File Revision Date:
August 21st, 2023

Data Set Description:

PI:	Glen McConville
Instrument:	Dobson Ozone Spectrophotometer
Site(s):	Amundsen-Scott Station, Antarctica (90S)
Measurement Quantities:	Total Column Ozone
DOI:	doi: 10.7289/V5H41PQ6
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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

Uses Bass/Paur ozone absorption coefficients, as defined in:
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