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Brewer ozone and UV data processing & analysis software

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Brewer data processing software

- Generates data for the WOUDC
- Install once and forget...
- Designed to run as a scheduled task
- Processes both B- and UV-files
- Can handle many errors in B- and UV-file format
- Processes data from multiple instruments as a single task



Brewer data processing software

- Outputs daily ozone values and individual measurements in ExtCSV format (for the WOUDC)
- Also, outputs data in a “database-friendly” format
- Generates graphs and plots that can be accessed by a browser
- Calculates ozone and UV from raw counts
- Includes additional quality control
- Open source (C++)



UV algorithm includes

- Responsivity interpolation
- Stray light correction
- Total ozone and SO₂ calculation from spectral UV
- “Spikes” correction
- HG control (from B-files)
- Data quality flags
- Angular response correction (based on Brewer #14 properties)



Total ozone algorithm includes

- All “standard” steps for ozone processing
- Additional quality control steps
- Works directly with calibration files
- Does SL-test correction for ozone
- Uses HG tests for quality control
- “Ozone from UV” is included in the ozone output files



C:\Brewer_Processing_Software\output\ozone\index.html

Index to graphs of ozone observations

Station #18 (Alert)

2005 [01](#) [02](#) [04](#) [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#) [12](#)

2006 [01](#) [02](#) [03](#) [04](#) [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#) [12](#)

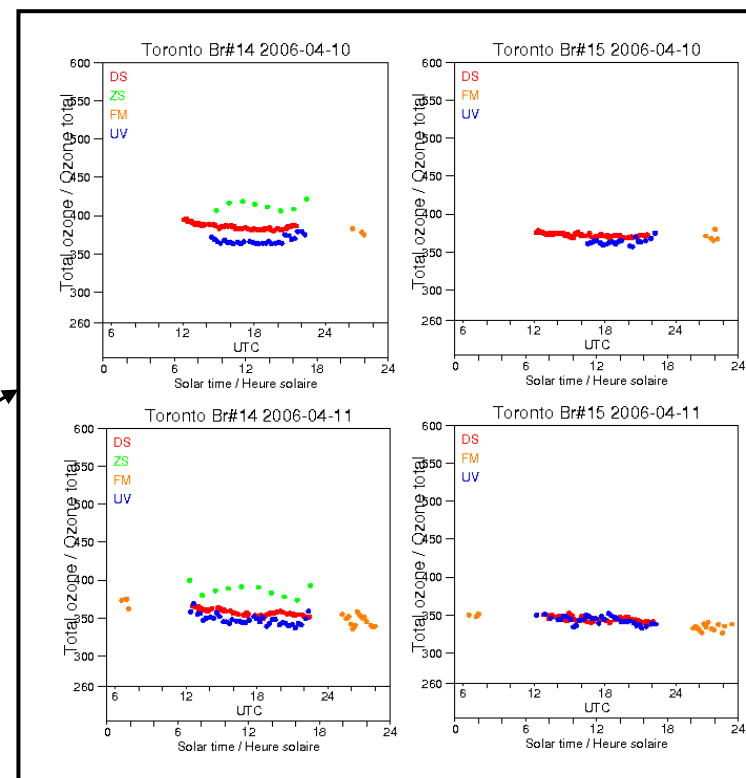
Station #21 (Edmonton)

2006 [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#) [12](#)

Station #65 (Toronto)

2005 [01](#) [02](#) [03](#) [04](#) [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#) [12](#)

2006 [01](#) [02](#) [03](#) [04](#) [05](#) [06](#) [07](#) [08](#) [09](#) [10](#) [11](#) [12](#)



See also c:\Brewer_Processing_Software\output\ozone\last7days.html for the most recent plots



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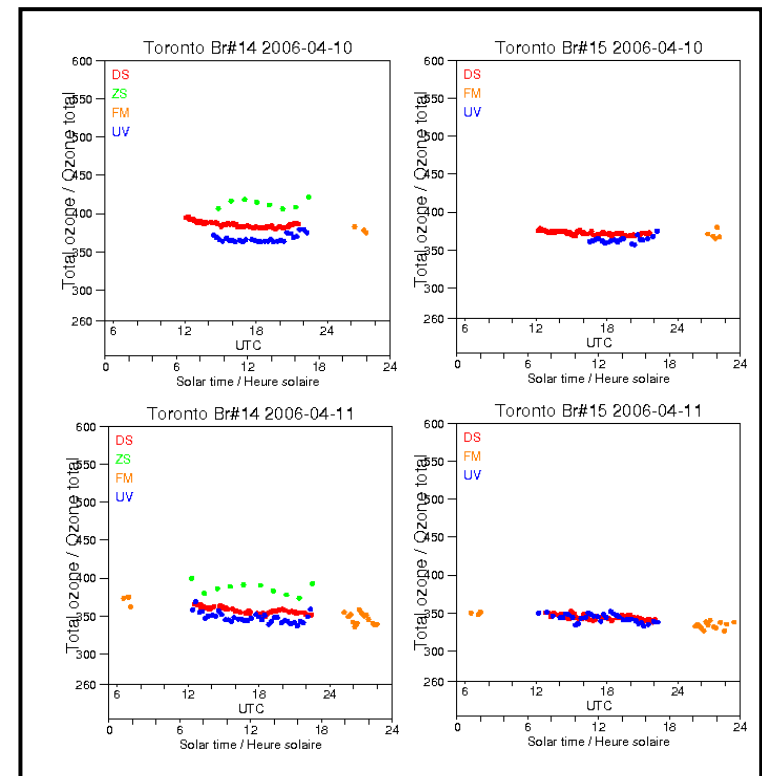
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C:\Brewer_Processing_Software\output\ozone\index.html

The plots show total ozone from different types of measurements (ds, zs, fm, and uv) as a function of time. One plot per day.

Use these plots to look for:

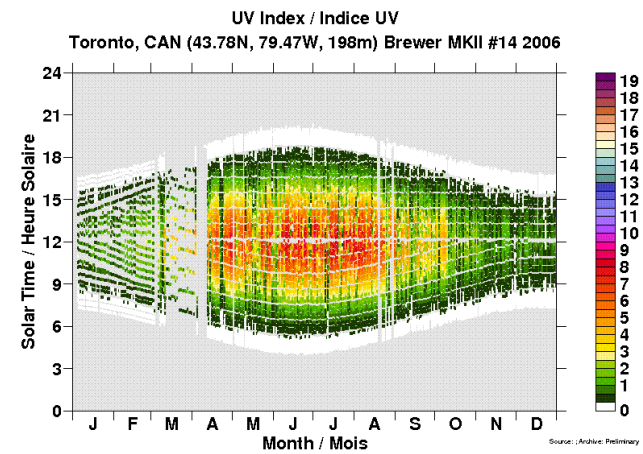
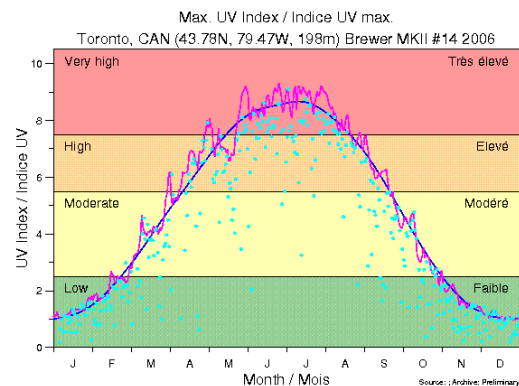
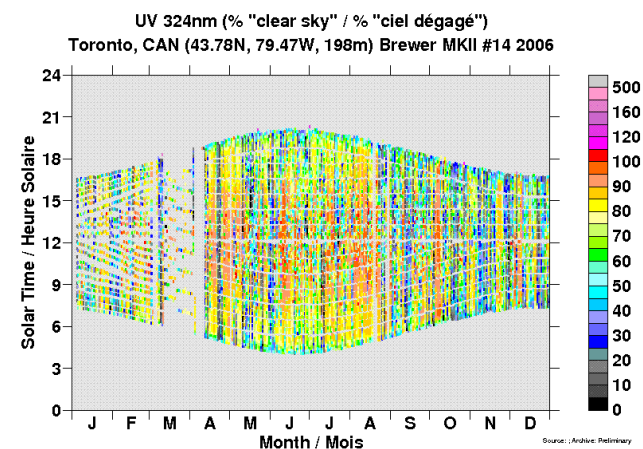
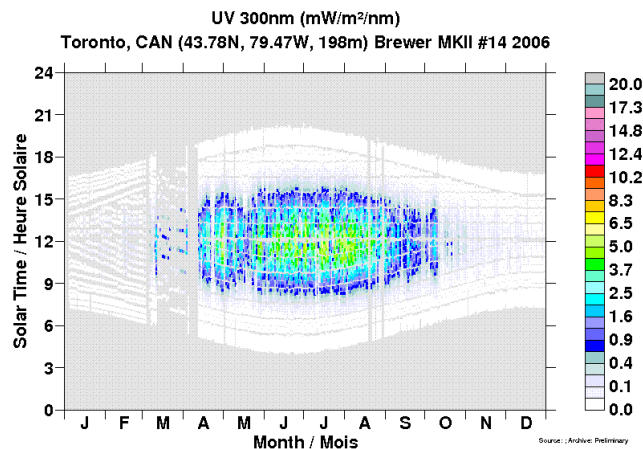
- Missing observations
- Outliers
- Consistency between different types of measurements
- Artificial diurnal variations caused by ETC errors



C:\Brewer_Processing_Software\output\spectral\annual_graphs.html

UV Graphs created 2007/05/22 18:15

Station 65 (Toronto, CAN)



Created by brewer_process.exe compiled May 22 2007 20:23:55



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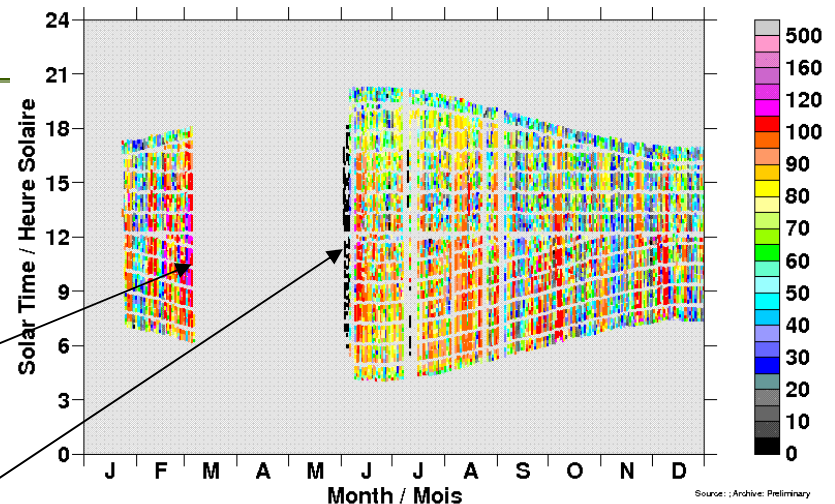
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The plots of normalized UV at 324 nm show UV at 324 nm where ozone absorption is low divided by clear sky UV at 324 nm. Each dot represents a single measurement

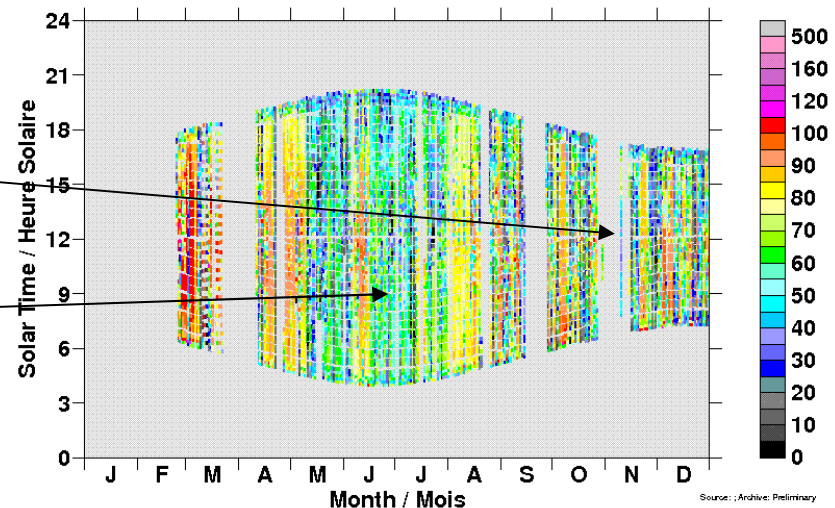
Use them to look for potential errors

- Values above 100 can be caused by snow on the ground or high elevation of the site. Or, by calibration errors
- Low values may be caused by heavy clouds, but persistent low values over a long period is an indication of potential problems with the instrument
- Gaps in the data. If Brewer was operational, gaps may be an indicator of malfunction
- Long period of low values could be caused by long periods of cloudy weather, or by filter degradation.

UV 324nm (% "clear sky" / % "ciel dégagé")
Toronto, CAN (43.78N, 79.47W, 198m) Brewer MKIII #85 2006



UV 324nm (% "clear sky" / % "ciel dégagé")
Toronto, CAN (43.78N, 79.47W, 198m) Brewer MKIII #145 2006



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Output data files

- Daily ozone values in ExtCSV format for WOUDC \TotalOzone directory
- Individual ozone measurements (DS, ZS, and UV) in ExtCSV format for WOUDC \TotalOzoneObs directory
- Spectral UV data in ExtCSV format for WOUDC \Spectral directory
- Daily summary UV data in in ExtCSV format for WOUDC Summaries\Spectral_UV directory



Support

Software support

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General questions

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WOUDC submission

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Download the software

- FTP to <ftp://es-ee.tor.ec.gc.ca>
- Username: bps
- Password: bps*



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