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Atmospheric Measurement Techniques Discussions

Interactive comment on "Validation of SCIAMACHY HDO/H_2O measurements using the TCCON and NDACC-MUSICA networks" *by* R. A. Scheepmaker et al.

K.G. Gribanov (Referee)

kgribanov@remotesensing.ru

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Dear Editor, dear Authors,

The paper by Scheepmaker et al. presents a detailed study of creating consistent HDO/H_2O data set from different sources covering a substantial period of time. Such a data set can be extended in the future using new satellite and ground-based measurements and can be used for GCM validation studies. In my opinion, the paper is well written. Only small technical corrections are needed.

Despite the fact that I do not insist on even minor revision of the paper, I have a couple

of comments regarding the gaps that can be filled in a separate study.

(1) The section 2.1 (starting from line 14) contains that "Unfortunately, full averaging kernels (including the cross-correlations) are not accessible...". In my opinion, despite initial data set does not contain averaging kernels for every individual retrieval, authors of this paper could reproduce at least some or typical full averaging kernel. It is very interesting to have a look at the structure of full averaging kernel.

(2) The section 2.3 (starting from line 9) contains statement that "a posteriori δD contain new information...". I think that this idea should be described more carefully, because quantitative measure of information can be represented by the difference of entropy of probability distribution before measurement and afterwards. Looking at Fig. 2 with wider distribution after measurement, one can think that information is negative.

Technical corrections. Authors referred panels of figures in the paper main text as "left-handed" of "right-handed", but panels on all figures are grouped vertically and have to be referred as "top" or "bottom" as it correctly done in figure legends. Please make these references consistent with actual figures.

Best regards, Konstantin Gribanov.

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 11799, 2014.