General Comments:

This paper introduces ozone profile retrievals from scattered radiance spectra in the ultraviolet and visible measured by OMPS Limb instrument using a regularized inversion technique. A three kinds of reference data sets (MLS, NASA OMPS-LP O3P, Ozonesonde) are used to assess their retrieval product. The verification results of this product are so interesting and important because this product will be merged with the SCIAMACHY ozone profiles, based on the same algorithm, to create a long-term data set. However, this reviewer would like to comment that the authors should consider deepening strongly the discussion about the OMPS limb Ozone Profile retrievals to convince potential data users of the data quality. Especially, the applied implementations in the retrieval process are mostly adopted from the SCIAMARCHY v3.0 ozone retrieval with small modification, this paper should provide reliable results for the verification of the data product to be published. If not, they well show what big efforts they made to optimize/improve the OMPS limb ozone profile retrievals, different from the original algorithm.

Detailed Comments:

1. Page 3, 21-23: Limb observation cannot see below lower stratosphere due to limited field of view and much strong interference with clouds.

2. Figure 7 (right panel): Why the retrieval errors are maximum at minimum solar zenith angles below 25 km and above 45 km in the retrieved altitude range? This retrieval characterization could be related to the maximum errors in lower stratosphere and upper atmosphere over the tropics compared to middle latitudes, shown in all comparison results.

3. This author should demonstrate or intensively discuss that this product have the accuracy/precision at least comparable to NASA OMPS-LP O3P product. This point is most interesting part for data users to determine which dataset they should use. Especially, the comparisons between IUP-OMPS and NASA-OMPS shows a significant bias of 10 % for most altitude, up to 20 % at the bottom level. I think that this difference is very huge considering the products derived from same satellite measurements and a very good vertical resolution of this instrument. This authors provide a detailed description about NASA-OMPS product, but did not discuss why two OMPS limb products have a big difference, especially in the lower stratospheric region over the tropics. So this paper should apply the comparisons with reference dataset to both IUP and NASA OMPS products under the exactly same condition. The NASA v2.5 limb data product is available for the whole period. This comparison could give an insight into the strength/weakness of the retrieval algorithm for a better understanding on the retrievals.

4. Fig 9: The author just introduce the Fig 9, as following, " Fig.9 shows the averaged profiles for the tropics and relative differences in the three latitude bands ", but there is nothing related discussion. Please deepen the discussion about the presented figure, which is corresponding to most figures. Generally, this paper tends to provide a huge description about dada and methodology used in the comparison and very simple/light discussion about the comparison results.

5. Fig 10: The author described that the positive errors above 35 km in NH high latitude during the northern polar summer season are caused due to the presence of the PMC and its sub optimal screening process. If so, why this PMC-induced positive errors are not shown in the SH high latitude during the SH polar summer season (December and January). Based on Bak et al. (2016), OMI UV ozone profiles show systematic PMC-induced errors during both polar summer season and the PMC detection flags systematically works for both Polar areas even though a relatively weak sensitivity of OMI nadir UV measurements compared to limb UV measurements. This IUP OMPS algorithm should be improved in screening the PMC affected pixels because this PMC-induced biases could impact on the long-term data analysis.

6. Comparison with ozonesonde: this paper insist that "the lack of stations presents a meaningful comparison over this short time span or validation is less significant because only two ozonesonde stations are available within the considered time span". If so, this paper should not use the ozonesonde dataset for validating the OMPS dataset or increase the validation period because the OMPS radiance dataset are available for the whole period.

7. Please simply the section 2, more maybe within 1 page, focusing on parts required to introduce this algorithm and to discuss the retrieval results. This part contain 5-6 pages among 23 pages. But, this part is rarely referred in other sections.

8. 12 page: "As the shift and squeeze correction algorithm works with the differential absorption structures, it cannot be applied in the UV range". It is hard to understand because the Huggins ozone absorption bands have notable differential absorption structure.

9. 15p page, 24 line: "The aerosol retrieval is particularly important at latitudes where the scattering angle is high", why ? Please more description using the presented figure 5.

10. In retrieval characterization, this paper just deals with the retrieval errors related to measurement random-noise errors, but discuss the effect of smoothing errors on the comparisons with high-resolution reference dataset. It is not consistent, so it is good to include the retrieval errors related to smoothing errors in section 4.1

Minor comments

A few editing correction is suggested and this paper should be more carefully edited.

P1 14L: below top levels : levels => level

P2, 9L : it determines the tropopause height : it is partly true, but the contribution of ozone on tropopause determination is not major.

P2, 14: the discovery of the springtime ozone hole in Antarctica research grew in this field: this sentence is not clearly written.

P13, 13 : each iteration => i^{th} iteration

P14, 6: The CI is defined as the ratio of

P 14, 8: delete "an altitude dependent quantity and "

P15, 3-8: revise this paragraph using “The presence of PMCs can affect limb radiance down to 40 km, causing an interference with ozone retrievals. Therefore, we screen out the PMC contaminated pixels in this study using the PMC detection flag in high latitudes below 50 N and below 50 S where the PMC occurrence is most frequent. PMCS are detected using the radiance profile around 353 nm if the radiance between 40 km and 80 km increases in two consecutive layers at least because radiances decrease monotonically with height in this altitude range under clear sky condition.”

P15: 11-13: revise this sentence using “To be optimized for OMPS aerosol retrieval, the wavelength is changed from 750 nm for SCIAMACHY to 868.8 nm for OMPS because the influence of the O2 absorption at 750 nm becomes significant due to the OMPS’s coarser spectral resolution.

P16, 8 : with a peak around 35 km ➔ with a worst resolution around 25 km.

Figure: the bottom level of y-axis is marked in all figures.