

## ***Interactive comment on “An updated version of a gap-free monthly mean zonal mean ozone database” by Birgit Hassler et al.***

### **Anonymous Referee #1**

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This paper describes a new version of the Bodeker Scientific ozone data record. The new version has been extended to 2016 and uses improved, or new methods to: account for bias and drift between data sources; choose the optimum number of Fourier and Legendre coefficients; trace measurement uncertainties through to the final database products.

The new database has been compared with SWOOSH and with the old Bodeker Scientific database and it compares well with SWOOSH and shows improvements over the previous data record. This paper is quite well written and can be published with only minor revisions.

Comments/questions:

C1

Why weren't any of the European or Canadian satellite based ozone data records included within the database?

Page 6 – line 10: The choice to linear interpolate the uncertainties should be justified. Although is intuitively correct it can be argued that it is not statistically correct.

Page 9 – line 26: The definition of the term O3\_raw in eq (1) is not obvious.

Page 10 – line 21: The definition of sigma\_raw is also not obvious.

Page 15 – line 9: In eq (9) I assume that n is the level number. Can you better explain how this step is used to merge information from or transfer information between three altitude/pressure levels?

Figures 6 and 7 are not overly informative. The last four panels of these are visually identical on my printed copy. Perhaps a presentation of the differences between the Tiers might be more informative.

Typos

Page 4 – line 30: “where” should be “were”. Page 15 – line 13: The text says 20 km while the figure caption says 20 hPa Page 17-line 19: the text should say “Tier 1.x”. Page 22 – line 16: “of” should be removed.

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