

Interactive comment on “Homogeneous nucleation rates of nitric acid dihydrate (NAD) at simulated stratospheric conditions – Part I: Experimental results” by O. Stetzer et al.

O. Stetzer et al.

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Comparing different data sets which were obtained with different experimental techniques is generally difficult. Especially when it comes to nucleation rates, a difference in "only" one to two orders of magnitude is perceived as a good agreement. This applies to the data in figure 6, too. Sources of errors are: Free floating aerosols vs. suspended droplets (surface effects), the correct measurement of temperature and compositions of the aerosols themselves. The latter is of special concern because it is not easy to measure both with high precision at the time of nucleation. Of all data in figure 6, our data set is the only one with direct measurements of compositions at the time nucleation takes place.

Regarding these uncertainties, a quick and easy comparison of nucleation rates from different data sets should be done with some care.

Please also keep in mind that our experiments were not carried out with monodisperse particles, which is - by your own argument - a needed assumption if you want to use eq. 5 in Tabazadeh et al. 2002 to convert volume into surface nucleation rates.

The comparison of different data sets as a function of saturation ratio is done thoroughly in the companion paper. This is not necessarily a better way to compare data because there is still a third variable: temperature. (cf. figure 1 in part II of this paper).

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 2091, 2006.

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