

Interactive comment on “Simulation of solar-cycle response in tropical total column ozone using SORCE irradiance” by K.-F. Li et al.

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I think this manuscript present some interesting results. And although Authors do not discuss vertical structure of the solar response in the tropical stratosphere, some of these results are consistent with our conclusions in Dhomse et. al, ACP, 2011. Authors should try to include some of the following points in the introduction and discussion.

1. SORCE data - There are some uncertainties in SORCE irradiances. Authors should include some discussion about these issues. (Also see Kopp and Lean, GRL, 2011)
2. Lower stratospheric solar response is the main contributor to the total ozone response. In our paper, we have shown that this lower stratospheric solar response in excellent agreement with the observed (HALOE, SAGE, SBUV) solar response if we

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use fixed dynamical conditions for our simulations. However, transient simulations with ERA-40 and ERA-interim give much larger lower stratospheric response. And our conclusion is that enhanced chlorine activation during high volcanic aerosol loading and some of the inhomogeneities in reanalysis data sets (both ERA-40 and ERA-interim) give rise to this response. This is consistent with Exp E in present study, as WACCM should not have any inhomogeneity issues. However, author should clarify if they use volcanic aerosols or not.

3. Very little differences in TOZ between transient and fixed SST i.e. ENSO does not play important role in modifying lower stratospheric solar response - Again this is consistent with our conclusions. Similar to Hood et al.,2010.

4. Authors can also add some discussion that lower stratospheric solar response (which is very important for solar response in total ozone) is probably of photo-chemical origin and QBO-SST are not important to simulate this response

5. Authors should also clarify if solar variations are included in both chemistry and radiation scheme or just in chemistry scheme.

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