

DustWatch Report - November 2013

Dust activity was low for November 2013 with minor dust activity in most States. **Wind** strength for November 2013 was similar to the same month for the last two years so the absence of dust is not related to wind strength. **Groundcover** was adequate to control wind erosion but is declining. **Rainfall** was below average in South Australia, Victoria, New South Wales and Queensland. **Fire activity** was less than September 2013.

Dust Activity

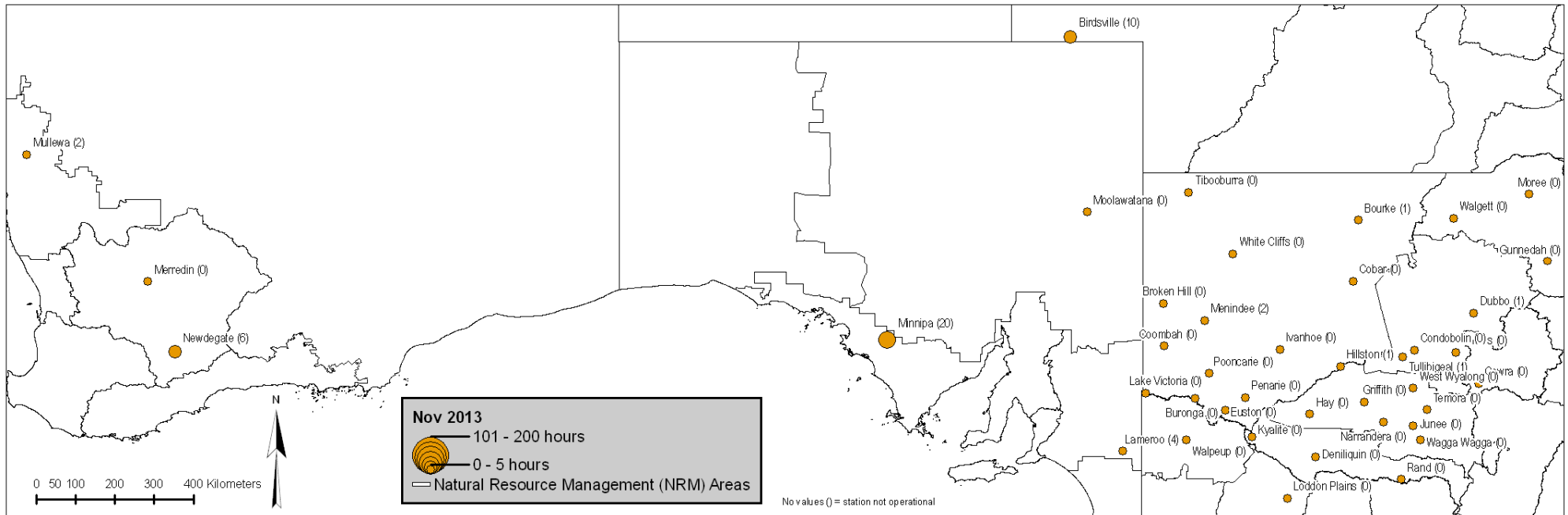
The Birdsville DustWatch node in south western Queensland recorded minor dust activity in early November 2013 and a moderate dust storm with visibility below 1km

overnight 28 to 29 November 2013 (Figure 2). The associated cold front and trough triggered some minor dust hazes at several stations in an otherwise dust-free **New South Wales**. The number of hours with strong winds across all stations in November 2013 was similar to the same month in the last two years, so lack of strong wind does not explain the absence of dust.

There was no dust recorded at the DustWatch nodes in **Victoria**. The **South Australian** Lameroo node recorded 4 hours of dust on 6 November. The Minnipa node, located on an Agricultural Research Station, has recorded 20 hours of dust – which is an unusually high. According to local DustWatchers, the instrument is in a paddock that is deliberately overgrazed for research so the resulting dust is expected.

The **Western Australian** Newdegate and Mullewa nodes recorded low level dust hazes between 12 and 18 November 2013.

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



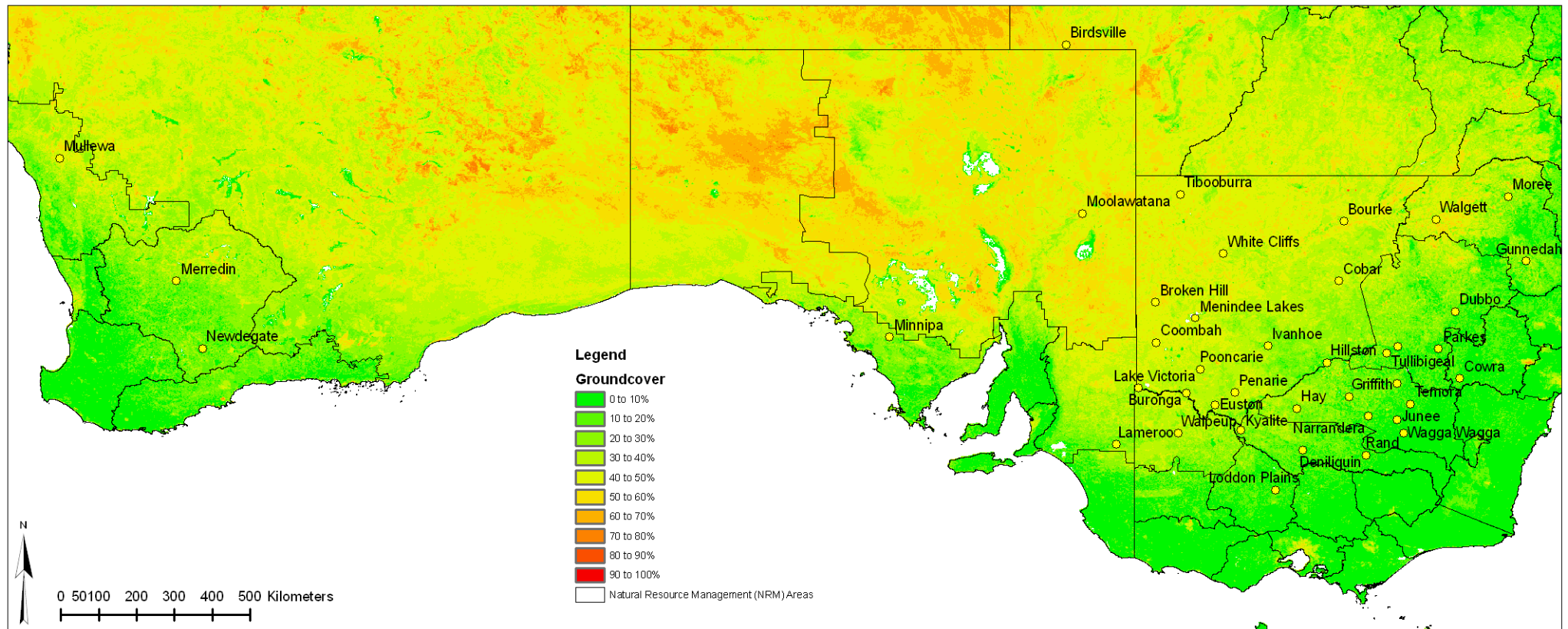
Groundcover

Groundcover remains adequate to suppress major dust emissions across most states and Natural Resource Management (NRM) areas. Reductions in groundcover continue in some areas (red circles in Figure 4). However, groundcover remains above 50%, the amount required to control wind erosion, for most agricultural areas.

The below average rainfall (Figure 5, Figure 6) is hindering pasture growth in the rangelands.

Drying lakebeds in the **South Australian** Arid Lands are also losing groundcover and could become major dust sources if this trend continues.

Figure 3. Percentage groundcover for November 2013 as determined from MODIS data using the method published by J. Guerschman *et al* in 2009.



Groundcover change

The greatest reduction in groundcover was in the Wheat / Sheep belt of southern Australia. The reductions are mainly due to grazing pressure or cropping activities such as harvesting and preparation of summer fallow.

The greatest reductions in groundcover between August 2013 and November 2013 occurred in the **Victorian** Mallee and Wimmera NRM and the adjacent **South Australian** South East NRM and Murray Darling Basin NRM.

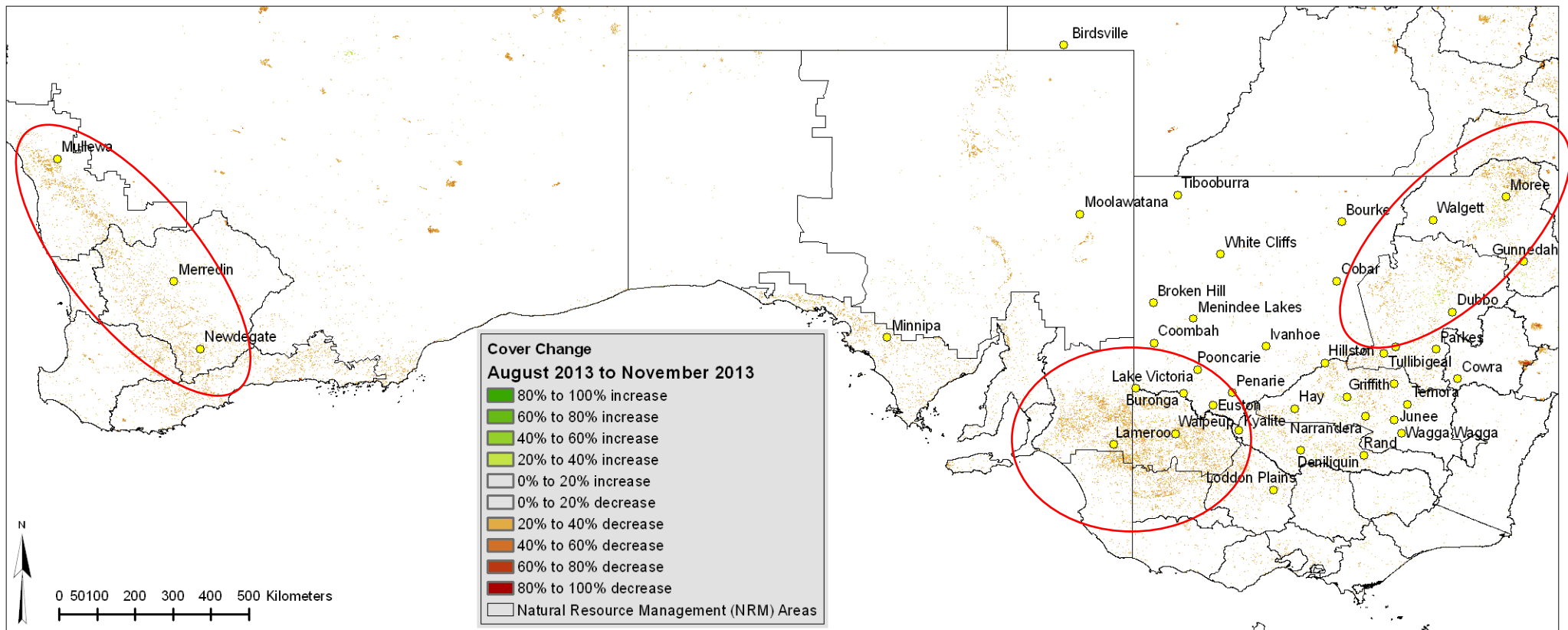
In **New South Wales**, groundcover reduced north of Moree in the **North West** Local Land Services area, between Walgett and Dubbo in the **Central West** Local

Land Services area and areas to the east of Hillston in the **Riverina** Local Land Services area.

Reductions in groundcover occurred in the **Western Australian** Northern Agricultural and Wheatbelt NRM.

The only groundcover increases occurred to the south of Griffith in the **Riverina** Local Land Services Area, to the south of Gunnedah in the **North West** Local Land Services Area and to the east of Dubbo in the **Central West**. The majority of these groundcover increases are due to (irrigated) crop growth and not to rangeland management activities.

Figure 4. Percentage groundcover change from August 2013 to November 2013 as determined from MODIS data using the method published by J. Guerschman et al in 2009. Areas with reductions of groundcover are circled in red.

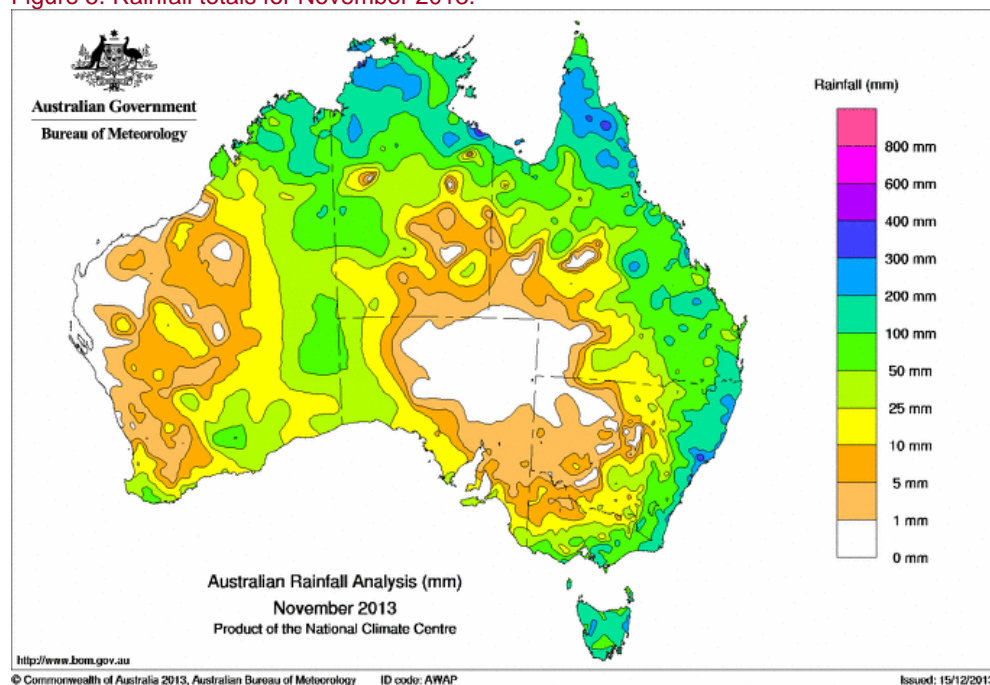


Rainfall Totals

The rainfall totals for November 2013 (Figure 5) increased from last month for most of Australia. Western **South Australia** and eastern **Western Australia** in particular had high rainfall of up to 100mm.

Central and north eastern **South Australia** and western **New South Wales** and **Queensland** had no rain or minor falls of less than 10mm. The **Victorian Mallee** and North Central CMA areas had falls of less than 25mm.

Figure 5. Rainfall totals for November 2013.

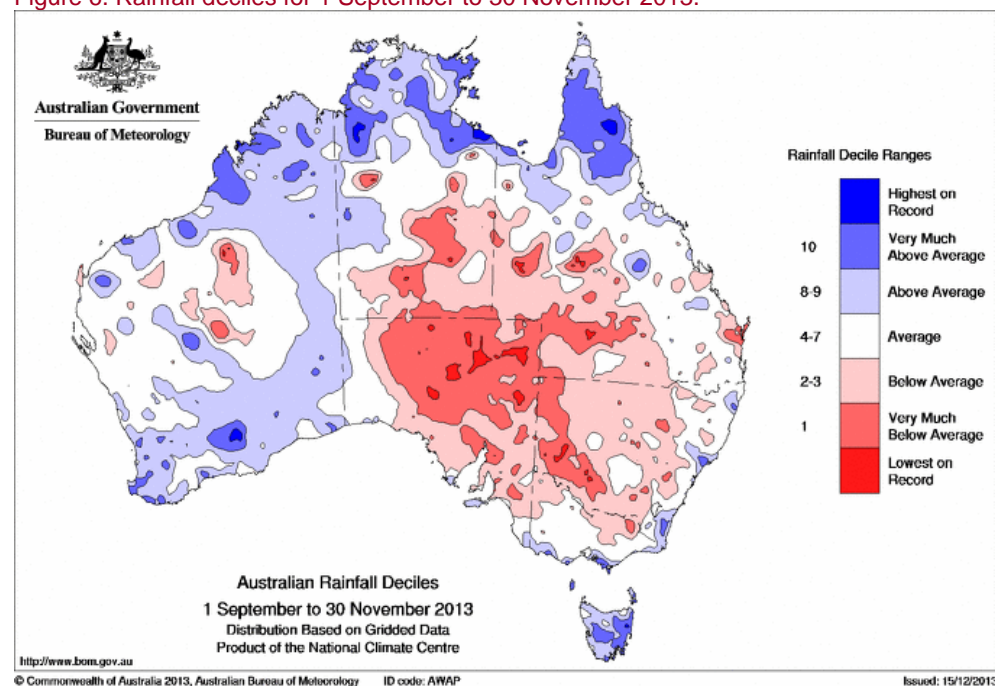


Rainfall Deciles

The high rainfall recorded in November 2013 in Western **South Australia** and eastern **Western Australia** pushed this area into the above average rainfall category for the three month period of September to November 2013 (Figure 6). Only a small proportion of inland **Western Australia** remains below average rainfall.

In contrast, most of **South Australia** and **New South Wales** are in the below average class, with only small coastal strips receiving above average rainfall. Central and western **Queensland** also remains below average for September to November 2013.

Figure 6. Rainfall deciles for 1 September to 30 November 2013.

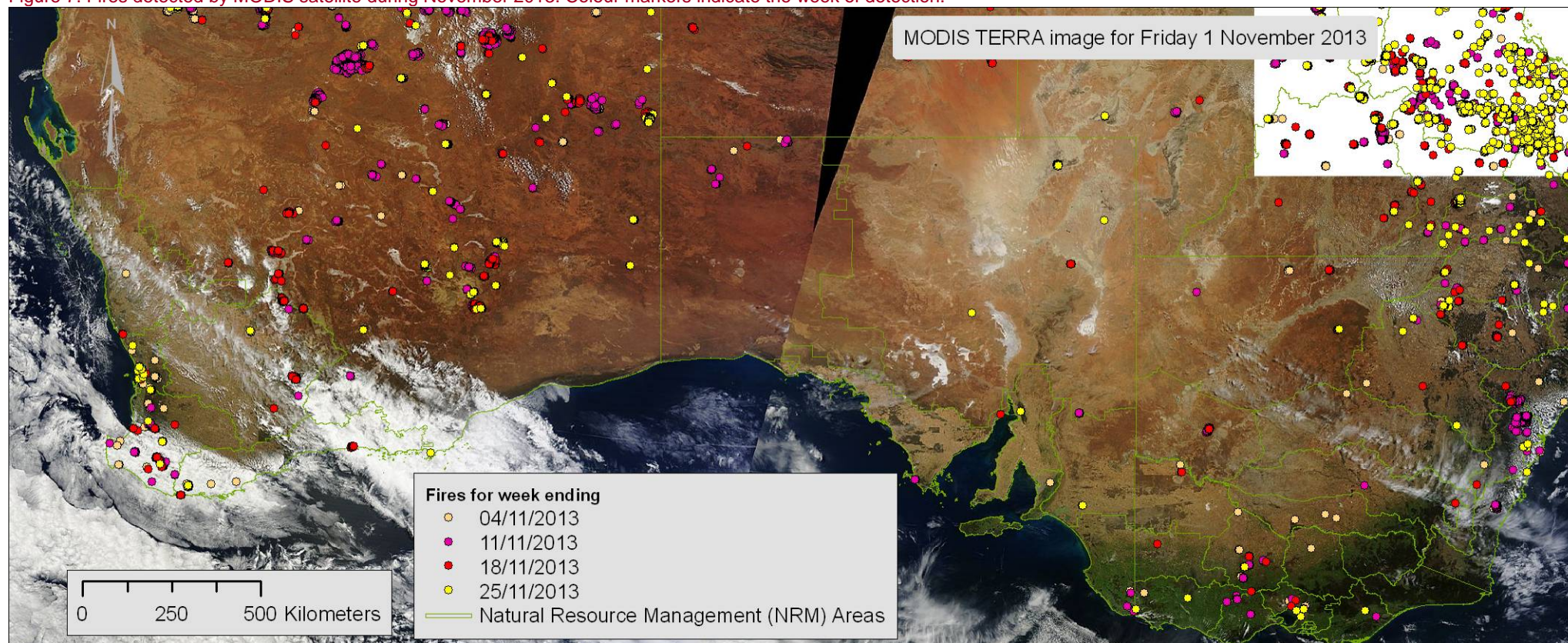


MODIS satellite image

Fire activity increased from October 2013 in **Queensland** and decreased in **New South Wales, Victoria and South Australia** (Figure 7). The number of fires in **Western Australian** remains similar to last month. There were many fires in the week ending 25 November in central and eastern **Queensland**.

During times of extreme fire weather this November, the **New South Wales Rural Fire Service** recommended that farmers avoid using harvesting machinery until conditions improved. This aligns with their Farm Firewise advice at: http://www.rfs.nsw.gov.au/dsp_content.cfm?cat_id=1161 .

Figure 7. Fires detected by MODIS satellite during November 2013. Colour markers indicate the week of detection.



The DustWatch Team

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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; Riverina, Western and Murray Local Land Services (LLS) in NSW; the NSW EPA, the Mallee CMA and North Central CMAs in Victoria; Department of Agriculture and Food WA, Wheatbelt Natural Resource Management in West Australia; and in-kind contributions from: Eyre Peninsula and Murray Darling Basin NRMs in South Australian; and Griffith University in Queensland. We also thank volunteer DustWatchers who provide observations and help maintain the instruments.