

File Revision Date:
September 30, 2020

Data Set Description:

PI: Dr. R. Stubi, H Schill
Instrument: Dobson (Brewer)
Site(s): Arosa Lichtsklimatologie Observatorium, LKO
Measurement Quantities: Total column ozone

Contact Information:

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Reference Articles on Dobson total ozone:

WMO/GAW: Reports on WMO International Comparisons of Dobson Spectrophotometers, WMO Report Series No. 138 and No. 108

Stubi, R., H.Schill, J. Staehelin. Instruments stability: experiences from Arosa Observatory. The sixth biennial WMO Consultation on Brewer Ozone and UV Spectrophotometer Operation, Calibration and Reporting, Tokyo, Japan, July 2000. WMO/GAW (to be published)

Weiss, A. K.: Anthropogenic and Dynamic Contributions to Ozone Trends of the Swiss Total Ozone, Umkehr and Balloon Sounding Series, Dissertation ETH No. 13635, GCA-Verlag Herdecke, 2000.

René Stübi, Herbert Schill, Jörg Klausen, Laurent Vuilleumier, Julian Gröbner, Luca Egli, Dominique Ruffieux, On the compatibility of Brewer total column ozone measurements in two adjacent valleys (Arosa and Davos) in the Swiss Alps Atmos. Meas. Tech., 10, 4479–4490, 2017, <https://doi.org/10.5194/amt-10-4479-2017>

Johannes Staehelin, Pierre Viatte, Rene Stübi, Fiona Tummon, and Thomas Peter, Stratospheric ozone measurements at Arosa (Switzerland): history and scientific relevance, Atmos. Chem. Phys., 18, 6567–6584, 2018, <https://doi.org/10.5194/acp-18-6567-2018>

Instrument Description:

Dobson spectrophotometer instrument No. D062 is in use for ozone column measurements at Arosa
Dobson spectrophotometer instrument No. D101 is in use for ozone column and D051 for Umkehr measurements at Davos

Algorithm Description:

Uses algorithm set out in "Operations handbook - ozone observations with a Dobson spectrophotometer", W.D. Komhyr, Global Ozone Research and Monitoring Project. Report 6, World Meteorological Organisation, Geneva, 1980.

Uses Bass/Paur (1992) ozone absorption coefficients.

Expected Precision/Accuracy of Instrument:

"Review of the Dobson spectrophotometer and its accuracy", Reid E. Basher, Global Ozone Research and Monitoring Project. Report 13, World Meteorological Organisation, Geneva,1982.

Instrument History:

- July 1999: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D065)
- July 1995: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D065)
- July 1999: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D065)
- July 2003: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D064)
- July 2006: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D064)
- July 2010: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D074)
- July 2012: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D074)
- July 2017: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D074)
- July 2018: Participation to the Arosa (Switzerland) Dobson Intercomparison (reference instrument: D064)

MeteoSwiss is in the process of moving the Arosa instruments to Davos station (11 km away).

Parallel measurements between the two sites have been conducted over the last 5 years with Brewer and Dobson spectrophotometers.

No break are expecting to be introduced in the Arosa series with this change. (see <https://doi.org/10.5194/amt-10-4479-2017>)