



Extreme Droughts In Sydney And Melbourne Since The 1850s

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Sydney and Melbourne are the two highly populated and very well known Australian cities. Population is over 4 million for each. These cities are subject to extreme droughts which affect regional water resources and cause substantial agricultural and economic losses.

This study presents a drought analysis of Sydney and Melbourne for the period of 1850s to date by using Effective Drought Index (EDI) and Standardized Precipitation Index (SPI). EDI is a function of precipitation needed for return to normal conditions, the amount of precipitation necessary for recovery from the accumulated deficit since the beginning of a drought. SPI is the most popular and widely used drought index for the last decades.

According to the results of EDI analysis; 8 different extreme drought events identified in Sydney, and 5 events in Melbourne since 1850s. The characterization of these extreme drought events were investigated in terms of magnitude, duration, intensity and interarrival time between previous drought event. EDI results were compared with the results of SPI and the similarities and differences were then discussed in more detail.

The most severe drought event was identified for the period of July 1979 to February 1981 (lasted 19 months) for Sydney, while the most severe drought took longer in Melbourne for the period of March 2006 to February 2010 (47 months).

This study focuses on the benefits of the use of EDI and SPI methods in order to monitor droughts beside presenting the extreme drought case study of Sydney and Melbourne.