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Interactive comment

Interactive comment on "The Impact of Future Emission Policies on Tropospheric Ozone using a Parameterised Approach" *by* Steven Turnock et al.

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In general this is a well-written and very useful paper that addresses relevant policy issues.

As a possible user of the ozone precursor source-receptor relations, I would like to make some suggestions that would improve the readability of the paper and create the possibility for the scientific community to replicate the results.

Eq. 1: the same variable symbol (deltaO3) is used at left and right-hand side of the equation, while they have different meanings. The same observation can be made for Eq. 2 where e.g is written fij = 2fij - gij; suggest to use a different symbol at the left hand side.

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Discussion paper

Eq. 1 expresses deltaO3 as response to the sum of an emission change (for NOx, CO and NMVOCs), and an abundance change in CH4. For the user, using emission changes for all precursors would make more sense. Isn't it possible, from the box model mentioned in section 3.2, and using a feedback factor, to relate a change in abundance to a change in emissions? Why not normalise the source-receptor responses by the emission strength? It would be useful to emphasise the time scale of the CH4 responses and how to deal with this in such a parametrised approach.

It's not clear why paragraph 3.1 is named 'Scaling Factors'

Page 10, line 12: 'the same scaling factor', is not clear if 'same' refers to using the same as in HTAP1, or using the same (new) factor for CH4 and NOx. So, Eq. 3: is this now the scaling factor replacing the 0.95f+0.05fˆ2 from HTAP1 both for NOx and CH4?

Figures 7 and 8 (and similar in SI): does the ozone trend from CH4 include the transient effect of the 12y perturbation response time? How can Eq. 3 be applied (for CH4) to obtain this trend? The figures show the change in ozone relative to year 2010; does it include the time-lagged impact of CH4 emissions before that date? I would appreciate having the box model for CH4 better documented.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2017-1220, 2018.