

Community-based wind erosion monitoring across Australia

Dust activity	Decrease in dust; less than half the January average
Wind strength	Decrease from December, below long-term average
Groundcover	Decrease in the Mallee; largely unchanged elsewhere
Rainfall	Increase in rainfall; above to very much above average

Dust activity

At long-term sites, dust activity decreased by half from December 2023 to January 2024, with an average of 5.1 hours of dust. This is also less than half of the usual January average (Figure 2). The main reason is the higher-than-average rainfall across the state (Figure 7a). Decreases in groundcover are likely due to dry conditions in the North West Local Land Services and a late harvest in the Mallee Catchment Management Authority (Figure 4). Weaker-than-average winds likely hindered the transport of dust emissions (Figure 1).

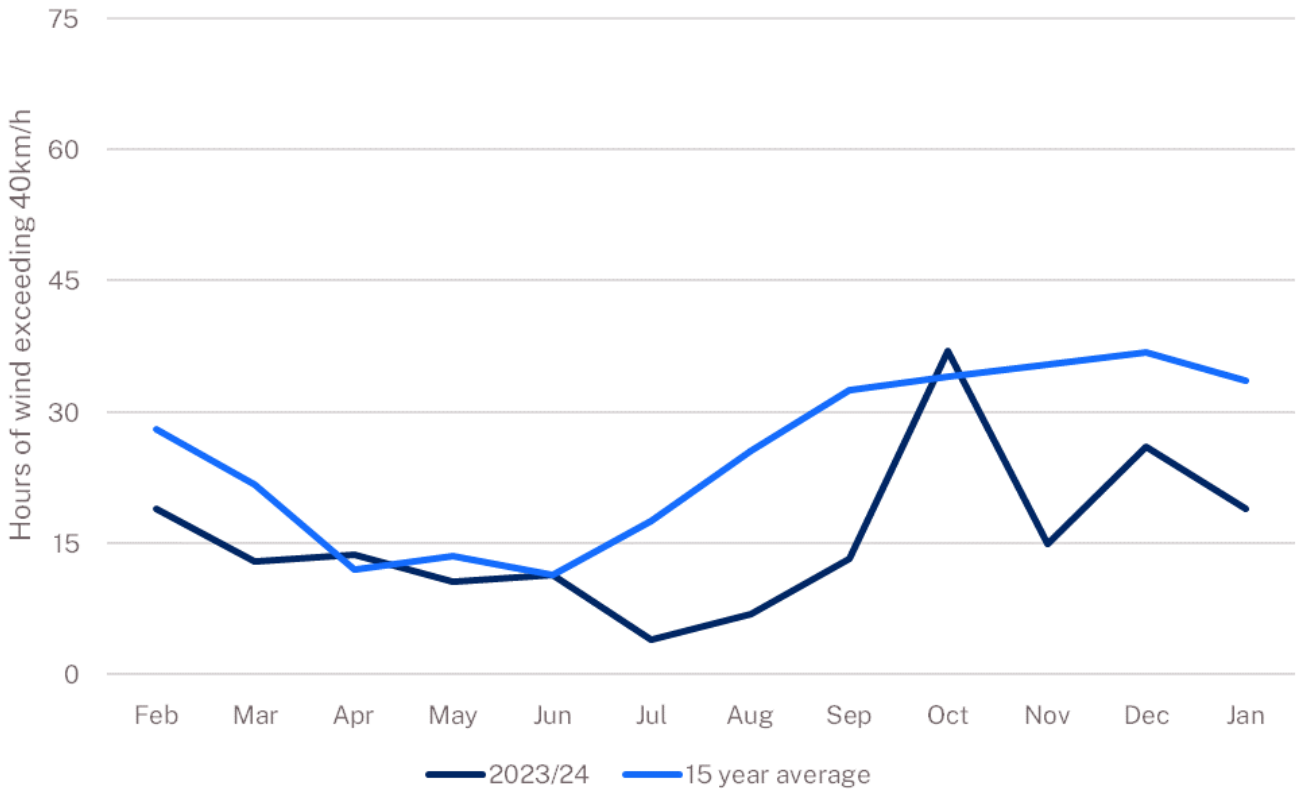


Figure 1 Hours of wind exceeding 40km/h – average across all sites

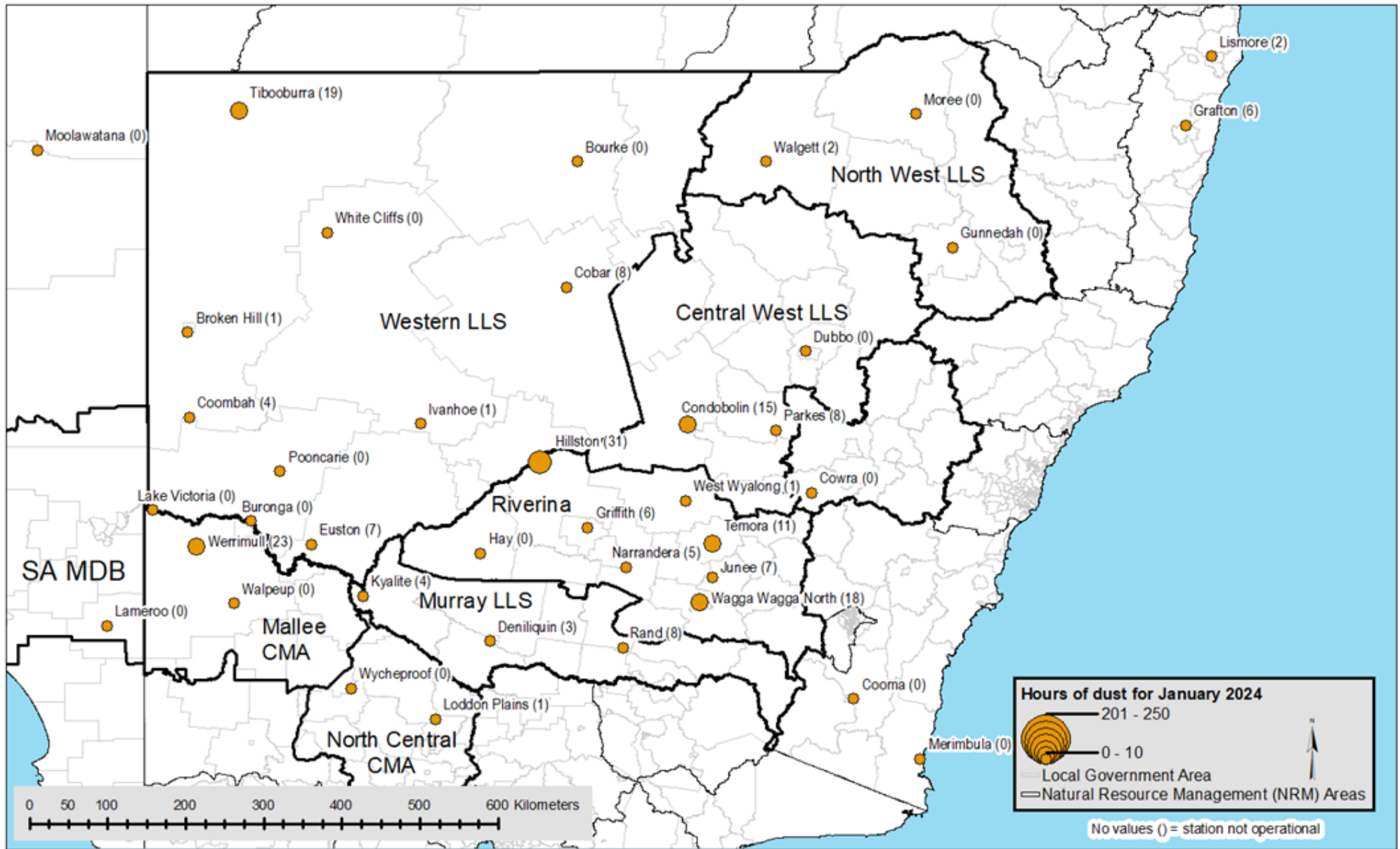


Figure 2 Hours of dust activity (number in brackets) at each DustWatch site in January 2023

Groundcover

The area with greater than 50% groundcover (green and yellow colours in Figure 3) has reduced, mainly in the Mallee Catchment Management Authority around Werrimull, which is likely due to a late harvest in Victoria (Table 1 and Figure 4). Groundcover remained largely unchanged across much of New South Wales. Some increases in groundcover were observed in parts of the Western Local Land Services around Tibooburra and Lake Frome and Lake Callabonna in South Australia. This is likely due to wetter-than-average January rainfall (Figure 7a).

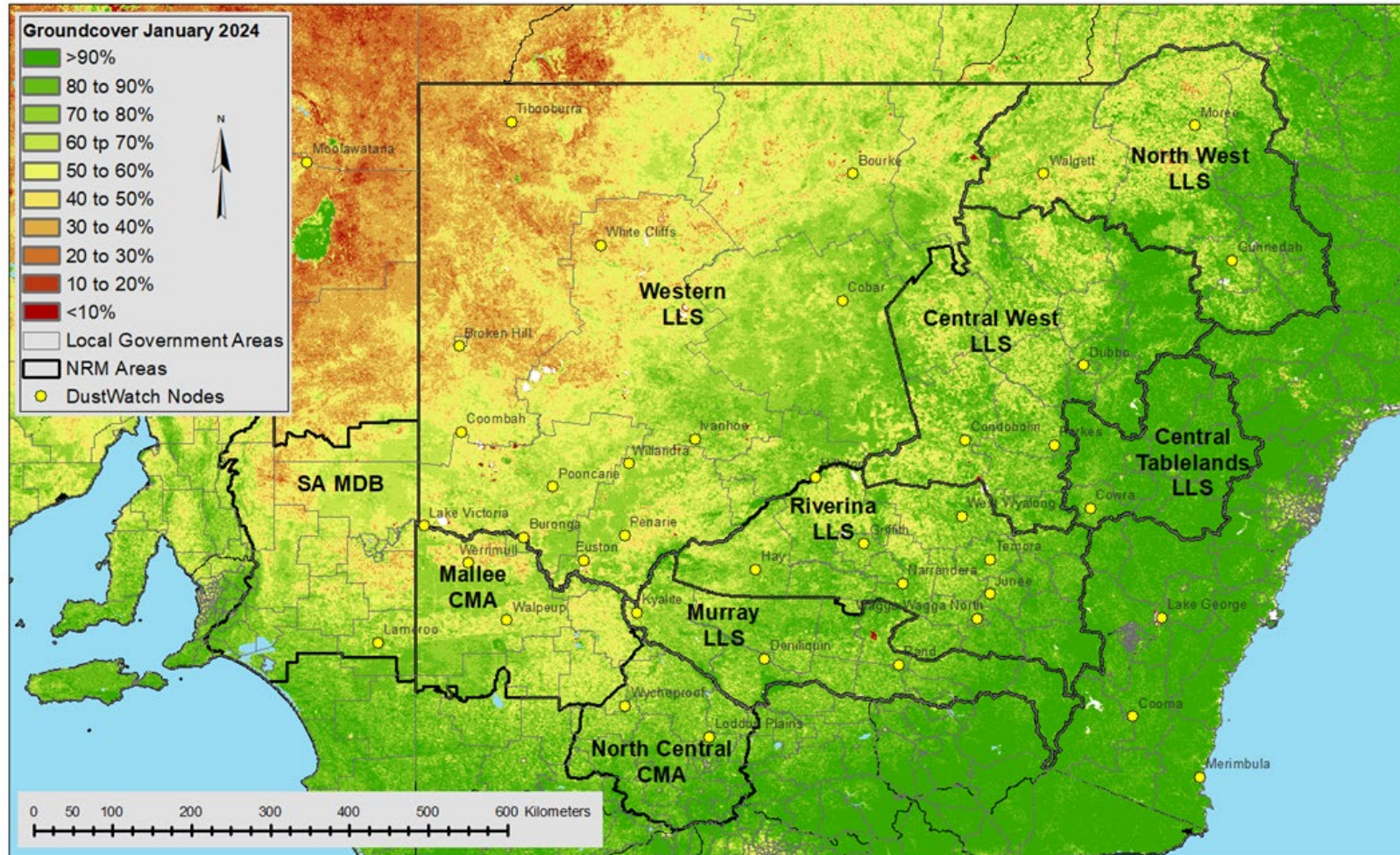


Figure 3 Groundcover for January 2023 as determined from MODIS by CSIRO

Table 1 Percentage of each NRM with cover >50% for February 2023 to January 2024

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
Feb 2023	99	95	100	100	98	99	91	74	100
Mar 2023	98	98	99	100	98	99	93	76	100
Apr 2023	98	97	100	100	97	100	95	83	100
May 2023	99	97	100	100	98	100	97	86	100
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

Groundcover change

Groundcover reductions (red and orange colours in Figure 4) over the 3 months to the end of January are visible across the wheatbelt and along the Darling (Barka) River Corridor. Reductions around the Mallee are likely due to the late finish of the wheat harvest in north-western Victoria, while reductions in the north-west Local Land Services are likely due to average rainfall in the 3 months to the end of January 2024. Patchy improvements in groundcover (green in Figure 4) are seen in areas of the north-west and Riverina regions, in national park areas east of Tibooburra and around Lakes Frome and Callabonna in South Australia.

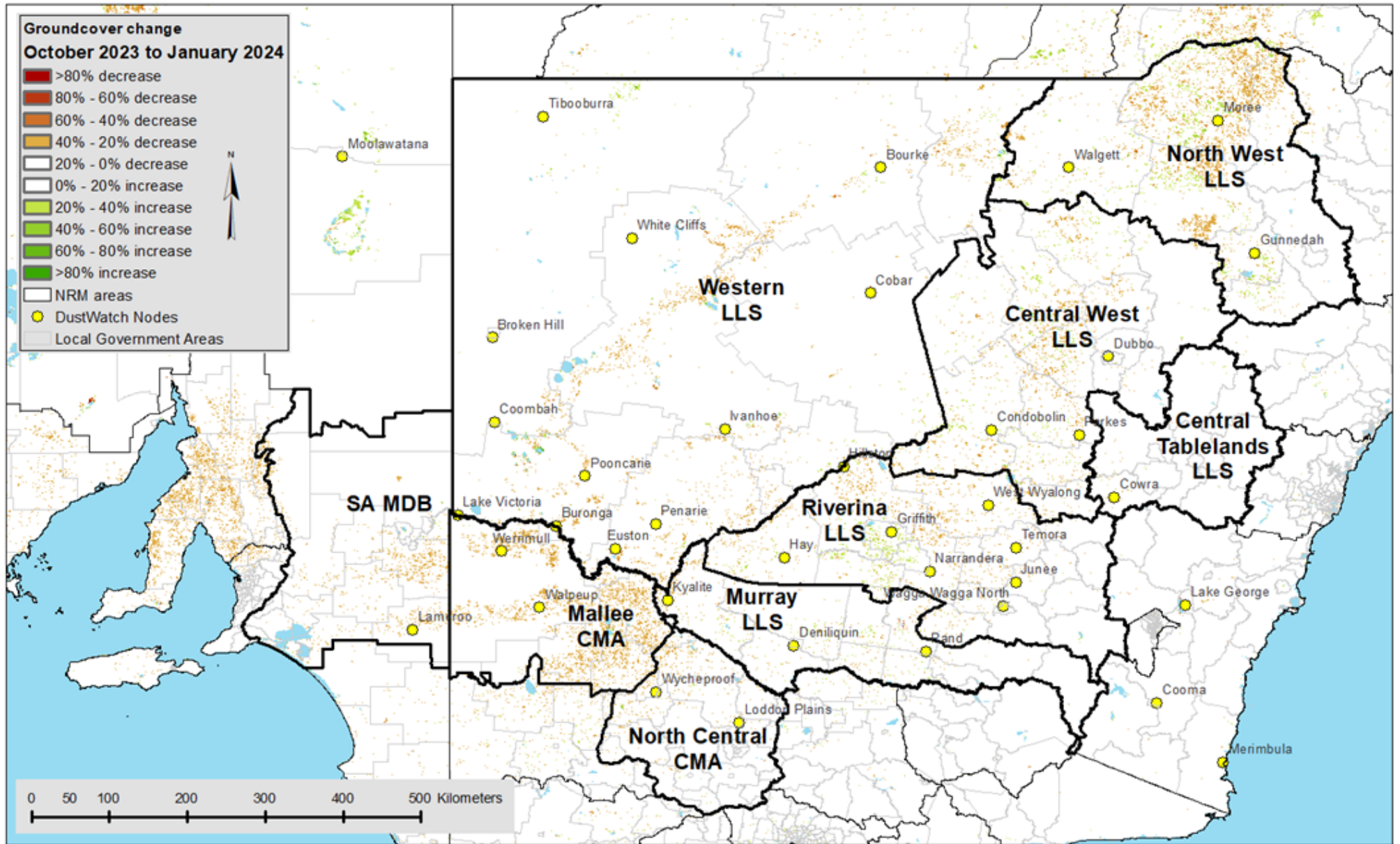


Figure 4 Groundcover difference between October 2023 and January 2024

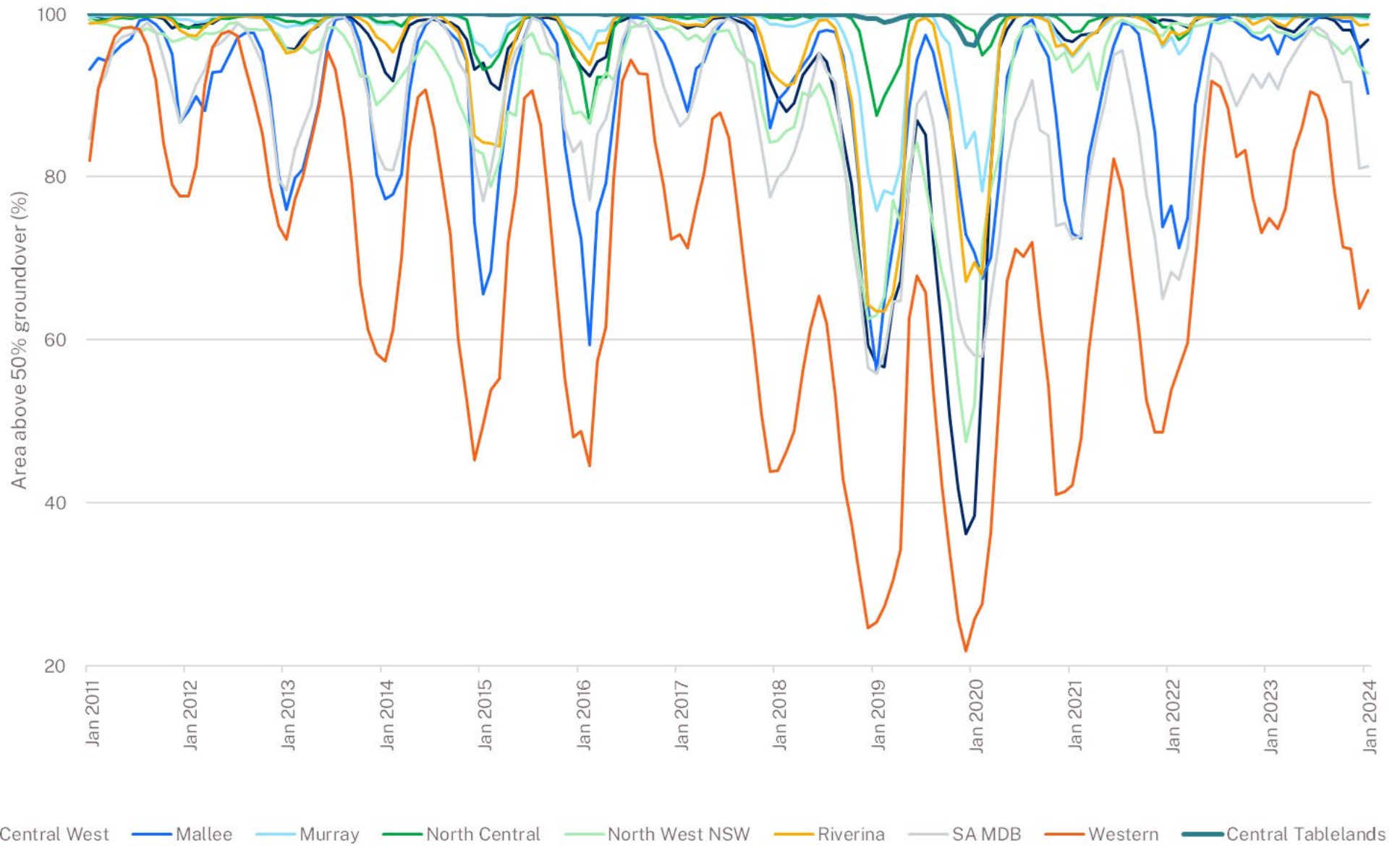


Figure 5 Area (%) of NRM with more than 50% cover since January 2011

Rainfall

Total rainfall in January ranged from 25 to 200 mm over most of the state (Figure 6). Rainfall deciles were above to very much above average for most of the state in January (Figure 7a). Compared to December 2023, rainfall improvements were most notable in the Western, Central West and Riverina Local Land Services regions and the South Australian Murray–Darling Basin, with small, isolated areas in the Western Local Land Services recording highest on record rainfall for January (Figure 7a). In contrast, parts of the state, including the north-west Local Land Services recorded average to below average rainfall. Most of New South Wales has recorded above to very much above average rainfall in the 3 months to January 2024 (Figure 7b).

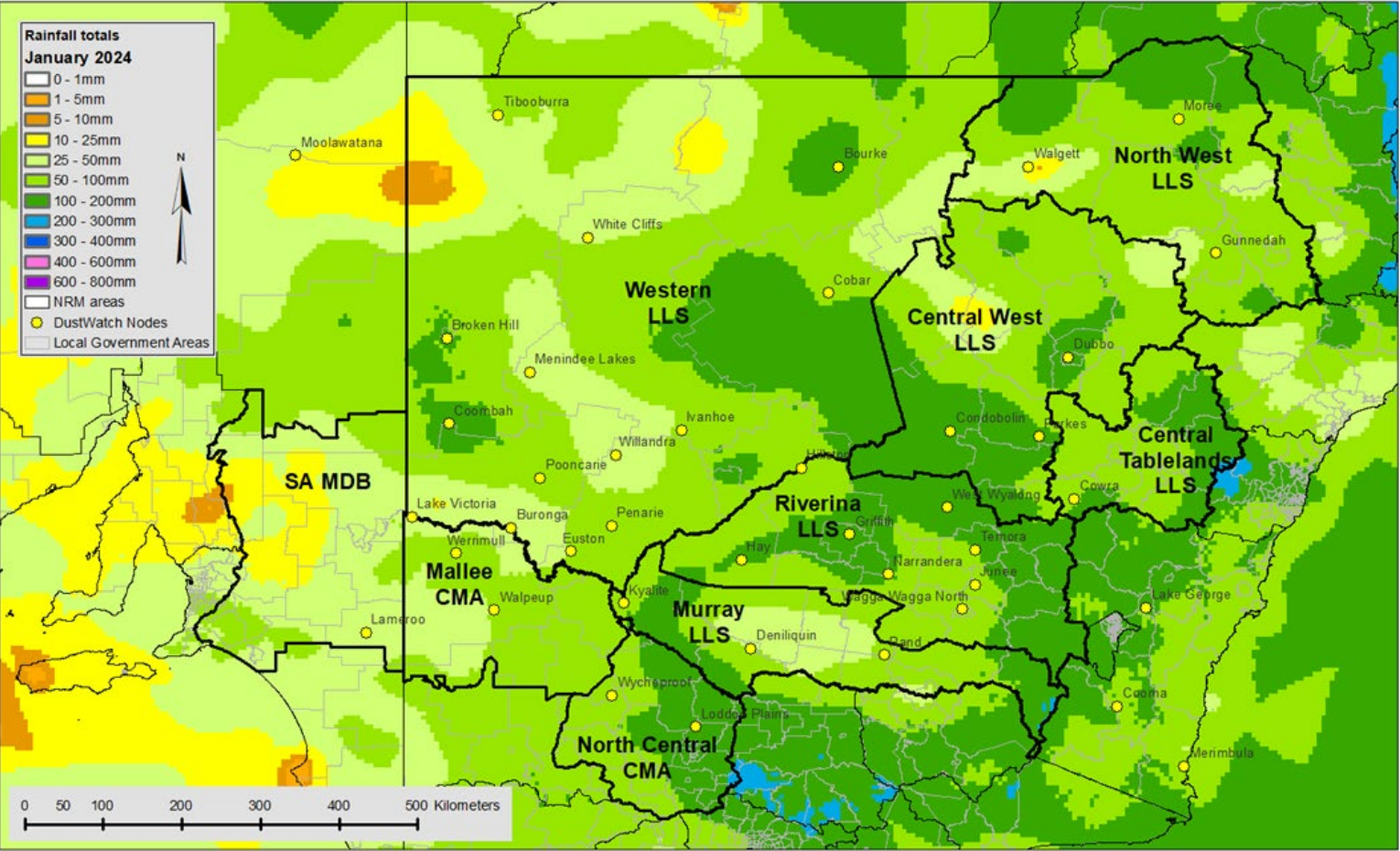


Figure 6 Rainfall totals for January 2024 (source: Bureau of Meteorology)

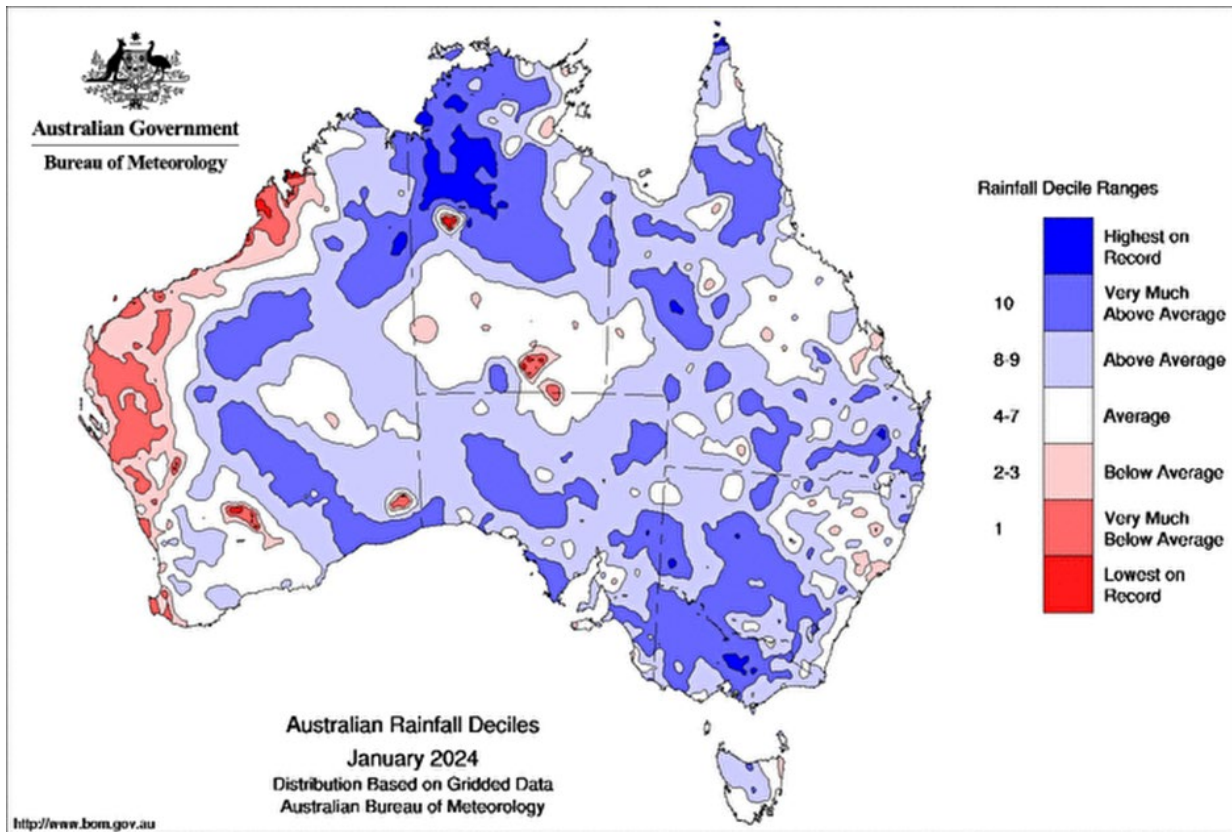


Figure 7(a) Rainfall deciles for January 2024

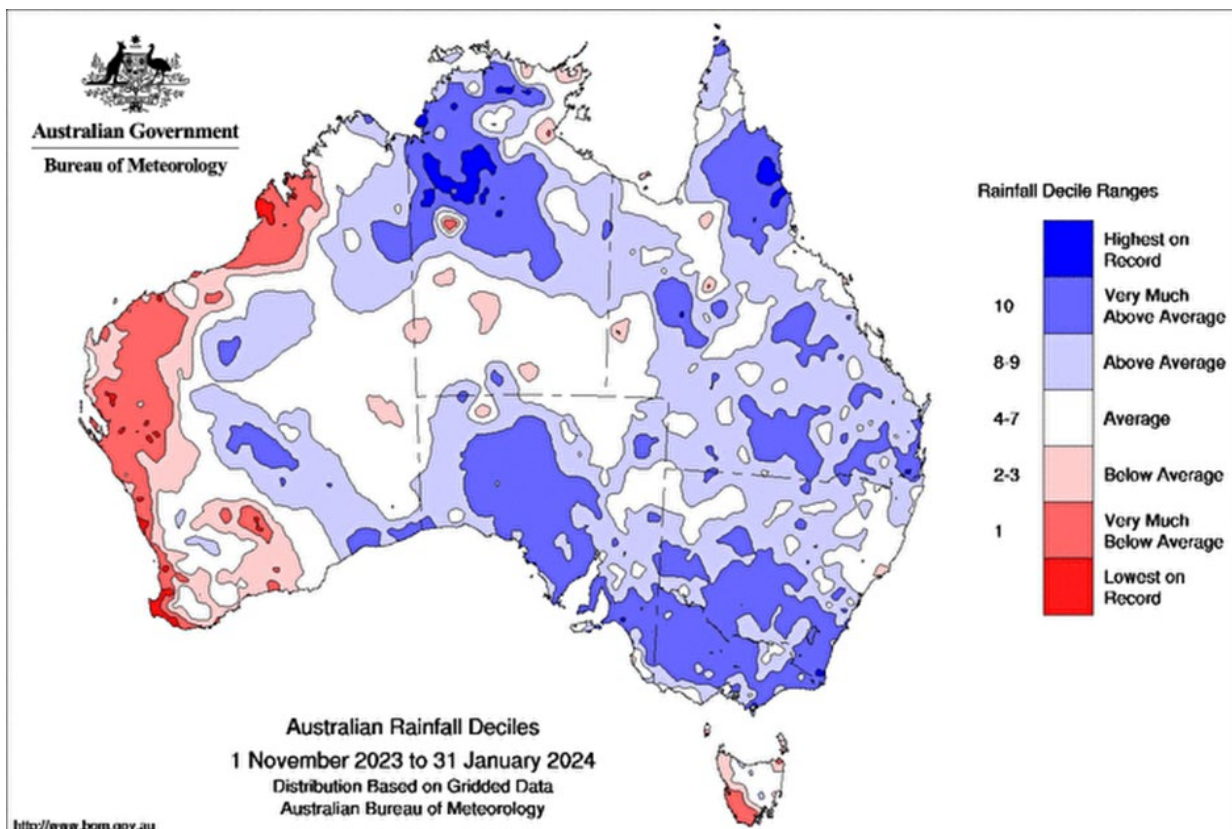


Figure 7(b) Rainfall deciles for 1 November 2023 to 31 January 2024

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 724 hot spots (375 m pixel with temperature anomalies) in January 2024 (Figures 8 and 9), a 91% reduction from the 7,889 hot spots detected in December 2023.

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

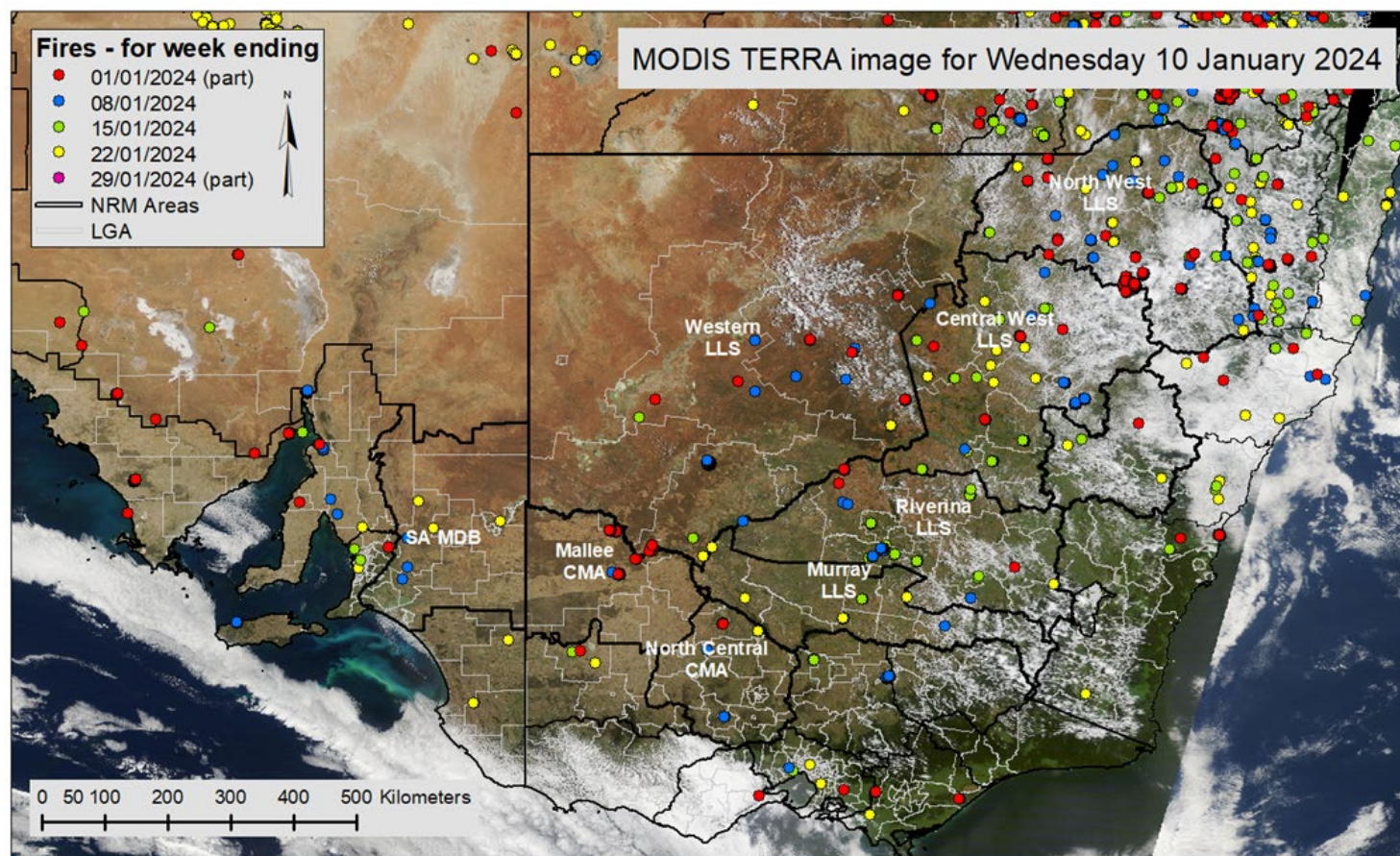


Figure 8 Pixels (375 m) with active burning fires in January 2024 as determined from VIIRS satellite

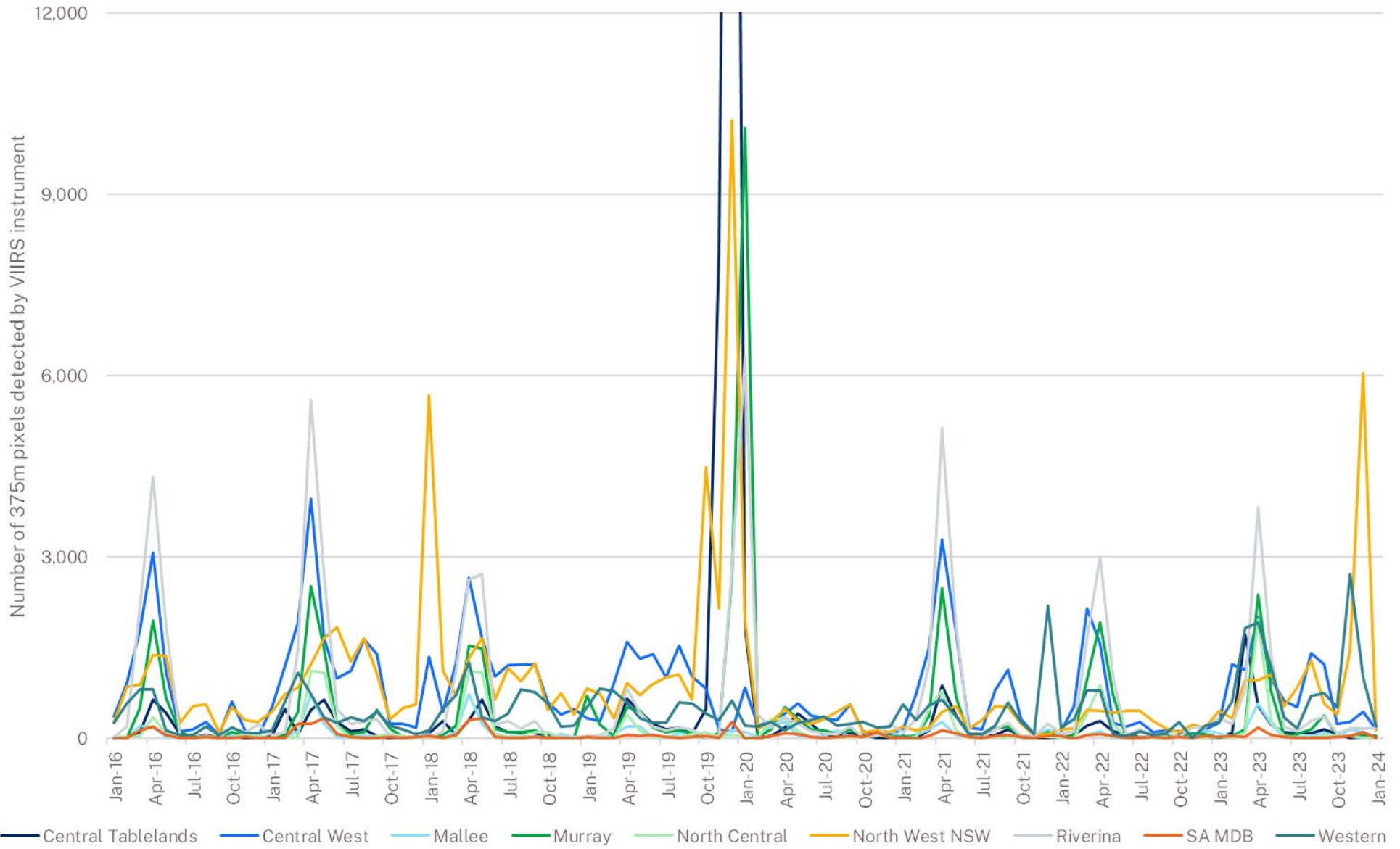


Figure 9 Number of 375 m pixels with active burning fires between January 2016 and January 2024

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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

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