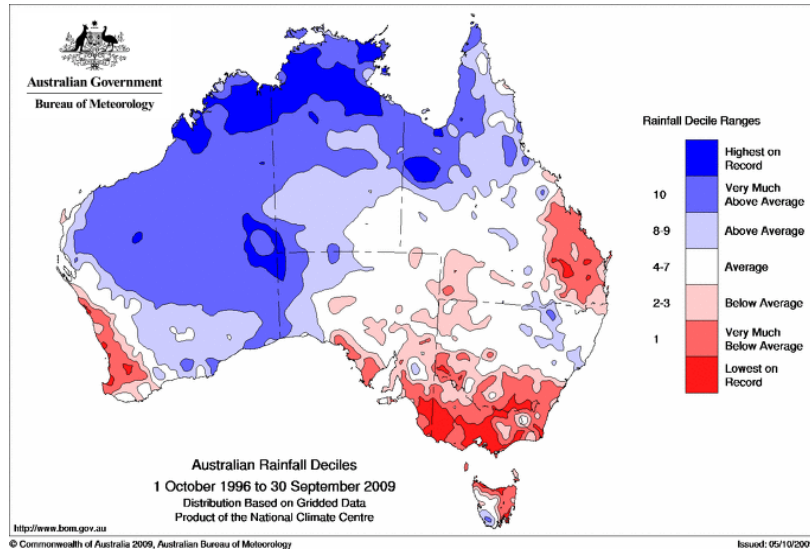


**P2.3 DOES THE POLEWARD RETREAT OF MID-LATITUDE SYNOPTIC SYSTEMS, REFLECTED BY A DECLINE IN RAINFALL AND AN INCREASE IN MSL PRESSURE AT MELBOURNE, SUGGEST AUSTRALIA'S GREAT ARTESIAN BASIN AS A POSSIBLE BACK-UP SOURCE OF WATER?**

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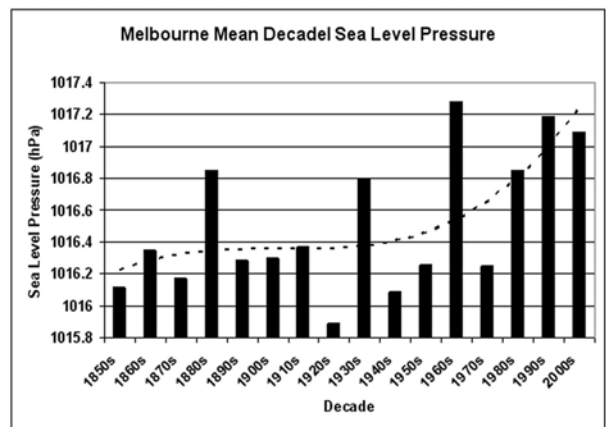
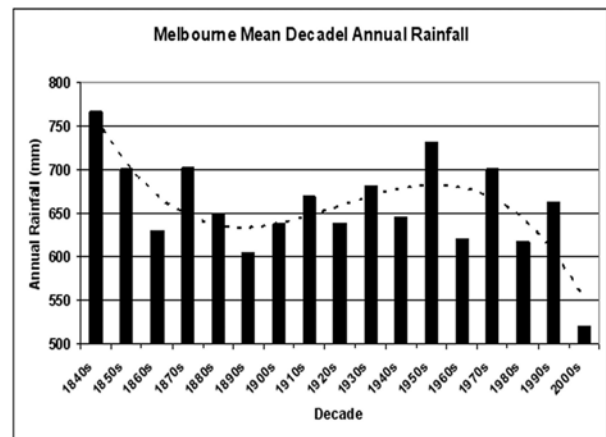


**1. INTRODUCTION**

The long-term decline in Melbourne's rainfall has accelerated over recent years. The current decade registers a mean annual rainfall (2000-2008 mean: 528 mm) well below that of previous decades (1841-1851 and 1856-1999 combined mean: 665 mm). At the same time, there has been an increase in Melbourne's MSL pressure (2000-2008 mean: 1017.1 hPa; 1858-1999 mean: 1016.5 hPa). These trends may be explained in terms of a poleward retreat of rain-bearing mid-latitude depressions.

**2. DISCUSSION**

Other mid-latitude regions of the world have also experienced declines in rainfall and consequent water shortages. For example, Brikowski, in a 2008 paper, reports that streamflow declines on the Great Plains of the US are causing many reservoirs to become profoundly inefficient and there are fears that that they will be driven into unsustainability as negative annual water budgets become more common. The CSIRO Northern Australia Sustainable Yields Project notes the perception that northern Australia has a surplus of water and the suggestion that some of this should be reallocated to alleviate water shortages in the southern (Australian) States.



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### 3. A QUESTION

Could Melbourne's water shortages be backed up by the construction of an underground river sourced by water from Australia's Great Artesian Basin?

This would be similar to that being developed in Libya since 1984, which involves constructing a network of underground pipelines transporting groundwater from aquifers in the Sahara Desert to the cities along the coastal belt.

The CSIRO Northern Australia Sustainable Yields Project observes that there are opportunities for groundwater development but that more data are required to determine extraction limits and (in this context) its "Key Finding 11" reads:

"The Great Artesian Basin aquifers may support further development, but safe extraction yields have not been determined."

