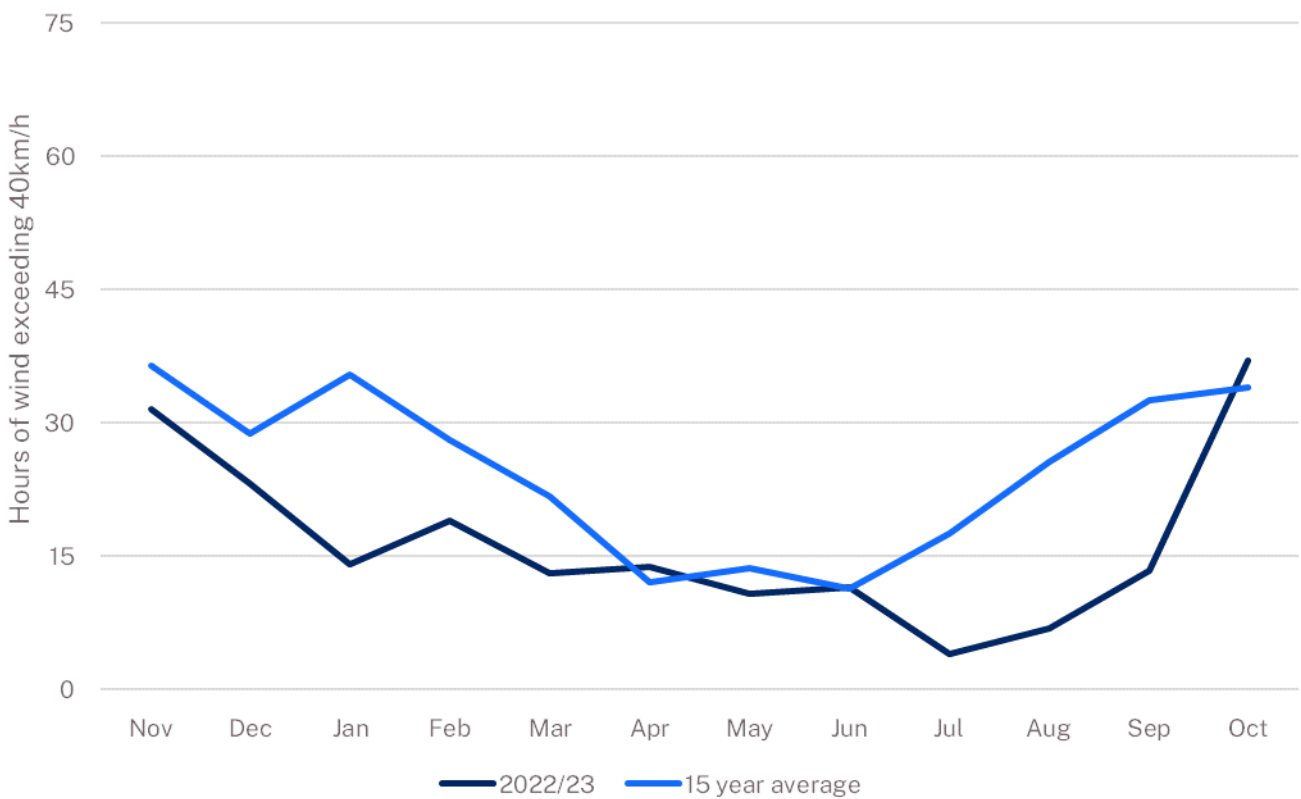


## Community-based wind erosion monitoring across Australia

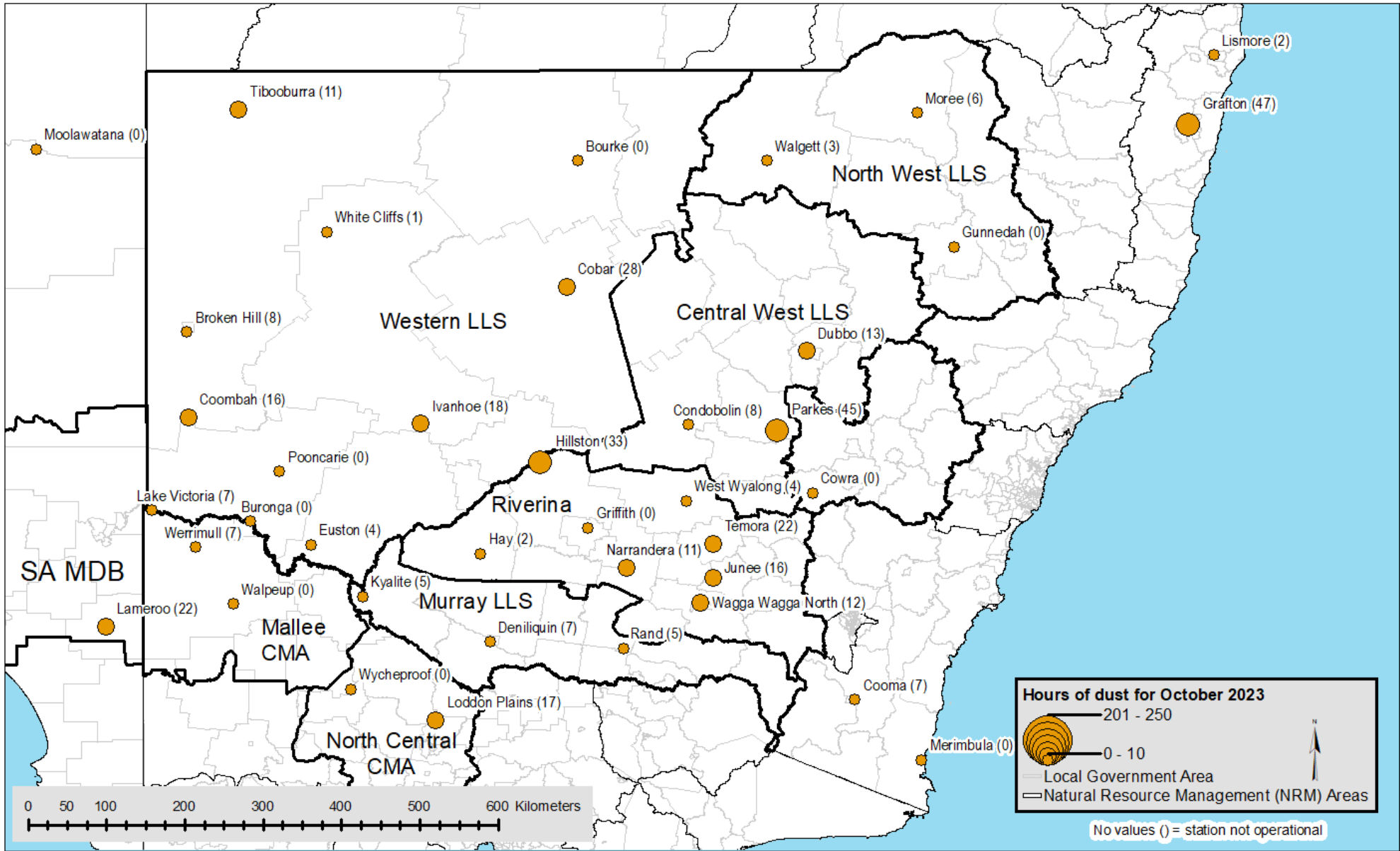
|                      |  |
|----------------------|--|
| <b>Dust activity</b> | Dust activity unchanged; below average for October |
| <b>Wind strength</b> | Increase from September, above long-term average   |
| <b>Groundcover</b>   | Decrease in the west and Riverina                  |
| <b>Rainfall</b>      | Increased rainfall; average to below average:      |

## Dust activity

Dust activity at long-term sites remained unchanged from September, with an average of 10 hours of dust activity. This is above average for October. Dust mainly occurred in the Central West and Riverina Local Land Services regions (Figure 2), while Grafton recorded 47 hours, due to very much below-average rainfall over the 3 months to the end of October. Generally, below-average rainfall leads to reduced groundcover (Figure 3). Stronger than average winds made transporting dust emissions more likely (Figure 1).



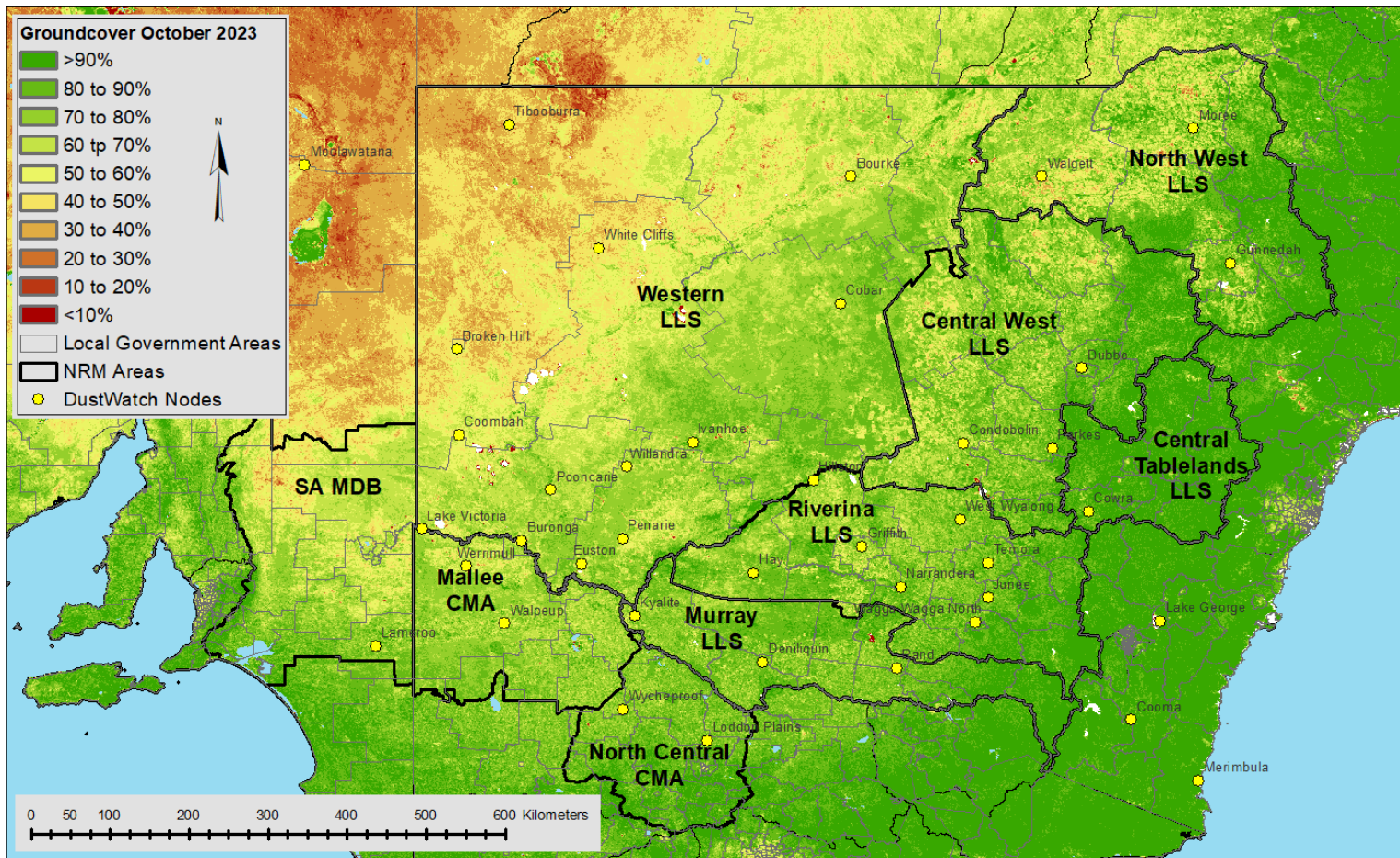
**Figure 1** Hours of wind exceeding 40km/h - average across all sites



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

# Groundcover

The area with greater than 50% groundcover (green and yellow colours in Figure 3) has reduced in the Local Land Services Western region, particularly east of Tibooburra and along the Darling (Barka) River Corridor (Table 1 and Figure 3). Four of the 5 regions recording groundcover reductions of 3% or less, while groundcover in the Western Local Land Services fell 7% (from 78% to 71%) from September to October 2023. This groundcover reduction is due to the drier-than-average conditions experienced by much of the state in the 3 months to the end of October (Figure 6 and 7b).



**Figure 3** Groundcover for October 2023 as determined from MODIS by CSIRO

**Table 1 Percentage of each NRM with cover >50% for November 2022 to October 2023**

| Date     | Central West | Mallee | Murray | North Central | North-West | Riverina | SA MDB | Western | Central Tablelands |
|----------|--------------|--------|--------|---------------|------------|----------|--------|---------|--------------------|
| Nov 2022 | 99           | 97     | 99     | 100           | 98         | 99       | 93     | 78      | 100                |
| Dec 2022 | 100          | 97     | 99     | 100           | 98         | 99       | 91     | 73      | 100                |
| Jan 2023 | 100          | 97     | 100    | 100           | 99         | 100      | 93     | 75      | 100                |
| 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                |

## Groundcover change

Groundcover reductions (red and orange colours in Figure 4) are visible north of Moolawatana in South Australia, east of Tibooburra and Broken Hill, along the Darling (Barka) River Corridor as well as patchy reductions across the wheat belt, particularly in the Riverina and south Australian Murray Darling Basin regions. This reduction is also shown for October in Figure 5, especially in the Western Local Land Services. Groundcover increased around Lake Frome in South Australia and in isolated pockets areas south of Moree and Gunnedah (Figure 4).



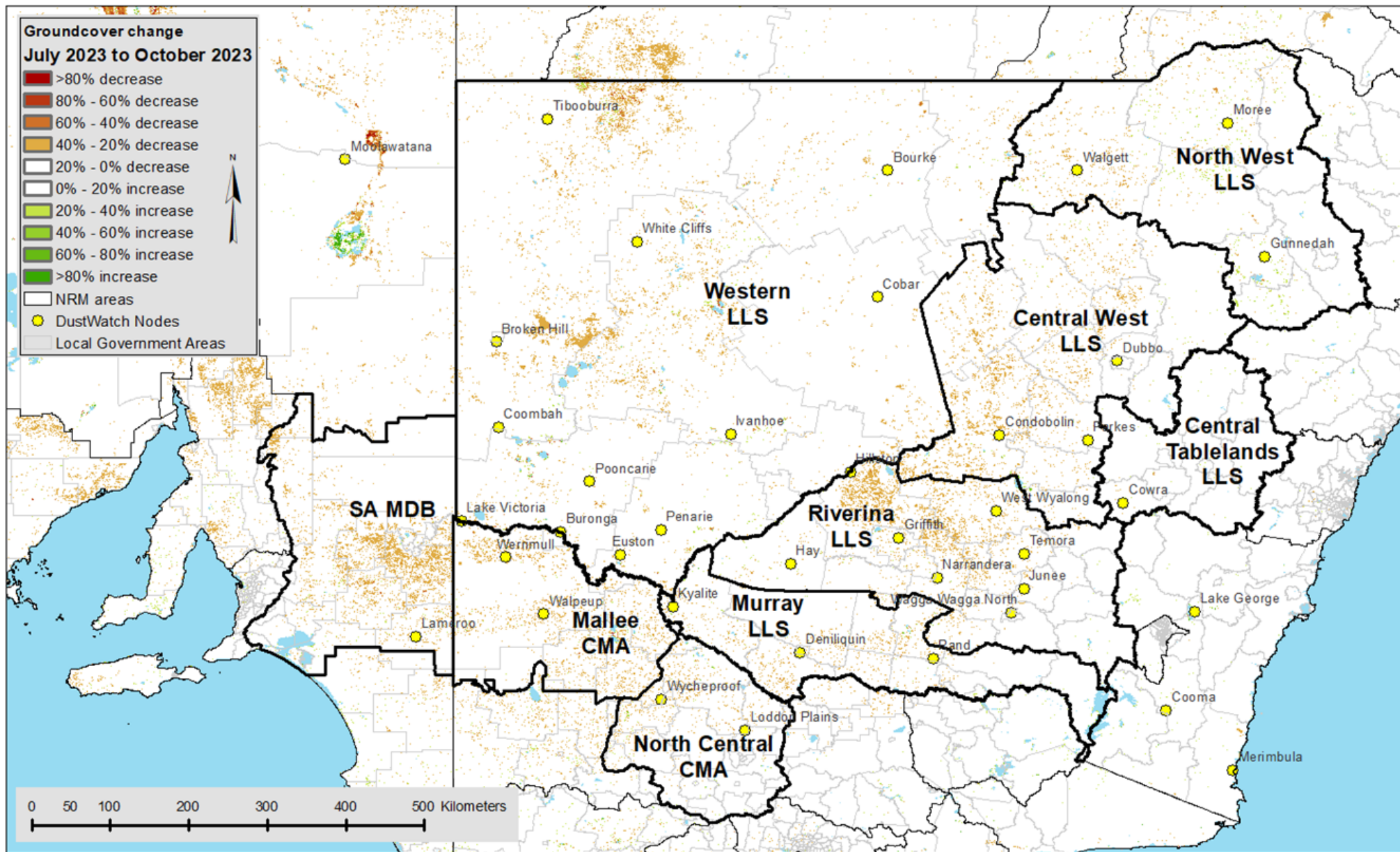
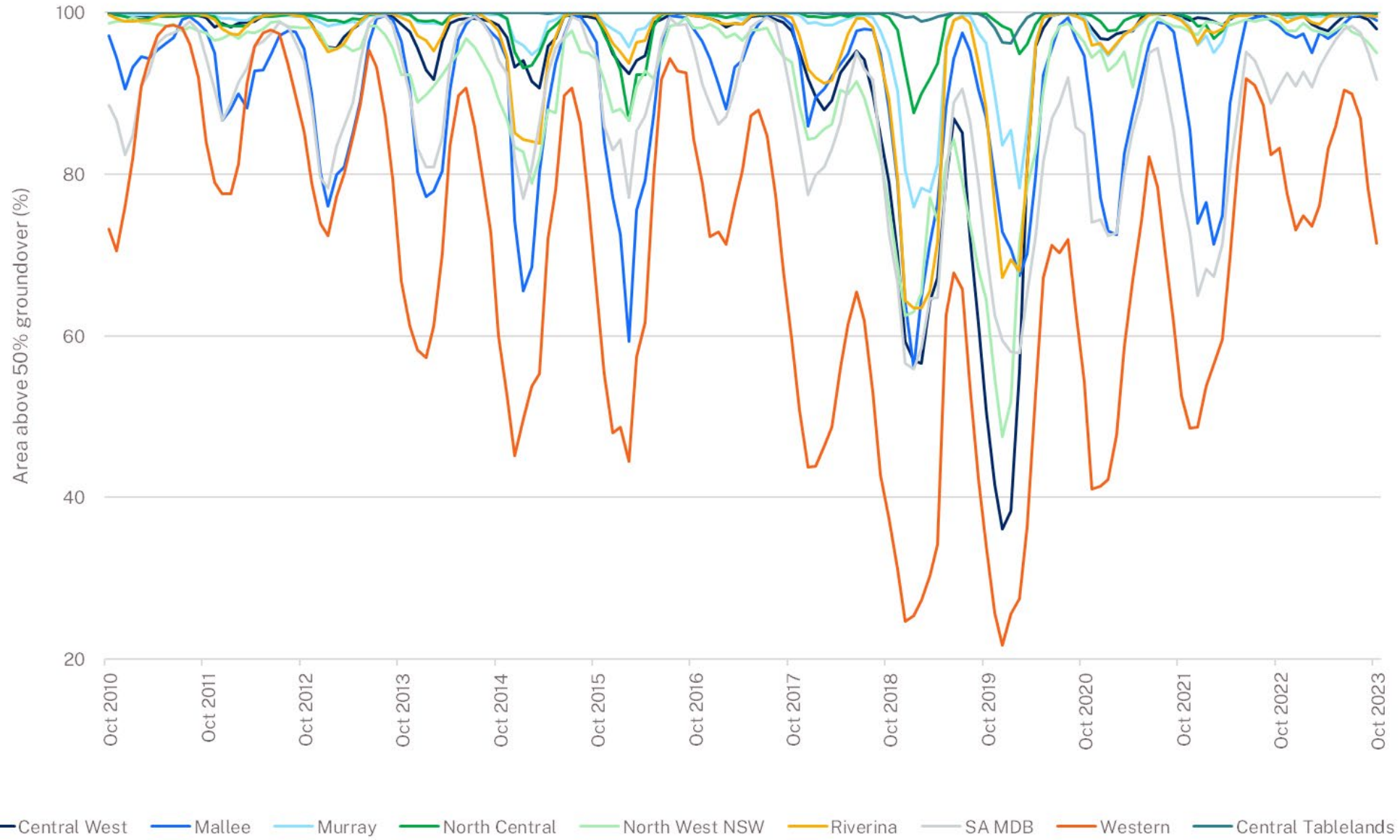


Figure 4 Groundcover difference between July 2023 and October 2023



**Figure 5 Area (%) of NRM with more than 50% cover since October 2010**



# Rainfall

Rainfall totals in October ranged between 25 to 100 mm for most areas east of the Great Dividing Range. To the west, rainfall remained below 25 mm for most areas, grading to patches of no rainfall in parts of northern areas of the Western Local Land Services (Figure 6). October rainfall in northern New South Wales is amongst the driest 10% on record (very much below average), or lowest on record (Figure 7b). Figure 7b also highlights a drying trend in southeast Queensland, with 3-month average rainfall to 31 October 2023, the lowest on record. However, 50 to 100 mm of rainfall was recorded through much of the Murray Local Land Services during October, with patches of up to 200 mm in the east of that region.

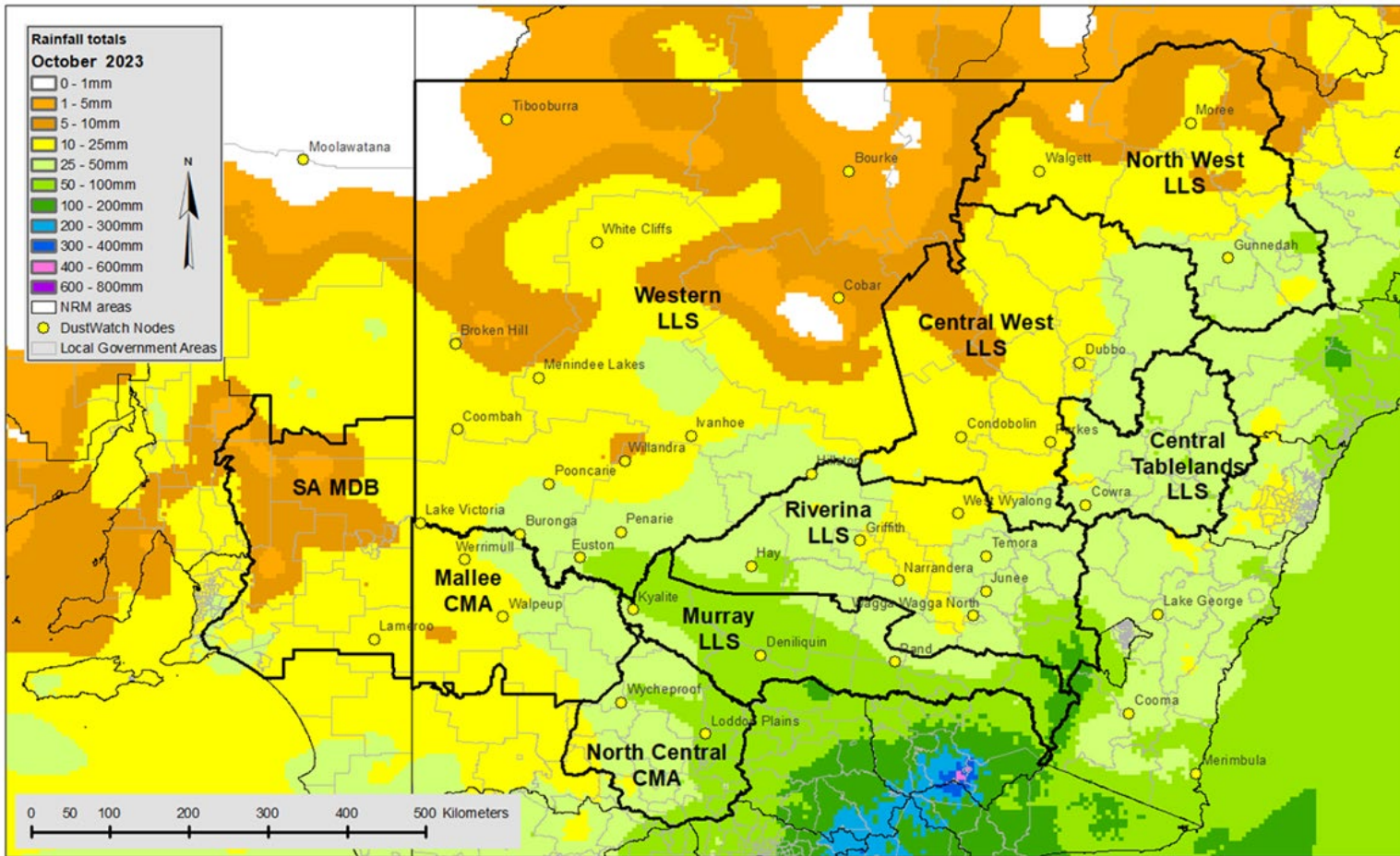
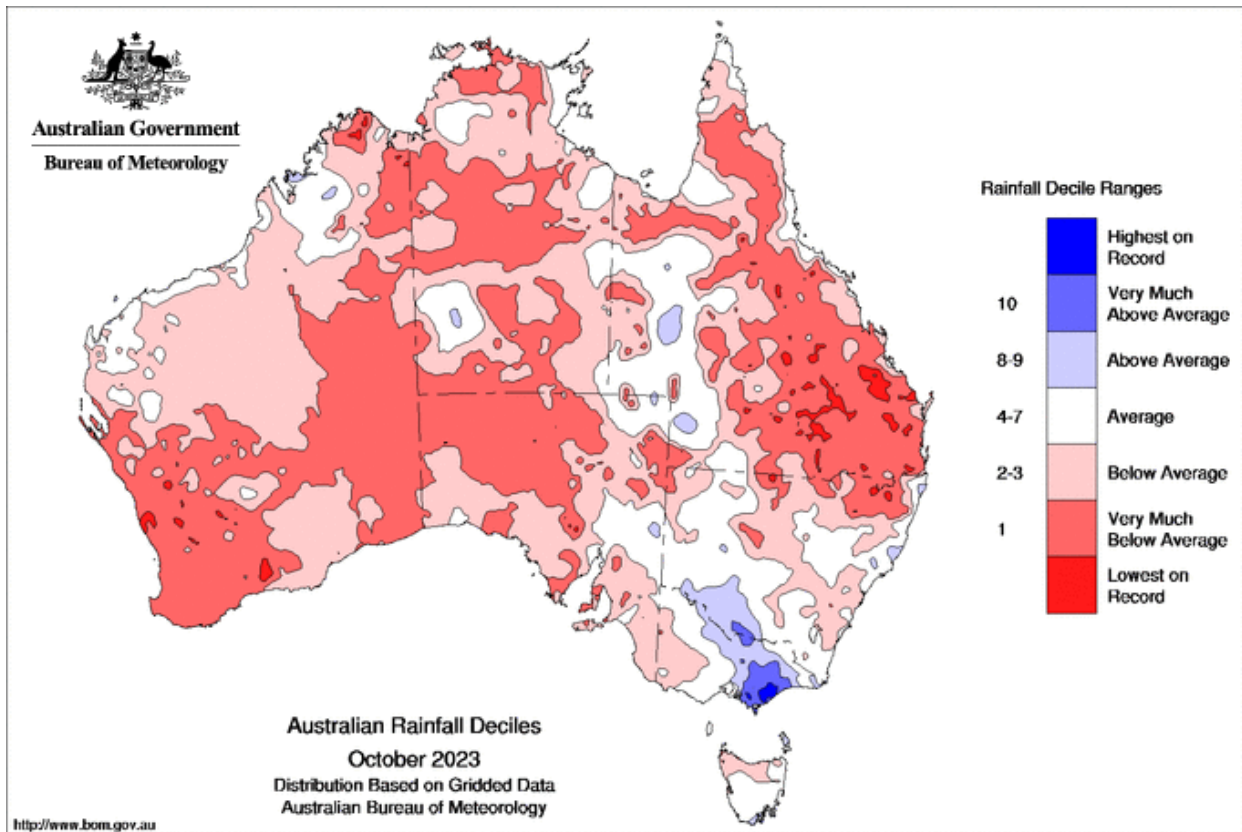
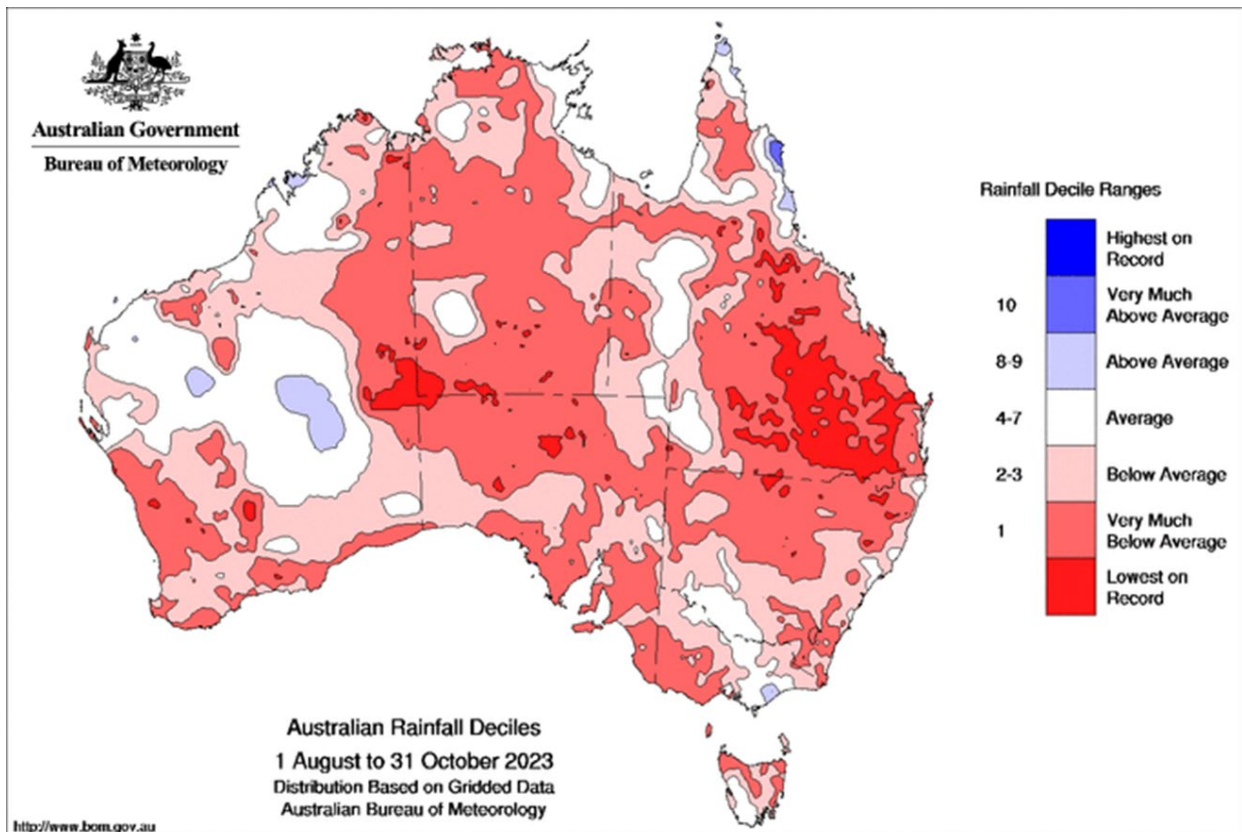


Figure 6 Rainfall totals for October 2023 (source: Bureau of Meteorology)



**Figure 7(a) Rainfall deciles for October 2023**



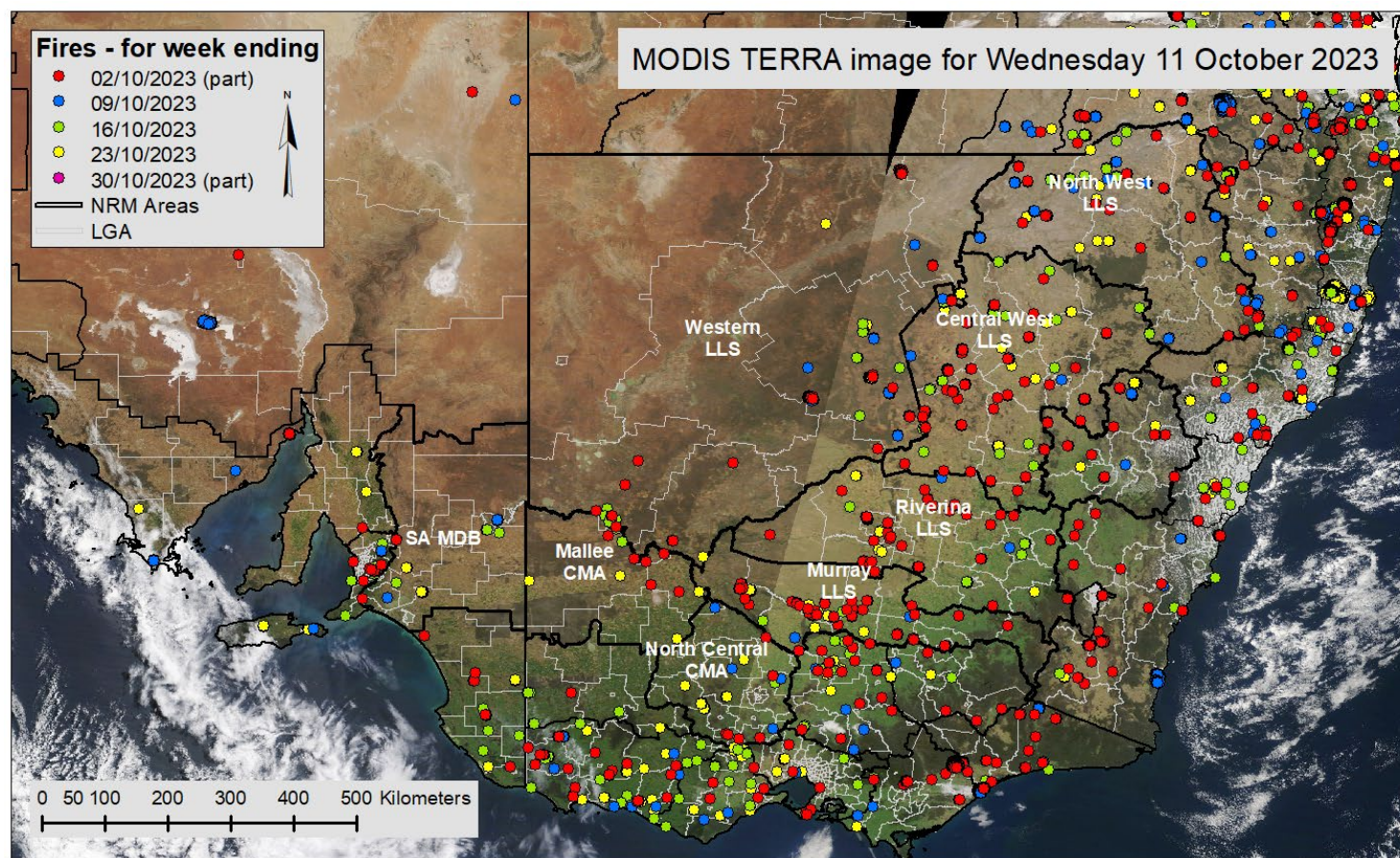
**Figure 7(b) Rainfall deciles for 1 August 2023 to 31 October 2023**



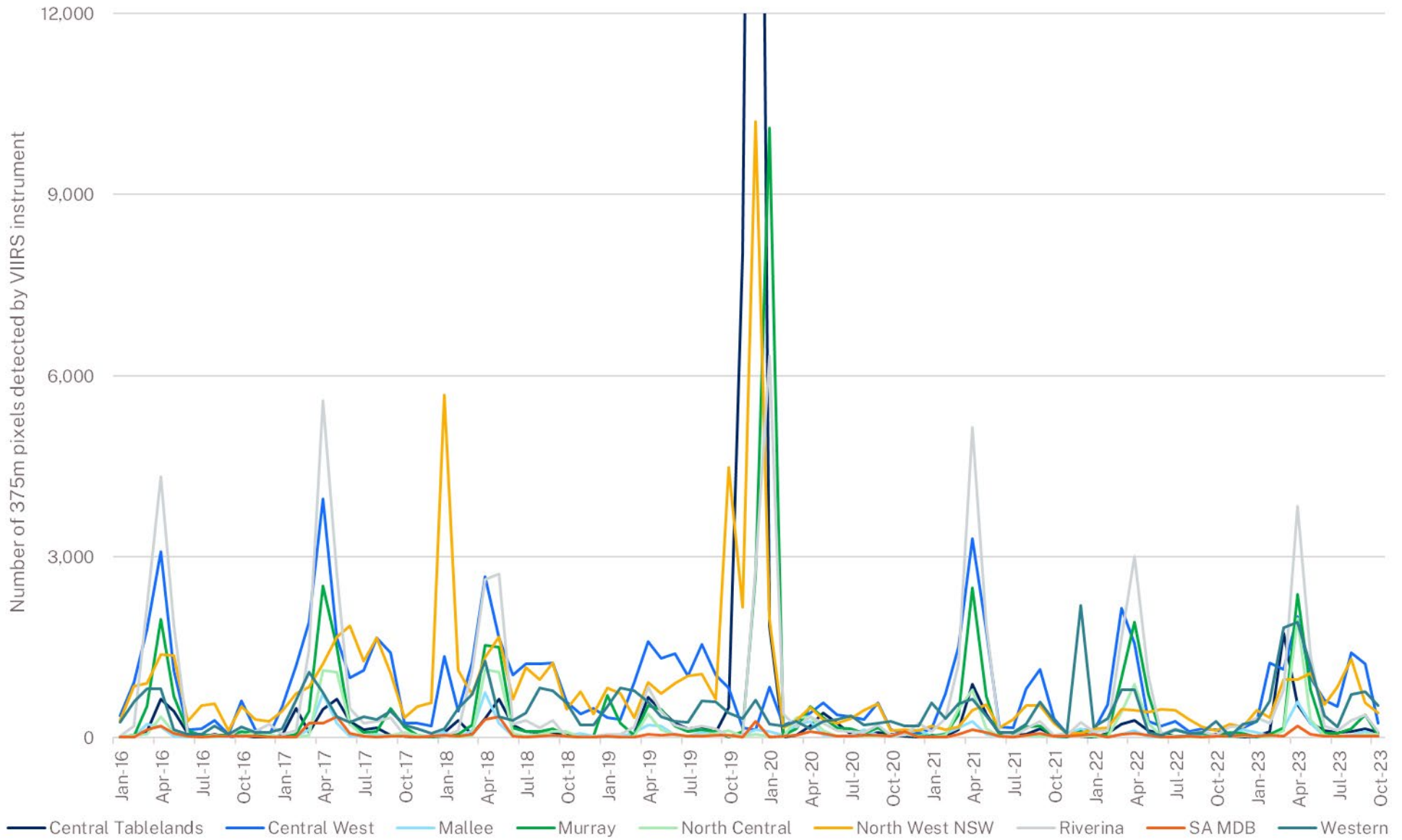
# VIIRS fires and satellite image

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 1,451 hot spots (375m pixel with temperature anomalies) in October 2023 (Figures 8 and 9), a 59% reduction from the 3,581 hot spots detected in September 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 (375m) with active burning fires in October 2023 as determined from VIIRS satellite



**Figure 9** Number of 375m pixels with active burning fires between January 2016 and October 2023

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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](mailto:info@environment.nsw.gov.au);

Web: [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au).

**The DustWatch team** Contact us at [dustwatch@environment.nsw.gov.au](mailto:dustwatch@environment.nsw.gov.au)

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