



Intercomparison of N_2O_5 measurements by LOPAP and pulsed CRDS

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During the ACCENT & EUROCHAMP NO_3 and N_2O_5 intercomparison campaign in the SAPHIR simulation chamber a recently developed wet chemical LOPAP instrument for the measurement of HNO_3 [1] was used. Since the instrument also quantitatively samples N(V) from N_2O_5 [1] and since under many experimental conditions formation of N_2O_5 was favoured over that of HNO_3 , the LOPAP data were also used to quantify the concentration of N_2O_5 . N_2O_5 was obtained by subtraction of background HNO_3 for experiments for which $\text{NO}_3/\text{N}_2\text{O}_5$ were quickly removed by the addition of NO or by the photolysis with natural sunlight, not affecting HNO_3 on a short time scale. Excellent agreement was observed between the corrected LOPAP N_2O_5 data and pulsed CRDS data from the NOAA ARNOLD instrument. For a N_2O_5 concentration range 0-2200 ppt, a slope LOPAP/NOAA of 1.01 and an insignificant intercept of 13 ppt was obtained for all data. The intercomparison confirms the high specified accuracy of both instruments. In addition, the data confirms the quantitative interference of the LOPAP instrument against N_2O_5 [1], which is a general problem of all wet chemical HNO_3 instruments, but which has been not considered up to now.

[1] Kleffmann J., T. Gavriloaiei, Y. Elshorbany, M. Ródenas, and P. Wiesen: Detection of Nitric Acid (HNO_3) in the Atmosphere using the LOPAP Technique, *J. Atmos. Chem.*, 2007, **58(2)**, 131-150.