



Australian Government
Bureau of Meteorology

Summary of significant fire weather conditions for season 2013-2014

Prepared for the Office of the Victorian Fire Services Commissioner

Data sources:

Bureau of Meteorology online maps, charts and data

Victorian State Control Centre weather briefing material

Daily archived Fire Weather Bulletin

Monthly Weather Review

Special Climate Statement 48 – one of southeast Australia’s most significant heatwaves

December 2013

- Maximum temperature was marginally higher than average
- Rainfall generally close to average, except for parts of western Victoria and central Gippsland, which were drier than average.
- First notable day of elevated fire weather conditions was the 2 December due to hot, dry northerly winds ahead of a southwest wind change.
- An episode of Very High to Severe fire danger then affected the State from the 19-20 December. Maximum temperatures soared into the high 30s and low 40s. A band of thunderstorms swept across northern and eastern Victoria during late afternoon and continued into the evening.
- On the 19th, GFDI at Horsham reached 87, while at 10pm at night the GFDI at Shepparton spiked to 117, likely due to thunderstorm outflow. Hot, dry conditions persisting in the north on the 20 December allowed the RH at Swan Hill to bottom out at 6% assisting in the GFDI reaching 89.
- Fire danger then spiked into the Severe to Extreme range on 28 December as hot dry northerly winds preceded a strong, dynamic southwesterly wind change. The GFDI at Swan Hill peaked at 168, while the FFDI at Mangalore reached 50.

Maximum Temperature Deciles December 2013
 Distribution Based on Gridded Data
 Product of the National Climate Centre

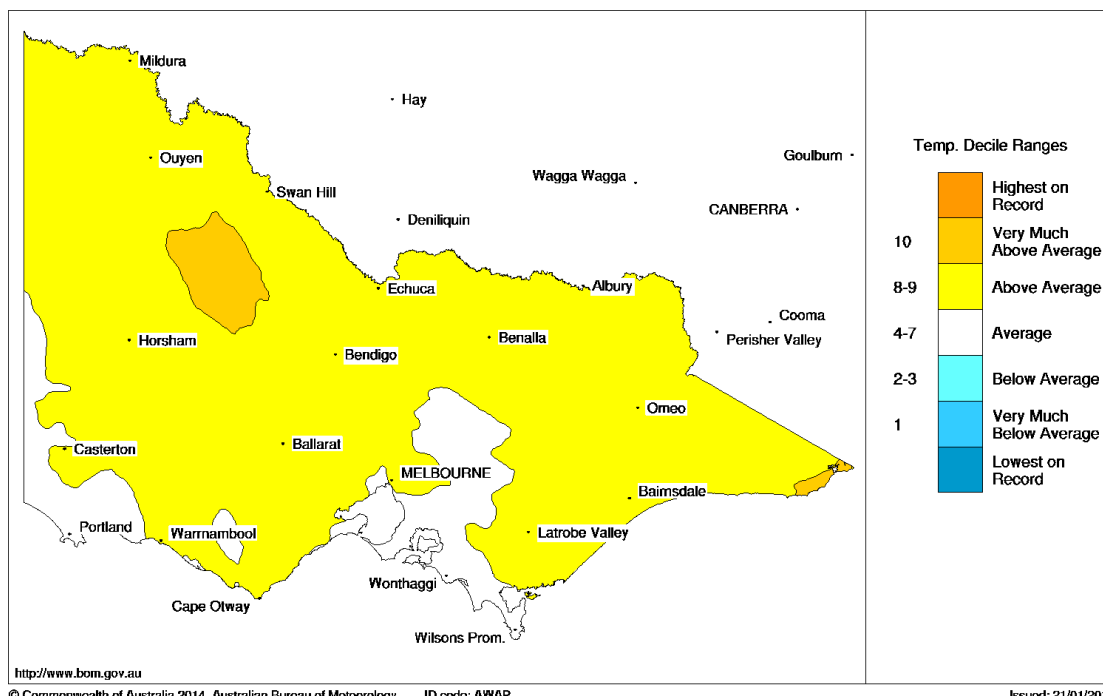


Figure 1 December maximum temperature decile map

Victorian Rainfall Deciles December 2013
 Distribution Based on Gridded Data
 Product of the National Climate Centre

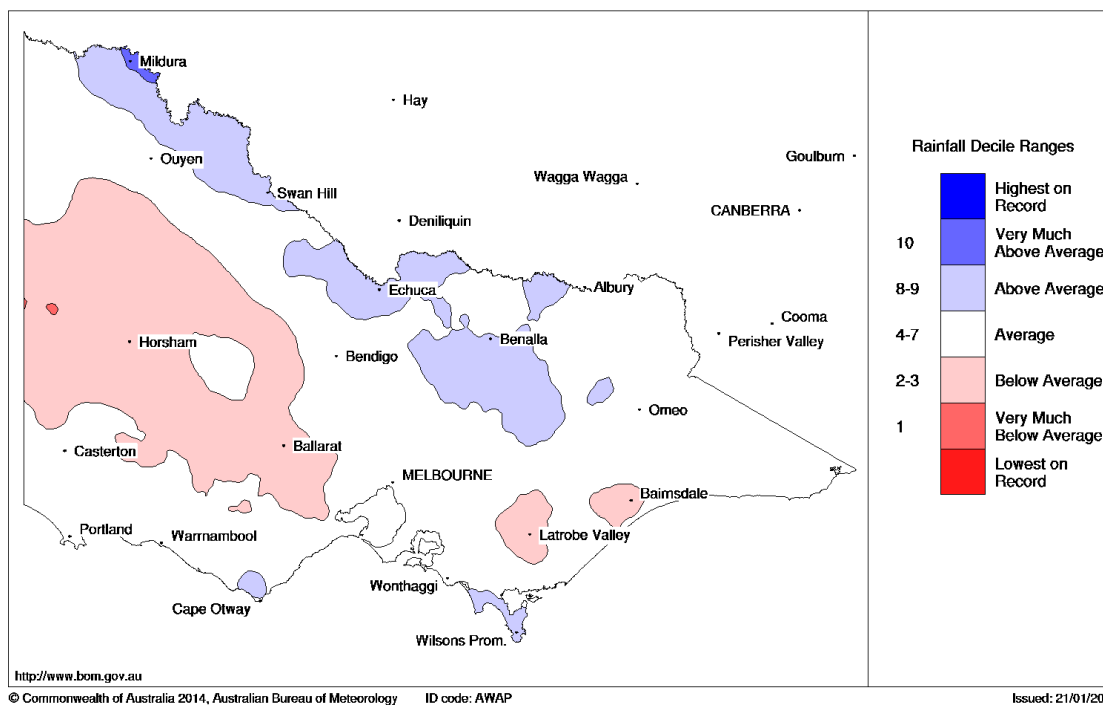


Figure 2 December rainfall decile map

January 2014

- Maximum temperature were very much higher than average across western two thirds of the State
- Rainfall was below average across Gippsland, central and northwest parts of the State.
- Marginal Severe fire danger conditions affected the Mallee and Wimmera on the 1st January ahead of a wind change during the afternoon. Fire danger was largely driven by wind speed.
- An Extreme heat wave affected Victoria from the 13th – 17th January.
 - Numerous records were broken for extended periods of heat. Most notably, the averaged data revealed that Victoria had its hottest four-day period on record, for both maximum and daily mean temperature. In both cases these surpassed records set in 2009, while for three-day periods the 2014 heatwave ranked second behind that of 2009. These two heatwaves, both of which have occurred in the last five years, stand ahead of any others recorded on a State-wide basis. The heatwave was more notable for persistent heat than for individual extreme hot days.
 - It reached 45°C in Victoria on three days during the heatwave. There have now been 21 calendar days in the period from 2001-2014 when it has reached 45°C at one or more Victorian locations (1.5 days per year), compared with 13 days in the 44 years (0.3 days per year) from 1957 to 2000. This is an approximately fivefold increase in the average annual frequency of such temperatures.
- Severe to Extreme fire danger accompanied the heatwave from the 14th-17th January peaking on the 17th January as a wind change moved across the State. Thunderstorms also occurred during this period, many accompanied with little if any rainfall resulting in numerous fires started by lightning. The combination of hot, dry conditions on with the wind change on the 17th January resulted in significant pyro-convection over the Grampians. The GFDI at Horsham reached 117.
- Fire danger then spiked into the Severe to Extreme range on the 28th January over the western and central parts of Victoria as hot dry northerly winds preceded a strong, dynamic southwesterly wind change.
- Conditions remained hot north of the Divide through to the end of January, persisting into early February.

Maximum Temperature Deciles January 2014
 Distribution Based on Gridded Data
 Product of the National Climate Centre

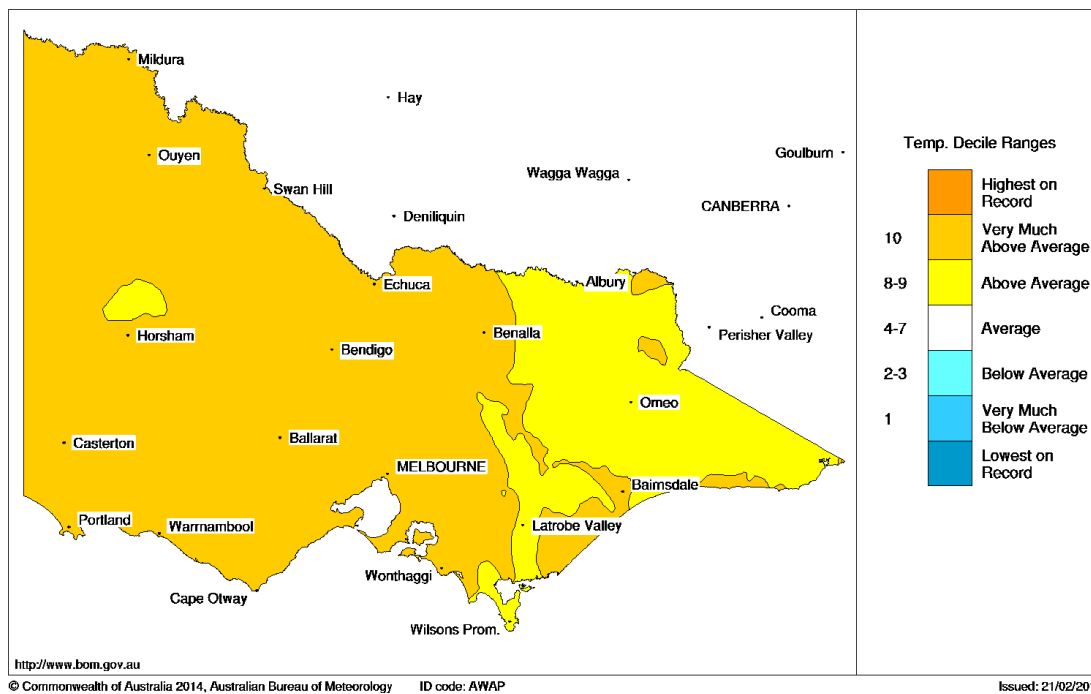


Figure 3 January maximum temperature decile map

Victorian Rainfall Deciles January 2014
 Distribution Based on Gridded Data
 Product of the National Climate Centre

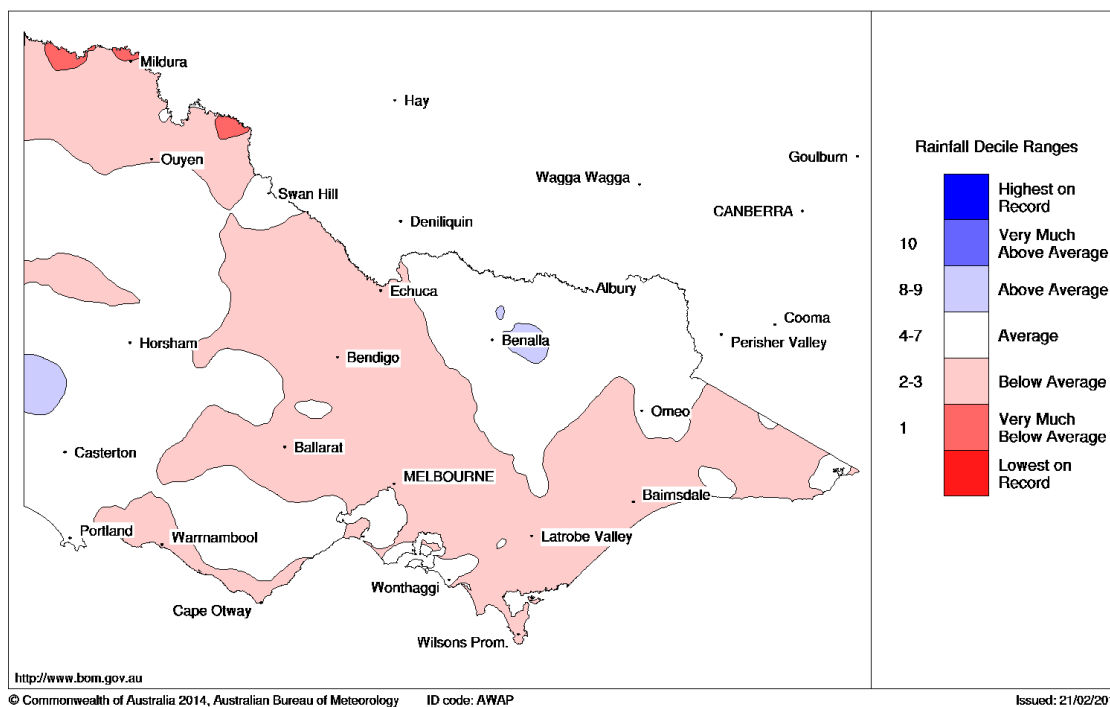


Figure 4 January rainfall decile map

February 2014

- Maximum temperature was very much higher than average across much of Victoria
- The trend in below average rainfall continued across most of the State, although a single rain event that impacted the far northwest meant that rainfall ended up being above to very much above average across much of the Mallee.
- The hot, dry air mass that occupied the continental interior in January re-circulated back over Victoria early February resulting in Very High to Severe fire danger from the 1st – 3rd February. An early cool change accompanied by gusty southerly winds crossed the State on the 3rd February. Thunderstorms developed during the afternoon and evening as the change moved across east and northeast Victoria.
- The hot, dry air returned once again from the 8th – 9th February ahead of a strong and squally wind change on the 9th February, which could be described as the worst fire weather conditions since Black Saturday in 2009. Very High to Severe fire danger was recorded on the 8th February, while Severe to Extreme fire danger was recorded on the 9th February. The change that swept across the State on the 9th February was not accompanied by any rainfall.
- Several locations recorded a FFDI of 100 or more aided by northwest winds with average wind speeds between 40-60 kmhr⁻¹, including East Sale, Melbourne Airport, Mangalore and Swan Hill. A peak GFDI of 150 was recorded at Melbourne Airport.
- Temperatures only peaked above 40°C once more; occurring on the 12th February in the far northwest, however due to light winds fire danger only locally breached the Severe threshold over the northwest on this day.
- Fire danger then predominately remained in the High range for the rest of February, although it did spike on the 25th February into the Very High to locally Severe range as a result of warmer conditions and fresh northwest winds.

Maximum Temperature Deciles February 2014
 Distribution Based on Gridded Data
 Product of the National Climate Centre

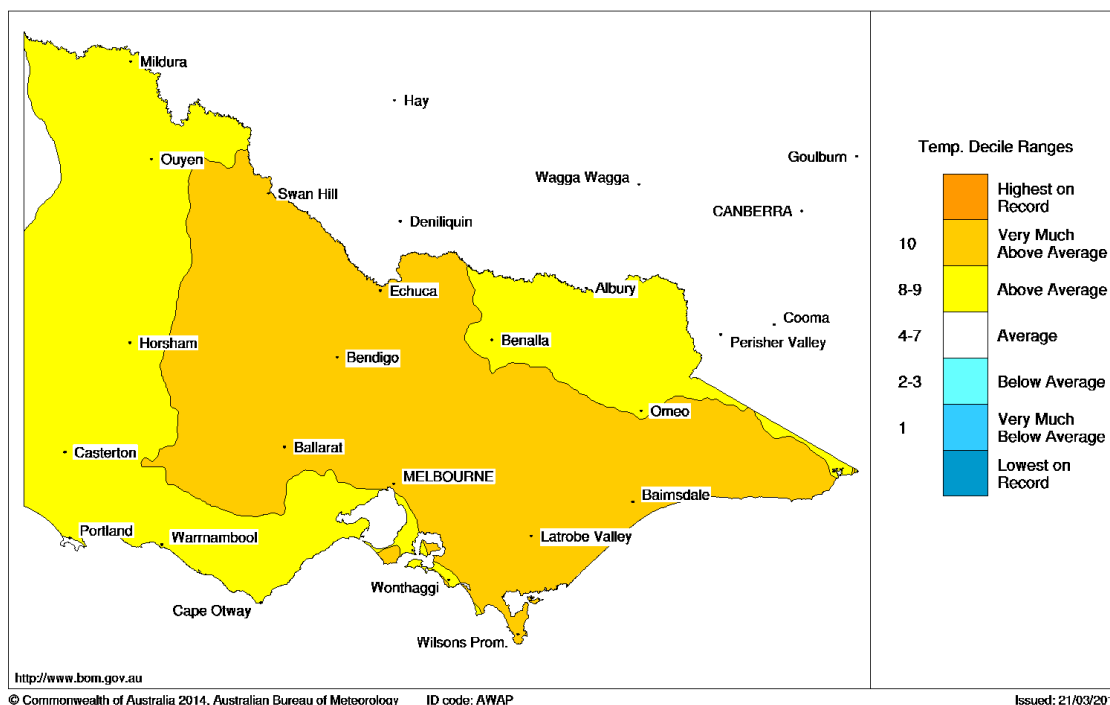


Figure 5 February maximum temperature decile map

Victorian Rainfall Deciles February 2014
 Distribution Based on Gridded Data
 Product of the National Climate Centre

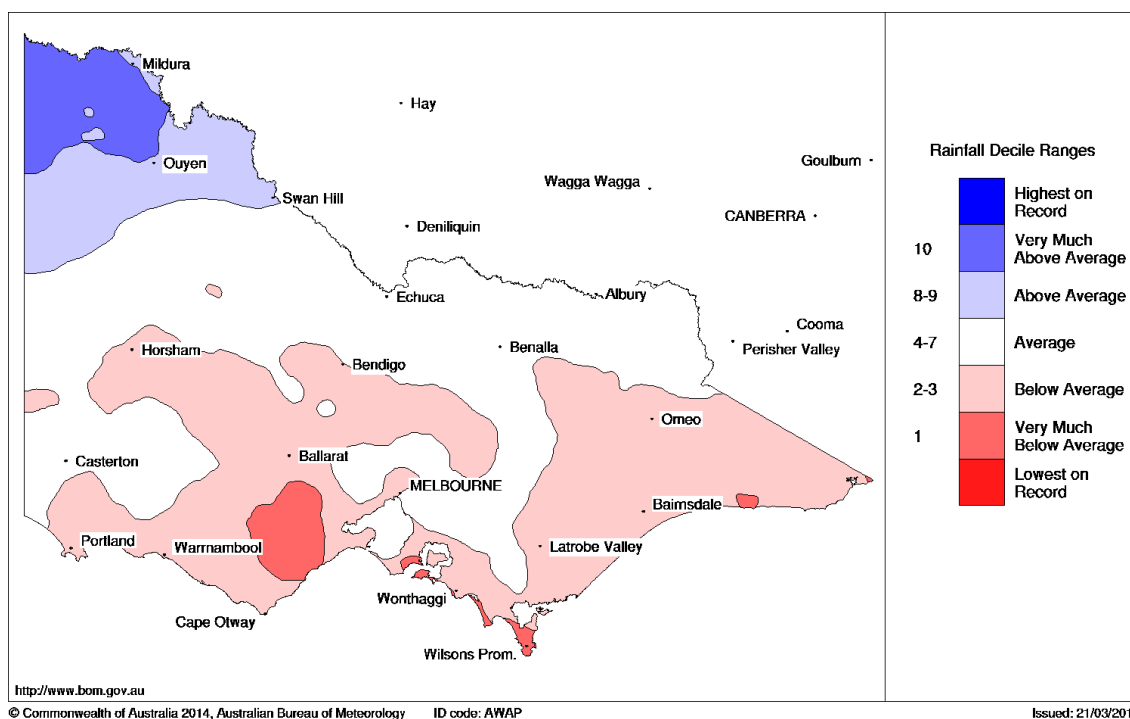


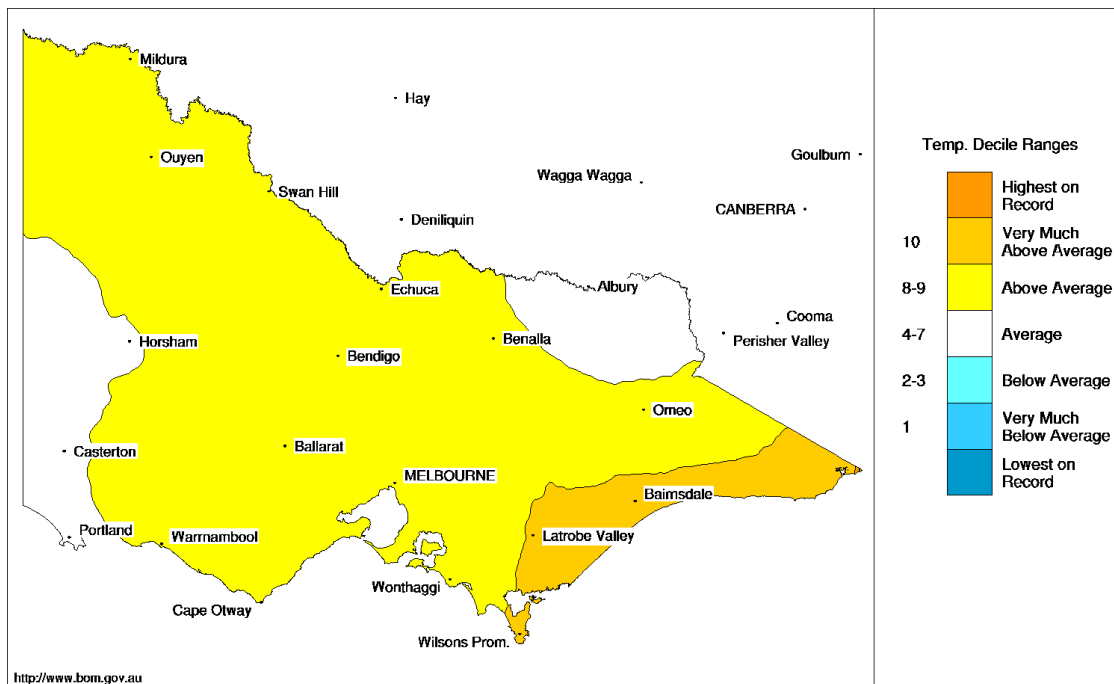
Figure 6 February rainfall decile map

March 2014

- Maximum temperatures continued higher than average across much of Victoria during the month of March.
- There was a return to average rainfall in many parts of the State, although locally drier conditions persisted over the South Gippsland, Central and South West districts.
- No further Severe fire danger days were experienced in Victoria.

Maximum Temperature Deciles March 2014

Distribution Based on Gridded Data
Product of the National Climate Centre

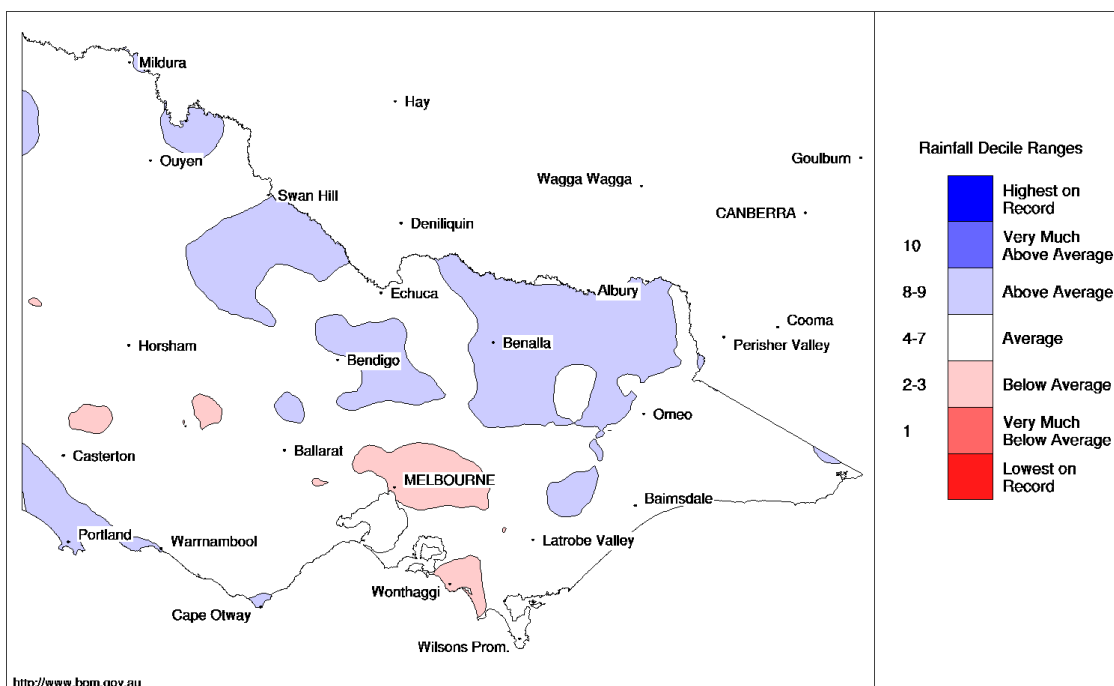


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Victorian Rainfall Deciles March 2014

Distribution Based on Gridded Data
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