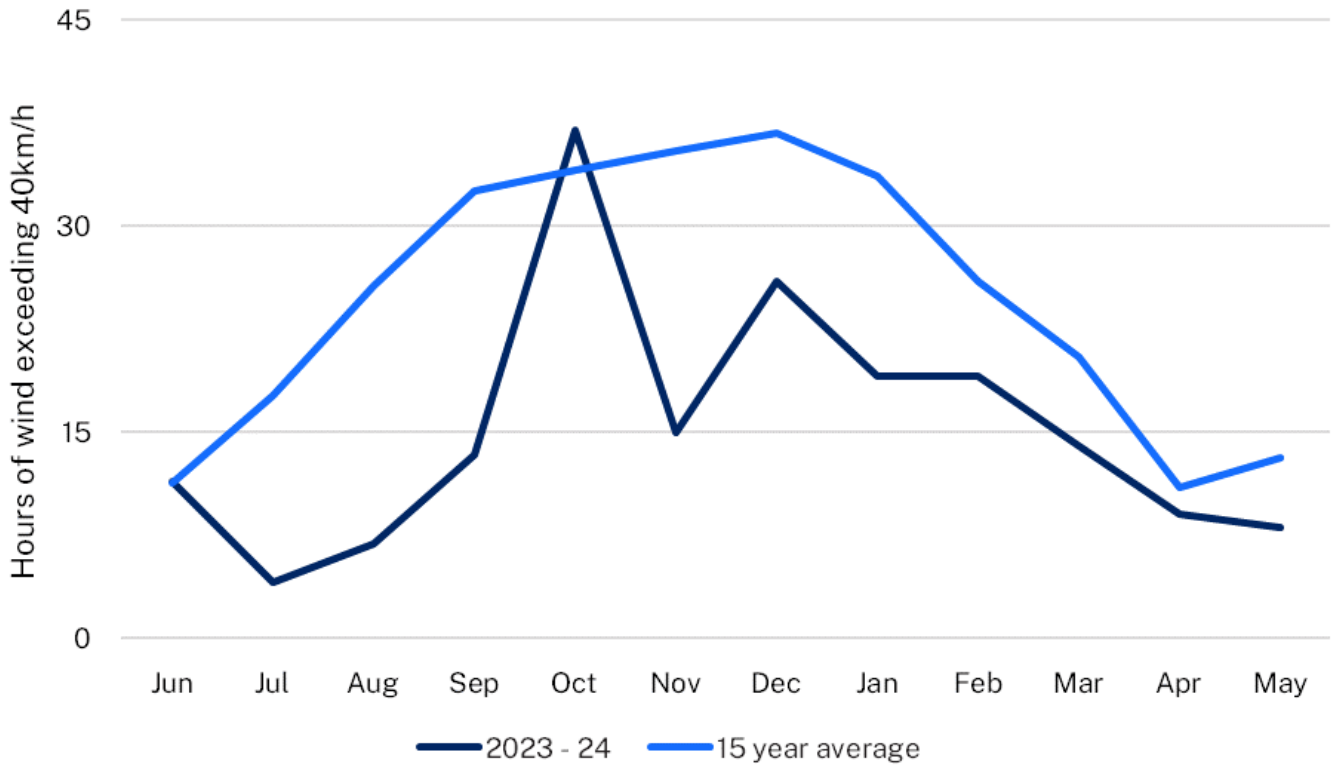

Figure 1 **Hours of wind exceeding 40km/h – average across all sites**

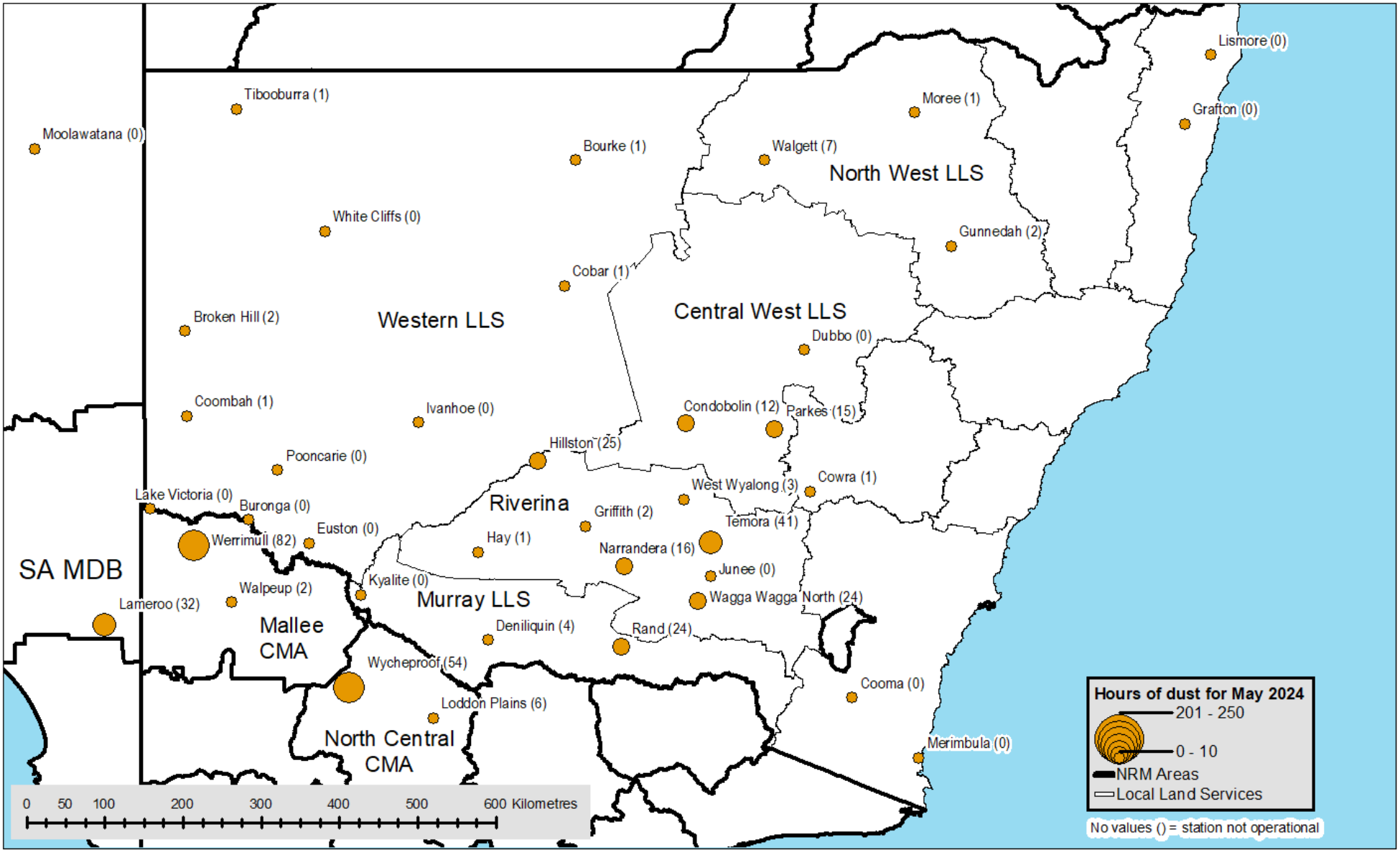

Figure 2 **Hours of dust activity (number in brackets) at each DustWatch site in May 2024**

Groundcover

The area with greater than 50% groundcover (green and yellow colours in Figure 3) has increased significantly during May. This is especially noticeable between Tibooburra and Broken Hill, as well as in the South Australian and Queensland Channel Country, including areas around Lake Frome and Lake Callabonna. Improvements are also evident through the wheat/sheep belt and along the Darling Barka River Corridor. Groundcover increased or remained stable in all regions, with the largest improvement in the Western Local Land Services, from 78% in April to 88% in May 2024 (Table 1).

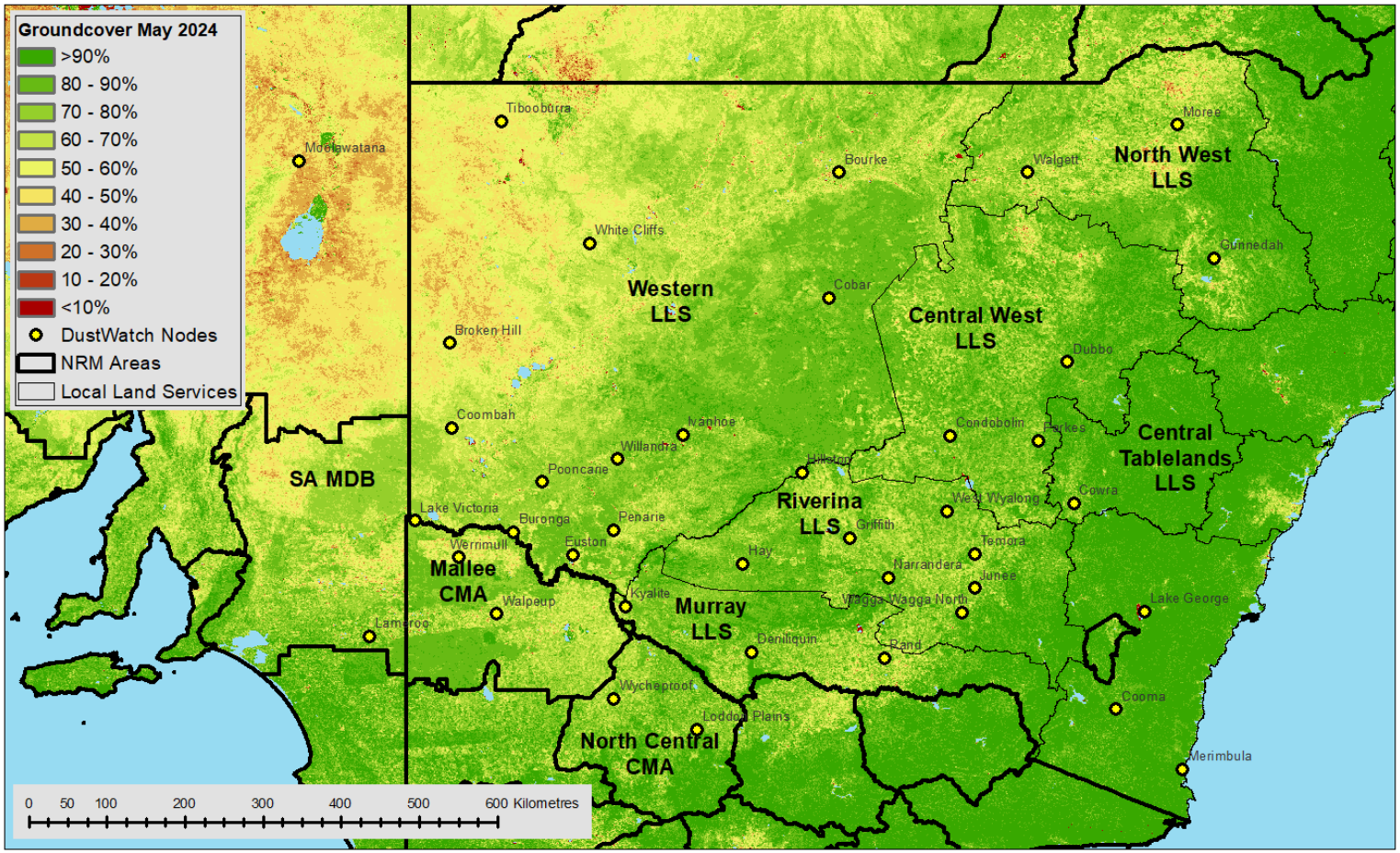

Figure 3 Groundcover for May 2024 as determined from MODIS by CSIRO

Table 1 Percentage of each NRM with cover >50% for June 2023 to May 2024

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Jun 2023	100	99	100	100	99	100	98	90	100
Jul 2023	100	100	100	100	98	100	98	90	100
Aug 2023	99	100	100	100	97	100	97	87	100
Sep 2023	99	100	100	100	96	100	95	78	100
Oct 2023	98	99	100	100	95	100	92	71	100
Nov 2023	98	99	100	100	96	100	92	71	100
Dec 2023	96	95	100	100	94	99	81	64	100
Jan 2024	97	90	99	100	93	99	81	66	100
Feb 2024	96	92	99	100	93	98	81	73	100
Mar 2024	95	94	99	100	93	97	87	77	100
Apr 2024	96	94	98	100	95	98	89	78	100
May 2024	99	97	99	100	97	100	93	88	100

Groundcover change

Significant groundcover improvements (green colours in Figure 4) are visible across the Channel Country in South Australia, Queensland and east of Tibooburra around Narriearra Caryapundy Swamp National Park, as well as areas between Ivanhoe and Menindee Lakes in the Western Local Land Services. Improvements are also evident across the wheat/sheep belt. Improvements can also be seen across the wheat/sheep belt, likely due to above-average rainfall in May 2024 and the 3 months leading up to it (Figure 7a, Figure 7b). Groundcover reductions (orange and red in Figure 4) are also visible, although these are largely confined to the Murray Local Land Services and the North Central Catchment Management Authority. Changes in groundcover are also shown for May 2024 in Figure 5, reflecting continued improvements or stabilisations in groundcover for all regions.

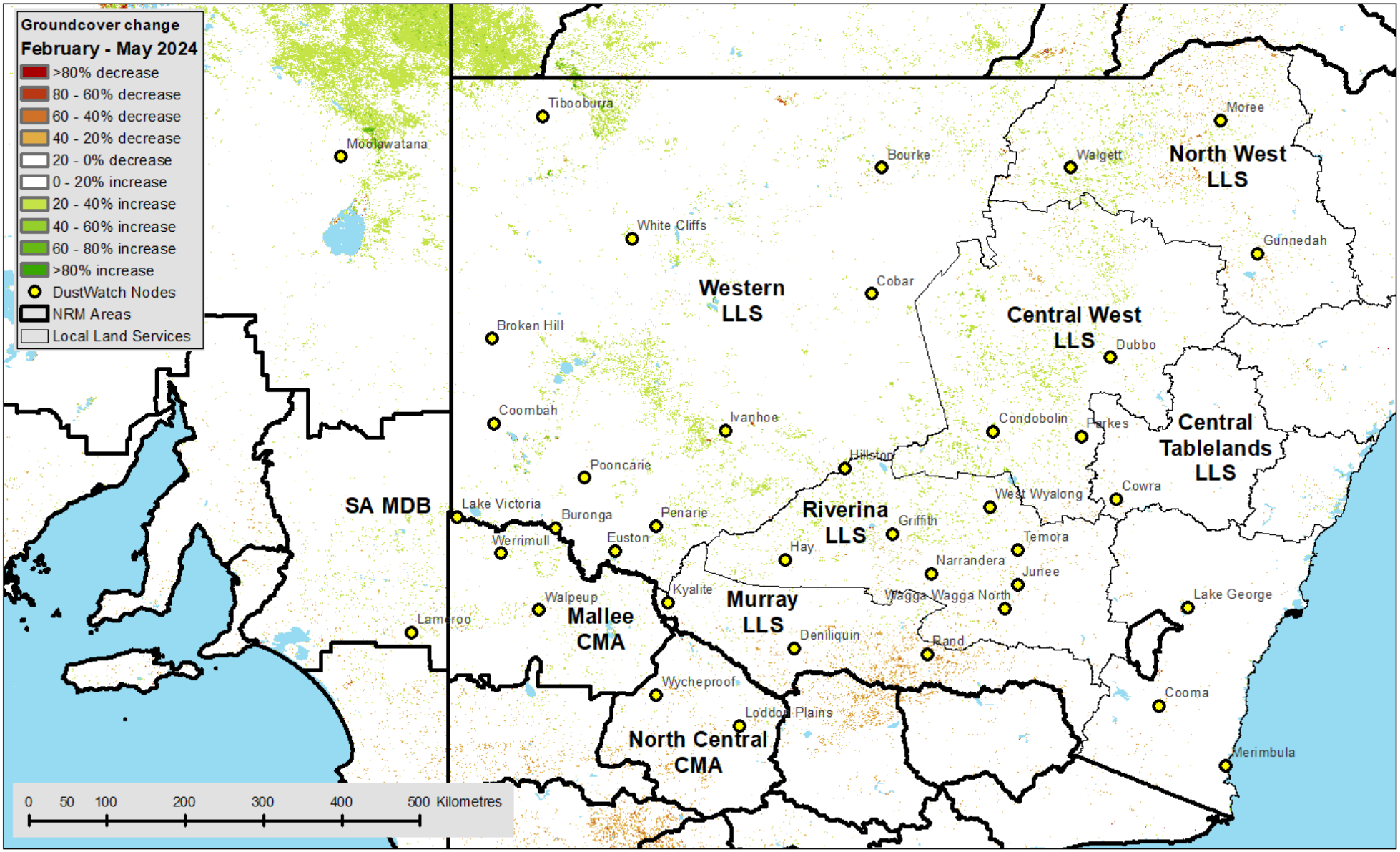

Figure 4 Groundcover difference between February 2024 and May 2024

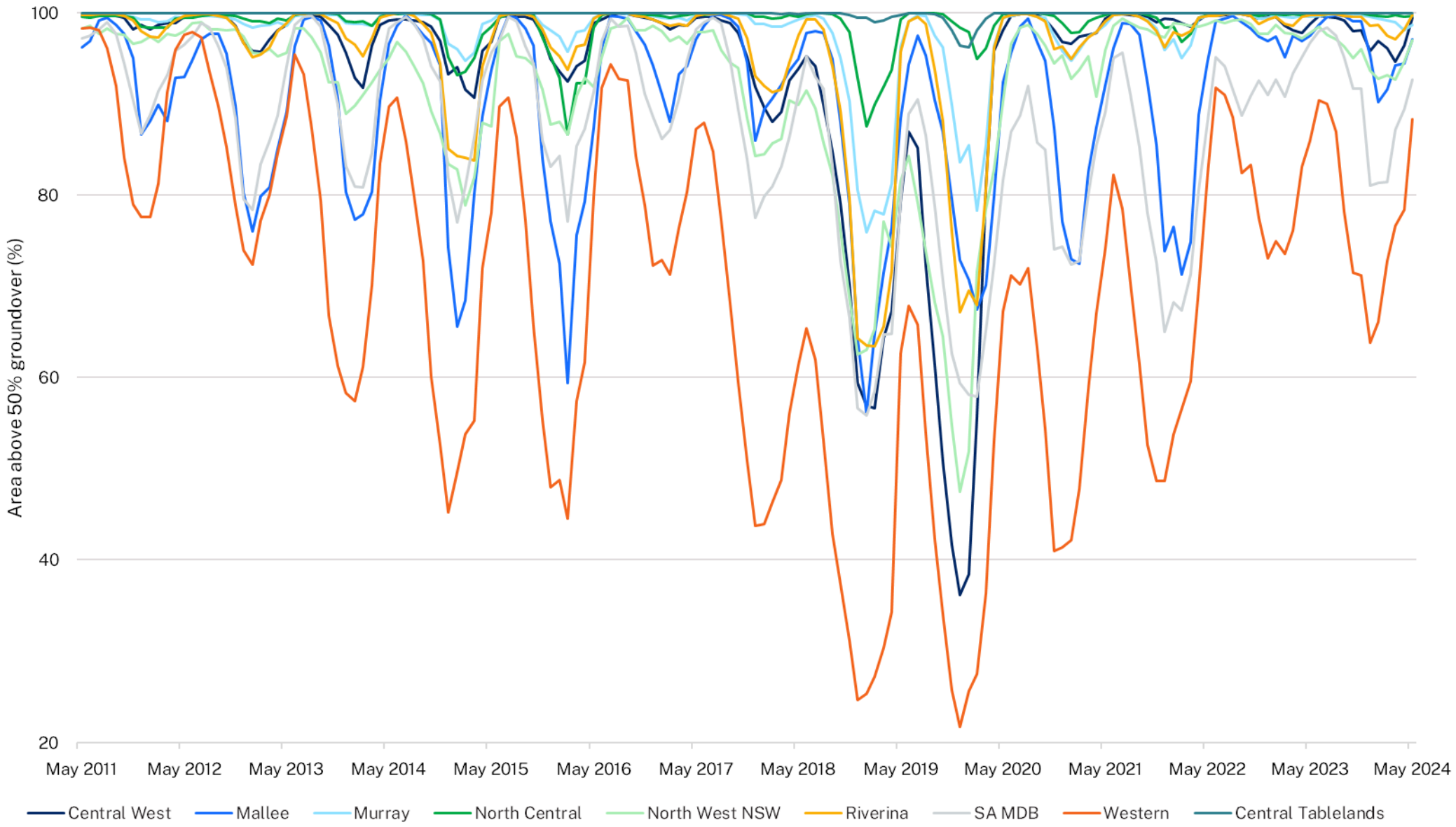

Figure 5 Area (%) of NRM with more than 50% cover since May 2011 (refer to table 1 for alternative text)

Rainfall

Across the state, May rainfall totals generally ranged from 10 to 200 mm, with totals up to 600 mm along parts of the south coast and less than 10 mm near Lake Victoria in the far south west near the South Australian and Victorian borders (Figure 6). Total rainfall was above average for much of the state, with large areas in the Western and Riverina Local Land services recording very much above average rainfall. Pockets of rainfall, the highest on record, were also recorded in these parts of the state (Figure 7a). In the 3 months to the end of May, rainfall was above to very much above average for much of the state, with average rainfall elsewhere. Below-average rainfall was recorded in the eastern portions of the Murray and Riverina Local Land Services (Figure 7b).

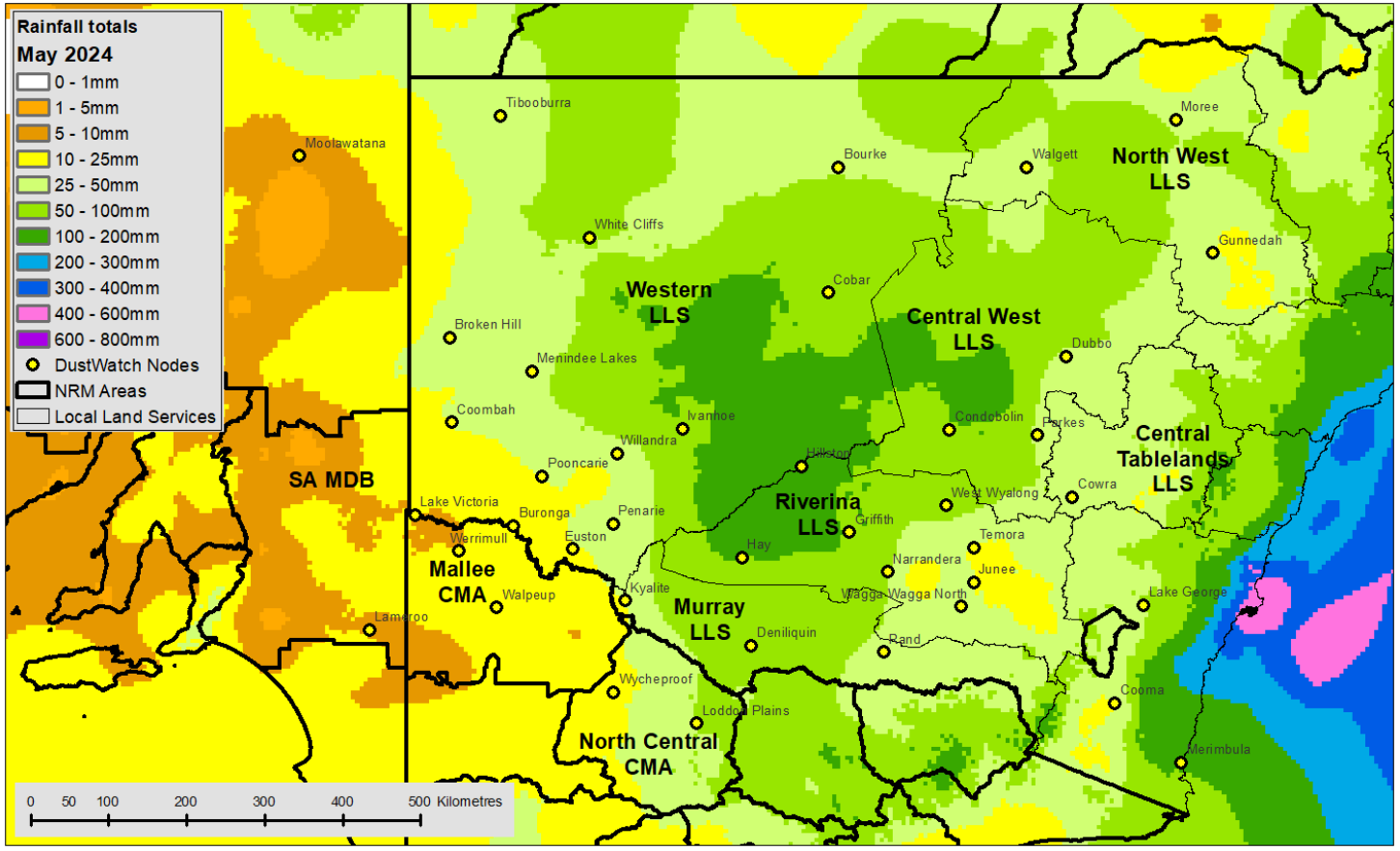

Figure 6 **Rainfall totals for May 2024 (source: Bureau of Meteorology)**

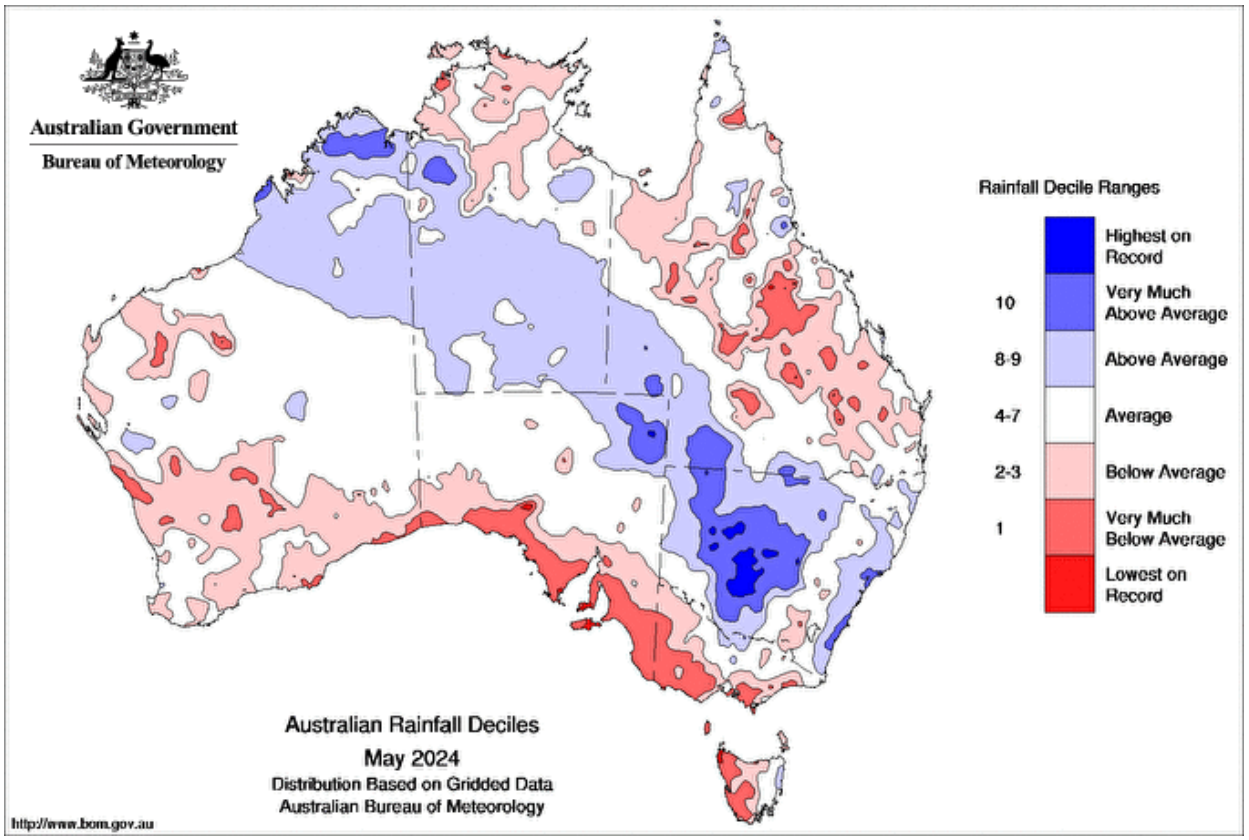

Figure 7(a) Rainfall deciles for May 2024

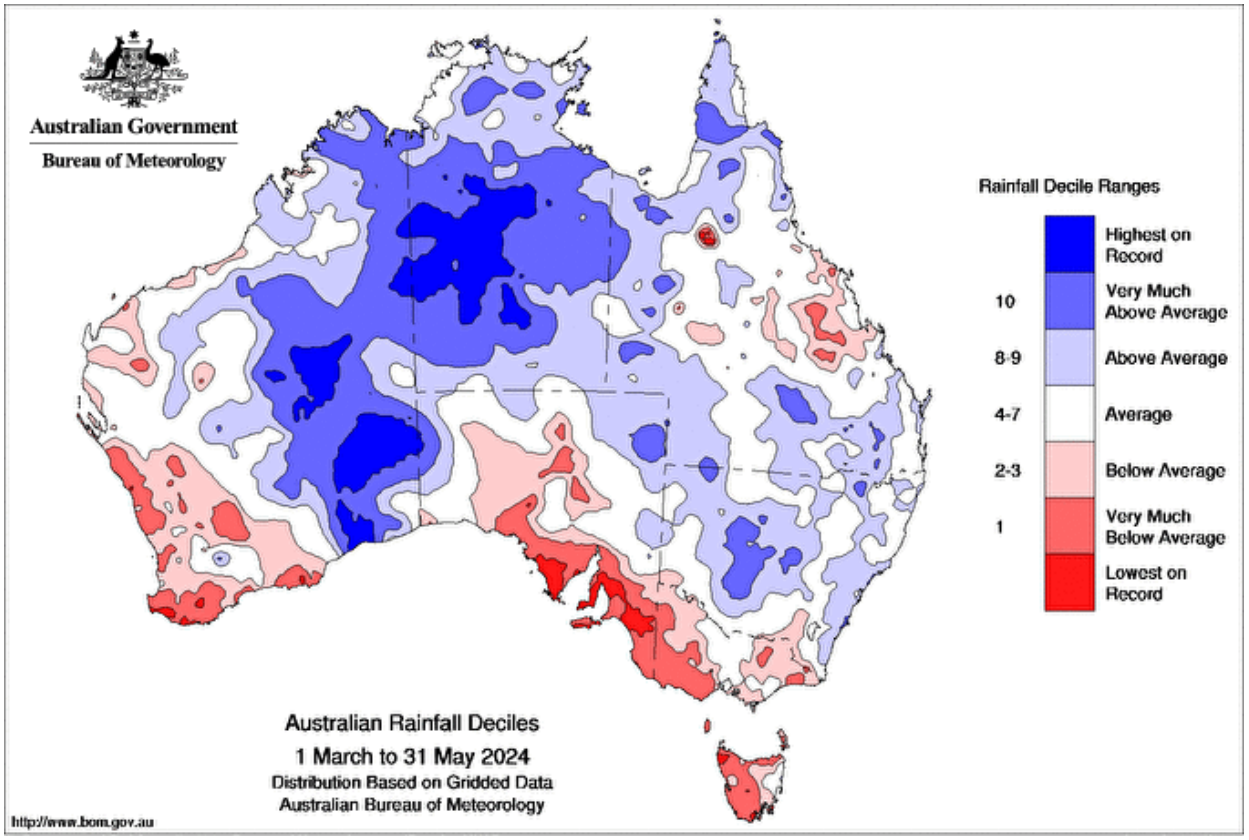

Figure 7(b) Rainfall deciles for 1 March 2024 to 31 May 2024

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 4,346 hot spots (375 m pixel with temperature anomalies) in May 2024 (Figures 8 and 9), a 55% reduction from the 9,741 hot spots detected in April 2024.

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

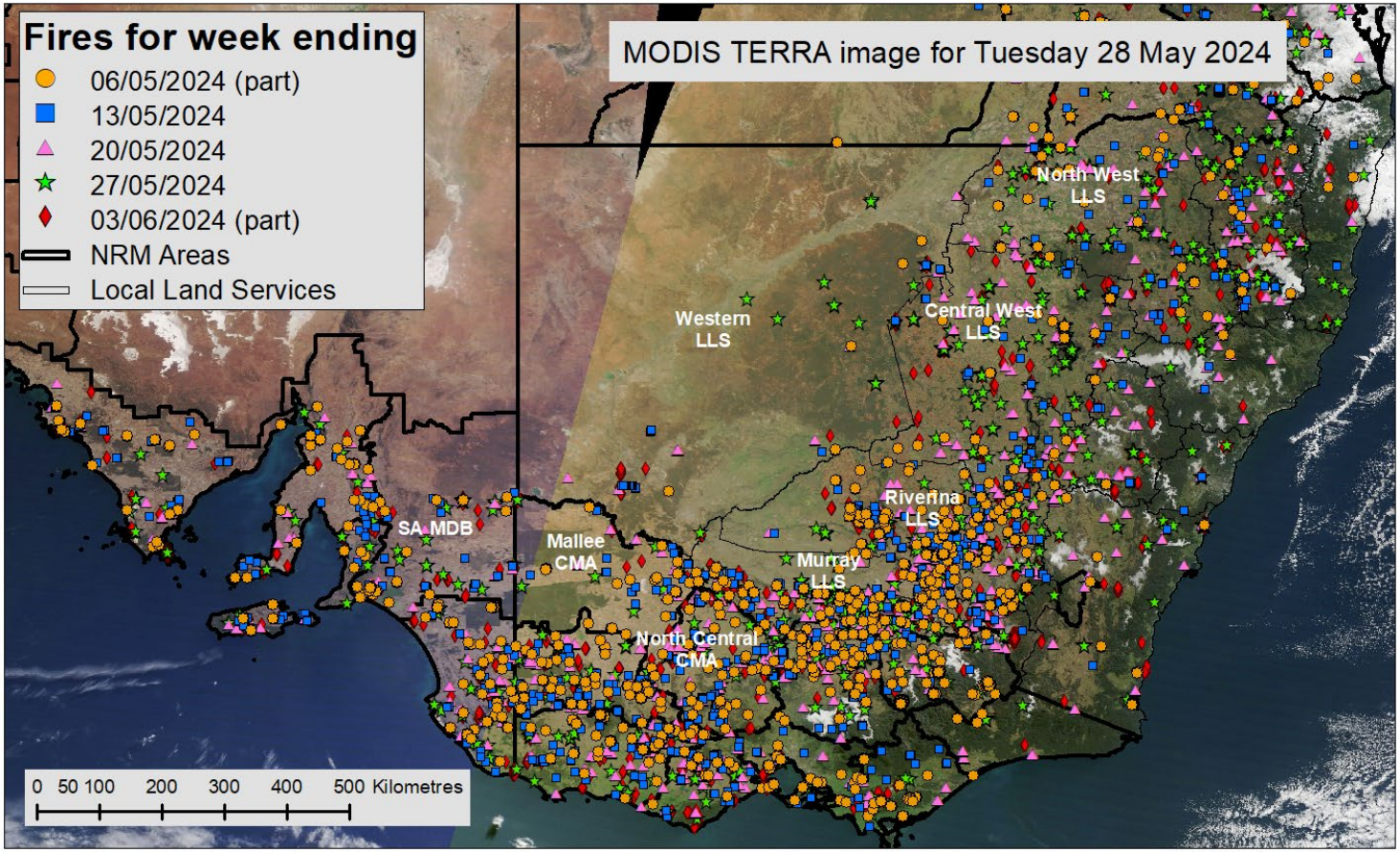

Figure 8 **Pixels (375m) with active burning fires in May 2024 as determined from VIIRS satellite**

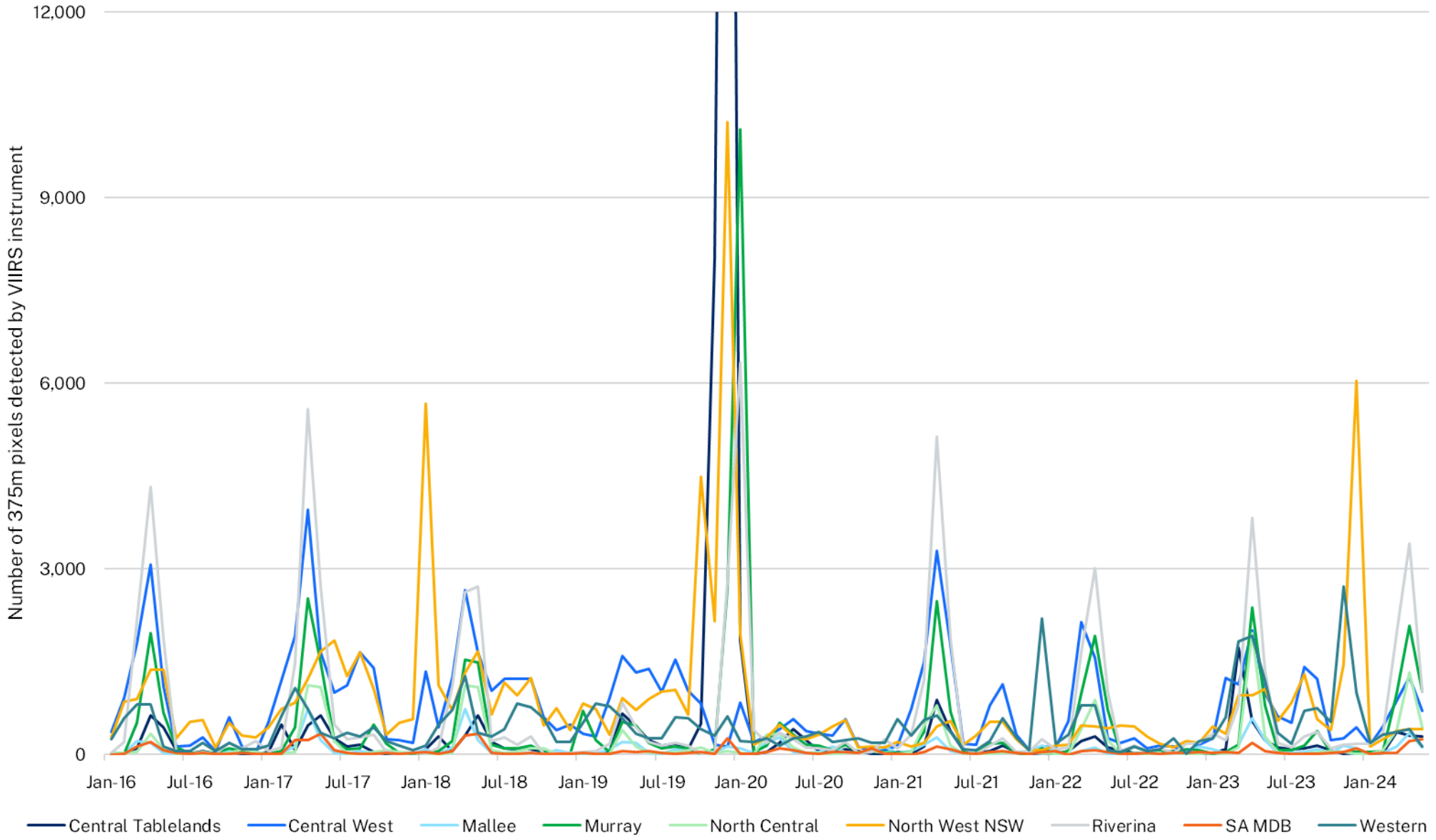

Figure 9 **Number of 375m pixels with active burning fires between January 2016 and May 2024**

This document was prepared by Toan Trieu and Sean Watt and reviewed by Margaret Haak.

Published by: Department of Climate Change, Energy, the Environment and Water, Locked Bag 5022, Parramatta NSW 2124. Ph: 131 555 (environment information and publications requests). TTY: (02) 9211 4723. Email: info@environment.nsw.gov.au;
Web: www.environment.nsw.gov.au.

The DustWatch team Contact us at dustwatch@environment.nsw.gov.au

Dust data is supplied by the Department of Climate Change, Energy, the Environment and Water's Rural Air Quality Monitoring 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 or in-kind contributions from: Western and Murray Local Land Services (LLS) in NSW; the Mallee and North Central Catchment Management Authorities in Victoria and Murray Darling Basin NRM in South Australian, CSIRO and the Australian National University. We particularly thank our many DustWatch volunteers who provide observations and help maintain the instruments.

ISSN 2206-3161 EH 2024/0005 November 2024