



## Dust Activity

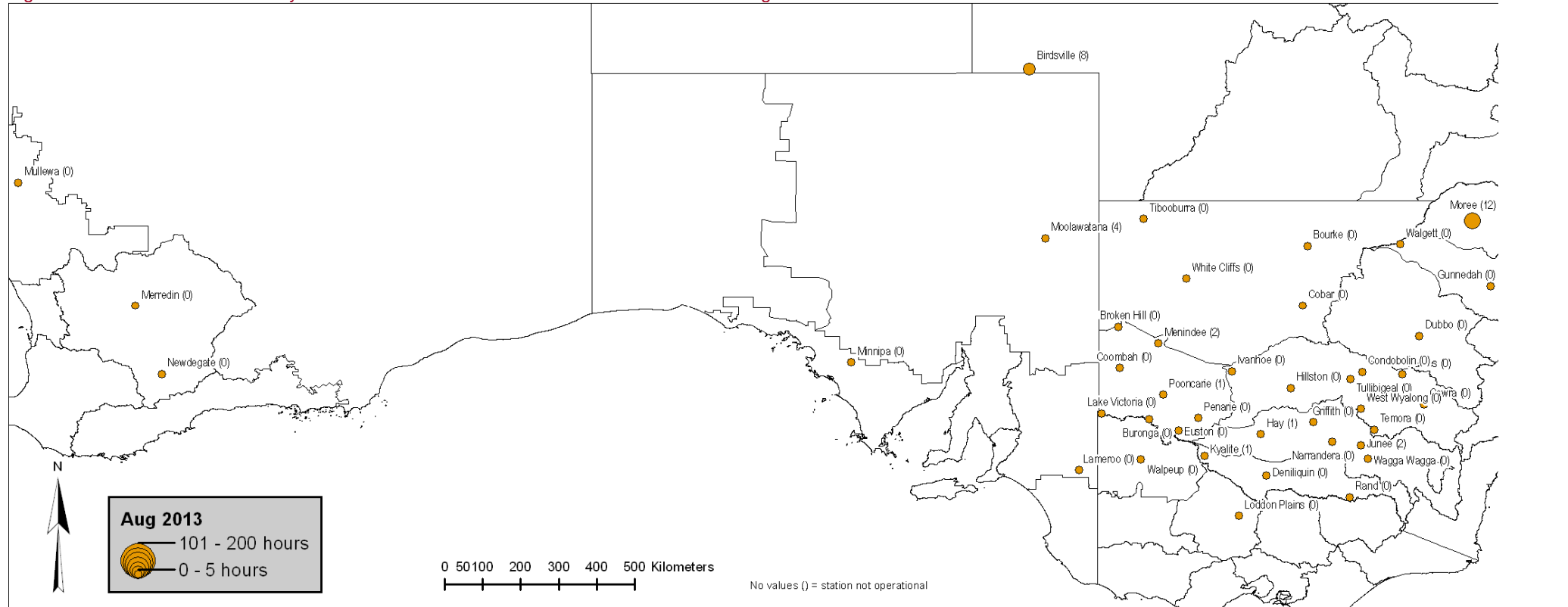
Dust levels are on the increase. Moree had the highest dust record with 12h for the month. Groundcover reductions related to cropping around Moree and Walgett (Figures 2 and 4) seem the likely cause.

The other area of dust activity is central Australia. Our newest station, the Birdsville DustWatch Node in south western Queensland, recorded eight hours of dust. Three hours on the back of strong westerly winds on 16 August and 5 hours on the back of strong northerlies on 31 August 2013. We anticipate some anthropogenic dust (created by humans) during the Birdsville horse races in early September. We will report on this in the next Newsletter.

Strong winds on 31 August 2013 caused a moderate haze at the South Australian Moolawatana DustWatch Node (Figure 1). Audrey Sheehan, our local DustWatcher indicated that the source areas of the dust were most likely local fire scars created back in December 2012 and the loose surface of the drying lakebed of Lake Callabonna.

A similar wind field stretched further south two days earlier. It created a minor dust haze across most of New South Wales. A moderate haze (visibility below 10km) was recorded at Menindee, Junee and Moree. Dust was not recorded in West Australian, Southern South Australian and Victorian Stations.

**Figure 1. Hours of dust with visibility less than 10 km recorded at each DustWatch Node in August 2013.**



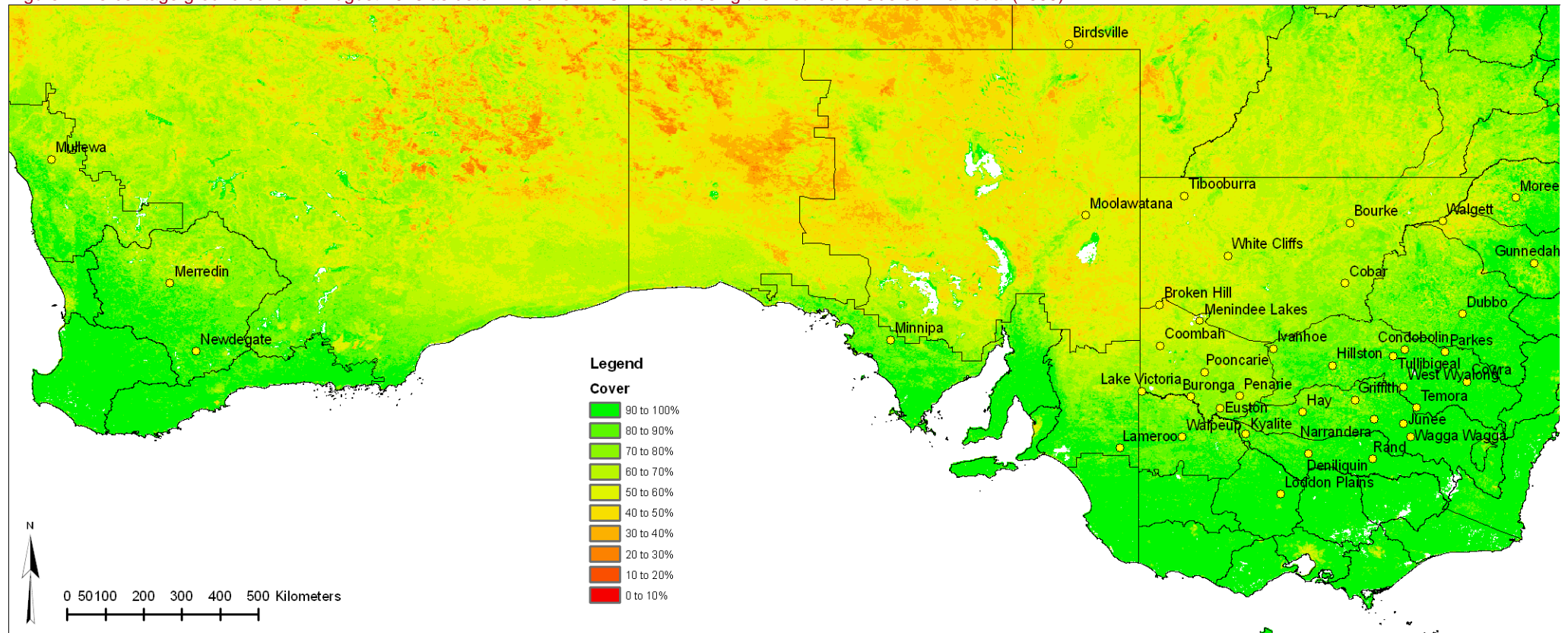
## Ground cover

Figure 2 shows groundcover based on MODIS satellite data for southern Australia. The image was processed using the Guerschman (2009) method. It shows significant areas of low cover in both the cropping and rangeland areas. The areas of low cover in the cropping areas are mainly visible in New South Wales, specifically around Walgett and Moree and further west towards Bourke. Ground cover in all southern cropping regions increased.

The reduction in rangeland cover is very wide spread and significant. Areas east of White Cliffs and Tibooburra and areas north of Moolawatana saw the greatest reductions (Figures 2 and 4).

Fires in the Western Australian and South Australian Rangelands in August 2013 (Figure 7) added to the reduction in cover in that area.

Figure 2. Percentage ground cover for August 2013 as determined from MODIS data using the method of Guerschman et al (2009).



## Ground cover change

Figure 4 below shows the change in groundcover from June to August 2013. Minor changes in cover ( $\pm 20\%$ ) have been removed from the image (white colour) to highlight the areas of significant change.

Crops have continued to grow in the cropping areas of Western Australia, South Australia, Victoria and New South Wales. This has increased the cover in those areas. Some districts in northern New South Wales, in particular around Walgett and Moree and west of Dubbo have seen both an increase from winter crop growth and a reduction in cover from cultivation prior to summer crop preparation.

The central Australian Rangelands have seen a significant reduction of cover. This is caused by the much below average rainfall (Figure 5) and the much higher temperatures in August 2013. In fact most of Australia was in the warmest 10 percent of temperature records (daily maximum) in August 2013 (Figure 3). High stocking numbers, particularly feral animals, have lead to rapid reductions in groundcover.

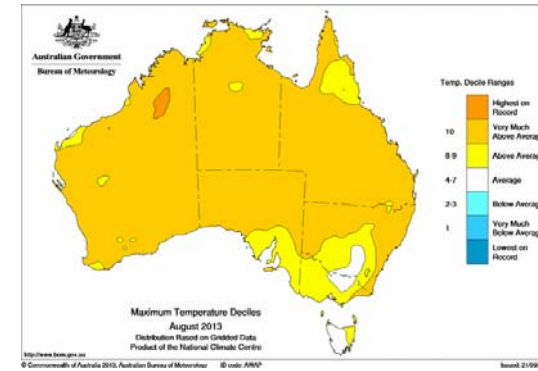
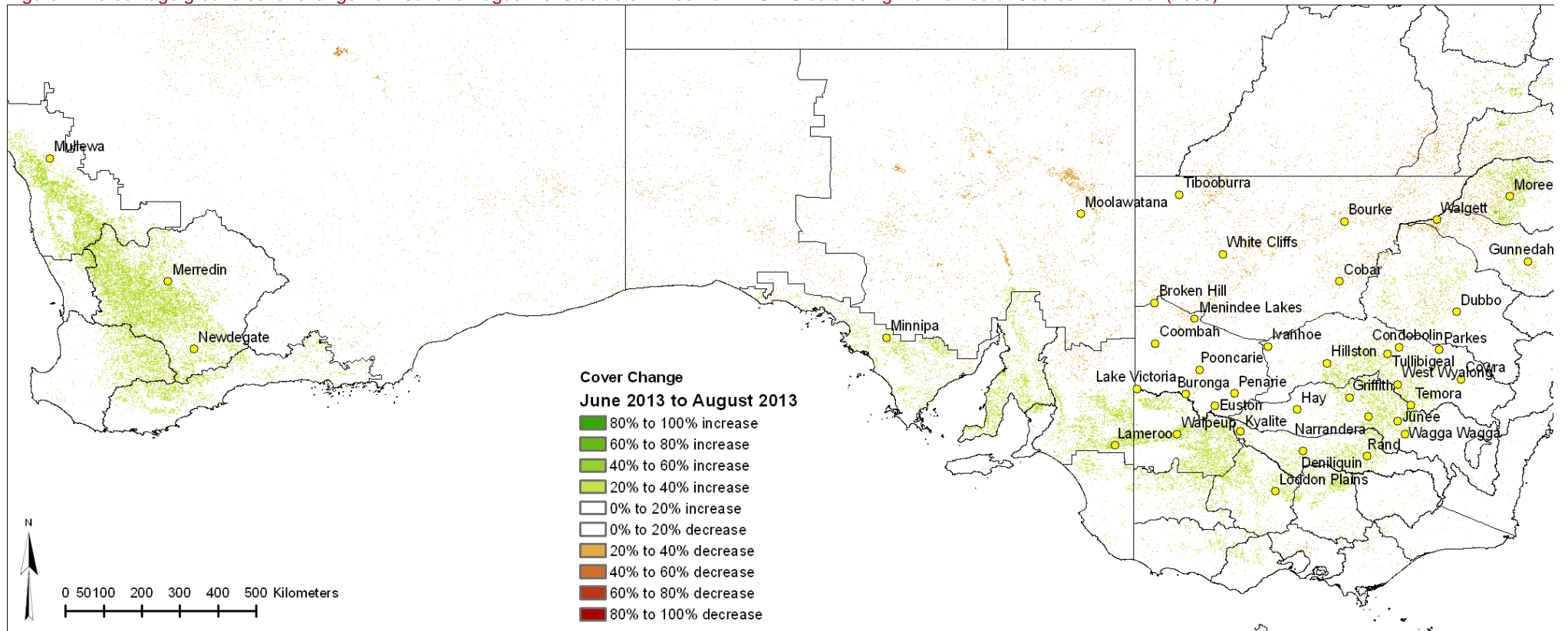


Figure 3. Temperature deciles for August 2013.

Figure 4. Percentage ground cover change from June to August 2013 as determined from MODIS data using the method of Guerschman et al (2009).



## Rainfall totals

Rainfall was confined to the southern part of the country with some minor and un-usual high falls along the southern coast coast. There is no rain at all in central Australia for August 2013 (Figure 5). This lack of rainfall in late winter does not help the ground cover conditions going into spring.

## Rainfall deciles

The complete lack of rain in central Australia during August has pushed most of Australia into the driest 30% of records, with large parts of Queensland, New South Wales and Western Australia in the driest 10% of records for August 2013 (Figure 6).

Figure 5. Rainfall totals for August 2013.

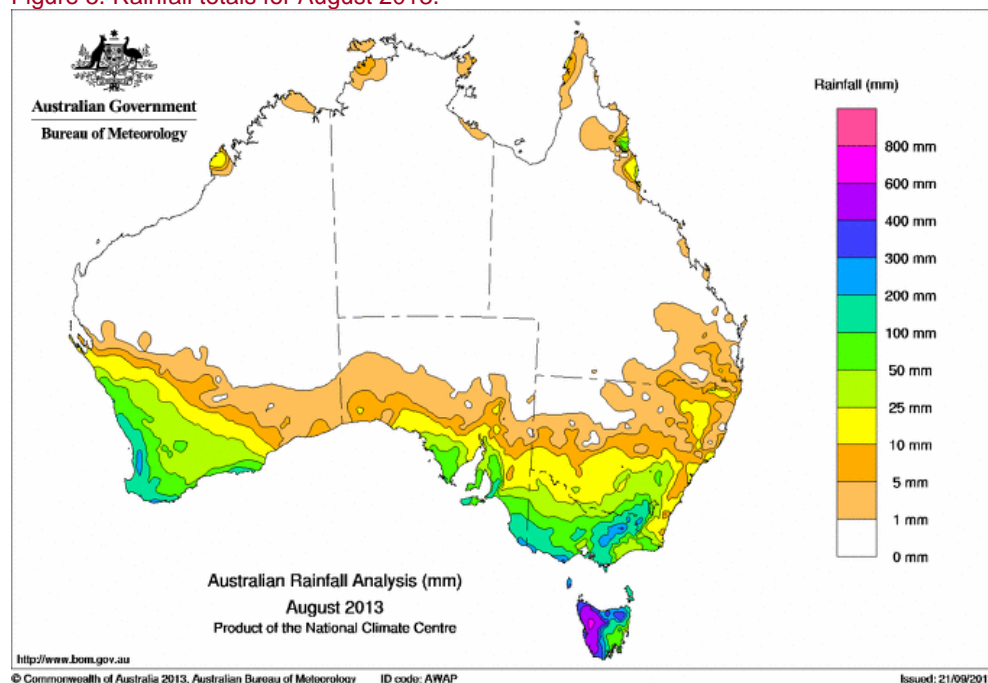
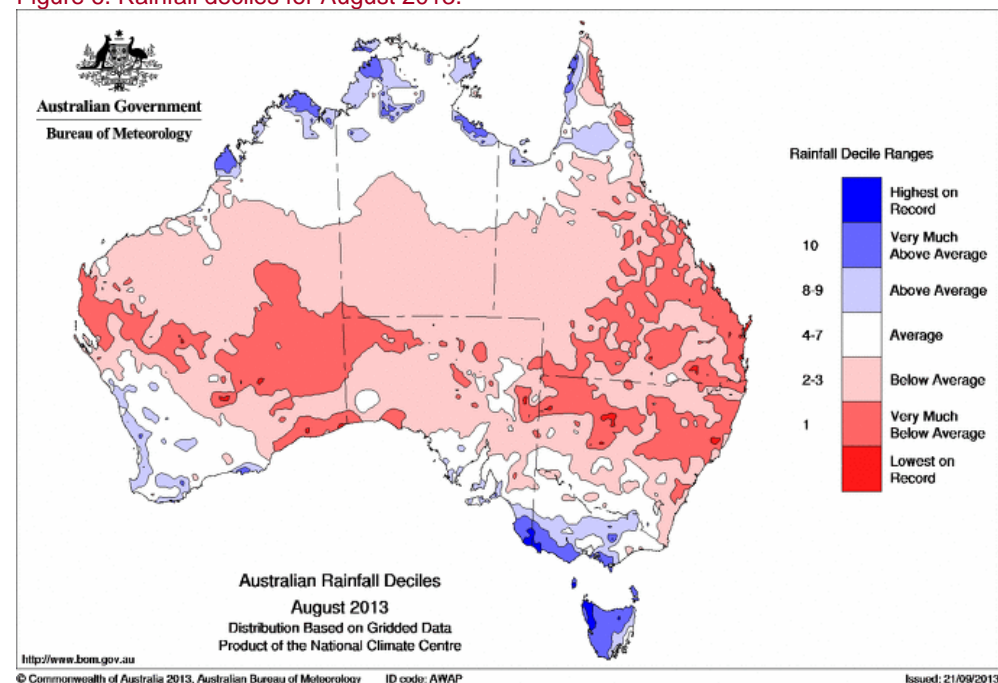


Figure 6. Rainfall deciles for August 2013.

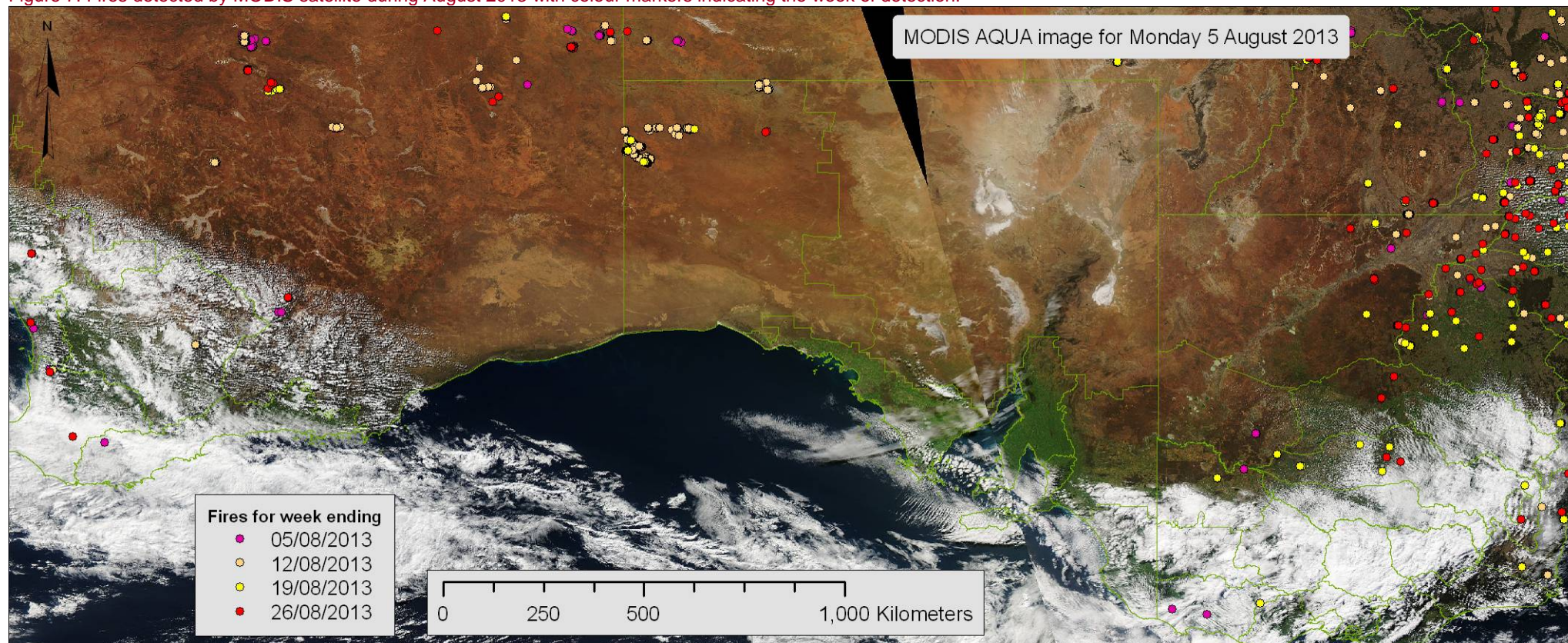


## MODIS satellite image

The number of fires in Western Australia and western South Australia rangelands has increased (Figure 7) from last month with the drier conditions enabling more wild fires to take hold.

In line with the drier conditions fires have also increased in north eastern New South Wales and south eastern Queensland. Only a very small proportion of these fires would be related to cropping activities.

Figure 7. Fires detected by MODIS satellite during August 2013 with colour markers indicating the week of detection.



### The DustWatch Team

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

The MODIS image is courtesy of MODIS Rapid Response Project at NASA/GSFC, the fire data is courtesy of the Fire Information for Resource Management System (FIRMS) and the rainfall map is from the Australian Bureau of Meteorology. This project would not be possible without funding from: Caring for our Country; Lachlan, Murrumbidgee and Murray CMAs in NSW; the NSW EPA, the Mallee CMA and North Central Catchment Management Authorities in Victoria; Department of Agriculture and Food WA, Wheatbelt Natural Resource Management in West Australia; and in-kind contributions from: Gwydir and Western CMAs in NSW; Eyre Peninsula and Murray Darling Basin NRMs in South Australian; and Griffith University in Queensland. We also gratefully acknowledge the contribution of DustWatchers who provide observations and help maintain the instruments.