

Interactive comment on “A new MesosphEO dataset of temperature profiles from 35 to 85 km using Rayleigh scattering at limb from GOMOS/ENVISAT daytime observations” by Alain Hauchecorne et al.

Anonymous Referee #2

Received and published: 9 November 2018

The study presents an interesting approach to retrieve temperature profiles in the middle atmosphere using the daytime Rayleigh scattering at limb from satellite observations (GOMOS/ENVISAT). Ten years of measurements have been used to obtain an impressive temperature dataset of more than 309000 profiles. As the authors pointed out, this dataset can be very useful for future climatology and atmospheric dynamics studies in the mesosphere.

A validation of these daytime temperature profiles has been done by means of a comparison with the nighttime Rayleigh lidar measurements. Some discrepancies were

C1

found between both techniques and as the authors mentioned, they could be partially explained by the contribution of thermal diurnal tides. In this point I think it would have been interesting to compare also with other techniques (as for example microwave MLS measurements), in which the time difference between their measurements were lower than between lidar and GOMOS. It would have provided a better estimation of the accuracy of the GOMOS profiles. But I consider that it is something that can be addressed in future studies.

In addition, a temperature climatology has been built as function of latitude and month and compare with model. A more detailed analysis has been carried out for the temperature measurements at the equator, giving a good idea of the great potential of this database, which could lead to deeper analysis at a regional or global scale in future studies.

The paper is very interesting, well written and describe the potential of Rayleigh scattering at limb observations to gain temperature information in the middle atmosphere. I consider that this study is appropriated for Atmospheric Measurement Techniques and it should be ready for publication after correcting some typos and minor comments:

Minor comment:

- Pag 5, line 19: Indicate how many profiles are used for this statistics (validation using lidar observations).

Typos:

- page 4, line 2: Tukiainen et al -> add year of publication
- page 4, line 7: replace “.. is negligible” by “.. are negligible”
- page 4, line 26, ... noise) -> delete it
- page 4, line 29: in et al. (2018): the author is missing in the cite
- page 6, line 6: “... for the 45°N latitude for August and middle panels)”. Something

C2

is wrong in this sentence.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-241, 2018.