



## South West rainfall and streamflow summary

Seasonal response update - August 2013

### Summary

The following rainfall and streamflow summary for August 2013 is based on information from the Department of Water, Bureau of Meteorology (BoM), Department of Agriculture and Food (DAFWA), and the Water Corporation. This summary is produced monthly from May to October. Some of the information here is also presented in the context of Seasonal response on the Department of Water website; go to [www.water.wa.gov.au](http://www.water.wa.gov.au) and follow the links under *News & Events*.

The following points summarise the current rainfall and streamflow conditions at August 2013, based on the 1975 to 2012 period:

- Rainfall in August across the majority of sites varied from average to well above average.
- Streamflow in August was mostly average to below average. Two sites, Capel River and Thomson Brook, had well above average streamflow for the month.
- Rainfall for the year to date across South West WA is average to above average, while streamflow remained average to well below average.
- The total IWSS dam storage has increased by 11% since July but the total inflow to our dams is well below the 50 GL target.
- The BoM and DAFWA rainfall outlooks for the November quarter predict average to below average rainfall for South West WA.



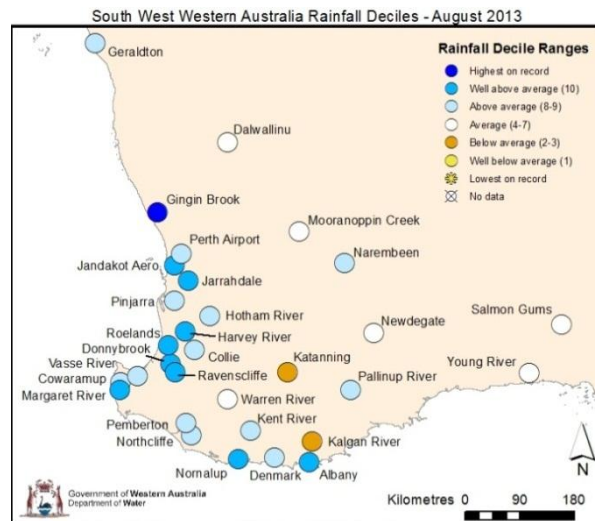
Photo: Gingin Brook (left) and Lake Yeal (right) on Gnangara Mound (2012)

## August rainfall and streamflow

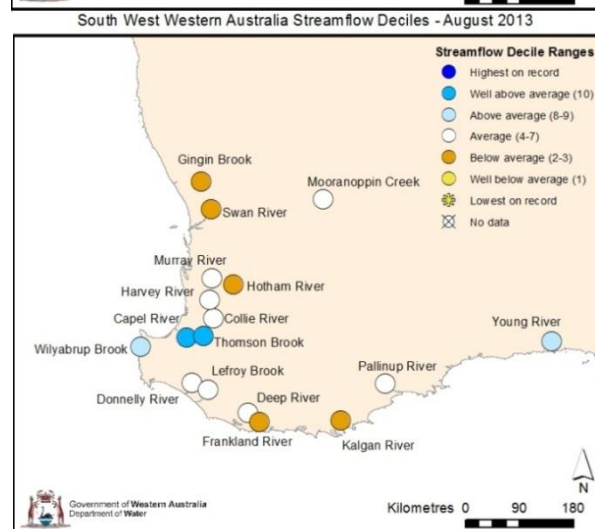
Data from 31 rainfall stations across South West WA are summarised to show the August rainfall condition across the region in comparison to historical rainfall since 1975. The period post 1975 is used because there has been an observed reduction in rainfall and runoff in the south-west from 1975 in comparison to long-term averages.

Figure 1 (top) shows that rainfall in August varied from highest on record (at Gingin Brook) to below average (at Katanning and Kalgan River sites). Thirteen out of 31 monitored gauges recorded above average rainfall including Perth Airport.

August rainfall across the state can be viewed at the Bureau of Meteorology's website; go to [www.bom.gov.au](http://www.bom.gov.au), follow the links to *Climate > Maps – recent conditions > Rainfall*, and select the *Rainfall Deciles* map, *1 month period* and *Western Australia area*.



The Department of Water operates numerous river monitoring sites throughout Western Australia. Information from telemetered sites is available for viewing on the Department of Water website; go to [www.water.wa.gov.au](http://www.water.wa.gov.au) and follow the links under *Tools & data > Monitoring and data > River level monitoring*. A small subset of these sites is used in this report.

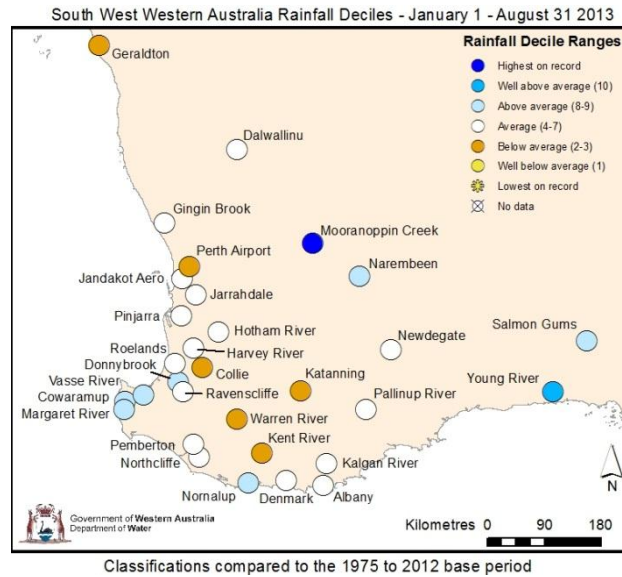


Seventeen telemetered streamflow gauges across South West WA were analysed for the month of August (Figure 1 - bottom). Eight sites recorded average, and five below average streamflow. Thomson Brook and Capel River had well above average monthly streamflow in August.

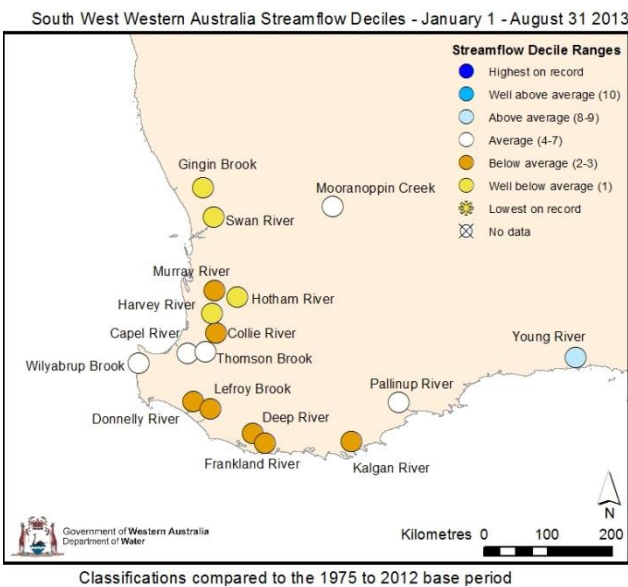
**Figure 1 - Monthly decile ranges for rainfall (top) and streamflow (bottom) in South West WA, with reference to the 1975–2012 base period**

## Year to date rainfall and streamflow

The year-to-date rainfall (January to August 2013) varied from below average to highest on record. A number of stations shifted to a higher rainfall category from July. Sixteen stations out of 31 recorded average rainfall totals. Mooranoppin Creek in the Wheatbelt remains the highest rainfall on record for the year to date period. Young River was the only site with well above average rainfall for the eight months of this year (Figure 2 - top).



Year-to-date rainfall across the state can be viewed at the Bureau of Meteorology's website; go to [www.bom.gov.au](http://www.bom.gov.au), follow the links to *Climate > Maps – recent conditions > Rainfall*, and select the *Rainfall Percentages* map, *Year to date* period and *Western Australia* area.



The year-to-date streamflow (Figure 2 – bottom) was average to well below average across the south-west. Only one gauge on Young River recorded above average streamflow total for the year to date. Two stations (Capel River and Thomson Brook) moved up into the average category. Gingin Brook moved from the lowest on record to well below average streamflow totals primarily due to the highest on record rainfall in August. Streamflow in Swan River has remained well below average since June this year.

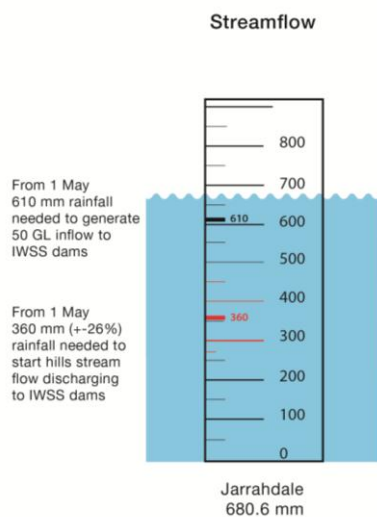
**Figure 2 - Year to date decile ranges (January to August 2013) for rainfall (top) and streamflow (bottom) for South West WA, with reference to the 1975–2012 base period**

## South West storages

The Water Corporation produces monthly storage level graphs for all its dams throughout South West WA. These graphs provide a comparison of the storage levels to the same time last year and the total capacity. To access the information go to [www.watercorporation.com.au](http://www.watercorporation.com.au), navigate to *Water supply & services > Rainfall, dam storage and water supply > Dam levels*.

The Department of Water has developed rainfall indicators that are used to track the status of water level in numerous dams throughout South West WA.

Subject to rainfall patterns, from 1 May around 610 mm (+/- 7%) of rainfall at Jarrahdale is needed to generate 50 GL of inflow into Integrated Water Supply Scheme (IWSS) dams. In previous years, if the season had a late onset of flows, the 50 GL target was not likely to be met by the end of October. Rainfall from 1 May to 31 August at Jarrahdale was 681 mm.



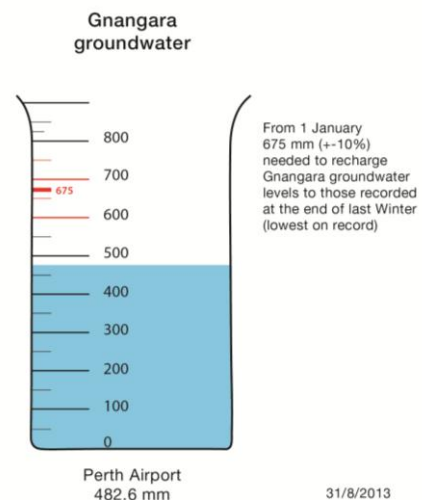
The total IWSS dam storage for the Metropolitan region has increased between July and August by 11% (from 157 GL in July to 174 GL by the end of August). The total inflow to our dams from May to the end of August was 19 GL, which is 62% less than the 50 GL target. The low inflow may be due to June rainfall being well below average resulting in the late onset of flows.

This year we are trialling the rainfall inflow indicator with industry partners for Harvey, Logue, Stirling, Wellington and Harris dams. Storage levels in these dams have increased from last month as a result of above average rainfall in August.

## Groundwater

The current average groundwater level can be viewed at the Department of Water's website: [www.water.wa.gov.au](http://www.water.wa.gov.au)

From 1 January, an estimated 675 mm ( $\pm 10\%$ ) of rainfall at Perth Airport is needed to recharge Gnangara groundwater levels to those recorded at the end of last winter. Rainfall from 1 January to 31 August at Perth Airport was 483 mm still below average.



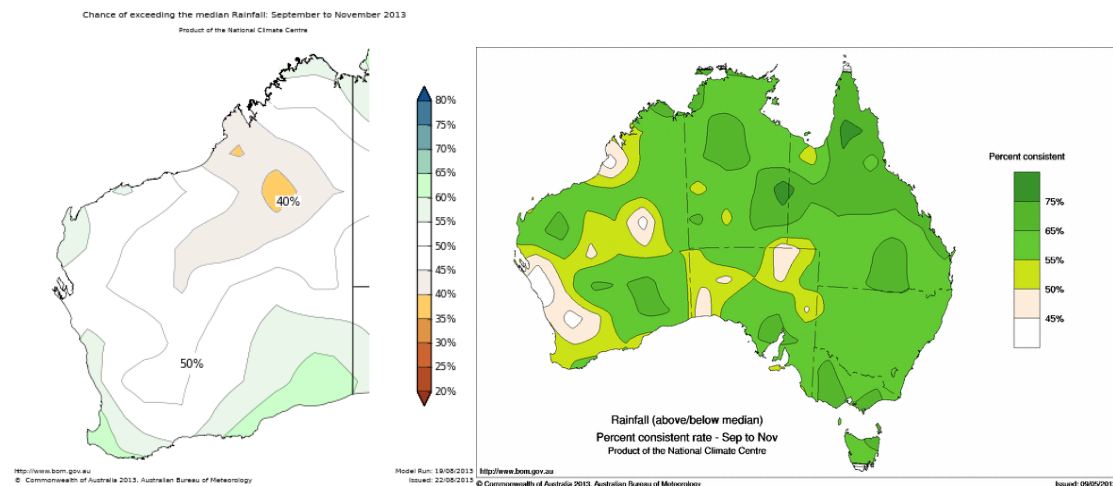


## Rainfall outlook

The Bureau of Meteorology produces a three-monthly outlook of the probability of exceeding the median rainfall. The probabilities are generated from the Predictive Ocean Atmosphere Model for Australia (POAMA), the Bureau of Meteorology's dynamical climate model.

**The outlook for total rainfall over the November quarter (September to November) for Western Australia is shown in** (Courtesy of Bureau of Meteorology, copyright Commonwealth of Australia reproduced by permission)

Figure 3. The probability of exceeding median rainfall for spring for parts of South West WA and South Coast is above 60%. The chance of exceeding the spring median rainfall is less than 40% for the Kimberley and Northern Interior. For the rest of the state there is a 50% chance of receiving higher than median rainfalls. The percent consistent figure shows that the majority of the state has a reasonable per cent consistent figure above 50%.



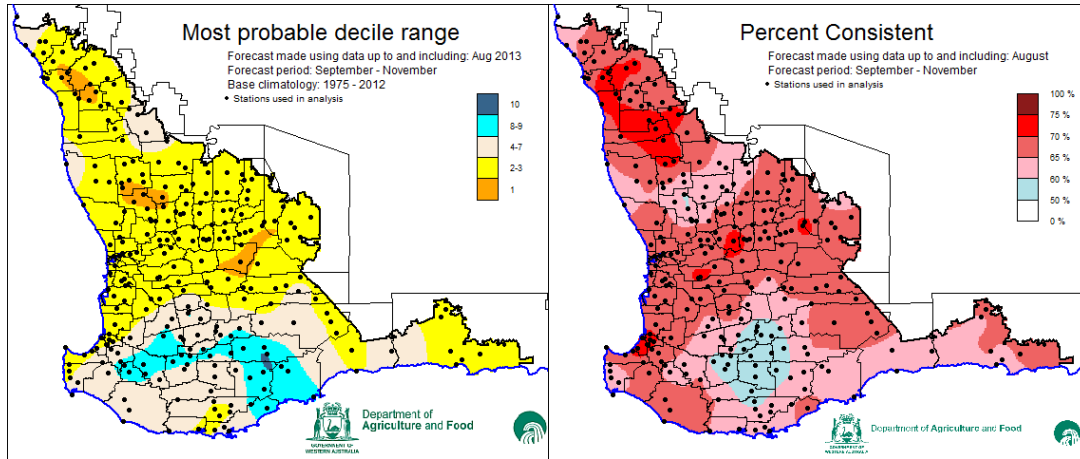
(Courtesy of Bureau of Meteorology, copyright Commonwealth of Australia reproduced by permission)

**Figure 3 - Probability of exceeding median rainfall (1981-2010) for September to November 2013 across Western Australia (left) and corresponding percent consistent map (right)**

The Department of Agriculture and Food WA also produce statistical seasonal forecasts (SSF) of the most probable rainfall decile range. The forecast for the November quarter for South West WA is shown in (Courtesy of Department of Agriculture and Food WA, copyright and reproduced by permission.)

Figure 4 (left). The most probable decile range is 4-7 (indicating average rainfall) for South West WA and southern parts of the Wheatbelt. There is a small area that predicts rainfall to be within the 8-9 decile range (above average) however this area has lower consistency in the forecast. The Geraldton areas and central Wheatbelt are predicted to be within the 2-3 decile range (below average) for the November quarter. The per cent consistent figure ((Courtesy of Department of Agriculture and Food WA, copyright and reproduced by permission.)

Figure 4 - right) is above 60% across the majority of the south-west of WA, indicating a reasonable level of consistency in the forecasts.

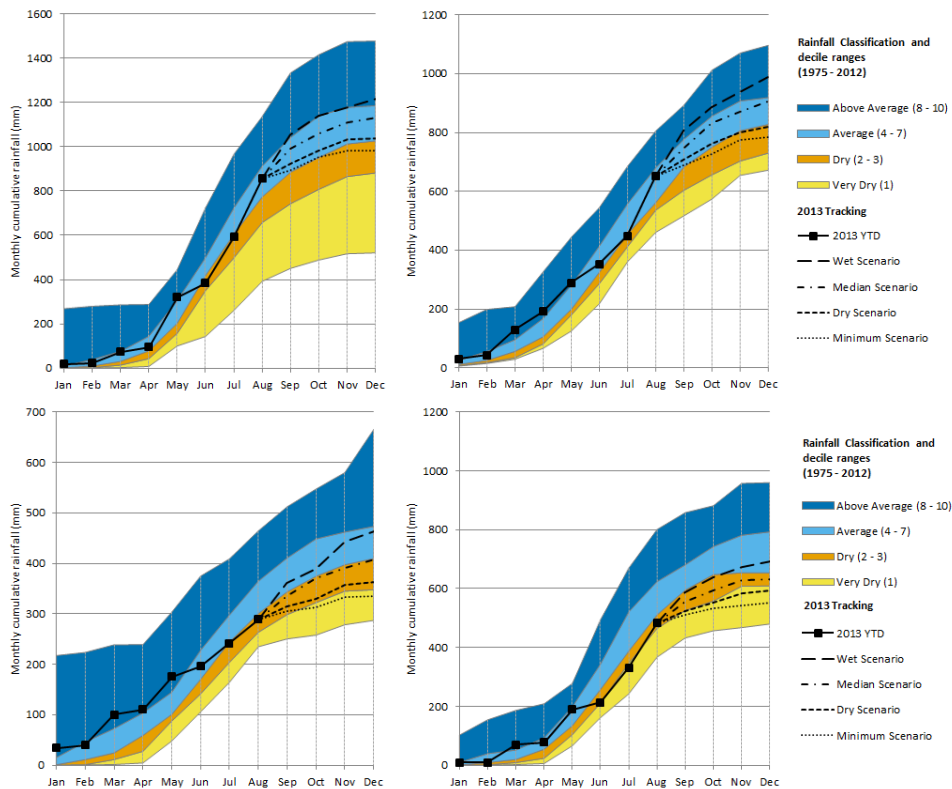


(Courtesy of Department of Agriculture and Food WA, copyright and reproduced by permission.)

**Figure 4 – Most probable decile range (1975-2012) for the next three months across South West Western Australia**

### Rainfall tracking

Seasonal tracking of rainfall is shown for Harvey, Albany, Katanning and Perth Airport (Figure 5). The year-to-date rainfall for 2013 is plotted against the historical rainfall ranges from 1975 to 2012. The DAFWA statistical seasonal forecast for the November quarter predicts below average rainfall for Harvey, Albany and Perth Airport (tracking in between median and dry scenarios). The forecast for Katanning is for average rainfall (tracking median scenario).



**Figure 5 – Rainfall year to date for Harvey (top left), Albany (top right), Katanning (bottom left) and Perth Airport (bottom right), with reference to the 1975–2012 base period**