CMDL

Aerosol Data Processing Overview v0.1

Revision Log

Work on this document is continually in progress. Updated versions will be posted as they are completed.

revisions:	TAK	940519	[0.1]	Compiled from assorted documents.

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Data Processing Flow

Generally

[documentation in progress...]

1. Data is received from station via modem, or direct connection on a daily basis.
2. Newly received datafiles are converted from station-specific format to standardized CMDL internal use format, as described in the document "CMDL aerosol data file Fomat Specifications".
3. Newly received data is merged in with cumulative records.
4. New data is reviewed on screen using the "show" program script, which generates a series of quality control plots.
5. As the Quality Control graphs are being viewed, an Excel sheet is kept open. Should any portion of the data need to be edited, deleted, or marked for future reference, an Excel macro program will allow entries into this "edit file" if it is given either a date string, or a year, and day of year combination. This edit file is stored on the network drive so viewing and editing of the data can take place on any machine with Windows and X-terminal capability.
6. Edits are applied to the data, and step 4 is repeated until no further corrections are necessary.
7. As needed, data is plotted to paper on a weekly, or monthly basis for record keeping.

8. Once a certain amount of data has been accumulated (usually one quarter), the files are passed through the program "avg" to create hourly averages.

9. Hourly average datafiles are used in a variety of data-processing applications, as well as being posted to the public access FTP area.

BND Specific

[documentation in progress...]

BRW Specific

[documentation in progress...]

KPO Specific

[documentation in progress...]

LAR Specific

[documentation in progress...]

MLO Specific

[documentation in progress...]

NWR Specific

[documentation in progress...]

SMO Specific

[documentation in progress...]

SPO Specific

[documentation in progress...]

WSA Specific

[documentation in progress...]

1. WSA data is received daily via automated modem script.
2. "wsa.new" is run each morning and checks for new data. If a valid data-file pair exists, ??_X.wsa files are merged into their appropriate ??_cum.wsa file.

3. "show" is used to generate Quality Control graphs of the data contained in the ??_X.wsa files.

4. GnuPlot is run with show.wsa as its script. show.wsa will generate the following plots: CN Control, Nephelometer Bsp, Wind speed, Wind Direction, Airflows 1, Airflows 2, Temperatures / RH, Active filter, Delta Pressure, Best UPS, Nephelometer Pressure, Nephelometer Temperature, Nephelometer Reference Green, Nephelometer Background.

5. As the Quality Control graphs are being viewed, an Excel sheet is kept open. Should any portion of the data need to be edited, deleted, or marked for future reference, an Excel macro program will allow entries into this "edit file" if it is given either a date string, or a year, and day of year combination. This edit file is stored on the network drive so viewing and editing of the data can take place on any machine with Windows and X-terminal capability.

6. As soon as a portion of the data has been averaged and no further processing will be done on it for quite a while, it is extracted from the ??_cum.wsa files, packed and archived.

7. Once the editing process is complete for a set of data, it is run through an hourly averaging program, which generates averaged data files based upon the edited data. Should any corrections be desired in the raw data, the Excel edit file may be updated and the process repeated.

8. The above Excel macro program will generate a text "edit file" suitable for reading by the "edit application program". This program will apply all deletions and edits (scaling, etc.) to the data and output edited data files. These files can again be plotted, viewed, and any additional changes that need to be made can again be entered into the Excel edit file. In this manner, it is clear to the person making any deletions or edits - what exactly they have changed, and if the changes were adequate.

Data Editing Process

[documentation in progress...]

How to...

Running "show" on a remote X-terminal.

The following assumes a PC machine running an X-terminal program atop DOS or OS/2. On a dedicated X-terminal, the procedure will be different, but the following items in bold will still need to be met.

1. Cmdl2 must be authorized to access your display.

Type "`xhost +cmdl2.cmdl.erl.gov`" at a command prompt. Typing "`xhost`" alone will list the systems allowed to access your display.

If there is no such command on the system, you may have to telnet to Cmdl2 (#2 below), set your display variable (#3 below), and then type the above at a Cmdl2 prompt.

2. Start a Cmdl2 session.

Telnet to cmdl2.cmdl.erl.gov

Some X-terminal programs (ie: PC-Xview) may not give you a window manager for your X-windows, and you'll probably have X-windows without boarders / scroll bars / etc. If this happens you may want to type "`olwm &`" at a Cmdl2 prompt to start up the Sun OpenLook window manager. If you try this and you already have a window manager running, it will tell you.

3. (#3 - 8 assume you are at a Cmdl2 prompt)

Type "`setenv DISPLAY` *<your machine's IP address>*`:0.`"

(using the machine's name address may or may not work)

4. "`cd`" to the appropriate directory

5. "`show`" for default QC graphs.

7. "`show -E`" for edited CN and Bsp graphs.

(see the show user's manual or help screens for additional information on show)

File Formatting

(see the document "CMDL aerosol data file Format Specifications")