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Atmospheric Chemistry and Physics Discussions

Interactive comment on "An improved parameterisation of ozone dry deposition to the ocean and its impact in a global climate-chemistry model" *by* Ashok K. Luhar et al.

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This paper describes an improved parameterization for oceanic deposition of ozone. It is based on a 2-layer molecular/turbulence model where the reactive component on the Oceanside is restricted in depth. The concentration of the reactive component (iodide) is represented as a function of ocean temperature. The new parameterization is compared to a set of direct observations from shipboard measurements. It gives a much better fit to the data compared to the 1-layer approach. The parameterization is incorporated into a global chemistry model and the results with different parameterizations are compared. The basic approach is sound and the new parameterization fits the data very well.

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Discussion paper

In my view the paper is acceptable for publication in its present form. One essential point is the restriction of the reaction to within 2 microns of the surface. This seems artificial and, as discussed by the authors on page 13, may be a surrogate for the decrease of turbulence near the surface because of dissipation. Perhaps this issue could be solved with a better representation of turbulent mixing, near the interface, but for now their method is successful as a parameterization that seems to work. The authors may wish to reiterate this point in their conclusions.

Here are a few other comments: *Figure 5b is confusing in that it appears that an increase in a can lead to a decrease in Vdw. I finally figured out that reactivity is not an independent variable but correlated with temperature. *Figure 7. It would be amusing to see the 1-layer no turbulence solution on this graph.

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