

Interactive comment on “The Stratospheric Water and Ozone Satellite Homogenized (SWOOSH) database: A long-term database for climate studies” by Sean M. Davis et al.

Anonymous Referee #2

Received and published: 19 June 2016

GENERAL COMMENTS

This is a well-written paper that describes in detail the SWOOSH database. It documents all source data sets for SWOOSH as well as how the raw data from the individual satellite-based instruments are combined into a variety of zonal mean monthly mean products. The paper provides the appropriate documentation for the SWOOSH database that is likely to be used by a wide range of researchers in stratospheric dynamics, chemistry, and radiative transfer. I think that it needs to be made clearer in the abstract whether SWOOSH is (a) a collation of satellite-based measurements from multiple instruments in one big database, or (b) a merged data product (comprising zonal mean monthly mean values), or (c) both. I have made a few specific comments

C1

below which the authors should address before the paper is accepted for publication. However these are generally minor comments and it should not be a significant amount of work for the authors to bring this paper to a state where it can be published in ESSD.

SPECIFIC COMMENTS

Page 2, line 9: Regarding "homogeneous and accurate". Do you mean homogeneous in space and time or just in time? And by accurate do you mean unbiased or of low random uncertainty?

Page 2, line 20: Are changes in surface UV radiation really considered a "climate impact"?

Page 3, line 23: I would suggest replacing "diurnal variability" with "the diurnal cycle in ozone".

Page 5, line 25: The whole profile is excluded, not just the values between 30 and 50 km?

Page 6, line 15: Do comparisons of the ozone product retrieved from the 183 GHz channel and the product retrieved from the 205 GHz channel provide useful information on the uncertainties on 205 GHz ozone data that you are using?

Page 8, line 5: You're talking here about instruments not variables so better to replace "ozone" with "ozonesonde".

Page 14, line 23: This is a very contorted description of equivalent latitude. Why not just say: the equivalent latitude associated with a prescribed PV value is that latitude which encloses the same area as the PV isoline?

Page 14, line 24: I think that you should make it clear that this applies only for long-lived tracers.

Page 14, line 29: How relevant/useful is the equivalent latitude at low geographic latitudes where PV is less representative of the behaviour of a passive tracer? I think

C2

that other people have used a hybrid latitude that is equivalent latitude poleward of 50 degrees and true latitude equator-ward of 30 degrees with a transition zone in between.

Page 17, line 19: I agree with what is written here and it concerns me. Researchers using the equivalent latitude filled geographical data will often end up using monthly mean zonal means that are biased low. Aren't you contaminating your geographical latitude data set by doing this?

Page 17, line 29: I think that this "radial basis function interpolation with an inverse multiquadric function" needs to be explained more thoroughly. Can the actual equations used be provided e.g. in an appendix?

GRAMMAR AND TYPOGRAPHICAL ERRORS

While reading the paper are spotted a few grammatical and typographical errors that I bring to the attention of the authors here should they wish to correct them. In no way should this detract from the excellent quality of the paper.

Page 2, line 3: Replace "1980's" with "1980s". Apostrophes denote contraction or possession and this is neither. Similarly elsewhere in the paper.

Page 5, line 26: Replace "water data" with "water vapour data".

Page 5, line 31: Replace "wit the SAGE" with "with the SAGE".

Page 6, line 11: Either the delete the "approximately" or the ~

Page 6, line 29: I would prefer to see "ground-based measurements" rather than "ground-based data".

Page 7, line 5: Replace "extinctions" with "extinction".

Page 7, line 26: Delete the second "(100 – 1 hPa)".

Page 7, line 27: Replace "is provided" with "are provided".

Page 9, line 30: Replace "to estimated" with "to the estimated".

C3

Page 10, lines 25-26: I don't know what is meant by "the statistical test does not account for seven".

Table 3: There is something anomalous with the "Period" entry for Samoa (looks like there are two sets of values).

Page 12, line 2: Replace "is gridded" with "are gridded".

Page 12, line 11: Replace "of "noise"." as "of as "noise"."

Page 12, line 17: Replace "measurements are used" with "are used".

Page 13, line 2: Replace "per decade" with "per decade in pressure".

Figure 8 caption: Replace "RMMS" with "RMSS"

Page 13, line 24: Replace "magnitude offsets" with "magnitude of the offsets".

Page 14, line 17: Replace "on to" with "onto".

Page 15, line 1: Replace "gridded data is" with "gridded data are".

Page 17, line 15: Replace "samples $\pm 82^\circ$ latitude" with "samples between 82°S and 82°N ".

Page 18, line 21: Replace "clearly captures" with "clearly capture".

Page 20, line 16: Replace "data is saved" with "data are saved".

Page 20, line 27: Replace "new data is" with "new data are".

Page 21, line 4: Replace "input in" with "input to".

Page 22, line 4: Replace "algorithm removing" with "algorithm for removing".