**Atmospheric
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Interactive
Comment

Interactive comment on "Validation of remotely sensed profiles of atmospheric state variables: strategies and terminology" *by* T. von Clarmann

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This technical note establishes the general criteria to be adopted in the validation of remote measurements of atmospheric state variables. It defines in a rigorous way the terminology and the statistical tools necessary for the meaningful comparison bewteen the measurements that have to be validated and the reference measurements. I found very valuable the detailed descriptions of the different approaches with all the explicit formulas for the statistical estimators. Also particularly interesting is the approach suggested for the quantitative validation of profile measurements when full covariance matrices are unavailable, situation that often occurs. I think that this technical note is a very useful reference for all the people that work on validation issues because it defines a common language with which different scientist groups can communicate the results

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of their work in a rigorous way.

I have found some potential errors in the equations. These are listed below.

p. 4979. Eq. (14). In the sum there is not any average value, so maybe at the denominator there is "I" and not "I-1".

p. 4980. Eq. (17). The covariance matrix ("Ccoinc") that there is in the second row should have the indices "1,2" and not "2,1", because there is the sign of transposed (T) that already accounts for the exchange of the indices.

p. 4982. Eq. (20). It should be stressed that the horizontal averaging kernel has to be applied to an horizontal profile (xr in this equation).

p. 4984. Eq. (25). The last term "Sval,coinc" should be replaced by "Scoinc" (It is relative to the coincidence of the two measurements not only to the validation measurement).

p. 4984. Eq. (28). "Sbias" should be replaced with the inverse of "Sbias" ("(Sbias)ˆ(-1)").

p. 4985. Eq. (32). At the denominator "xref;n" should be raised to 4 and not to 2. (As it is in the manuscript also the dimensions are not consistent).

p. 4986. Eq. (34). "r" depends on the index "n", so I would replace "r" with "rn".

p. 4988. Eq. (41). K should be replaced with K*(K-1) and there is not the exponent 2 to "sbias;m,n". Eq. (41) is the same of Eq. (23).

p. 4989. Eq. (45). "(Sval;ensemble+Sref;total)" should be replaced with its inverse "(Sval;ensemble+Sref;total)ˆ(-1)".

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