

Defining winter and summer in Sydney

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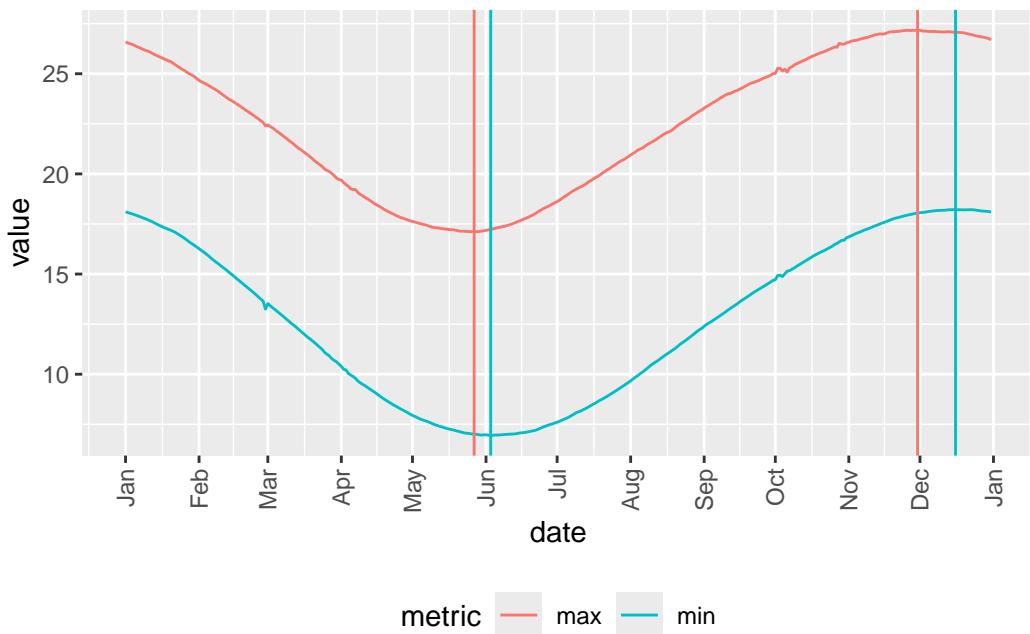


Figure 1: Average daily temperatures for 91 days following indicated date for period 2001–2023

In the United States, one often hears people speak of the “official” start of seasons. Ironically, there seems to be nothing that is official about these dates. However, there is consensus about the dates. The “official” start of summer is the summer solstice (for 2024: 20 June in Boston, 21 December in Sydney) and the “official” start of winter is (for 2024: 21 December in Boston, 21 June in Sydney).

In Australia, the usual convention is to divide seasons by months. On this basis, winter starts on 1 June and summer starts on 1 December.

Is there a sense in which one approach is more correct than the other? Focusing on summer and winter, one definition for these seasons would be that winter starts on the first day of the 91-day period that is the coldest such period for a year averaged over a number of years. Similarly, summer should start on the first day of the 91-day period that is the hottest such period for a year averaged over a number of years.

We answer this question focusing on Sydney, Australia (latitude of -33.9, longitude: 151).

Daily temperature data from [Open-Meteo](#) comprise a maximum and minimum temperature. So immediately we have two possible definitions of each season according to the temperature we use (e.g., summer could be the 91-day period that has the highest average minimum temperature or it could be the period that has the highest average maximum temperature. Here we consider both.

The start of winter based on the 91-day period with the lowest average maximum temperature is **27 May**. The start of winter based on the 91-day period with the lowest average minimum temperature is **03 June**. So whether we use maximums or minimums, we get close to the Australian convention for winter.

The start of summer based on the 91-day period with the highest average maximum temperature is **30 November**. The start of summer based on the 91-day period with the highest average minimum temperature is **16 December**. With summer, we get close to the US convention for summer using minimums, but close to the Australian convention using maximums.

Interestingly, it seems that using average maximums for summer and winter gets closest to the current approach in Australia. However, even using these we have the issue that spring begins on 26 August and autumn begins on 01 March. This implies a spring of 96 days and an autumn of 87 days.