

Interpreting Correlation and Multi-Regression Analyses of Solar Cycle Impacts

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For some fields and locations in the atmosphere, for example ozone in the tropical mid to upper stratosphere, the response to the solar cycle can be easily detected from observations and understood from basic physics. At other locations and for other fields, a solar cycle response is sometimes evident but the physical or coupled processes that lead to it are not so straightforward. In these cases, it is important to examine the analysis method to determine the reliability of the deduced solar response. This presentation will discuss some of the factors that can lead to spurious solar responses, including short data record, dependence on season of the atmospheric response to all forcing processes, and over-generous attribution of statistical significance.