

NOAA Earth Systems Research Laboratory-Global Monitoring Division: Surface Ozone Program

The following information describes the data format for the surface ozone mixing ratio data available on this directory. The data that is contained in this directory are to be used for scientific and educational purposes only. This data is available given that the providers will be cited and co-authorship will be offered when there is substantial use of the data. **For all users, acknowledgement must be given to data providers when these data are used in a publication.**

Data citation for use is as follows:

McClure-Begley, A., Petropavlovskikh, I., Oltmans, S., and NOAA ESRL (2013): Earth System Research Laboratory Ozone Water Vapor Group Surface Ozone Measurements, Version 1. *[indicate subset used]*. NOAA National Centers for Environmental Information. DOI: 10.7289/V57P8WBF *[access date]*.

If you have questions, please contact:

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Please consult the following article in Atmospheric Environment for information on the stations and for referencing the data:

Oltmans, SJ and Levy II, H, Surface ozone measurements from a global network, Atmos. Environ., 28, 9-24, 1994.

S. J. Oltmans, A. S. Lefohn, H. E. Scheel, J. M. Harris, H. Levy II, I. E. Galbally, E.-G. Brunke, C. P. Meyer, J. A. Lathrop, B. J. Johnson, D. S. Shadwick, E. Cuevas, F. J. Schmidlin, D. W. Tarasick, H. Claude, J. B. Kerr, O. Uchino, V. Mohnen. Trends of ozone in the troposphere, Geophysical Research Letters, 25, 139-142, 1998.

WMO/GAW Report No. 209, Guidelines for Continuous Measurements of Ozone in the Troposphere, 2013

Data Disclaimer: Data is available from NOAA-GMD and WDCRG. Data provided by GMD surface ozone program have undergone thorough evaluation and extensive quality checks. However, there exists the potential for these data to be modified at the discretion of NOAA/OAR/ESRL/GMD.

Data Format

The data provided are hourly averaged (from 1 minute data collection) and are reported in UTC (GMT) time.

File name: *STN_MM_YYYY_hour.dat* (STN = 3 letter station ID, MM = Month, YYYY = year)

File Contents: STN YEAR MON DAY HR O3(PPB)

All year data format:

(stn)ptsoz

Hourly Averages are displayed by date for each month.

These files also provide daily and monthly means as well as maximum ozone mixing ratio values.

Data QA/QC-The quality of data is a joint effort by the program managers and the station technicians

Raw data: Any original information as reported by the instrument and acquired by NOAA GMD data collection systems. No calibration coefficients are applied and no data is removed from the record.

Processed data records:

Detailed records of station data are maintained at NOAA-GMD. These records contain any periods of instrument mal-function, removed data, and changes to the data and instrument systems. These records also contain the station climatology and diurnal cycle to assist in understanding the expected values from each station. This includes the 10th, 30th, 70th, and 90th percentiles, median values, and standard deviation.

Quality controlled and processed data have undergone the following adjustments:

- Calibration Coefficients: A linear equation is applied to all data. The slope and zero values are calculated from a routine NIST Traceable calibration.

- Instrumental checks: In order for the data reported by the instrument to be considered quality assured, the following must be met.

 - Flow through the instrument is adequate to the limits set in the instrument manual

 - Lamp settings are such that the intensity of the lamp is within the limits of the instrument manual

 - Temperature and Pressure corrections are applied in the instrument

 - Routine level checks ensure that the instrument calibration has not drifted

 - The instrument and inlet have been set up as described in the NOAA GMD Surface Ozone Handbook and are functioning with the proper particle filtration, Teflon tubing, temperature conditions, and inlet location.

Data Processing:

This is the procedure that is followed to apply calibration factors and average minute data into one hour average values.

Outliers are removed, but only if they are extreme outliers exceeding 2 standard deviations from 5% or 95% seasonal values and cannot be explained.

Data PI may also remove data that is of questionable quality with documentation as to the reason the data was removed. Example: Unexpected spike in otherwise very clean environment which was caused by people driving by inlet line during the sample time. Data is removed if there are instrumental errors or contamination to the system (ex. Water contamination through inlet line).

For more information regarding instrument specifications and limits:

<http://www.thermoscientific.com/content/tfs/en/product/model-49-i-i-i-ozone-analyzer.html>