

## ***Interactive comment on “A solar signal in lower stratospheric water vapour?” by T. Schieferdecker et al.***

**T. Schieferdecker et al.**

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In this reply we put the more technical issues temporarily aside and concentrate on the more fundamental comments.

1. We know since David Hume ('A Treatise on Human Nature' (1739) and 'An Enquiry Concerning Human Understanding' (1748)) that no observation can ever reveal causation. This does not only apply to regression analysis but to all empirical research. The only exception might be controlled laboratory experiments, but these do not help a lot in climate research. The concept of causation is a theoretical concept, not an empirical one, but that does not mean that hypothesizing  
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about causal relations is per se inadequate. The tentative causal explanations of the solar cycle signal in our H<sub>2</sub>O data are clearly presented as hypotheses ("candidate explanations" p12366 l.1) and the risk associated with inferring causation from statistics is explicitly mentioned (footnote on page 12370). In summary, we can see nothing inadequate in our hypothesizing nor in our wording<sup>1</sup>. A hypothesis involving causation can only be described using words implying causation.

2. It is suspected that we have "tried to remove the negative trends intentionally". We consider this accusation which is based on pure speculation as unscientific.

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<sup>1</sup>except perhaps in the abstract, as pointed out by the anonymous reviewer.