



Evidence of Climate Change in South-East Australian Water Data

Allen Amin and Ian Cordery

University of New South Wales, School of Civil and Environmental Engineering, Sydney, Australia (allenamin@hotmail.com)

In Australia's south-west, a warming climate has coincided with decreased precipitation and with runoff decreasing dramatically by up to 70% in the past 50 years. In the south-east, however, these changes are less conspicuous as temperatures have reportedly declined by 0.5°C during the 20th century but there is suggestion that temperatures have since risen. This study has observed the streamflow and rainfall changes in several river regions over New South Wales, Victoria, South Australia, and Tasmania.

The annual streamflow results do show significant reductions over the long-term, particularly with decreasing peak flow values. Rainfall data helps shed light into why this is occurring as changes in precipitation will result in a streamflow response 2.0–3.0 times the magnitude. Though long term trends in the annual precipitation data were not compelling, there were notable changes between the seasons. Mirroring the results in Western Australia, the summer seasons are now wetter, graduating towards the northern, sub-tropical regions where summer rainfall is dominant. Meanwhile, the autumn to winter period are drier in the southern, temperate regions dominated by cool-season rainfall. These seasonal shifts are observed and amplified in the streamflow values. However, there is difficulty in assessing whether the origin of the changes is climatic, or due to changing land use within the catchment.

The link between the results derived in this study and climate change is related to the observed ongoing expansion of the southern hemisphere Hadley Cell polewards. Expanding tropical influences lead to wetter summers, whilst the mid-latitude storm tracks that supply winter rainfall to the temperate zones are pushed further south. Though not as emphatic as the effects observed in the south-west, there is compelling evidence for climate change in the water resources of Australia's south-east.