

Community-based wind erosion monitoring across Australia

Dust activity	Increased dust hours; below average for November
Wind strength	Decrease from October, below average for November
Groundcover	Decrease from October, especially in the Western Local Land Services region
Rainfall	Average to very much above average for most of the state

Dust activity

In November 2024, average dust activity at long-term sites increased to 12.9 hours, up from 4.2 hours in October. This is still below the November average of 14.4 hours. The increase in dust activity was mainly due to more dust hours in the wheat/sheep belt, especially in the Central West, Riverina, Murray Local Land Services regions, and the North Central Catchment Management Authority region. These areas also saw reductions in groundcover (Table 1). The state had average to very high rainfall (Figure 7a). The lower-than-usual winds in November probably reduced dust emissions (Figure 1).

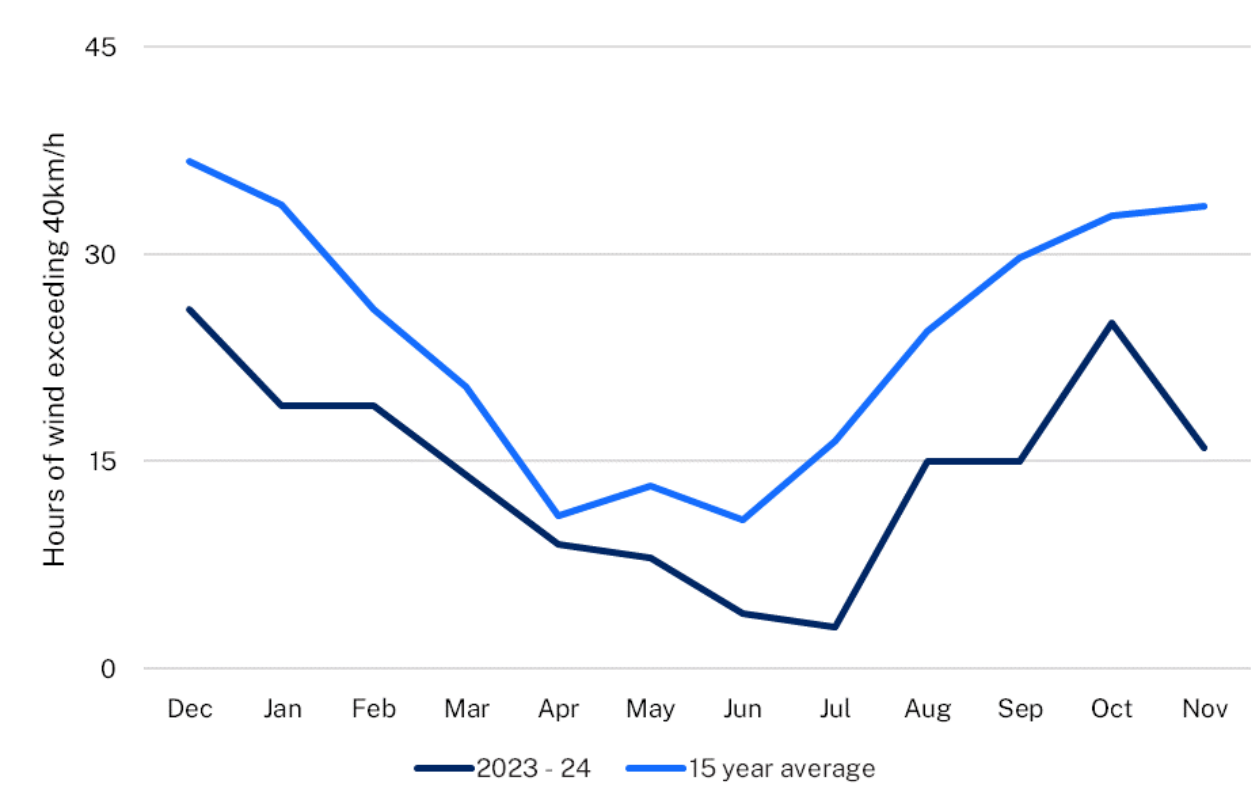


Figure 1 Hours of wind exceeding 40km/h – average across all sites.

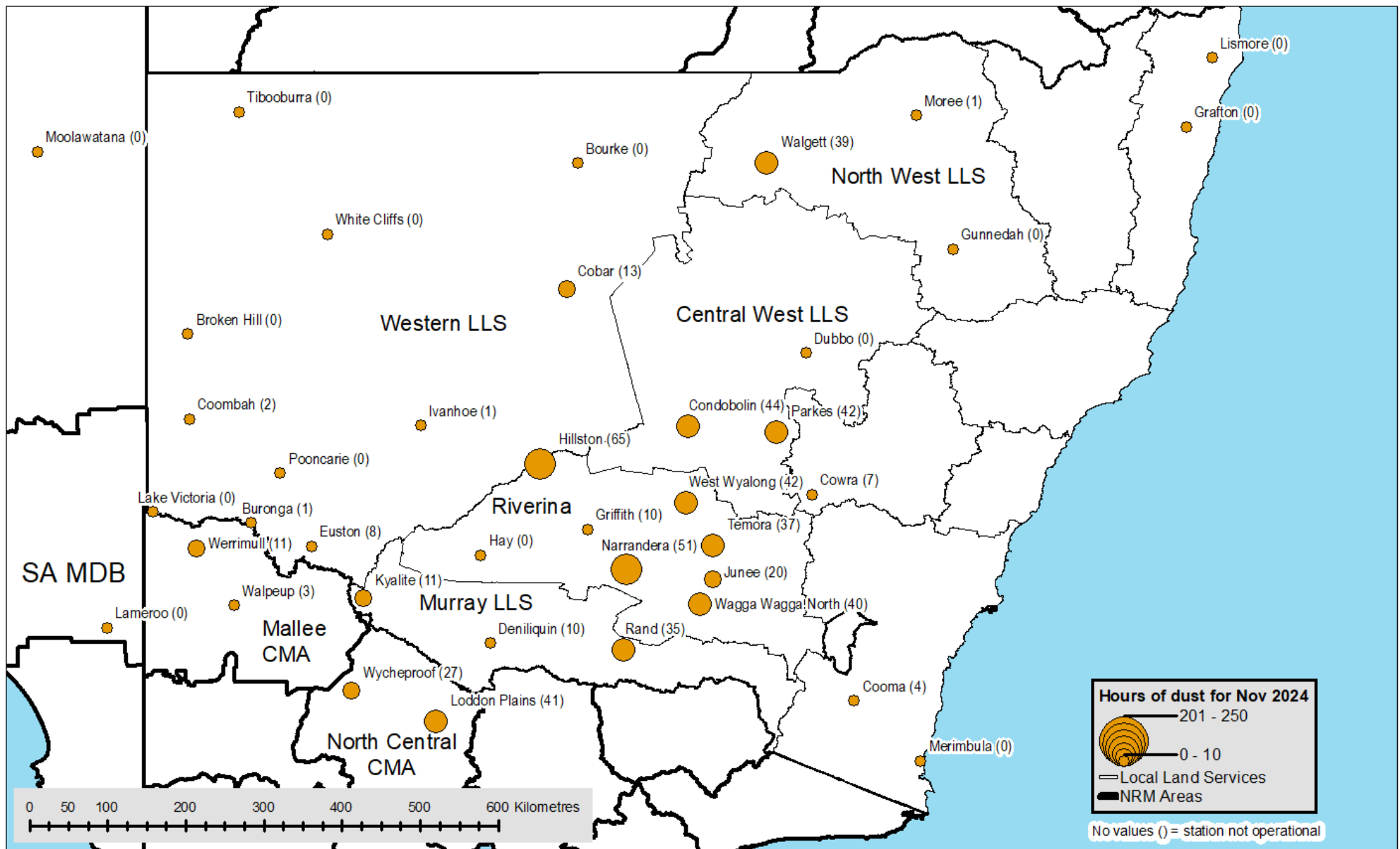


Figure 2 Hours of dust activity (number in brackets) at each DustWatch site in November 2024

Groundcover

The area with greater than 50% groundcover (green and yellow colours in Figure 3) has reduced across the Western Local Land Services and South Australian Murray–Darling Basin regions and the South Australian rangelands (Table 1 and Figure 3), with an increase in orange and red in Figure 3 indicating reduced groundcover. While groundcover across the wheat belt shows some areas of patchy reduction, overall groundcover values for most other regions remained stable during November (Table 1).

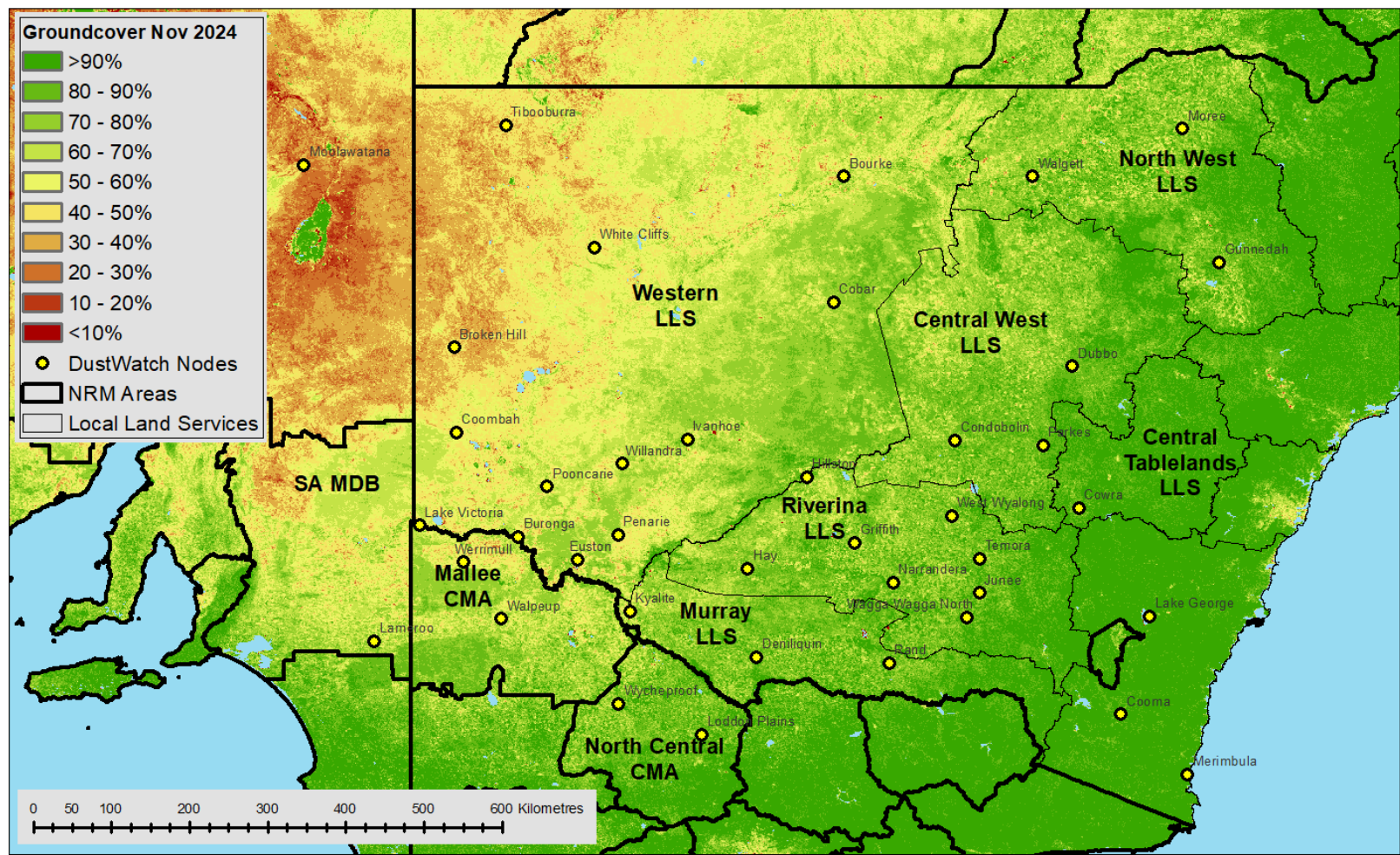


Figure 3 Groundcover for November 2024 as determined from MODIS by CSIRO

Table 1 Percentage of each Natural resource management region with cover >50% for November 2023 to November 2024

Date	Central West	Mallee	Murray	North Central	North West	Riverina	South Australian Murray–Darling Basin	Western	Central Tablelands
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
Jun 2024	100	98	100	100	98	100	95	91	100
Jul 2024	100	98	100	100	99	100	96	93	100
Aug 2024	100	99	100	100	99	100	95	90	100
Sep 2024	100	98	100	100	99	100	88	84	100
Oct 2024	100	96	100	100	99	100	83	76	100
Nov 2024	99	94	100	100	99	100	79	71	100

Groundcover change

In the 3 months from the end of August, groundcover has decreased in patches throughout the NSW wheat belt. More widespread reductions have occurred in the Western Local Land Services, Mallee Catchment Management Authority and South Australian Murray–Darling Basin regions. Groundcover has also decreased in the Queensland and South Australian channel country and rangelands, as indicated by red and orange in Figure 4. Despite the average to very much above average rainfall observed in November (Figure 7a), the groundcover trends in Figure 4 may reflect the generally average rainfall recorded in the 3 months to the end of November (Figure 7b). Areas with improved groundcover (green in Figure 4) can be seen in Lake Froome and isolated patches in the North West Local Land Services region.

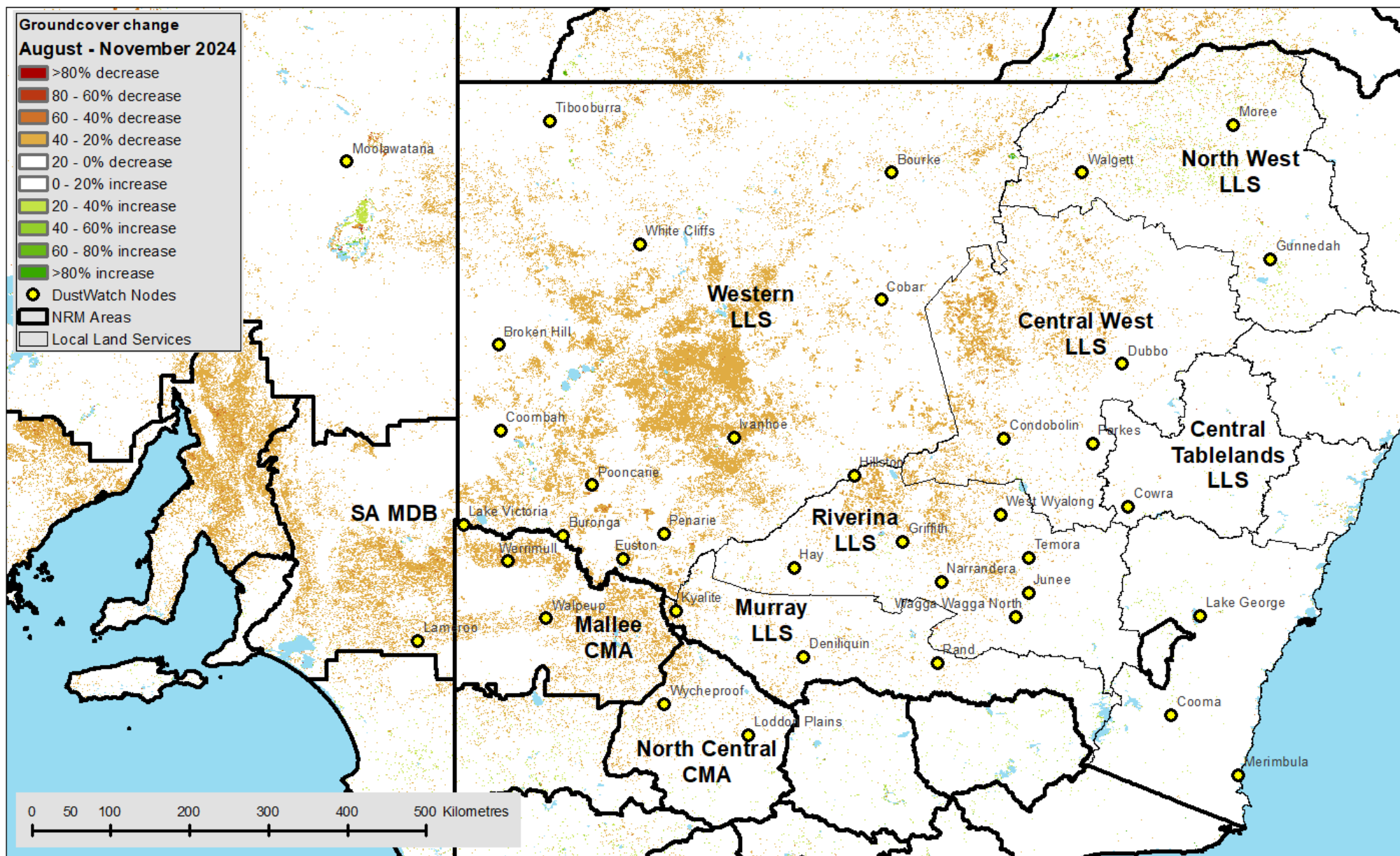


Figure 4 Groundcover difference between August 2024 and November 2024

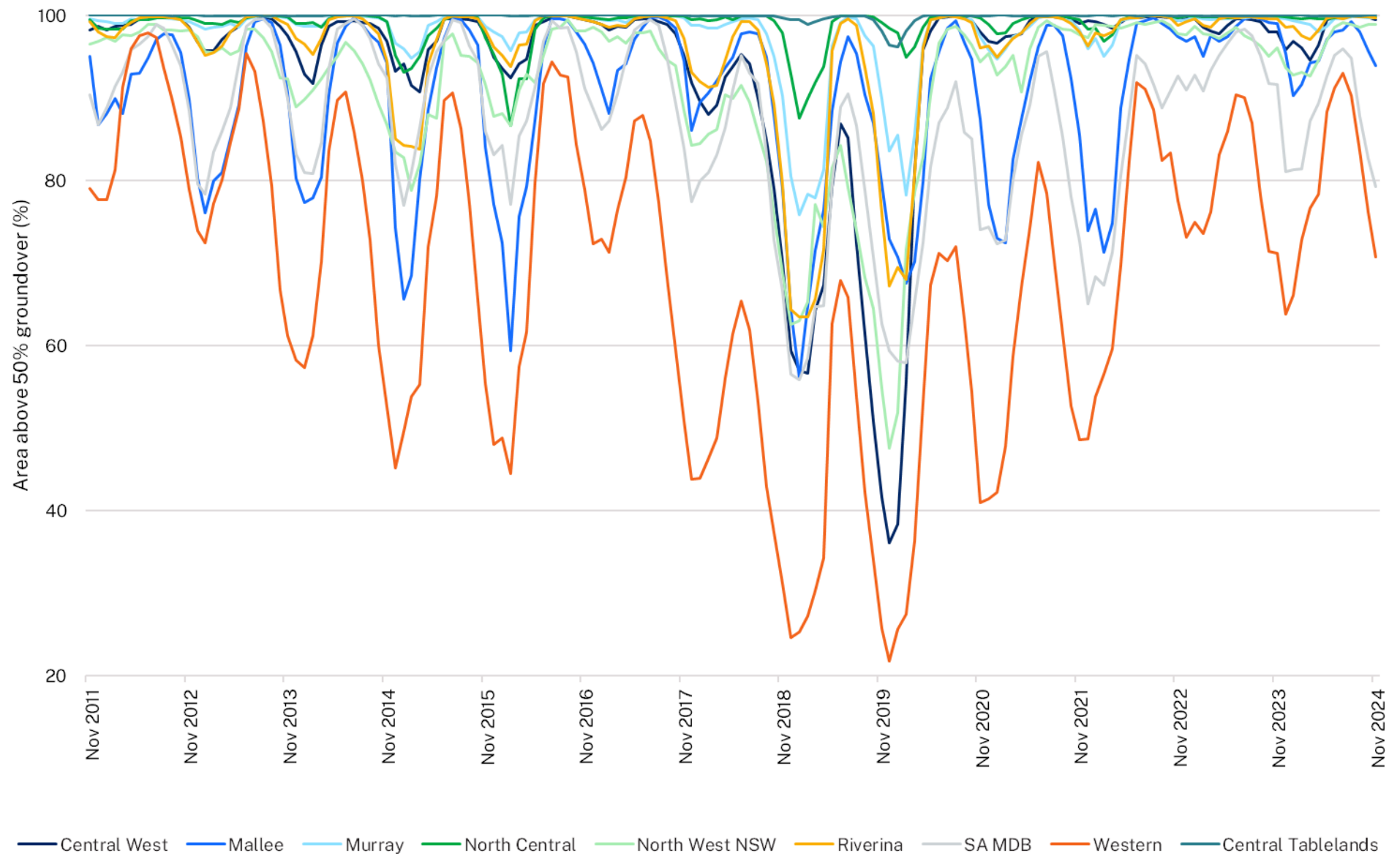


Figure 5 Area (%) of natural resource management region with more than 50% cover since November 2011

Rainfall

Rainfall totals in November 2024 ranged from 1 to 300 mm across the state (Figure 6). Total rainfall has increased since October and is visible across all regions. Totals were average to very much above average across the state, with areas of above-average rainfall generally occurring west of the ranges (Figure 7a). In the 3 months to the end of November 2024, rainfall was average for much of the state (Figure 7b). Patches of average rainfall occurred across the state, with very much above average rainfall observed in northern New South Wales, with below average rainfall observed in the south-east of the state (Figure 7b).

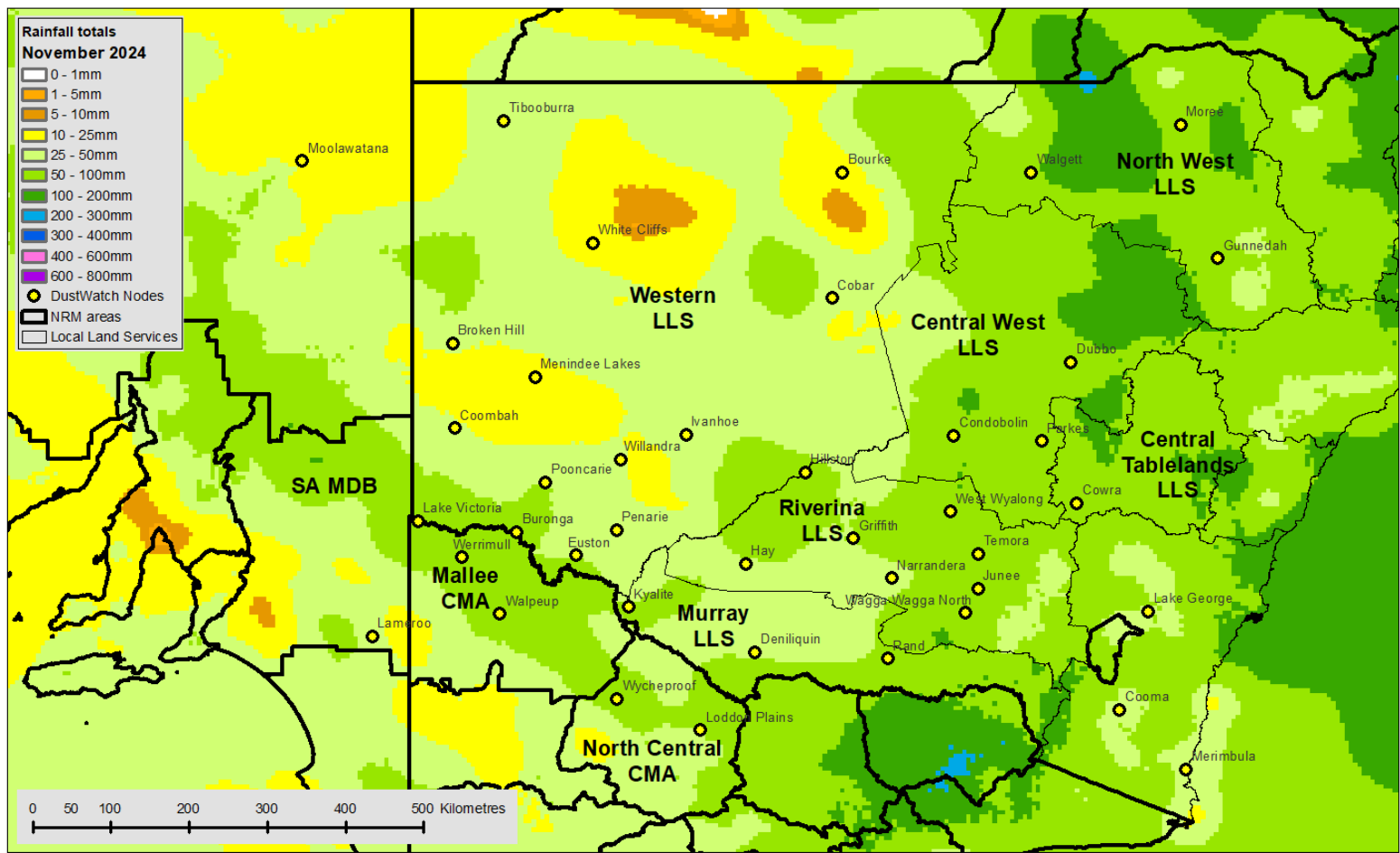


Figure 6 Rainfall totals for November 2024 (source: Bureau of Meteorology)

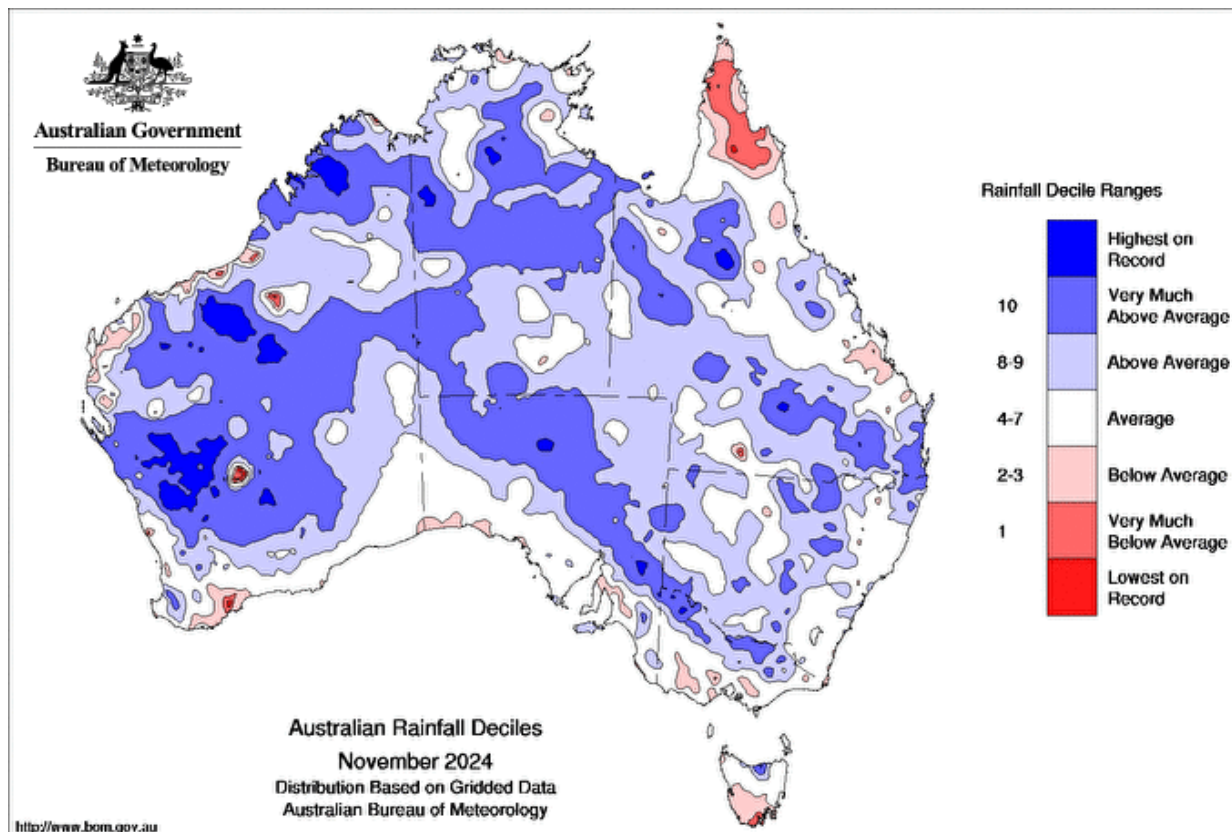


Figure 7(a) Rainfall deciles for November 2024

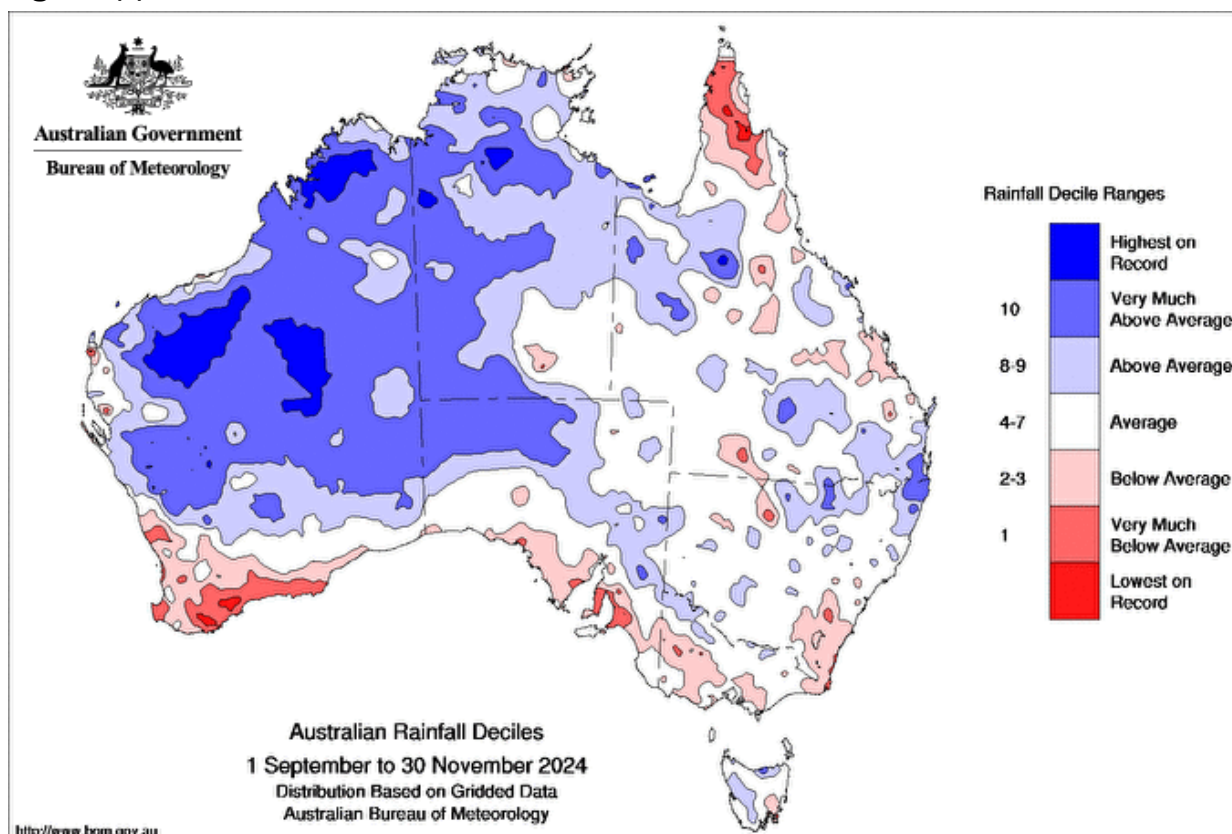


Figure 7(b) Rainfall deciles for 1 September 2024 to 30 November 2024

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 998 hot spots (375 m pixel with temperature anomalies) in November 2024 (Figures 8 and 9), a 7% increase from the 931 hot spots detected in November 2024.

Note: The number of hot spots differs from the number of fires. Large fires have multiple hot spots, which increases the number of detections. Cloud or fog can hide hot spots, reducing the number of detections.

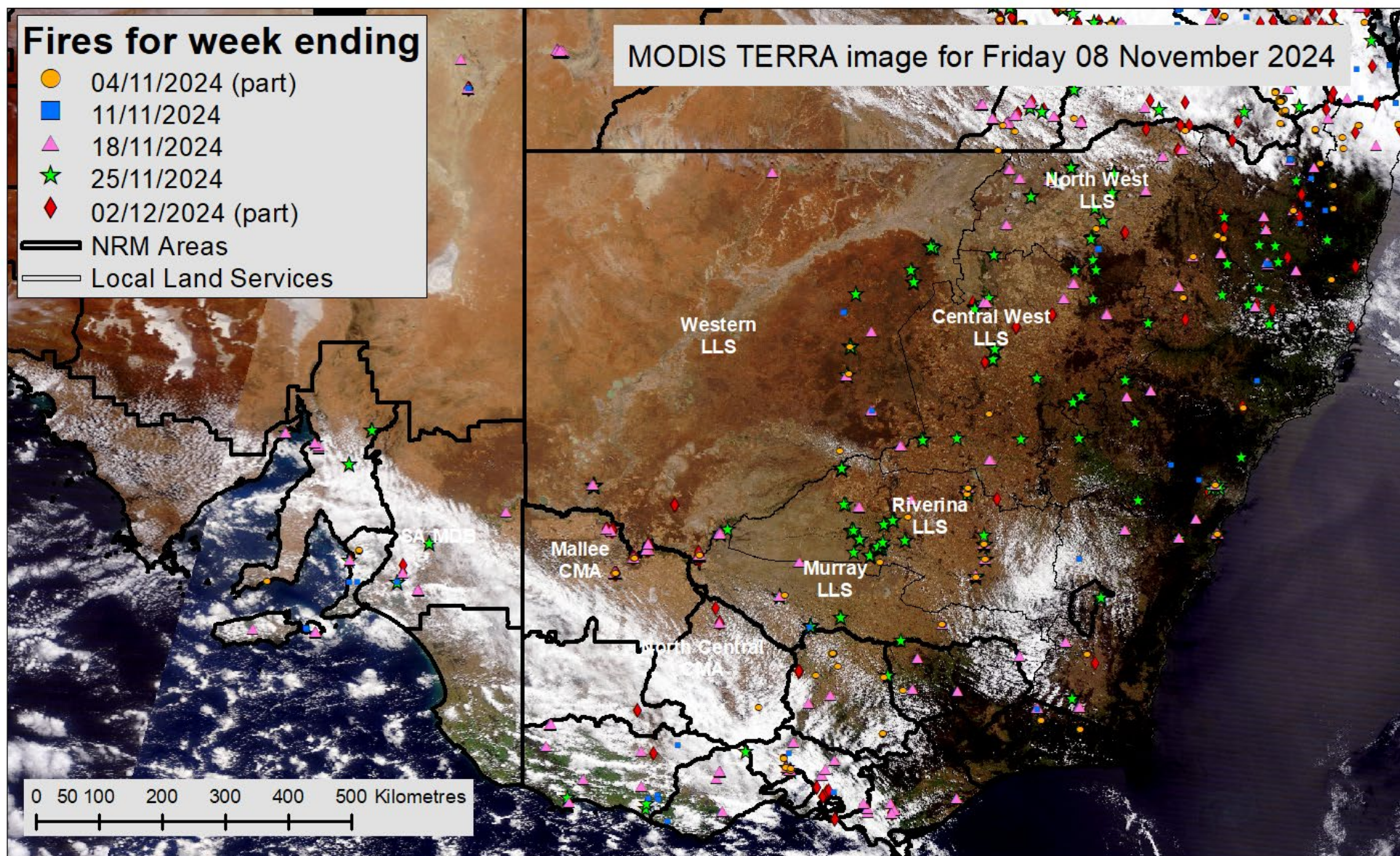


Figure 8 Pixels (375 m) with active burning fires in November 2024 as determined by VIIRS satellite

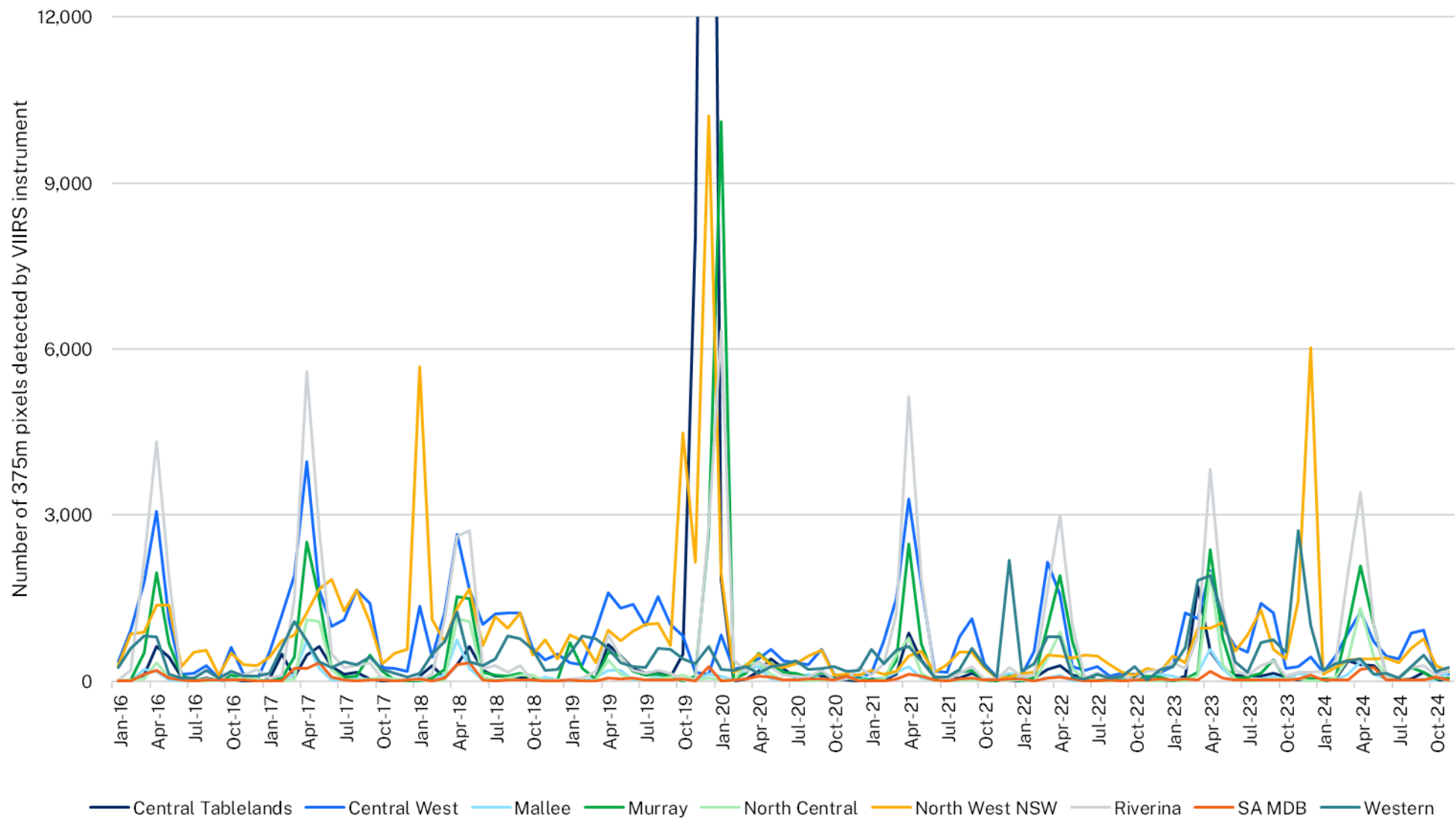


Figure 9 **Number of 375 m pixels with active burning fires between January 2016 and November 2024**

Note: The number of 375 m pixels from Central Tablelands for December 2019 is 30,903

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Published by: Department of Planning and Environment, 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

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