

File Revision Date:

September 3, 2020

Data Set Description:

PI: Glen McConville  
Instrument: Dobson Ozone Spectrophotometer  
Site(s): Amundsen-Scott Station, Antarctica (90S)  
Measurement Quantities: Total Column Ozone

Contact Information:

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Reference Articles:

The instrument is described in numerous publications, the most commonly used reference is "Operations handbook - ozone observations with a Dobson spectrophotometer", W.D. Komhyr, Global Ozone Research and Monitoring Project. Report 183, World Meteorological Organization, Geneva, 2008.

Evans, R.D., Petropavlovskikh, I., McClure-Begley, A., McConville G., Quincy, D., and Miyagawa, K., The US Dobson Station network Data Record Prior to 2015, Re-evaluation of NDACC and WOUDC archived records with WinDobson Processing Software, Atmos. Chem. Phys., <https://doi.org/10.5194/acp-2017-383>, 2017.

Instrument Description:

Dobson Ozone Spectrophotometer numbers 80 and 82.  
(Instruments are exchanged on a 4-year schedule, so that the calibration can be monitored.)

Algorithm Description:

Uses algorithm described in "Operations handbook - ozone observations with a Dobson spectrophotometer", W.D. Komhyr, Global Ozone Research and Monitoring Project. Report 183, World Meteorological Organization, Geneva, 2008.

[www.esrl.noaa.gov/gmd/ozwv/dobson/GAW183-Dobson-WEB.pdf](http://www.esrl.noaa.gov/gmd/ozwv/dobson/GAW183-Dobson-WEB.pdf)

Uses Bass/Paur ozone absorption coefficients, as defined in  
[www.esrl.noaa.gov/gmd/ozwv/dobson/papers/coeffs.html](http://www.esrl.noaa.gov/gmd/ozwv/dobson/papers/coeffs.html)

Expected Precision/Accuracy of Instrument:

There is a paper; "Review of the Dobson spectrophotometer and its accuracy", Reid E. Basher, Global Ozone Research and Monitoring Project. Report 13, World Meteorological Organization, Geneva,1982, describing the precision and accuracy.

In general, the precision is considered to be from +/-1% (direct sun observations) to +/-5% (Observations on cloud zenith) for total ozone.

Accuracy is part of an ongoing debate, but is considered in the 5% range.

Instrument History:

1963.01.01-1972.10.31 ;D082

1972.11.01-1985.12.06 ;D080

1985.12.07-1989.11.27 ;D082

1989.11.28-1992.12.15 ;D080

1992.12.16-1997.01.28 ;D082

1997.01.29-2000.12.08 ;D080

2000.12.09-2004.12.14 ;D082

2004.12.15-2008.12.19 ;D080

2008.12.20-2012.12.19 ;D082

2012.12.20-2015.12.31 ;D042

2016.01.01-2020.01.19 ;D082

2020.01.20-9999.12.31 ;D080