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Earth System Science Data Discussions

Interactive comment on "Compilation of ozonesonde profiles from the Antarctic Georg-Forster-Station from 1985 to 1992" *by* G. König-Langlo and H. Gernandt

Anonymous Referee #2

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This short paper gives a description of a set of ozonesonde data from the early phase of Antarctic ozone layer observations performed at the Antarctic station of the German Democratic Republic. In light of the scarcity of this kind of measurements in a critical period of the Antarctic stratosphere and a focus on long-term changes/variability in current ozone and stratosphere research, the publication yields a valuable contribution to make important data sets available. The publication does not have ambitions to exploit the data set scientifically, which I assume is in line with the intention of this recently established journal.

Nevertheless, I have some proposals to improve the quality of the paper and which I

hope the authors are willing to consider.

1. In order to improve the logical structure of the paper, I recommend to exchange sections 1 and 2. The description of the station is of general interest, but is not directly related to the data set. Therefore, this should come before a description of the measurement technique, which is a central aspect of the data set described here. The same can be said about the second part of section 2, which gives the background of the East German measurement program and the background in stratosphere/ozone research.

2. Figure 1 should be replaced by a map showing Antarctica and especially the "Atlantic" sector of the continent, with the stations that are found in this region (and mentioned in the paper). As an example, the authors might consider `http://www.alci.info/dromlanflightmap.html`, if they get the Copyright from the producer.

3. The rationale in the second paragraph of page 4 is not straight forward. I propose to continue after the first sentence in the following or a similar way: "The correction factor C is determined by comparing the column ozone value derived from the ozonesonde measurement X_S with an independent value, e.g., from a spectrometer measurement X_D:
$C{=}X_D/X_S$.
X_S is determined by integrating the ozonesonde profile from the ground level to the burst altitude and adding a residual value of the column ozone above this altitude, e.g., by assuming a fixed or a characteristically varying ozone mixing ratio."

4. Also the 3rd paragraph on page 4 should be re-formulated. Alternatively, a figure with typical biases and standard deviations would be more instructive.

5. Page 7, the last two paragraphs: Figure 3 does not prove that the partial series from Georg Forster Station and Neumayer Station can be concatenated into one series without a correction factor. Instead, one should compare independent column ozone series for the two sites, e.g., from satellites such as TOMS, over a long time period, and independently calculate correction factors C for both stations. If these agree, one can state that the two series can be merged into one.

Some minor issues to be considered:

- "GDR" should be explained at its first use: "German Democratic Republic (GDR)"
- Page 5, 1st line: "... named after the German natural scientist, author and revolutionary Georg Forster (1754-1794) until 1993."
- Page 5, line 15: replace "have been" with "were"
- Page 5, line 17 and following: These results supplemented the strong negative trends in total ozone which had been observed at the British station Halley for several years... Further studies focused on understanding the dynamical control...
- Pages 6 and 7: replace "gained" by "performed" (3 occasions)
- Page 7, line 4: Koldewey Station (Ny-Ålesund, Svalbard, Norway: 79°55′ N, 11°52′ E)

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