

FACTS

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What's happening to the Murray River?

The Murray River is Australia's longest river, and together with its tributary, the Darling River, drains an area known as the Murray Darling Basin. The region has historically received only 6 per cent of Australia's annual rainfall but produced 40 per cent of Australia's food.

For years it was feared that the region would be lost to salt from rising water tables. Now it is feared that the rivers will run dry from a long-term decline in rainfall associated with climate change.

So far there has been no long-term decline in rainfall, but there has been a dramatic decline in the amount of water flowing into the Murray River.

The Murray Darling Basin



YOUR GUIDE TO THE NUMBERS THAT MATTER

Authors **Jennifer Marohasy and Nichole Hoskin** | Institute of Public Affairs, © 2008

There are many myths about the health of the Murray River.

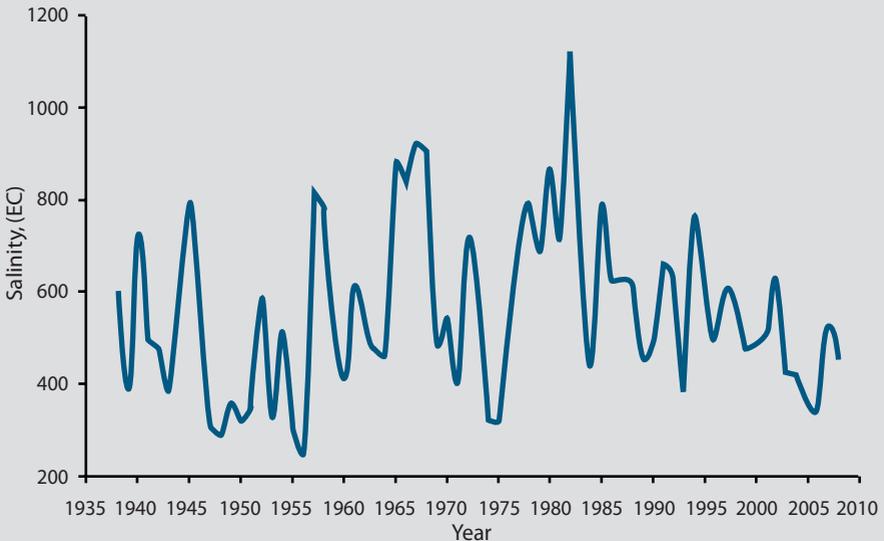
Salt levels *are not* rising

Salt levels in the Murray River are not rising. In fact, through the construction of salt interception schemes and changed land management practices, salinity levels have been falling since 1982, including at Morgan.

Morgan is just upstream of the pipeline off-takes for Adelaide's water supply. Its use as an indicator site emphasises the relative importance of river salinity impacts on all water users in the system.



Annual salinity at Morgan, 1938-2008



Source: Murray-Darling Basin Commission, April 2008.

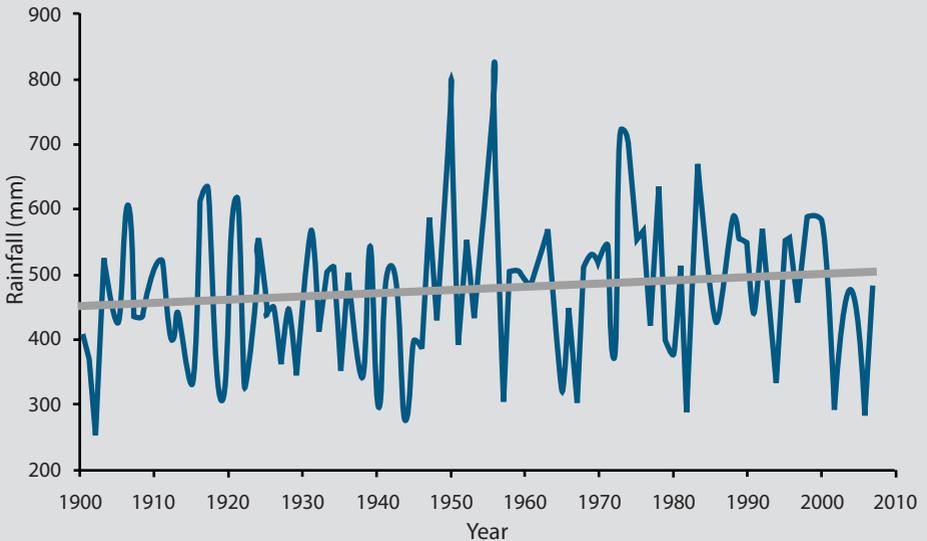
There has been *no reduction* in rainfall



In October 2006, an influential report on climate change by British economist Sir Nicholas Stern stated that the east coast of Australia—home to over 70 per cent of the population and the location for most of our major cities—had already suffered longer droughts and declining rainfall as a consequence of climate change.

But in fact, data from the Australian Bureau of Meteorology (for the period 1900 to 2007) shows that there has been no long term decline in rainfall in eastern Australia or the Murray Darling Basin. Sir Nicholas was wrong.

Murray Darling Basin Annual Rainfall, 1900-2007



Source: Australian Bureau of Meteorology. Trend line is linear regression.

River levels *are not* at historic lows

**Has the Murray River really
'never been lower'?**



Murray River at Riversdale, September 2006, photographed by Daryl McDonald.



Murray River at Riversdale, Easter 1915, photographed by Frank Hall.

In recent years it has been reported that the water levels in the Murray River are at historic lows. In fact, despite the drought, the river has been running strongly in the central Murray Valley. Local farmer, Daryl McDonald, remarked, in 2006, that this was:

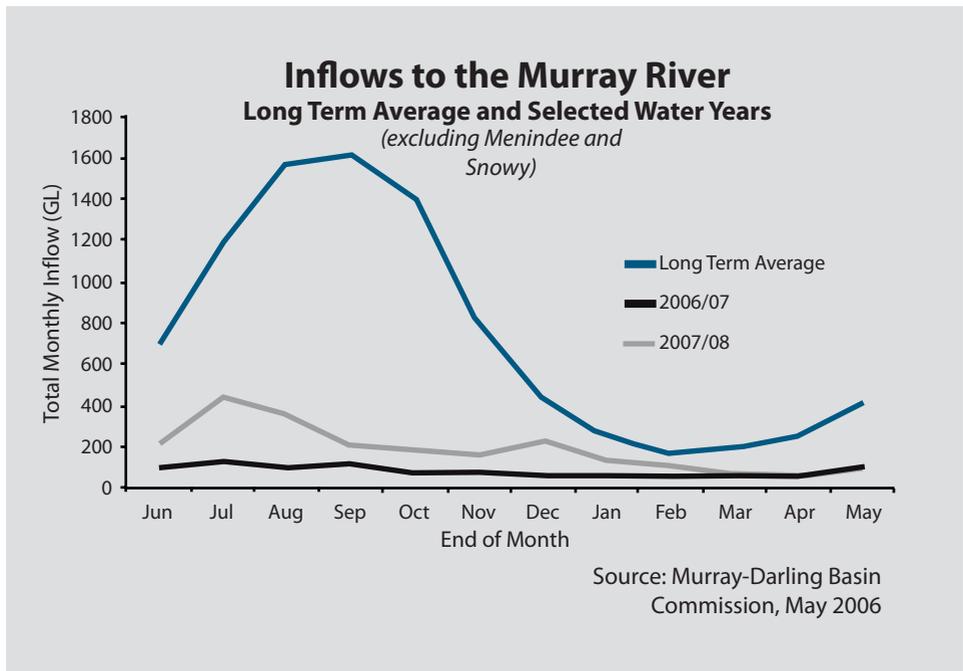
'Quite amazing—considering we have had the lowest inflows on record. It should be noted that South Australia still expects its guaranteed 1,850 gigalires per annum, while NSW irrigators have a zero allocation, and the Victorians are on 50 per cent of their average 160 per cent water right.'

Recalling the autumn of 1915, Russell McDonald has said that the river was perfectly dry, having stopped running in February or March of that year.

So why is there less water?

The amount of water that ends up in the Murray River has changed because:

- More farm dams have reduced run-off by between 660 and 2,400 gegalitres (GL) per year¹
- Groundwater pumping has reduced run-off by 327 gegalitres per year²
- Regrowth from the bushfires in early 2003, when over a million hectares of native forest was burnt, could reduce run-off by 430 gegalitres by 2020³
- New plantations could have further reduced inflows by 1,100-1,400 gegalitres per year⁴
- Farmers have increased the water holding capacity of their soil by adopting minimum tillage.



1. CSIRO report prepared for MDBC on Risks of Shared Water Resources in the Murray-Darling Basin, February 2006, p 30

2. *ibid*, p 22

3. *ibid*, p 33

4. *ibid*, p 14

How much water is actually flowing to South Australia?

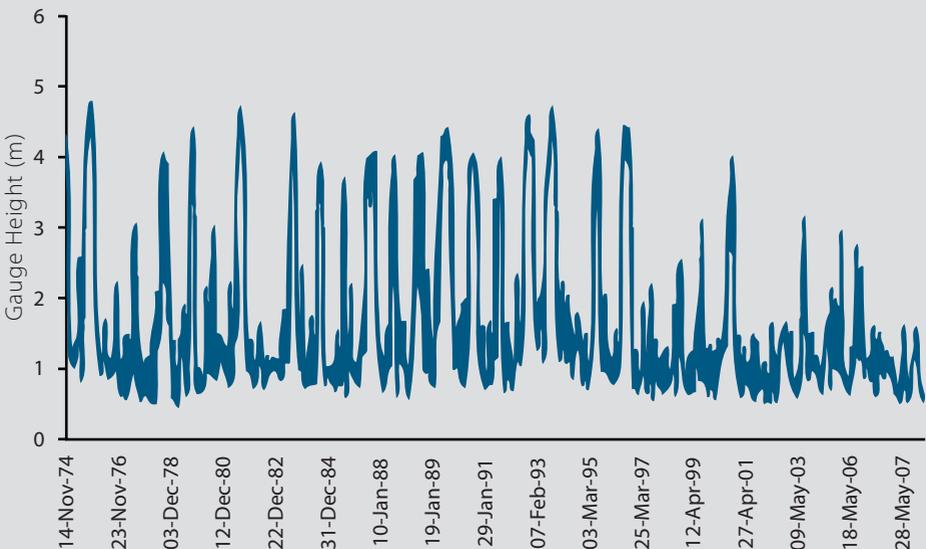
The amount of water in the Murray River at Swan Hill has been measured since 1974, and over this period, has fluctuated from a low of 0.5 metres to a peak of 4.6 metres.

The amount of water in the Murray River peaks in spring and troughs in autumn.

Even during the recent drought, which has seen a reduction in river water levels to an average of 1.17 metres (as measured by gauge height between January 2000 and May 2008), an average of 5.5 gigalitres (5.5 billion litres) of water passed Swan Hill each day, on its way to South Australia.

While this amount is less than has been common over the last 30 years, the water reduction is not as dramatic as is widely believed.

Swan Hill Gauge Heights (metres), 1974-2008



Source: Murray-Darling Basin Commission, May 2008

Do the lower lakes really need 'saving'?

European perceptions of the Murray River have changed with time. While many Australians who watch the nightly news have come to associate the narrow channel between the sandbars below the barrages at the bottom of the lakes as the Murray River's mouth, British Explorer, Charles Sturt, in 1830-1831, described the river's mouth as being above the lakes, where the township of Wellington now lies.

After 33 days in a whaleboat, he wrote:

'we had, at length, arrived at the termination of the Murray. Immediately below me was a beautiful lake, which appeared to be a fitting reservoir for the noble stream that had led us to it; and which was now ruffled by the breeze that swept over it.'



Captain Charles Sturt, 1795–1869

Captain Sturt initially described the waters of the lake as 'sweet', but by the morning of his second day on the lake, as the boat headed to the south-western corner of the vast expanse of water, he noted that the lake suddenly became salty and 'unpalatable', and that 'the transition from fresh to salt water was almost immediate.' Sturt's diary tells us three important things:

- Even before irrigation, **there was no navigable passage** between the lower lakes and the ocean
- The lower lakes **were not fresh**
- To Sturt, the lower lakes **could not** be considered part of the Murray River.

But something can be done

From the 1920s a series of barrages were built across the bottom of Lake Alexandrina preventing inundation from the Southern Ocean and making the water in the lakes permanently fresh.

With the recent prolonged drought, Lake Alexandrina and Albert are now drying out, exposing acid sulphate soils. Potential acid sulphate soils are common along much of the Australian coastline. The soils are harmless as long as they remain waterlogged. But, if the sulphide in the soils reacts with oxygen, it forms sulphuric acid. The Dutch have been managing acid sulphate soil problems associated with land reclaim for more than four centuries. A solution they favour is to open the barrages and let the area flood with seawater.

Opening the barrages would immediately take some pressure off the entire Murray-Darling system, because less water would need to be allocated to South Australia. But that doesn't mean the Murray River won't run dry if this drought continues.

If there is ongoing drought and the upstream dams eventually run dry, there will simply be no water for the river. Thankfully, the lower lakes can be saved by the Southern Ocean.

