

Community-based wind erosion monitoring across Australia

Dust activity	Increase dust hours; below-average for August
Wind strength	Increase from July, below-average for August
Groundcover	Decrease in the Western Local Land Services; stable elsewhere
Rainfall	Average to below-average for most of the state

Dust activity

Dust activity increased for August 2024 at long-term sites, averaging 1.7 hours of dust, below the 3.2 dust hour average for August. This is higher than the 0.4 dust hours in July. This is due to a reduction in groundcover in the Western Local Land Services and South Australian Murray-Darling Basin region (Table 1). Hillston recorded the highest dust activity across the network in August with 11 hours. There was generally average to below-average rainfall across much of the state, with above average rainfall in the north (Figure 7a). Below-average winds in August made transport of dust emissions less likely (Figure 1).

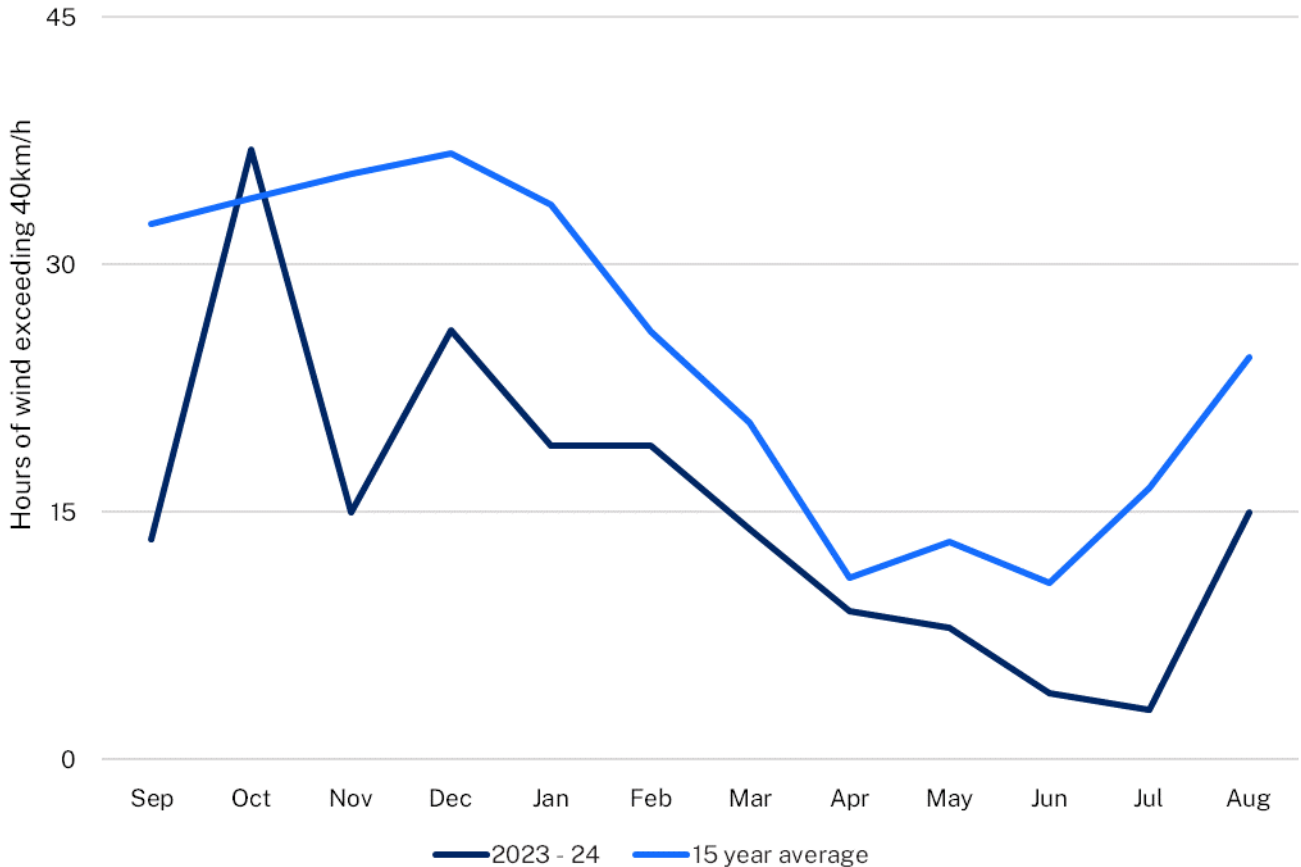


Figure 1 Hours of wind exceeding 40km/h - average across all sites

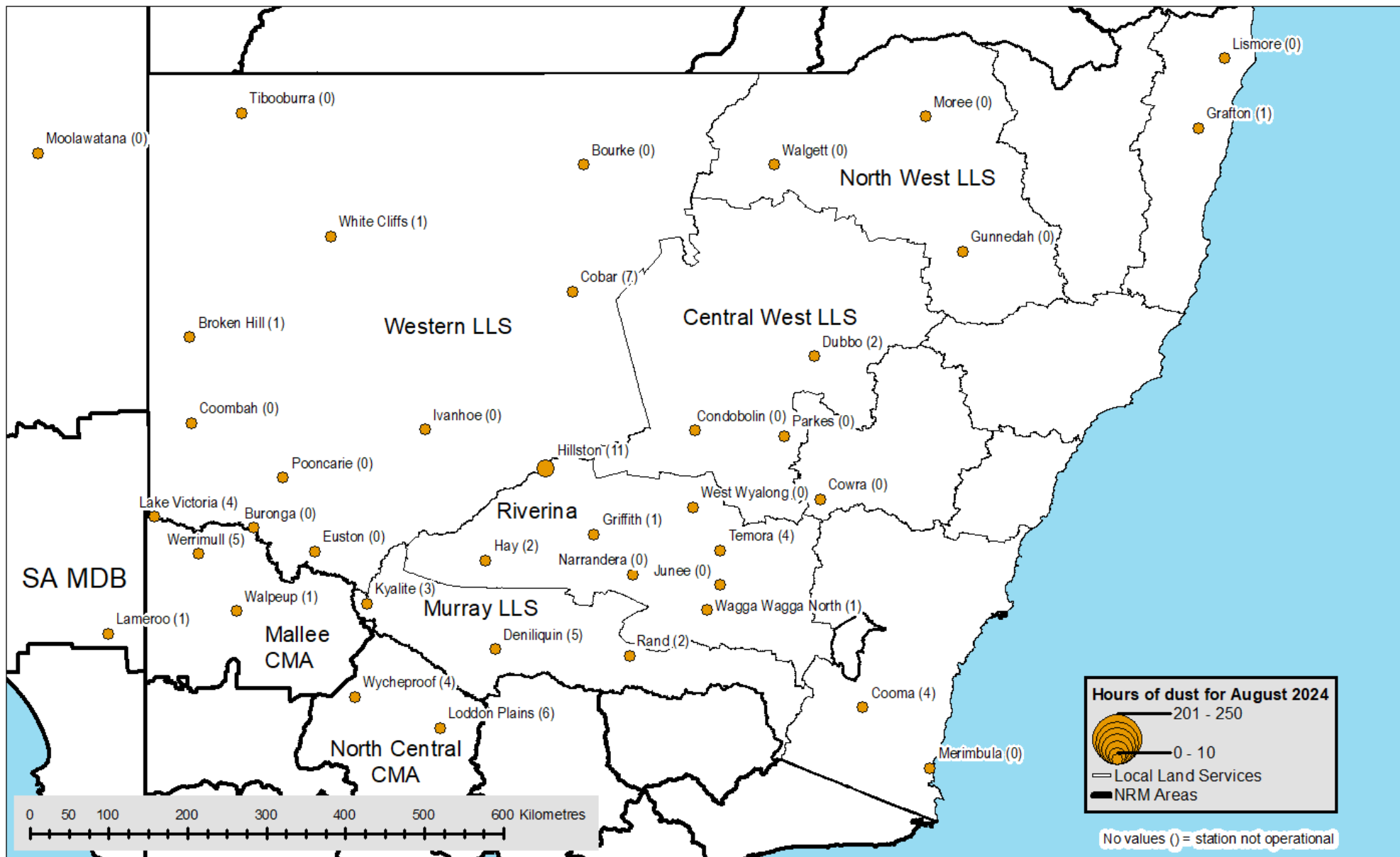


Figure 2 Hours of dust activity (number in brackets) at each DustWatch site in August 2024

Groundcover

The area with greater than 50% groundcover (green and yellow colours in Figure 3) has increased in the Western Local Land Services region, particularly west of Tibooburra, Moolawatana and South Australian Murray-Darling Basin region (Table 1 and Figure 3). The groundcover for the rest of the state remains relatively unchanged. Areas with reduction in groundcover are shown in Figure 3 in orange and red.

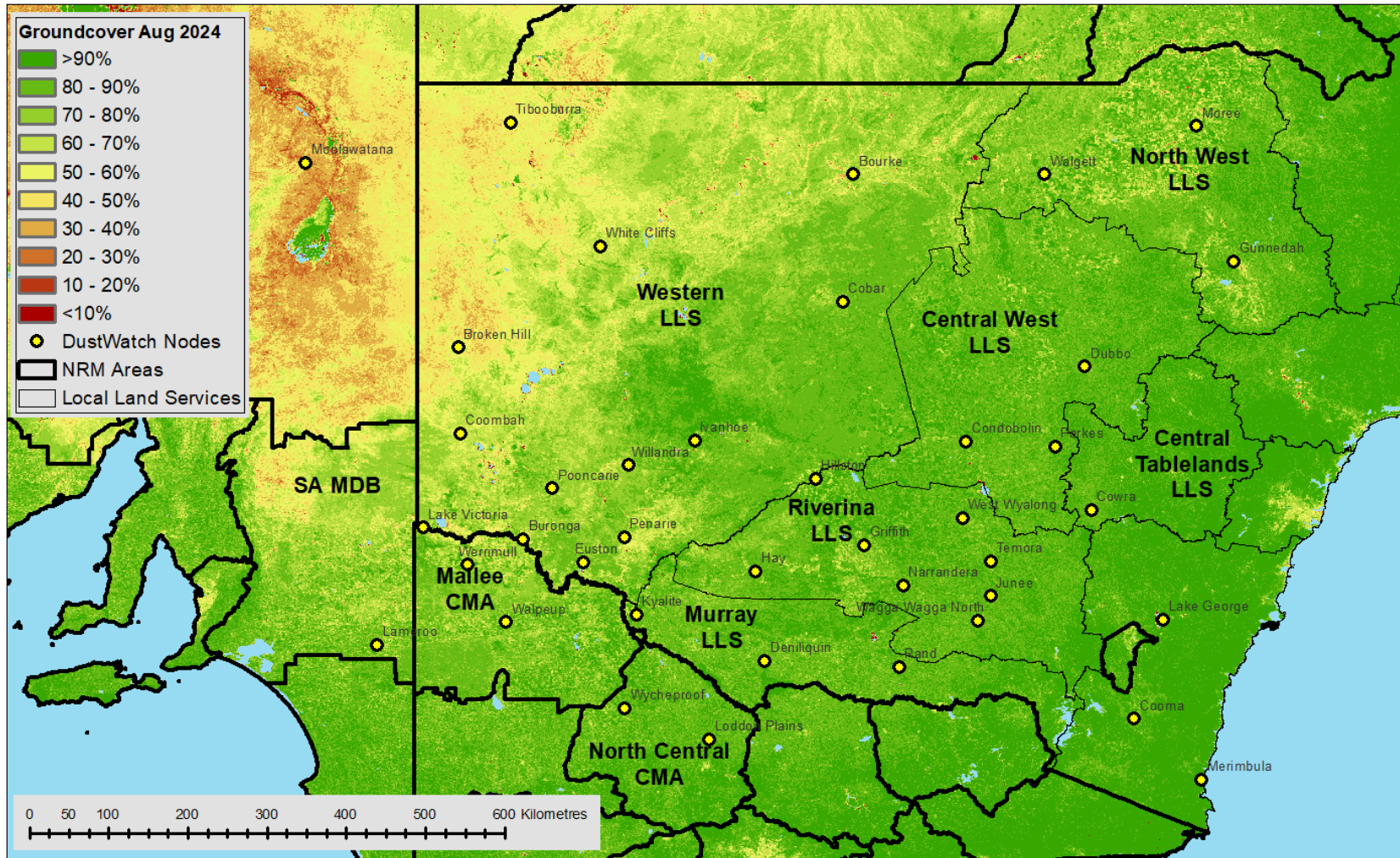


Figure 3 Groundcover for August 2024 as determined from MODIS by CSIRO

Table 1 Percentage of each NRM with cover >50% for September 2023 to August 2024

Date	Central West	Mallee	Murray	North Central	North West	Riverina	SA MDB	Western	Central Tablelands
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
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

Groundcover change

Reduction in groundcover is visible across the Western Local Land Services region and in the Moolawatana area. The Riverina, Central West and North West Local Land Services regions also show large areas with increased groundcover, likely due to crop growth.

From June to August 2024 (Figure 7a, Figure 7b), most of the state experienced average to below-average rainfall, except for the north-west. This has led to a decrease in groundcover

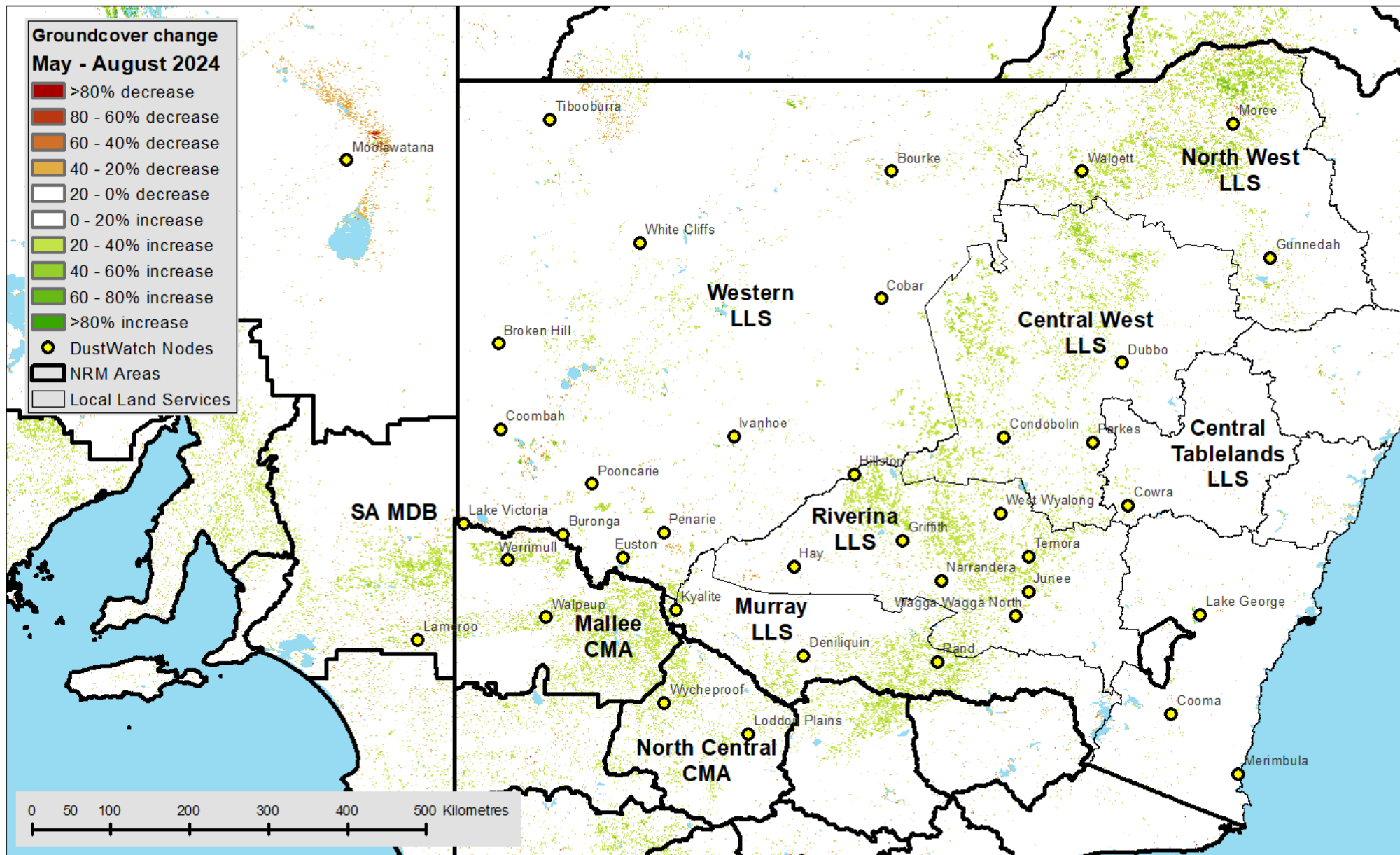


Figure 4 Groundcover difference between May 2024 and August 2024

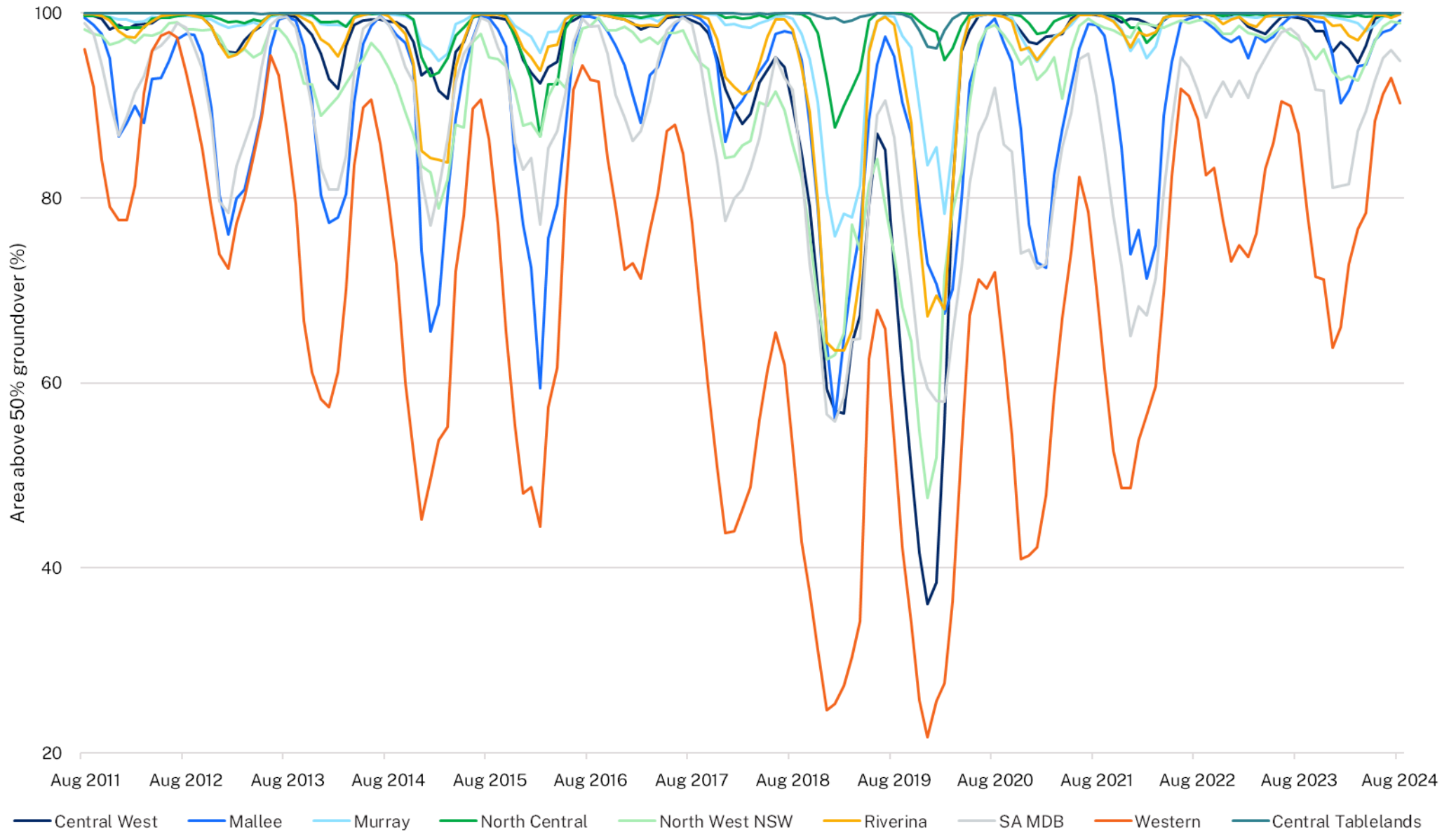


Figure 5 Area (%) of NRM with more than 50% cover since August 2011

Rainfall

Rainfall totals for August 2024 ranged from 1 to 100 mm across much of the state (Figure 6). Totals were average to below-average for most of the state. Most parts of the Western Local Land Services region and the South Australian rangelands show average rainfall.

Much of the Mallee Catchment Management Authority and Murray Local Land Services regions received below-average to very much below-average rainfall.

From June to August 2024, the southern third of the state had below to very much below-average rainfall. Large areas of northern New South Wales experienced above-average rainfall, while other parts of the state had average rainfall (Figure 7b).

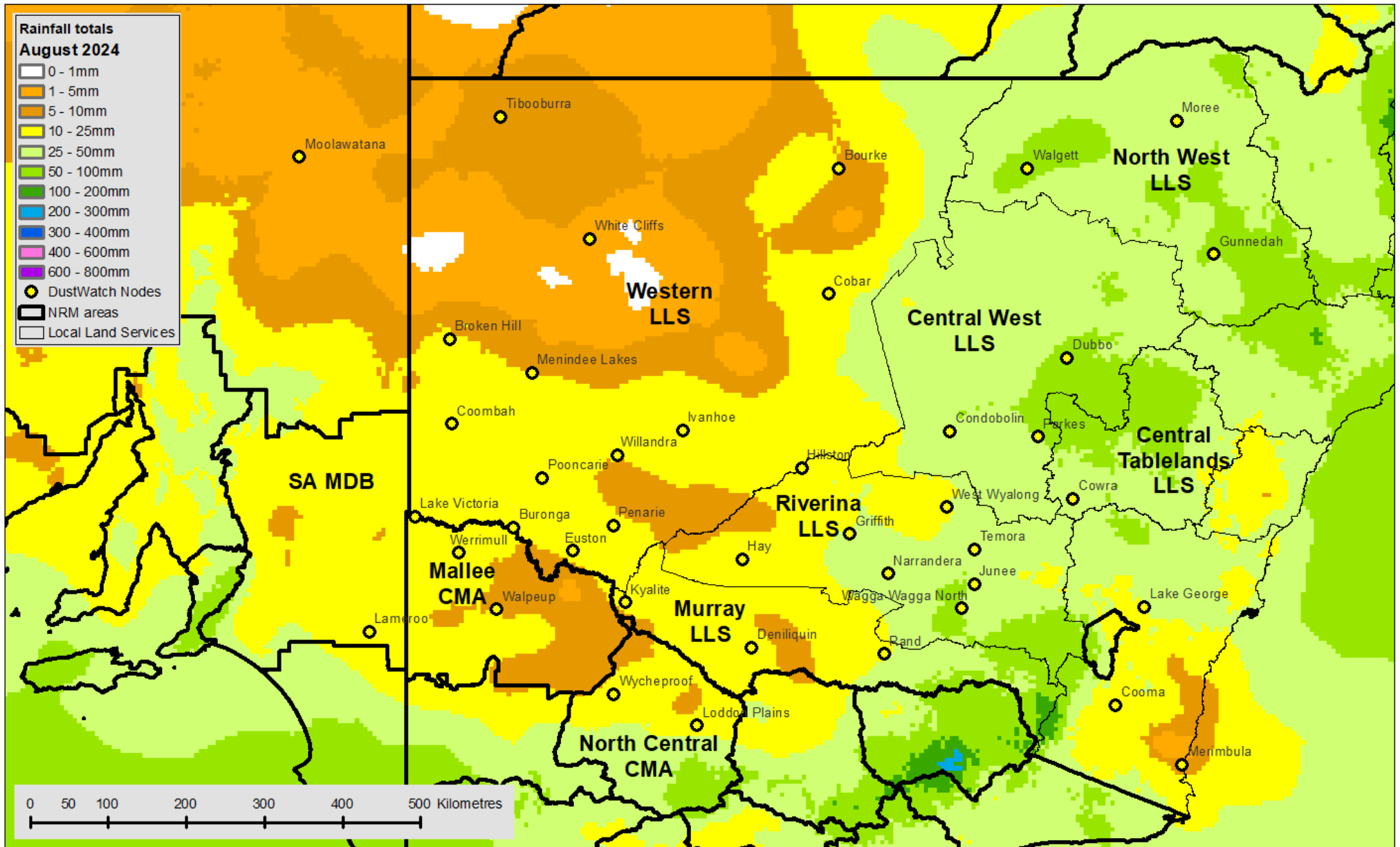


Figure 6 Rainfall totals for August 2024 (source: Bureau of Meteorology)

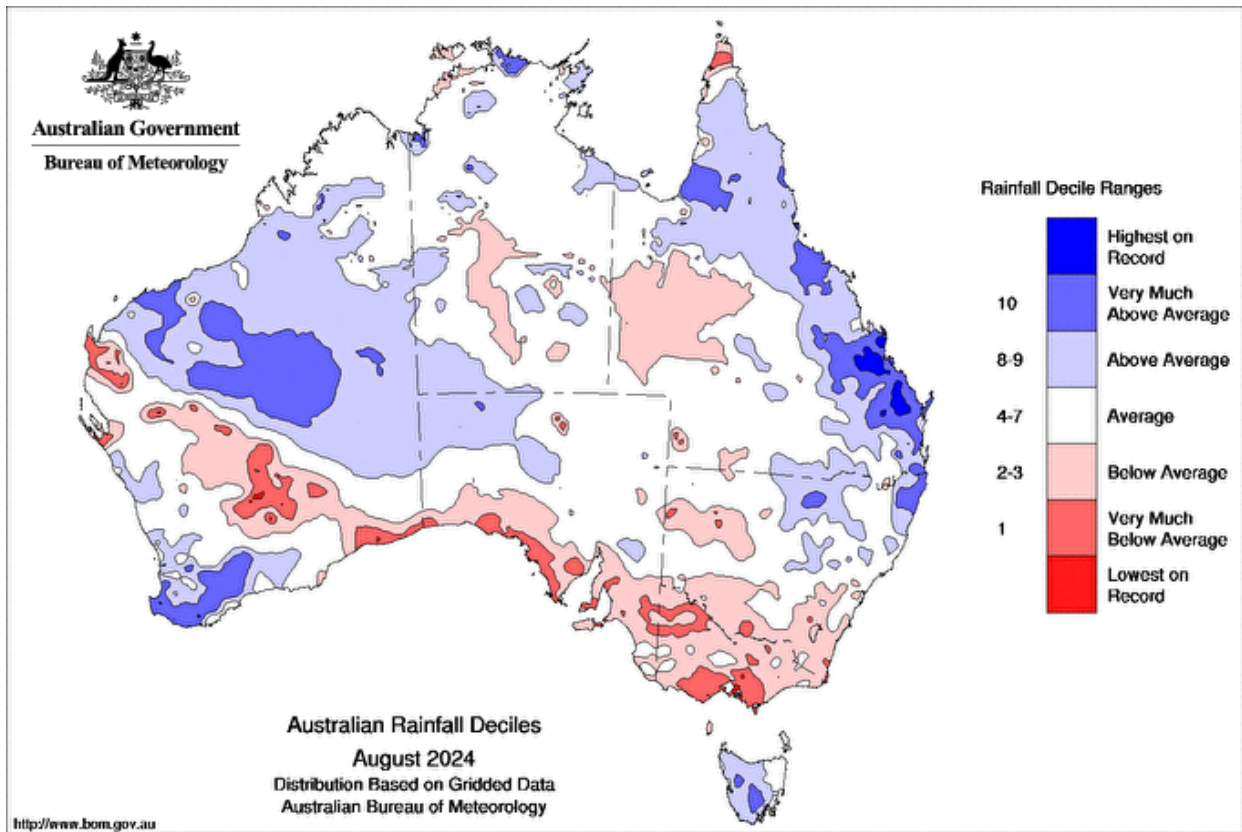


Figure 7(a) Rainfall deciles for August 2024

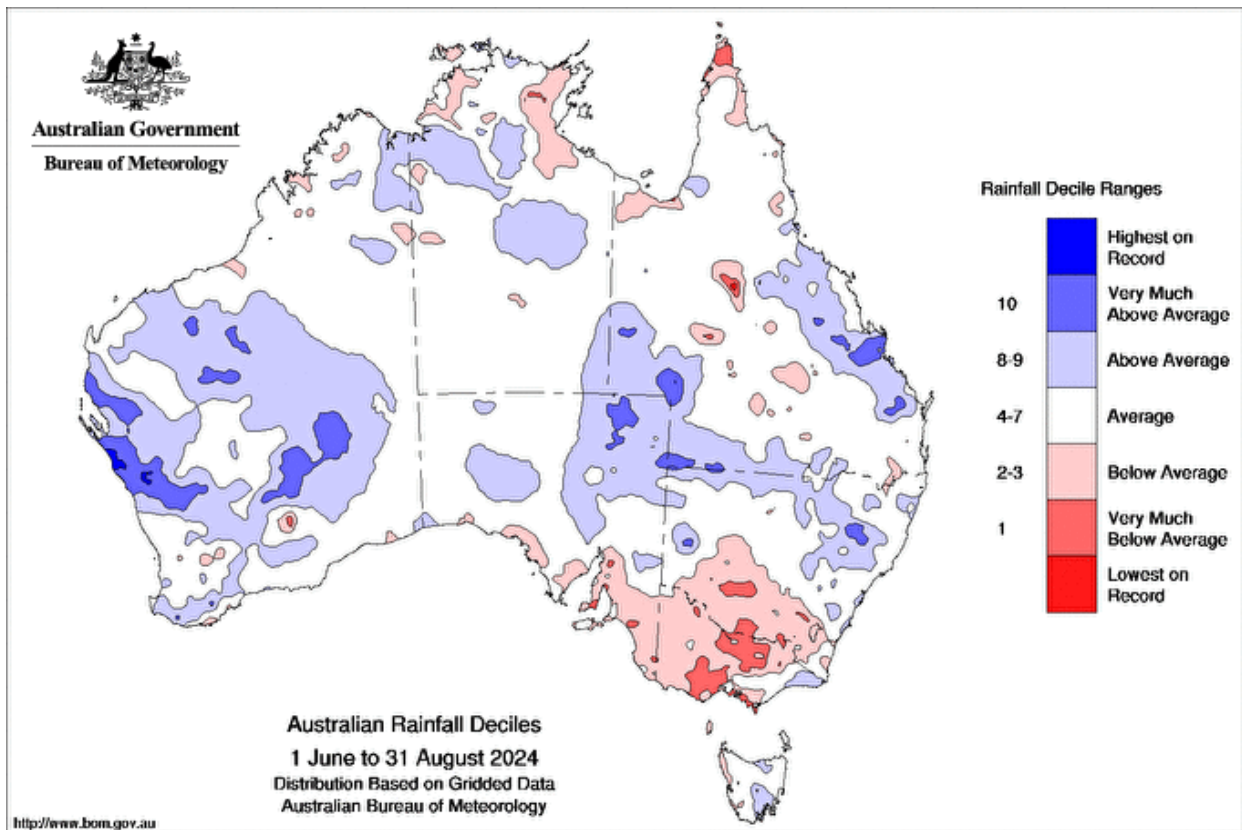


Figure 7(b) Rainfall deciles for 1 June 2024 to 31 August 2024

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 2,299 hot spots (375 m pixel with temperature anomalies) in August 2024 (Figures 8 and 9), a 127% increase from the 1,012 hot spots detected in July 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.

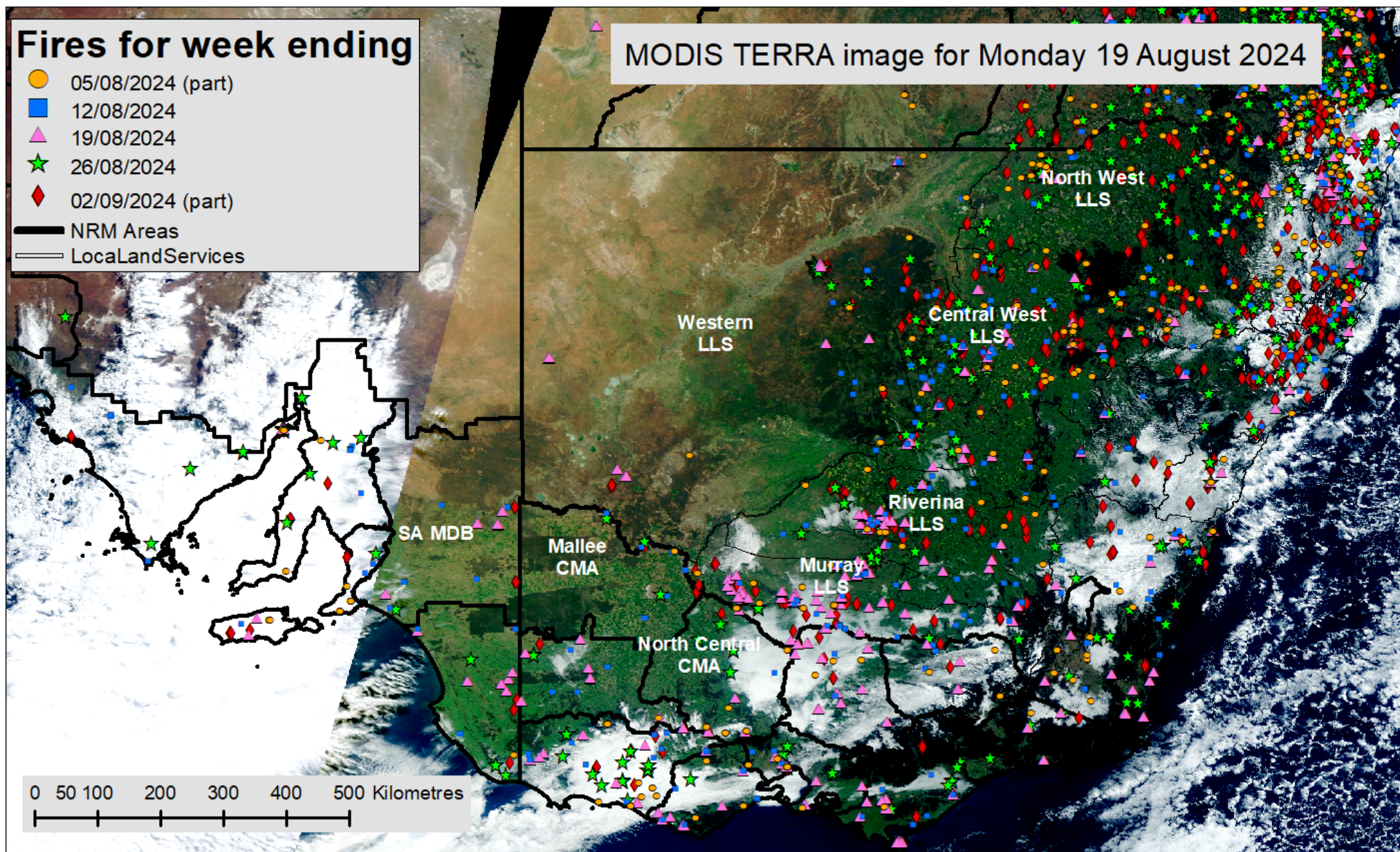


Figure 8 Pixels (375 m) with active burning fires in August 2024 as determined from VIIRS satellite

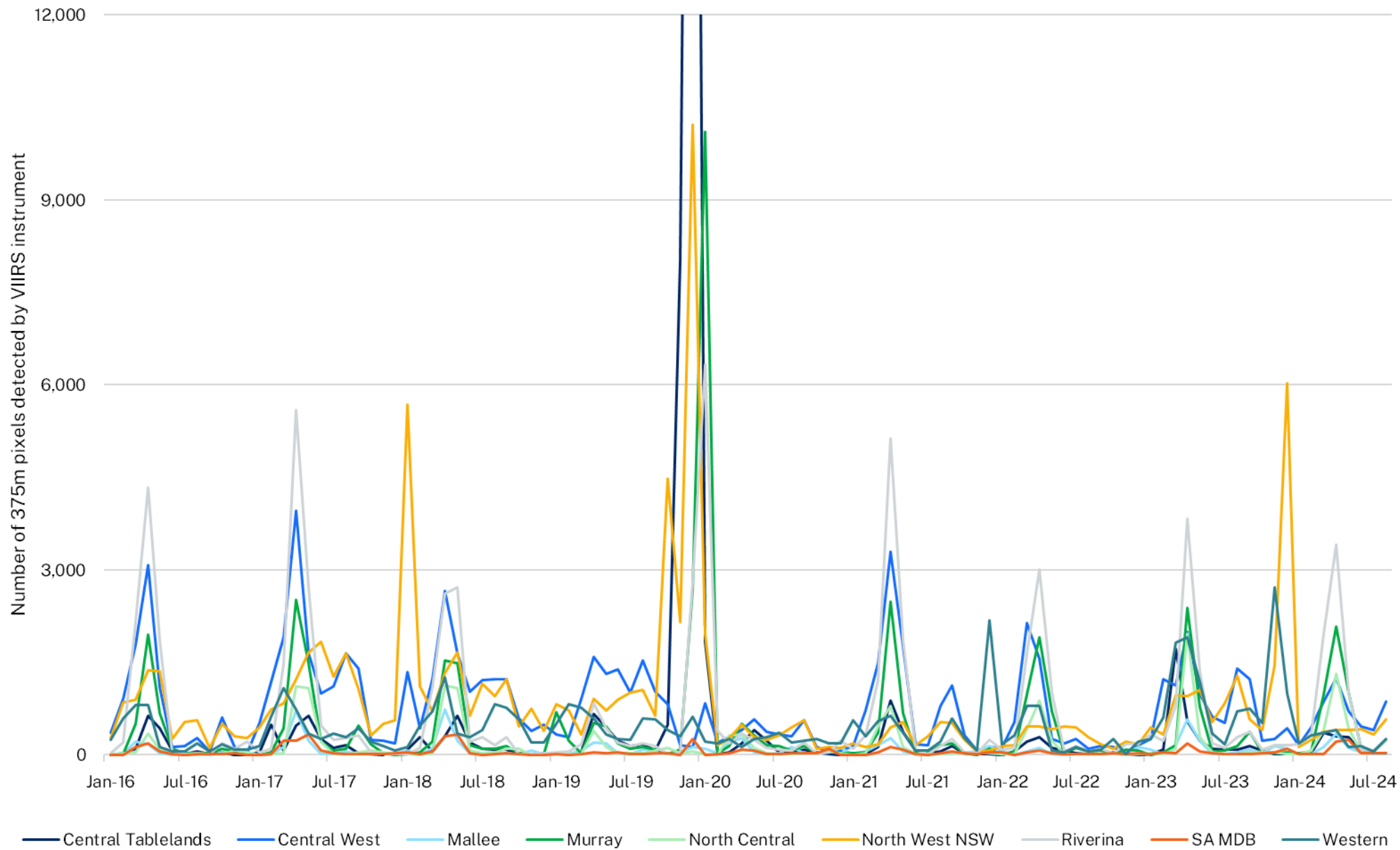


Figure 9 Number of 375 m pixels with active burning fires between January 2016 and August 2024

2025 State of NSW and Department of Climate Change, Energy, the Environment and Water

The State of NSW and the Department of Climate Change, Energy, the Environment and Water are pleased to allow this material to be reproduced in whole or in part for educational and non-commercial use, provided the meaning is unchanged and its source, publisher and authorship are acknowledged.

Department of Climate Change, Energy, the Environment and Water has compiled this report in good faith, exercising all due care and attention. No representation is made about the accuracy, completeness or suitability of the information in this publication for any particular purpose. The department shall not be liable for any damage which may occur to any person or organisation taking action or not on the basis of this publication. Readers should seek appropriate advice when applying the information to their specific needs.

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

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 New South Wales; 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 2024/0008 January 2025