Atmos. Chem. Phys. Discuss., 8, S2074–S2076, 2008
www.atmos-chem-phys-discuss.net/8/S2074/2008/


Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Technical Note: A new global database of trace gases and aerosols from multiple sources of high vertical resolution measurements" *by* B. Hassler et al.

**Anonymous Referee #2**

Received and published: 28 April 2008

REVIEW OF:

Technical Note: A new global database of trace gases and aerosols from multiple sources of high vertical resolution measurements

GENERAL COMMENTS:

This paper describes a new database (BDBP) that combines ozonesonde and solar occultation data into a single database such that all of the data can be accessed from a computer program in a uniform manner. In this regard, the BDBP goes further than simply gathering the data into a common location or data format site such at the NILU



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database, the NASA Aura Validation Data Center, or the French ETHER website. The paper nicely details the data sets and quality control algorithms used. Nevertheless, a user of the database should still become familiar with each of the instrument types and data quality issues. Some of the nice features of the BDBP include the ability to access the data on both altitude and pressure grids, and a lower resolution equivalent latitude/theta grid based on the consistent potential vorticity from the NCEP/NCAR reanalysis. The BDBP may be a useful tool for atmospheric scientists and is an appropriate subject for an ACP technical note. The level of detail is sufficient for understanding the database, although specific information about to obtain the database and any example programs for reading the data is absent.

The suggested applications for the BDBP include trend analysis and process studies. For these applications the BDBP has one major problem that has not been addressed. There can be significant biases in the lower stratospheric ozone profiles between different solar occultation instruments and relative to ozonesondes (see example references below). Differences as large as 5% are not uncommon for altitudes below ˜25 km. Combining measurements from SAGE, POAM, HALOE, and ozonesondes in a trend analysis or process study cannot be done without accounting for the biases between these instruments. The same is true for other trace gases and aerosols.. I would suggest that this issue be discussed in the technical note.

A few example references regarding ozone profile biases: Randall, C. E., et al., Validation of POAM III ozone: Comparisons with ozonesonde and satellite data, J. Geophys. Res., 108(D12), 4367, doi:10.1029/2002JD002944, 2003. McPeters, R. D., et al. (1999), Results from the 1995 Stratospheric Ozone Profile Intercomparison at Mauna Loa, J. Geophys. Res., 104(D23), 30,505–30,514. Nazaryan, H., M. P. McCormick, and J. M. Russell III (2005), New studies of SAGE II and HALOE ozone profile and long-term change comparisons, J. Geophys. Res., 110, D09305, doi:10.1029/2004JD005425.

SPECIFIC COMMENTS:



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1) Table 3 should add a note for those instruments where the temperature is not measured, but simply taken from a standard meteorological analysis.

2) Are the ozonesonde profiles subsampled or averaged to 1 km resolution? I did not see this detail in the text. Averaging would make the profiles more easily compared with the satellite profiles.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 7657, 2008.



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Interactive Comment