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## Sensitivity studies of the recent new data on $O(^1D)$ quantum yields in $O_3$ Hartley band photolysis in the stratosphere

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**Abstract.** The production yields of excited oxygen  $O(^1D)$  atoms from the near ultraviolet  $O_3$  photolysis are essential quantities for atmospheric chemistry calculations because of its importance as major sources of hydroxyl (OH) radicals and nitric oxide (NO). Recently, new  $O(^1D)$  quantum yields from  $O_3$  photolysis between 230 and 305 nm in the Hartley band region were reported, which are almost independent of the photolysis wavelength (0.88-0.93) and smaller than NASA/JPL-2000 recommendations (0.95 between 240 and 300 nm). In order to assess consequences of the new data of  $O(^1D)$  quantum yields on the stratospheric chemistry, the changes in stratospheric chemical partitioning and  $O_3$  concentration are examined using a one-dimensional atmospheric model. Our steady state model simulations for 40° N in March indicate that the smaller  $O(^1D)$  quantum yields result in increases of stratospheric  $O_3$  (up to ~2% in the upper stratosphere), which are attributed to the changes in  $HO_x$ ,  $NO_x$ , and  $ClO_x$  abundance and their catalyzed  $O_3$  loss rates.

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