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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Consistent simulation of bromine chemistry from the marine boundary layer to the stratosphere – Part 2: Bromocarbons" *by* A. Kerkweg et al.

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We thank the anonymous referee #1 for the comments, which helped very much to improve the manuscript.

Unfortunately, the reaction rate of bromoform with OH is not just a typo in the table, but a typo in the code. Due to the enormous computational costs of the full chemistry simulation (including the aerosol chemistry) we will not be able to repeat the entire simulation. But, we will perform an additional sensitivity study only comprising bromoform and the destruction rates by OH and photolysis and show what the impact of the different rates is. Hence, we will rewrite the discussion about $CHBr_3$ according to our findings. The discussion including the results of Warwick et al., will be affected by the

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results of this sensitivity simulation.

P9490, line 19 Exposed to air algae experience a form of oxidative stress stimulating them to produce halocarbons (e.g. Carpenter et al., 1999). Hence, halocarbon emissions are enhanced when seaweeds are exposed to air.
P9490, line 20-21 Most of this decrease in CH_3Br mixing ratios can be attributed to reduced industrial production due to the Montreal Protocol. But the observed decrease is larger as -with current knowledge- would have been deduced from the reported industrial reduction. This led Montzka et al. (2003) to the conclusion that the lifetime of CH_3Br is most likely larger as assumed so far.
P9492, line 12-13 Yes, you are right. We made the right statements in the abstract and in the conclusion. We will correct the numbers in the text.
P9493, line 10-14 As explained above, we will check these by performing a sensitivity simulation and change the discussion accordingly.
P9493, line 16-17 We will remove it. Especially, as this issue becomes unimportant in the light of the corrected reaction rate of $CHBr_3$ and OH.
P9494, line 25 Unfortunately, we cannot make a direct comparison, as we did not introduce the same diagnostic tracers for the halons as for the C_1-bromocarbons. Nevertheless, we calculate the difference between the total production of Br and the production by the six C_1-bromocarbons. We will add this derived halon contribution to Table 3 and make a more precise statement in the text.

Minor comments
We correct the two typos and add the y-axis label in Figure 22 (and consistently in Figure 7).

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