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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical Note: VUV photodesorption rates from water ice in the 120–150 K temperature range – significance for Noctilucent Clouds" *by* M. Yu. Kulikov et al.

Anonymous Referee #2

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The article "Technical note: VUV photodesorption rates from water ice in the 120-150 K temperature range-Significance for Noctilucent Clouds", by Kulikov, Feigin, Ignatov, Sennikov, Bluszcz and Schrems describes a laboratory investigation on the photolysis of thin water ice films with Lyman-ïĄą photons at mesospheric temperatures.

The experiments have been conducted carefully and the key experimental parameters are commented on extensively. There is a detailed description of the procedures of calibration of the photon flux of the UV lamp and of the estimate of the slow water ice film growth due to deposition from H2O molecules desorbed from the chamber

walls. The IR measurements show that no significant decrease in this ice growth rate is induced by photolysis of thin ice films and the authors suggest that the most likely fate of H atoms produced by photolysis is recombination within the ice. In summary the authors make a convincing case of their main conclusion which is the irrelevance of ice particle photolysis for mesospheric chemistry. This conclusion helps clarify the existing doubts on the subject pointed out by Murray and Plane in a recent article (ACP 2005).

Although performed under different conditions, there are some results in the literature on the UV photolysis of ice, with quantitative estimates of the destruction of water molecules (Westley et al. Nature 373 (1995) 405, Watanabe et al. Astrophys. J. 541 (2000) 772). The authors should comment briefly on these results and on their compatibility with their work. Also for the sake of completeness the authors should provide a reference for the value of the absorption cross section of Lyman-ïĄą photons in ice (page. 22662, line 18).

With these minor additions to the discussion and with slight improvements to the English, the article should be published.

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