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Interactive comment on "Validation of Aura MLS retrievals of temperature, water vapour and ozone in the upper troposphere and lower–middle stratosphere over the Tibetan Plateau during boreal summer" *by* X. L. Yan et al.

Anonymous Referee #2

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Review of paper "Validation of Aura MLS..." by Yan et al.

The study by Yan et al. deals with the validation of Aura MLS temperature, water vapor and ozone retrievals over the Tibetan plateau during the Asian Summer Monsoon with light balloons in-situ observations. The validation methodology is thorough with the choice of MLS data according to the MLS team recommendations, the application of interpolation and the smoothing to the in-situ profiles. The focus of the paper is appropriate to AMT and the original balloon observations bring some interesting information about the MLS data. The comparison between MLS v3 and v4 data ar of particular

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Discussion paper

interest for the users. Nevertheless, I have two major comments to be dealt with before this study could be published in AMT.

The first comment concerns the added-value of the paper. The authors cite a number of previous publications (p2 l27-32) where MLS data have been validated globally and justify their study by the fact that none has focused on the Tibetan plateau region where the presence of the Asian Monsoon Anticyclone in the UTLS makes it particular relative to other UTLS regions. Nevertheless, the results are not discussed enough in light of the previous validation studies cited in the introduction and one does not really see clearly wether MLS retrievals have particular difficulties in reproducing Temperature, water vapor and ozone over this region during the monsoon, that is the added value of this study. The discussion part of the paper should therefore more clearly show how the results over the Tibetan plateau agree or disagree with the previous validation studies.

The second comment is concerning the presentation of the results. The profile figures are good and informative. The detailed statistics are rather difficult to follow and heavy to read because presented in a very descriptive way. Three different parameters and four different sites makes a large amount of numbers which are repeatedly presented all along the paper. Furthermore, a lot of information is present in the profile figures and does not need to be described in details in the text. For the pressure-weighted mean (differnet from the profils) the statistics should be presented in a more synthetic way. Furthermore, the paper mostly dicusses biases. The variability from MLS and the radiosonde are compared and the correlation between both are discussed in the text but not thoroughfully enough. They should appear in a more concise and synthetic way with Taylor diagramms complemented by the correponding numbers presented in tables (biases, biases of the RMs, RMS of sondes and MLS, correlation coefficients). Taylor diagramms are indeed the best way to synthetically compare the variabilities of different datasets and their correlations. With such diagramms and tables, the reader could see the agreement between both datasets in terms of correlation, RMS of the

biases and variabilities much more easily.

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