

File Revision Date:

August 21st, 2023

Data Set Description:

PI: Glen McConville
Instrument: Dobson Ozone Spectrophotometer
Site(s): Mauna Loa Observatory (19.5N, 155.6W)
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 Number 76 (automated)

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:

1963.01.01-1972.02.29	;D063
1976.06.23-1976.06.27	;D083
1976.06.28-1976.06.30	;D063
1976.07.01-1976.07.01	;D083
1976.07.02-1976.07.02	;D063
1976.07.03-1976.07.04	;D083
1976.07.05-1976.07.06	;D063
1976.07.07-1976.07.08	;D083
1976.07.09-1976.07.09	;D063
1976.07.10-1976.07.11	;D083
1976.07.12-1976.07.13	;D063
1976.07.14-1976.07.15	;D083
1976.07.16-1976.07.16	;D063
1976.07.17-1976.07.18	;D083
1976.07.19-1976.07.20	;D063
1976.07.21-1976.07.22	;D083
1976.07.23-1976.07.23	;D063
1976.07.24-1976.07.25	;D083
1976.07.26-1976.07.27	;D063
1976.07.28-1976.07.29	;D083
1976.07.30-1976.08.03	;D063
1976.08.04-1976.08.05	;D083
1976.08.06-1976.08.18	;D063
1976.08.19-1976.08.19	;D083
1976.08.20-1976.08.20	;D063
1976.08.21-1976.08.22	;D083
1976.08.23-1976.08.23	;D063
1976.08.24-1976.08.25	;D083
1976.08.26-1982.05.11	;D063
1982.05.12-1984.03.11	;D065
1984.03.12-1984.03.20	;D076
1984.03.21-1984.05.30	;D065
1984.05.31-1987.05.17	;D076
1987.05.18-1987.05.19	;D083

1987.05.20-1987.05.22	;D076
1987.05.23-1987.05.24	;D083
1987.05.25-1991.07.17	;D076
1991.07.18-1991.08.22	;D083
1991.08.23-2005.06.19	;D076
2005.06.20-2005.08.31	;D082
2005.09.01-9999.99.99	;D076