Review of

“The use of SMILES data to study ozone loss in the Arctic winter 2009/2010 and comparison with Odin/SMR data using assimilation techniques”,

by
Sagi et al.

General Comments

The paper by Sagi et al. is a study on SMILES ozone measurements being used for the detection of Arctic polar vortex ozone losses in 2010. The losses are retrieved using ECMWF wind data and an isentropic transport model. Results are then compared to SMR data.
While the use of SMILES data is novel, the method has been used in similar ways before. An asset of the paper is the vertical extent of the results (425K - 950K). Also the method allows the vortex to be examined at the beginning of the year, which is not easily possible for instruments using wavelengths in the visible range. But the results are only compared to SMR data, while now a few other papers exist dealing with this period. Otherwise the criteria to accept the paper for publishing are in general fulfilled. Thus I recommend the article to be published with minor revisions, after the following comments are addressed.

Specific comments

- As the instrument is only operated in 2009/2010, please indicate the fact in the abstract.
- It is a bit confusing in the figures not to use one one x-axis. It might help to indicate the day of the year in the global maps and in the text as well.

P7890:
3: What does high sensitivity mean here and later on in the paper?
13: How good do SMILES and SMR fields agree?
P7891:
24: the instrument only detects latitude on the south side?
7892:
3: How well does EQL70 represent the vortex edge?
7893:
3: What is the step width of the measurements?
7894:
11: described by (Frisk et al.,2003), -> Frisk et al. (2013) / also line 24
7896:
2: adiabatic vortex descent -> diabatic…
7898:
3: 550K is not in the figures.

7899:
9: 65S?
7900:
Description of Fig.8: Where does the loss (day 12-29, 650K) in SMILES come from? It is not seen in SMR data. And the difference in maximum loss height (day 75-90) between both instruments? How do these results compare to findings from other instruments.

Figures:

Fig.2a: Globe is too small, maybe also reduce the latitude range.
Fig 3. and 6.: Extent the range of date until day 90, similar to the other figures. Increase the size of the figures and the legend.
Fig 4./5.: Why not spend some colours to the figures to make them easier readable?
Fig. 8: Font size of axes and legend is too small.