

## ***Interactive comment on “A simple formulation of the CH<sub>2</sub>O photolysis quantum yields” by E.-P. Röth and D. H. Ehhalt***

**Anonymous Referee #2**

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This paper presents a parameterization of the CH<sub>2</sub>O photolysis quantum yields (QYs) that could be used in atmospheric modeling. The authors are attempting to parameterize the QYs using a more physically based model than used in the NASA/JPL recommendation. They demonstrate that their parameterization does an equally good job of fitting the available experimental data, although it is not necessarily better than the empirical parameterization given in the NASA/JPL data evaluation. It should be noted that both the present and the NASA/JPL evaluations do not address the CH<sub>2</sub>O spectrum in high-resolution as presented in the most recent studies of Tatum Ernest et al. The present analysis also does not address the temperature dependence, although this refinement should be possible in the future. The discussion of the quantum yield temperature dependence and its impact on atmospheric photolysis rates, therefore,

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seems out of place.

The paper is well written, although the development of the fitting is a bit long (the final recommended parameterization is, however, provided in section 5).

Page 7264, Figure 4: It would be very instructive to include an additional panel that shows the wavelength dependence of the product of the terms shown in this figure.

Technical comments: Page 7240, line 1: delete “various”

Page 7240, equations: It would be useful to provide the photolysis threshold wavelengths (energies) along with the possible photolysis channels.

Page 7241: fluorescence is noted here to account for a small, <3.5%, yield in the photolysis of CH<sub>2</sub>O. The authors choose to neglect this term, although when trying to develop a comprehensive “physical” based model it probably should not be neglected. I suggest the authors reconsider their decision to neglect fluorescence even if only a minor term.

Page 7242, line 3: “a more handy tool. . .” The proposed parameterization is more physically based, but not necessarily easier to implement (see the number of parameters given in Table 5).

Page 7243, line 5: delete “without any weighing”

Page 7243, line 12: wavelengths

Page 7244, line 9: delete “Discussion”

Page 7246, line 1: “vanishes” poor wording

Page 7249: equations (11)-(13) do not exist in the paper

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