The authors thank the reviewers for the constructive comments which have helped to improve the paper.

Answer to Reviewer #2.

1)Section 5 and more specifically p 3965, begs for an answer regarding the impact of the natural variability on the RV and I feel that this could be easily resolved with the data at hand using geographical selection criteria.

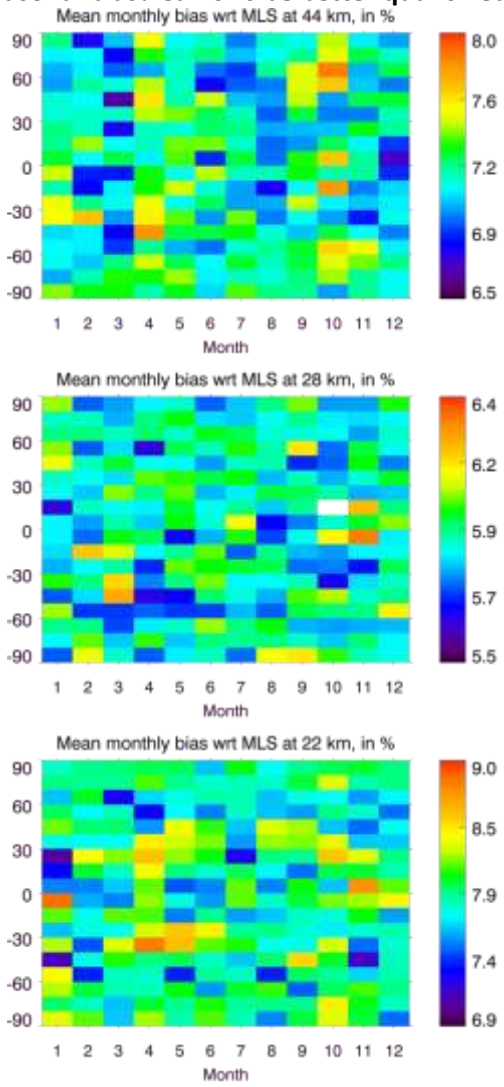
Indeed, this plot could be done by using the tropical collocations only, which would significantly reduce the impact of natural variability. However, this would imply that for POAM, HALOE and SAGE the residual variability curve could not be calculated, due to lack of coincidences in the tropics, and the statistics for GOMOS and ACE-FTS would be done on small samples. Our choice was rather to treat all instruments in a homogenized way, by carefully explaining the obtained results, than exclude five instruments from the residual variability analysis.

In order to make the implications of natural variability clearer, the text after Eq (6) has been rewritten.

2)p 3967, from line 8 onwards: This section could deal with some elaboration. Questions that arise are: What is the impact of latitude on this observed seasonal bias? Can this be better quantified?

We have investigated the annual and latitudinal variation of the bias wrt MLS (see plots on the right, done on collocations within 4 h – 250 km). No systematic latitudinal variations have been detected.

We mention this result in the revised paper but in order to save space we have decided not to include a related figure.



At the end of the paragraph (last sentence) you should also state that you observe no long term deviations of the bias (if verified!)

Drifts, i.e. long term deviations of the bias, as a function of latitude and altitude, have been analyzed by Eckert at al, "Drift-corrected trends and periodic variations in MIPAS IMK/IAA ozone Measurements », Atmos. Chem. Phys., 14, 2571–2589, doi:10.5194/acp-14-2571-2014, 2014. Short resume of their findings is added in the text of the paper. This discussion is also mentions now that new version 7 of Level 1 Spectra of MIPAS were released by ESA. Its production uses a new set of time dependent correction coefficients for the detector non-linearity (which changes in time due to ageing of the detectors for channels A, AB, B). The effect can be in the order of 3% in ozone change per decade (if AB info is used in the retrieval), i.e. trends will be determined more accurately with new data; dedicated baseline for ozone retrieval is under development.

3)p 3971, line 7: "less than about 3%". When using less or greater than it is best to use the real limit instead of a vague one

We changed the text to "Near the ozone vmr peak, the agreement with ACE-FTS is better than 1.5 %, the agreement with MLS is better than 2 %, and the agreement with OSIRIS is better than 2.5 %".

4)Fig 4: Heading and color scale notations are very small

Heading and colors are made larger.

5)Fig 7: Given that a key feature in this plot are the deviations from the 1:1 ration, it would be helpful to also plot a fit through the data. For ACE and SAGE one can discern some deviations but for MLS and OSIRIS (higher scatter), this becomes more difficult

The 1:1 slope curves on the panels were made thicker. No regression line has been fitted, because the actual distribution of data points is not expected to be a linear function.

6)Conclusions: A statement on the temporal variability of the bias should be added.

Drifts, i.e. long term deviations of the bias, as a function of latitude and altitude, have been analyzed by Eckert at al, Drift-corrected trends and periodic variations in MIPAS IMK/IAA ozone measurements, Atmos. Chem. Phys., 14, 2571–2589, doi:10.5194/acp-14-2571-2014, 2014. Short resume of their findings is added in the text of the paper.