

Below is the main finding of the work: McLean, J. D., C. R. de Freitas, and R. M. Carter (2009), 'Influence of the Southern Oscillation on tropospheric temperature', *Journal of Geophysical Research*, 114, D14104, doi:10.1029/2008JD011637.

The statistical analysis employed has been criticized by some, but the key result is embodied in Figure 7, which uses the original data. The caption to Figure 7 includes the correct descriptors, but the labels on the figure itself were ambiguous in the figure as published. The latter have been corrected in the figure below. The *Journal of Geophysical Research* will publish a corrigendum - it's currently (28/8/09) in "Papers in Press". The figure shows SOI and mean global temperature cohere in terms of short-term variation, tendency and trend, leaving little room for human-caused carbon dioxide to play a part.

The context of Figure 7 is as follows. The aim of the McLean et al (2009) paper was to look for a relationship between global circulation (SOI) and mean global temperature (MGT). First, a simple statistical analysis was used to find the 'best' lag time between a metric of global circulation (SOI) and MGT. Having done this, the original data (lag-adjusted) were plotted. There were no statistical analyses of these data. The results are shown in Figure 7 (below).

The climatic significance of the SOI is that, although the Southern Oscillation is a tropical Pacific atmosphere-ocean phenomenon, its influence on climate can be seen globally. During strongly positive SOI, the zonal circulation of the Walker Circulation is enhanced, with well-defined and vigorous rising and sinking branches. This results in stronger than normal easterly equatorial surface winds. During strongly negative SOI, there is an increase in meridional Hadley cell circulation and subtropical highs intensify. A more vigorous overturning of the Hadley Cell circulation leads to an increase in heat transfer from tropical to higher latitudes in both hemispheres.

The anomalies in the strength of the Hadley Cell Circulation are also strongly and inversely correlated with the anomalies in the strength in the Walker Circulation. As meridional circulation increases, there are teleconnections globally. It seems clear, therefore, that the SOI-signal is associated with climate variation, which in turn is reflected in MGT. This has been the subject of several studies, but the additional record in the satellite tropospheric temperature observations since this work provides the opportunity to investigate this further. This was the objective of the McLean et al (2009) paper.

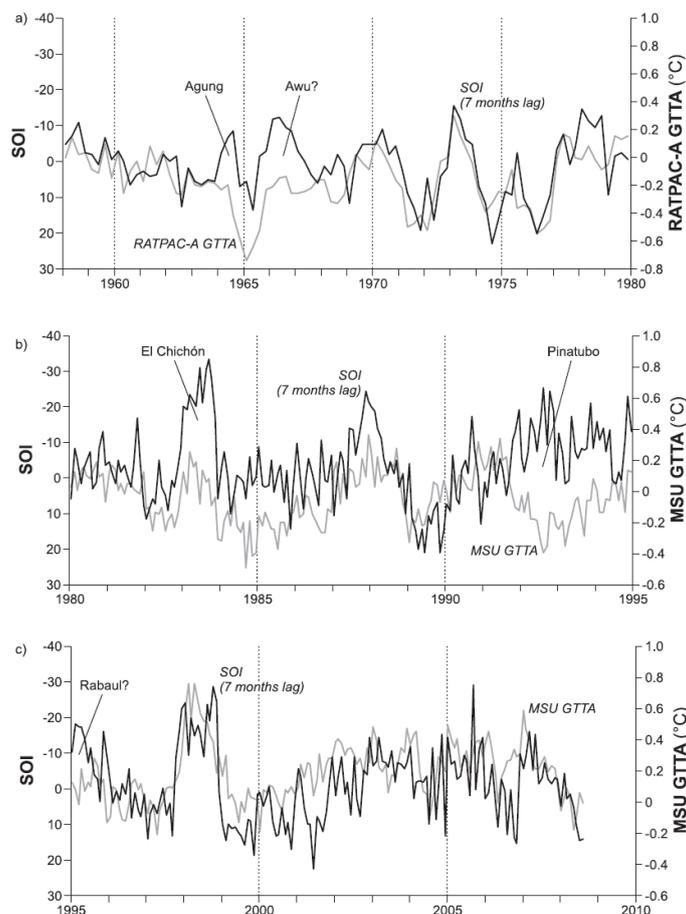


Figure 7. Seven-month shifted SOI with (a) seasonal RATPAC-A GTTA data 1958–1979 and monthly UAH MSU GTTA data (b) 1980–1995 and (c) 1995–2008. Dark line indicates SOI, and light line indicates lower tropospheric temperature. Periods of volcanic activity are indicated (see text). Question marks alongside certain volcanic eruptions refer to the uncertainty of their impact.