Atmos. Chem. Phys. Discuss., 15, C11924–C11925, 2016
www.atmos-chem-phys-discuss.net/15/C11924/2016/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "The global tropospheric ammonia distribution as seen in the 13 year AIRS measurement record" *by* J. X. Warner et al.

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Received and published: 22 January 2016

The paper definitely should be published.

However, one point should be clarified, namely the mode of calculation of the jacobian matrix. SARTA is set on the 100 atmospheric layers with different widths of the layers in hPa (or in molecules/cm2 of air partial columns). Calculation of the jacobian for a given gas requires taking these widths into account. Otherwise jacobians must depend on the mode for dividing the atmosphere on layers. If perturbations are in ppb (or ppt) and the same for all layers, then corresponding perturbations in mol/cm2 would be different for different atmospheric layers: the less width in hPa, the less number of molecules for a given layer. In the lowest limit of zero width in hPa, the perturbed number of

molecules will be zero for any perturbation in ppb. Please, add some words, describing this effect and how do you take it into account.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 35823, 2015.