

***Interactive comment on “Intercomparison of stratospheric ozone and temperature profiles during the October 2005 Hohenpeissenberg Ozone Profiling Experiment (HOPE)” by W. Steinbrecht et al.***

**Anonymous Referee #1**

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This study provides analyses of the observed differences of ozone and temperature measurements reported during a lidar intercomparison campaign. This approach appears, as the previous ones performed on other sites, to be very useful to detect spurious problems. This study is quite important while the DWD lidar has provided one of the longest ozone and temperature series of the middle atmosphere which are thus very important series publicly available through the international NDACC database that can be used to monitor the evolution of the stratosphere and notably few of the series able to report about the ozone recovery and temperature cooling and its evolution. This

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lidar had been never intercompared with the NASA system and thus this campaign was expected and required to describe further the NDACC lidar quality.

- While such intercomparison does not documented the continuities of the data series, I recommend to remove in the abstract the sentence from “ Long-term Record ” to “ over the years ”.

- The comparisons have been careful handled and were then able to detect the small altitude drift in DWD lidar. A simulation performed by Leblanc and coworkers (J. Geophys. Res., 103, 6.177-6.187, 1998) shows how such problem affect temperature comparison and should be cited here.

- It is not clear in the manuscript, if this intercomparison was performed following the recommended NDACC protocol of blind intercomparison, guaranteed by an independent referee. It seems to be done that way when we read the manuscript. Even if it is not the case it should be mentioned while the publication of this study is still very valuable.

- In section 3, in the domain 25-30 km lidar temperature are reported to be too cool. Authors should also consider the potential role of aerosols. Small sporadic layers may appear in this domain even for period outside large volcanic aerosols loading that are difficult to detect and could participate to induce such bias.

- In section 4, where uncertainties were estimated and evaluated, it is important to consider that the photo-counting system can also biased these estimates. It depends strongly of the threshold of the pulse selection before the counting. This effect can be checked on the lidar return when no geophysical information is present in the background part of the signals. Few lines about how the threshold is fixed on the both systems can be added in section 2.

- Finally, there is one discrepancy on temperature above 70 km that is not mush discuss in this mancript. It was also reported in a previous intercomparison (Singh et al., J.

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Geophys. Res., 101, 9.983-10.016, 1996) involving the mobile NASA system and can be due either to the initialization process or background extraction. This should be mentioned and is probably an interesting issue to be further study in the future, to be discuss and considered within the lidar working group of NDACC.

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