Victorian Water and Climate Initiative

Remember the Millennium Drought? Well, so do our rivers…

During the Millennium Drought, researchers noticed something strange about how some rivers were responding to rainfall. You expect less flow in rivers when there is less rainfall, but in some rivers, there was less than expected. Some of our rivers are still behaving this way.

Nearly ten years since the drought ended researchers from the University of Melbourne have found that about one third of catchments still produce less flows than expected. This means that even though rainfall has improved compared with the Millennium Drought, the amount of rainfall making it into these rivers is less than it would have been before this prolonged drought.

So where is all this water going?

Well, we don't know yet, but researchers are working very hard to find out. There is a range of possible causes, including changes to evaporation, changes to water uptake by trees and vegetation, and how streams interact with soils and groundwater. Teasing out these different reasons for the change is a difficult process but will be an important step in better informing how our water resources are managed into the future.

What does this mean for water management?

The good news is that many of the wetter catchments around the Great Dividing Range did not change their behaviour significantly and in other areas the catchments have recovered. The news is not so good in parts of the west, which is where most of the significant declines have been observed (see map over page).

The Victorian Government is investing in a range of measures to ensure secure water supplies in response to both a changing climate and population growth. Water resource managers are continually monitoring the status of water supplies. Longer-term plans take into account the conditions observed during and after the drought, along with the impacts of climate change.

Where to from here?

Whether catchments will eventually recover remains to be seen. Understanding why some catchments are resilient to changing conditions and others are not, is essential in planning for long-term water security, and for the ongoing protection of our rivers and streams for their health and our recreation. The Victorian Government is investing in research to better understand these changes. This research will be used to inform how the water sector responds to this challenge.

Key messages

» About three quarters of the river catchments studied changed the way they responded to rainfall during the Millennium Drought, with less streamflow generated for a given amount of rain.

» Even though rainfall has generally improved since the Millennium Drought, a third of catchments studied now convert less rainfall into streamflow than they did before the drought.

» About one quarter of catchments studied did not significantly change their response to rainfall during the drought, with many of these catchments located around the Great Dividing Range.

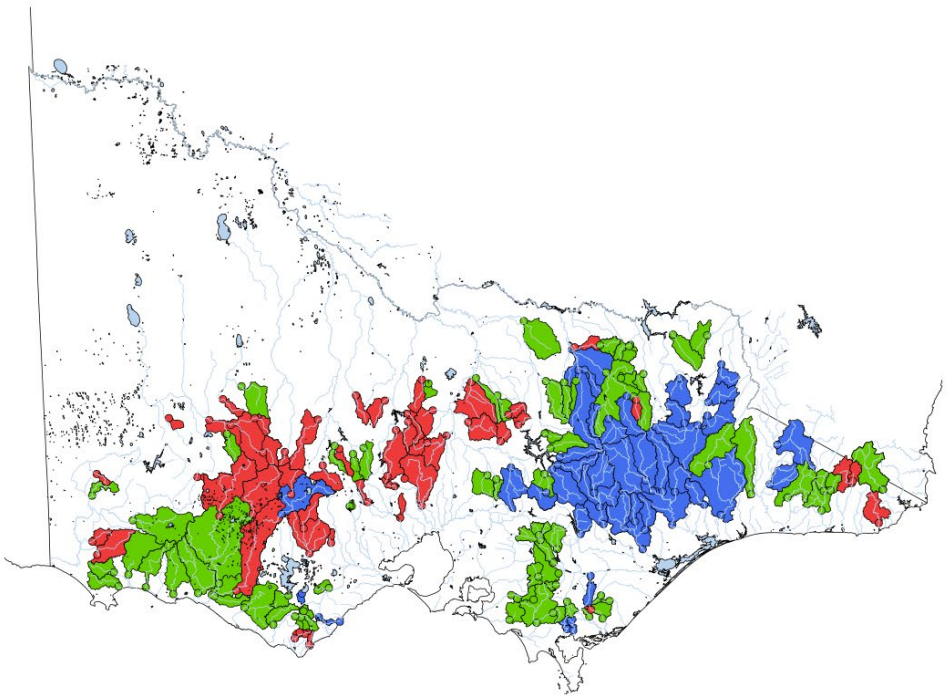
» In total, researchers analysed 162 catchments across Victoria to get an understanding of the extent of the phenomenon.

» Longer-term water management plans take into account the conditions observed during and after the drought, along with the impacts of climate change.

» The Victorian Government is continuing to invest in research to understand why this change in catchment response has occurred.

» The Government is also undertaking a range of other measures to ensure water supplies remain secure into the future through the Government's water plan, Water for Victoria.

How Victorian catchments responded during and after the Millennium Drought



Blue catchments had streamflows that were as expected during and after the drought.

Green catchments had less flows than previously expected during the drought, but have since recovered.

Red catchments had less flows than expected during the drought, and have continued to have less flow than previously expected.

The white areas are catchments that were unable to be included in the study as they did not fit the criteria required for scientific comparison. This includes many of Melbourne's catchments.

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