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Catastrophic heat-waves in Southern Australia and extremes in the Solar/Lunar tides - are they linked?

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The cities of Melbourne and Adelaide in southern Australia are subject regular summer heat waves that push temperatures up into the low to mid 40's for anywhere from three to six days. The heat-wave conditions are often responsible hundreds of heat-related deaths and are almost always associated with catastrophic forest fires that cause extensive loss of life and property.

We present evidence to show that the intensity of these summer heat waves are significantly amplified by long-term periodic increases in the median maximum summer temperatures that provide the base upon which the extreme heat waves develop. We find that the average of median maximum daily temperatures for Melbourne (since 1857) or Adelaide (since 1887) show a distinct spectral pattern that is closly mirrored by the spectral pattern that is seen in the extremes of lunar/solar tides acting upon the Earth. Morlet Wavelet analysis is used to show that both the temperature data and the tidal data share the same spectral properties over four distinct epochs.

Between 1880 and 1910 and between 1980 and 2010: These are the years in which the average maximum daily temperatures for Melbourne and Adelaide peak, closely matching the years in which the solar/lunar tidal forces also peak. Both show a periodicity of 9.5 years that is set by the times where line-of-nodes and the line-of-apsides of the lunar orbit align with the Moon-Earth-Sun syzygy at the time of perihelion.

Between 1857 and 1880 and between 1910 and 1980: These are the years in where there is a mis-alignment between the line-of-nodes and the line-of-apsides at the time of perihelion. Over these two epochs, we find that the peaks in the average maximum daily temperatures for Melbourne and Adelaide show a much more chaotic temporal pattern, no longer exhibiting the distinctive 9.5 year periodicity.