

Interactive comment on “

Potential impact of iodinated replacement compounds CF_3I and CH_3I on atmospheric ozone: a three-dimensional modeling study” by Daeok Youn et al.

Anonymous Referee #1

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This paper presents two key results. (1) Calculation of the background atmospheric concentration of CH_3I using a 3-D model from known natural source distribution and comparison of the calculated concentrations with observations from PEM TB. (2) Calculations of the ODP values for CH_3I and CF_3I using both 3-D model and 2-D model with the somewhat surprising conclusion that the 2-D model gives very similar results.

Comments:

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1) The authors claimed that the good comparison between model simulated and observed CH_3I distributions is an indication that the 3-D model chemistry is reliable for evaluating ODP of iodine species. I do not think the statement is a justified. The good comparison, at best, provides some validation for convective transport of short-lived species and how much reaches the stratosphere. It does not speak to how iodine affects ozone.

2) In figure 6a, is the difference between 10-1.5 ppt and 10-2.5 ppt significant, or it is more appropriate to consider them as the same small number so that the change in Cl_y has uniform mixing ratio in the stratosphere. Note that the expected result is that the change in Cl_y mixing ratio should be uniform because there is no sources and sink in the upper stratosphere.

3) From figure 7, it is clear that the ODP values are mainly from ozone depletion in the troposphere. Does the similarity between the 3-D and 2-D results tells us any more that that the tropospheric ozone response is about the same?

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