

USING 'CPX2' FOR DATA VIEWING AND EDITING

**Version 1.03
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About CPX2

CPX2 is a graphical user interface written for viewing and editing NOAA/ESRL/GMD aerosol data. It can be used to look at raw, edited or averaged station aerosol data so long as the station and data are set up in the GMD database.

Getting Started

To start a CPX2 session you merely need to type `cpx2 stn <enter>` where 'stn' is the 3-letter station identifier. For example to start cpx2 for Cape San Juan, Puerto Rico you would type: `cpx2 cpr <enter>`

This opens and plots the most recent week of raw data. Note it takes a few minutes to load the data in – there is a loading bar in the lower right so you can see when it is loading and at the lower left you can see if the status is idle or loading or whatever.

CPX2 has lots of functionality and it is constantly being updated. Figure 1 highlights some of the basic functions that you will need for editing.

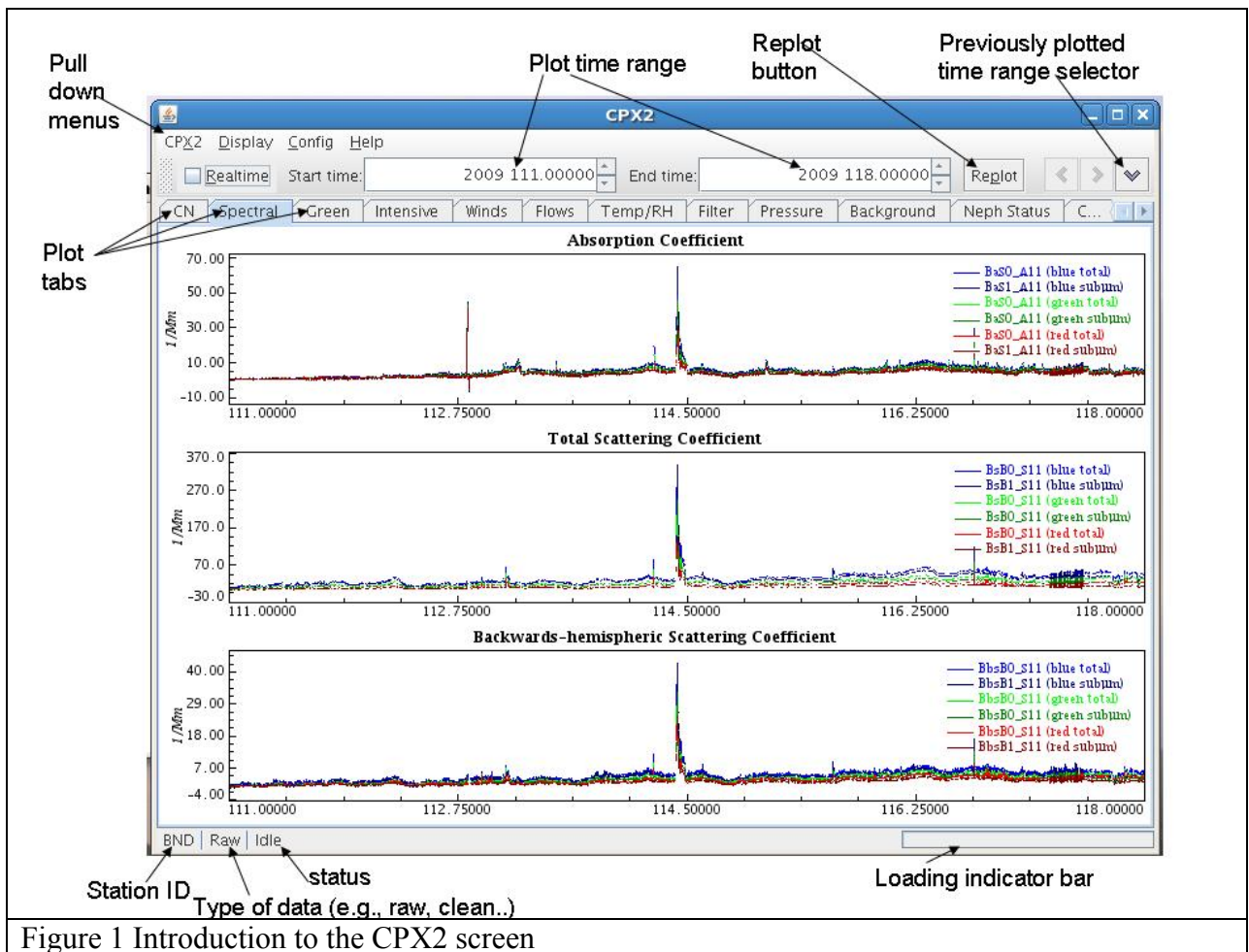


Figure 1 Introduction to the CPX2 screen

Getting help with CPX2

There are three ways to get help with cpx2

1. From a command line prompt. At the command line type `cpx2 --help <enter>` This will list out some `cpx2` options some to do with how to generate plots from `cpx2` (e.g., `png`, `eps`) and some to do with plotting different types of data (e.g., averaged or clean) See appendix B for a listing of what the `cpx2 --help <enter>` provides.
2. On the web. There are more details and examples of the options described in the command line help listing on our website:
<http://www.esrl.noaa.gov/gmd/aero/software/aerosols/cpx2.html>.
3. Within CPX2. You can get help from within CPX2 by clicking on the Help pull down menu and searching the 'Knowledge data base'.

Quitting CPX2

The last item on the CPX2 pull down menu is 'quit'. Alternatively you can type `<control><q>` and CPX2 will quit.

Extracting data

There are two ways to extract data for viewing in CPX2. One can begin by opening a CPX2 session and then editing the 'Plot time range' values at the top of the CPX2 window. Alternatively, one can tell CPX2 on the command line what time range of data to start with. There are multiple command line options to set the time range. Some of these are described in Table 1 below.

Table 1 Telling CPX2 what data time range¹ to plot, examples are all for Bondville (bnd)

Command Line	Result
<code>cpx2 bnd</code>	Most recent week of data
<code>cpx2 bnd 24h now</code>	Data collected during the past 24 hours
<code>cpx2 bnd 2009w15 1w</code>	1 week of data starting at the beginning of week 15, 2009
<code>cpx2 bnd 2009:103 2009:106</code>	Three days of 2009 data: DOY 103, 104 and 105
<code>cpx2 2008-01-15T12:00:00Z 2008-01-16T15:00:00Z</code>	Data between 12pm Jan 15, 2008 and 3pm Jan 16, 2008
<code>cpx2 bnd 2009.5 2009.75</code>	Fractional year – so data between ~July 1 – Sept 30, 2009
<code>cpx2 bnd 2009-01-15 2009-01-30</code>	Data between Jan 15 and Jan 30, 2009

¹Times are always in UTC; there are additional permutations, which are described on the web:
<http://www.esrl.noaa.gov/gmd/aero/software/aerosols/timeformat.html>.

Station data editing is typically done in weekly increments where the week is defined as Monday through Sunday (thus editing for the previous week can commence on a Monday). Thus, for weekly editing, you will typically use the third example in Table 1.

Using 'data.status' to determine last week of data passed

To figure out what the most recently edited week is you would type on the command line:
`data.status stn <enter>` (replace `stn` with the three letter station id, e.g., `mlo`). Note: `data.status` tells you several things: (a) when there are gaps in the raw data (b) the latest raw data received and (c) the most recently passed week.

You can see the date ranges that have been passed by typing at the command line:
`data.comments.get stn none none clean | grep '^=== clean add'`
where `stn` is the three letter station id.

Selecting a specific data time range to look at more closely

Once you have a CPX2 session open you may want to look at a specific time period within the period of time displayed, i.e., for editing you may want to look at a spike in the data. Again there are two ways to do this. You can edit the 'Plot time range' values at the top of the CPX2 window with the appropriate start and end times. Alternatively, you can use the mouse to select a range. To use the mouse, left-click on the left side of the time range you want to look at, then drag the mouse to the right and left-click again on the right side of the region of interest. CPX2 will put vertical bars at the two edges you have defined. To look at just that time period, left-click on the 'replot' button. Table 2 describes various options for using your mouse and the keyboard to select (or de-select) data and to change plot parameters for a better look at the data.

Table 2 Using your mouse to select data and change plot parameters

Selection action	Result
Left-click	Selection box, may have vertical and horizontal constraints
Shift+left-click	Vertical selection bars only, no y-axis constraint
Control+left-click	Horizontal selection bars only, no x-axis constraint
<esc>	Gets rid of selection constraint
Right-click	Brings up menu of various options including: <ul style="list-style-type: none">• Manual zoom (so you can force axes to be desired range)• Data smoothing options (e.g., hourly, lowpass filters)• Trace specific options (e.g., add symbols, hide legend)• Adding grid to plot• Show plot in pop-up window (good for comparing with other plots)

Returning to a previous data time range

Once you've inspected the small feature you were looking at, you may want to expand back to the previous wider time range. In the upper right corner are three arrow buttons. The '<' and '>' are similar in functionality to the forward and backward keys on webpages. The 'v' key pops up a menu with a list of time ranges you've looked at recently and you can select the one you want. If you want to go back to the time range you began with when you started cpx2 (for example the whole week of data) you can use a keyboard shortcut and type 'a'.

Selecting a data display mode

Use the 'Display' pull down menu to select the display mode.

- 'Raw' will show you the unedited, uncorrected data
- 'Edit' will show you the raw data in the top pane and the edited data in the bottom pane. The edited data plot shows data with the corrections applied. Edited data differs from the 'clean' data in that it shows the effect of all edits in the 'mentor edits' list, not just the "passed" data edits. (These terms are explained more clearly below.)
- 'Clean' will show you data with all the "passed" data edits applied

Editing data - mechanics

Specific things to look for when editing data are described in the next section 'Editing Data – what to look for'. The mechanics of data editing are described here.

Once you have a CPX2 window open and showing the extracted data, you are ready to begin editing. Note: you can do edits in any display mode (raw, edit, clean), but it's recommended to use 'edit' display mode. (See **Selecting a data display mode** above.) To begin editing, click on the CPX2 pulldown menu on the upper left and select 'Mentor Edits'. This will pop up a window showing any existing edits for that time range (Figure 2a). To add an edit, click the 'Add' button in the upper left of the 'Mentor Edits'. This will bring up the 'Edit Directives' window (Figure 2b).

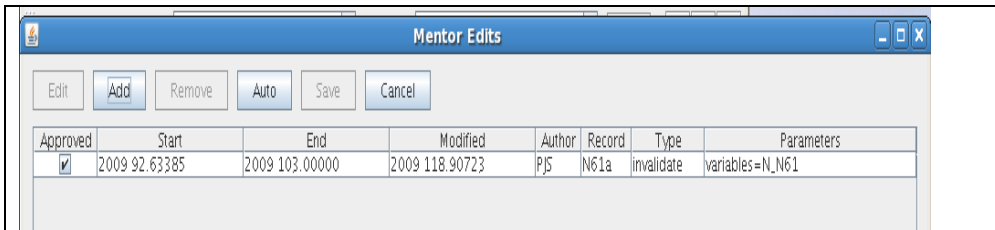


Figure 2a Mentor edits window

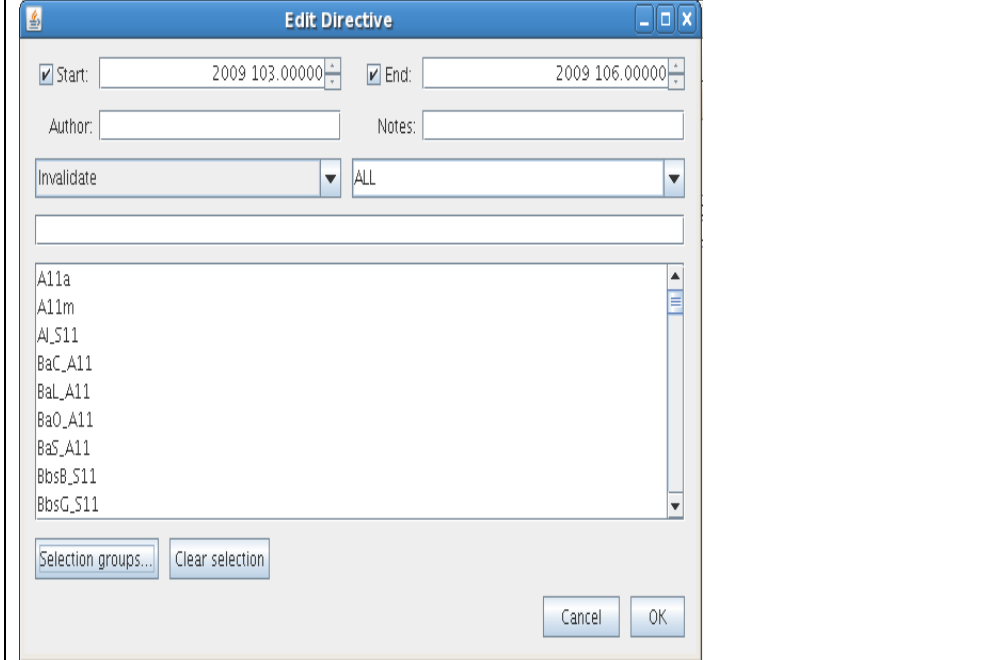


Figure 2b Edit directives window

The 'Edit Directive' window has several slots in which to enter information and various options to choose.

Edit start and end times

'Start' and 'End' are the start and end time of the edit – i.e., if there is a spike that starts at 2009 103.56 and goes to 2009 103.57 then those are the times that should be in the start and end boxes. You can type in the edit times if you know them or you can select the appropriate time period on the plot (see **Selecting a specific data time range** above) and the start and end boxes will automatically reflect those times.

Author

The data editor's initials should go here.

Notes

Put a brief comment about why the data was edited here. Some examples are 'absorption spike', 'weekly maintenance', or 'pump failure'.

Type of edit

There are several types of edits than can be made:

- 'Invalidate' – choosing this says the data are bad and should not be included in clean data
- 'Contaminated' – choosing this causes the data to be flagged as contaminated. Data might be marked as contaminated for many reasons – for example if there is construction occurring near the site affecting the measurements. Contaminated data will not be displayed in the edited data pane but a small black marker (see Figure 3) on the plot will indicate that the data has been removed because of contamination. By default contaminated data will not be averaged into the longer term average files (hourly, daily, monthly) (although there is an averaging option which will include contaminated data if desired).
- Bitmask – this allows you to change the flags field. For example, if the impactor switching stopped working because the electronic ball valve fails you can change the flags field to indicate the proper size cut.
- Poly – this allows you to apply a polynomial correction to the data

ALL

This list box lets you limit the variables in the data selection box to those related to a particular record type. The default value "ALL" shows all available variables.

Data selection

You can either choose the individual parameters to which the edit is to be applied from the scroll down list of variables or you can use the 'selection groups' pull down menu and choose the appropriate group(s). Using the selection groups is much easier!

Once your 'Edit Directives' window is filled out to your satisfaction for a particular edit, left-click on 'OK' and the edit will be added to the list of edits in the 'Mentor Edits' window. Save the edit by clicking 'save' in the 'Mentor Edits' window. When you replot the data the edited pane will reflect the edits. Continue adding edits in this way until you are done with the week. Note: you can make multiple edits before saving. Every time you save your edit directives the data set is reloaded which takes some time so it's usually quicker to do several edits between saves. However, if you close the edit directives window before you save you will lose all your unsaved edits.

To see the effect of individual edits, open the 'Mentor directives' window and click on an edit. A vertical bar will appear to show where that edit occurred. In 'edit' display mode this allows you to see where the edit is and the difference between raw and edited plots (see Figure 3).

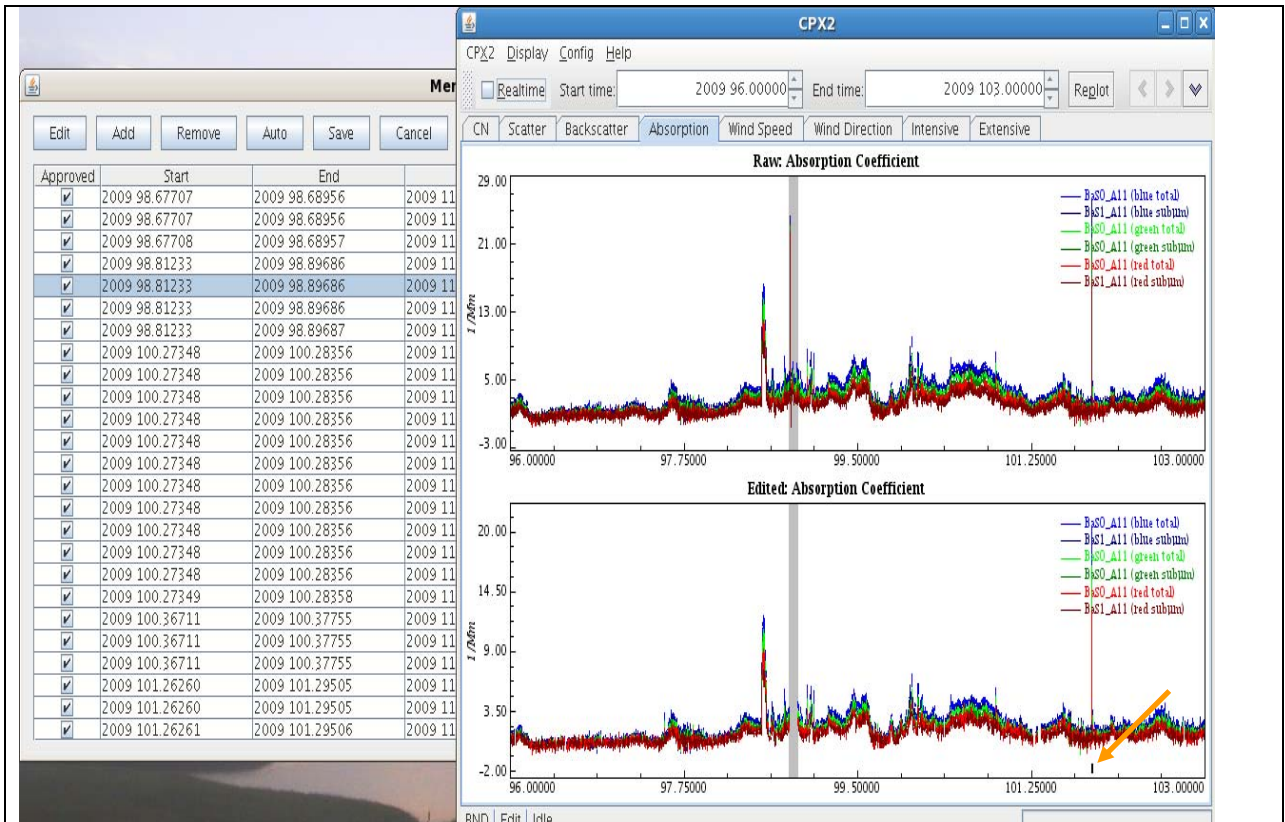


Figure 3 Vertical gray bar shows selected edit. Display mode is ‘Edit’ so you see both the raw and edited data. Orange arrow in lower right of edited plot points to flag indicator for data marked as contaminated.

Editing an existing edit

There are times when you might want to edit an existing edit. When you are doing editing, you may create an edit and then, for some reason, want to change it - for example, to expand or narrow the time range of the edit or change the variables you’ve chosen. Select the edit in the ‘Mentor Edits’ window by left-clicking edit so that the whole row for the edit is highlighted. Left-click on ‘edit’ and an ‘edit directive’ window will pop up that you can change whatever you need to change. When you are done, left-click on ‘OK’ and the edit will be updated.

(Semi) Automatic Edits

CPX2 has the ability to automatically generate some edits. For example if the nephelometer backscatter shutter is causing problems CPX2 can identify those periods and generate an edit for them. To have CPX2 do this, left-click on ‘Auto’ in the ‘Mentor Edits’ window. A list of automatically generated edits will appear in the list of edits. These automatic edits will not have a checkmark (✓) in the left column which indicates they have not been approved. To approve them, click in the empty box in the ‘approved’ column and a checkmark will appear. When the edit directives are saved and passed these approved edits will be included. Note: the ‘Auto’ option generates a lot of edits – you may not want to use it unless you have a lot of spikes caused by a system problem. An example of where you would want to use the automatic editing is when the neph motor fails resulting in frequent spikes in the neph data.

Passing the edited data

Once you are satisfied with your data edits, you need to save the edit directives and then "pass" the data. This informs the data management system that the data have been QC-checked and approved. Click the "Save" button in the Mentor Edits window to save your edit directives. Then exit CPX2, and use the command `data.pass` to pass the data. For example, if you edited data for week 15 of 2009 from Bondville (`cpx2 bnd 2009w15 1w`), the syntax for passing the data for this week is

```
data.pass bnd 2009w15
```

More information on `data.pass` is available at

<http://www.esrl.noaa.gov/gmd/aero/software/aerosols/data.pass.html>

There is an option for making comments about the passed data – look at the info on `data.pass`. This can be used for adding some sort of general comment about that week's editing, although typically it's not used.

Checking the passed data

It's good practice to do a final check of the data after you have passed it. Open up a CPX2 session for the time period and choose display mode 'clean'. This allows you to see the final data with all the passed edits applied. If you see problems or additional edits you wish to make then repeat the editing process as described above.

Shortcut keys

Cpx2 can be used entirely as a point-and-click program, however there are some short-cut keys (hotkeys) which may be useful. These are described in the knowledge base, but also in Table 4 below.

Table 4 Shortcut keys (hotkeys)

N	Move to next (right) tab
p	Move to previous (left) tab
r	Replot graphs (same as replot button) i.e., use after you select a different time range
a	Go back to time range that cpx2 was started at (i.e., if you started editing a week of data this will set the x-axis back to the whole week)
b	Go back one item in history (question – by history does this mean time or tab or both?)
f	Go forward one item in history
d/r	Delete the selected edit

More shortcuts are described in Appendix A

Editing data when there are multiple similar instruments

Sometime stations have multiple instances of identical instruments or more than one instrument that measures the same parameter even if the instruments aren't identical. There may be times

when the data from one of these instruments needs to be edited but not the other. An example could be where a station has both a CLAP and a PSAP. Both of these instruments measure aerosol absorption, so they are in the 'absorption group'. Choosing 'absorption' from the 'selection groups' menu in the 'edit directive' window will result in data from both the CLAP and PSAP being edited. (see Figure 4a). If you only want to edit the data from one of the absorption group instruments you have several options.

- Option 1 is to select absorption from the 'selection groups' menu and then change the data selection space so that it just contains the parameters for the instrument you went to edit.
- Option 2 is you can scroll through the list of parameters and just pick the ones you wish to edit (see Figure 4b).
- Option 3 is to change what shows up in the list of parameters to just the parameters for a given instrument. To do that you would go to the 'ALL' pulldown menu and select the instrument you wish to edit (see Figure 4c).

Once you've got the parameters you want to edit into the data selection space then you would edit like normal.

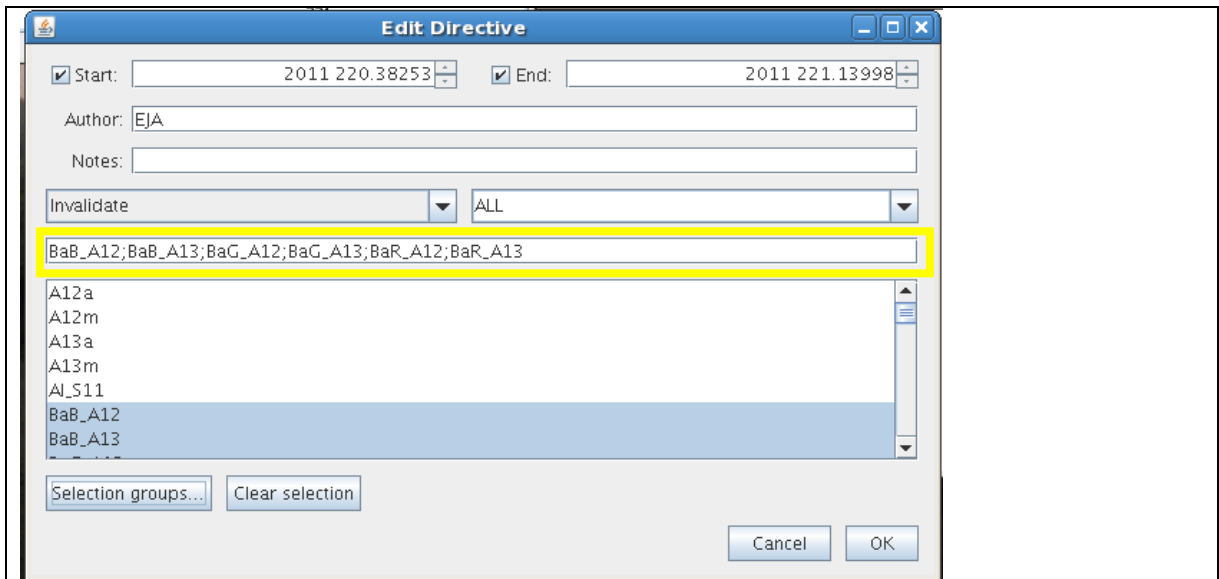


Figure 4a. In this example, the PSAP is instrument A12 and the CLAP is instrument A13. When you select absorption from the 'selection groups' menu all the absorption parameters for both A12 and A13 end up in the data selection space (yellow box): BaB_A12, BaB_A13, BaG_A12, BaG_A13, BaR_A12, BaR_A13

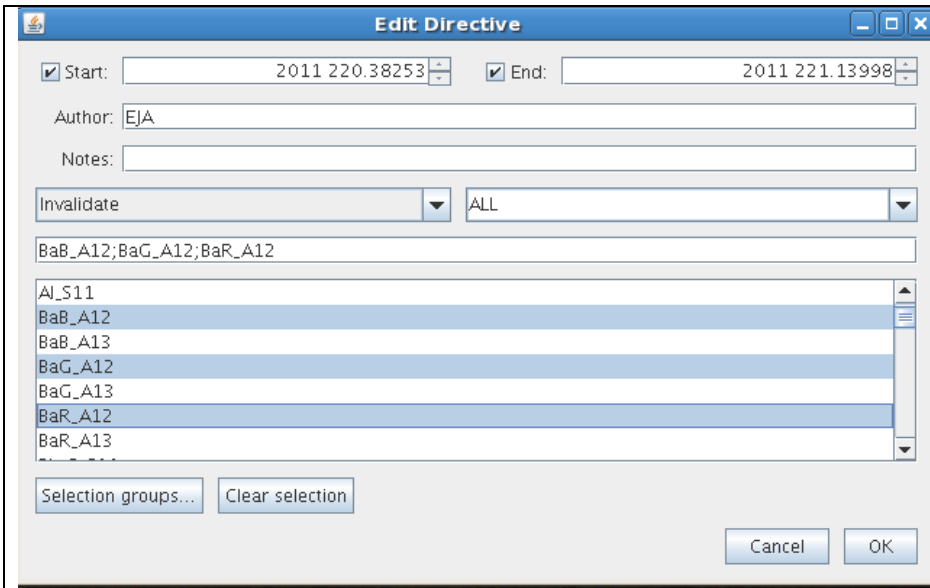


Figure 4b. Here just the absorption parameters for the PSAP (which is instrument A12) have been selected. This results in BaB_A12, BaG_A12, BaR_A12 being entered in the data selection space.

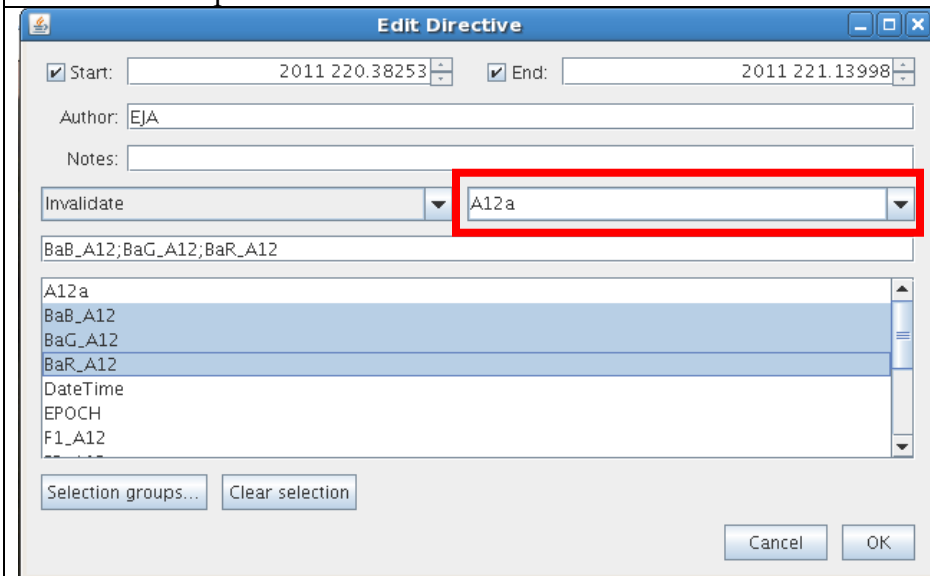


Figure 4c. Here just the A12 parameters are listed in the list of parameters because the selection box (see red box) has been changed from 'All' which shows all parameters from all instruments to 'A12a' which shows all parameters for the instrument A12. Now it is easier to see and select the the parameters for just that single instrument.

Considerations for hybrid data processing

Some stations use legacy software and edit directives files for viewing, editing, and passing data (xshow, pass, ed_cum.stn). If CPX2 is used to view and edit the data, then extra synchronization steps are needed to keep the legacy files consistent with the newer data management system.

Once a week's worth of editing is done, save the edits and quit CPX2 as described above. The data.pass command is not needed for stations that use hybrid data processing. Instead, from the command line issue the command data.edit.mentor.edcum synchronize <enter>.

This command compares the CPX2 and XSHOW edit directives files and synchronizes them so they are the same. This can take a minute or two but there will be dialogue to tell you when it is done.

Once the synchronization is done you can pass the data. On the command line type:

```
pass YYYY WW
```

where YYYY is the year and WW is the week (1-53)

For stations using hybrid data processing, there is an extra step if you need to edit an existing edit that has been passed and synchronized with the old data editing system. Edit the existing edit as described above and save all the edits you've made by clicking 'save' in the 'Mentor Edits' window. Quit CPX2. Before you pass the data, you first need to edit the edit directives file for the XSHOW program to remove the old version of the edit. This file is in the directory /aer/{stn}/new and is called ed_cum.{stn} where station is the 3 letter identifier. For example, for Lulin you would need to edit /aer/lln/new/ed_cum.lln. You can use a text editor such as 'nedit' or 'vi' to edit ed_cum.lln. **Don't** use a program like Excel or Word – they will do weird things to the file formatting. The ed_cum.stn edit directives file is formatted differently than the 'edit directives' file for CPX2. There is an entry line for the start time and an entry line for the end time of the edit and you need to remove both from ed_cum.lln.

For example if the 'edit directive' in CPX2 for Bondville (bnd) looked like this:

app	start	end	modified	auth	Record	type	params
[√]	2009 090.12345	2009 091.67890	2009 120.00000	PJS	N61a	Invalidate	Variables=N_N61

The corresponding lines in ed_cum.bnd would look like this:

```
BND,2009,090.12345,h__,"CNCC",I,,2009,120.00000,PJS,"CPC malfunction"
```

```
BND,2009,091.67890,h__,"CNCC",/I,,2009,120.00000,PJS,"CPC malfunction"
```

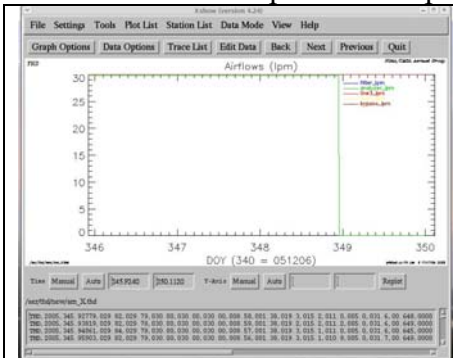
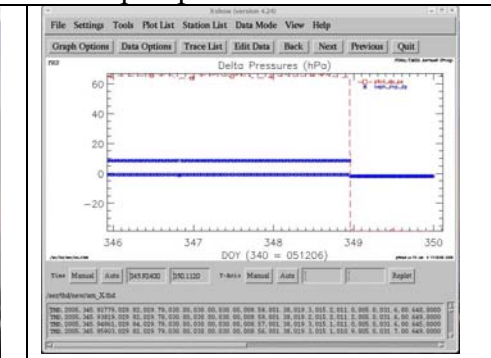

These two lines need to be deleted from the ed_cum.bnd file without leaving blank lines or spaces or otherwise altering the ed_cum.bnd file. Once the lines are removed from the ed_cum.stn file you can then pass the CPX2 edit directives.

Editing Data – Things to look for

Even the GMD-style aerosol rack is not perfect (!!) and occasionally there are instrument maintenance activities or system glitches that result in data that need to be edited out. Below I show some plots of some of the more common scenarios which require editing. **Note the plots in this section are from the old data viewing/editing software (XSHOW).** However, the general gist of the discussion is the same. This part of the manual will be updated once all the GMD stations have been incorporated into CPX2 so the example plots can be shown.

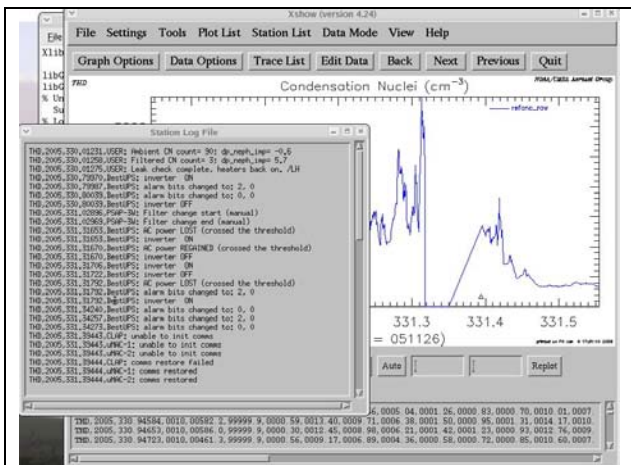
Pump failure

Pumps occasionally fail. The carbon vane pump vanes may break, the diaphragm(s) in the diaphragm pump may crack and the blowers can corrode and stop working. Depending on how your system is plumbed, pump failures will result in different data editing commands. Below are some examples of data plots when pumps fail.

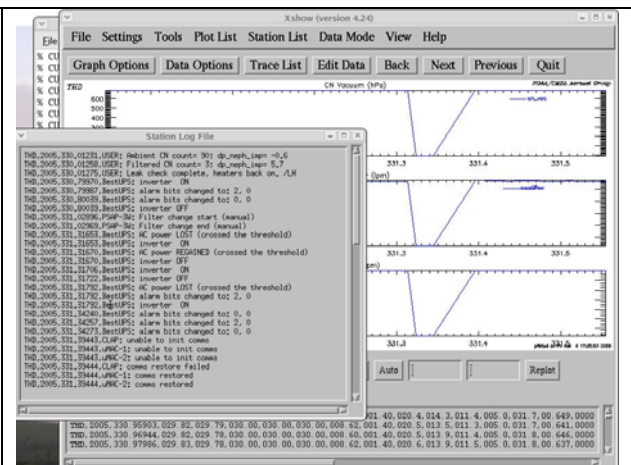
		
<p>Here the analyzer pump has failed</p>	<p>This means there is no flow going through the impactors and thus the pressure difference for the 1um impactor is the same as for the 10 um impactor</p>	<p>No flow through the analyzers means the instruments aren't pulling in aerosol to measure, so for example, the scattering will be low.</p>

Power outage

When there's a power failure, the UPS protects the instruments and the computer and the system will run after the power has failed for as long as the UPS battery supports it. However, the pumps are usually not working as they are not behind the UPS. This often results in plots looking like the pump failure plots. There may also be some spikes when the pumps come back on again.



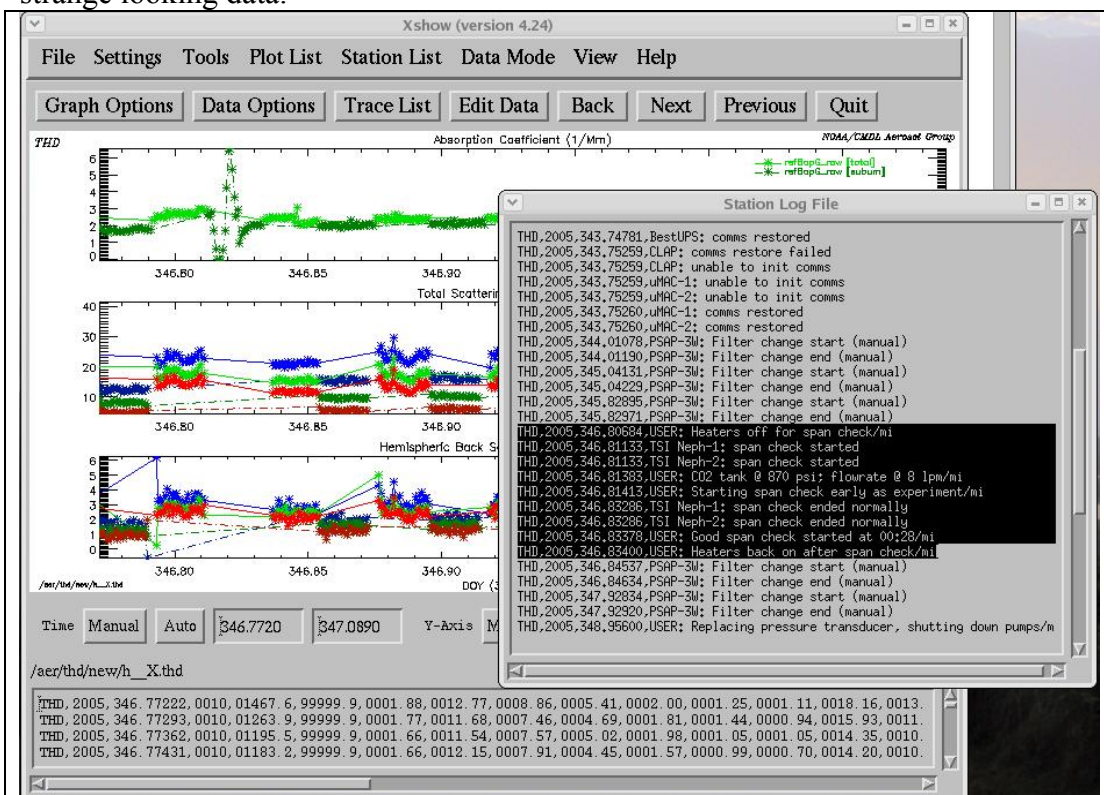
CN trace during power failure



CN status during power failure

Span Check

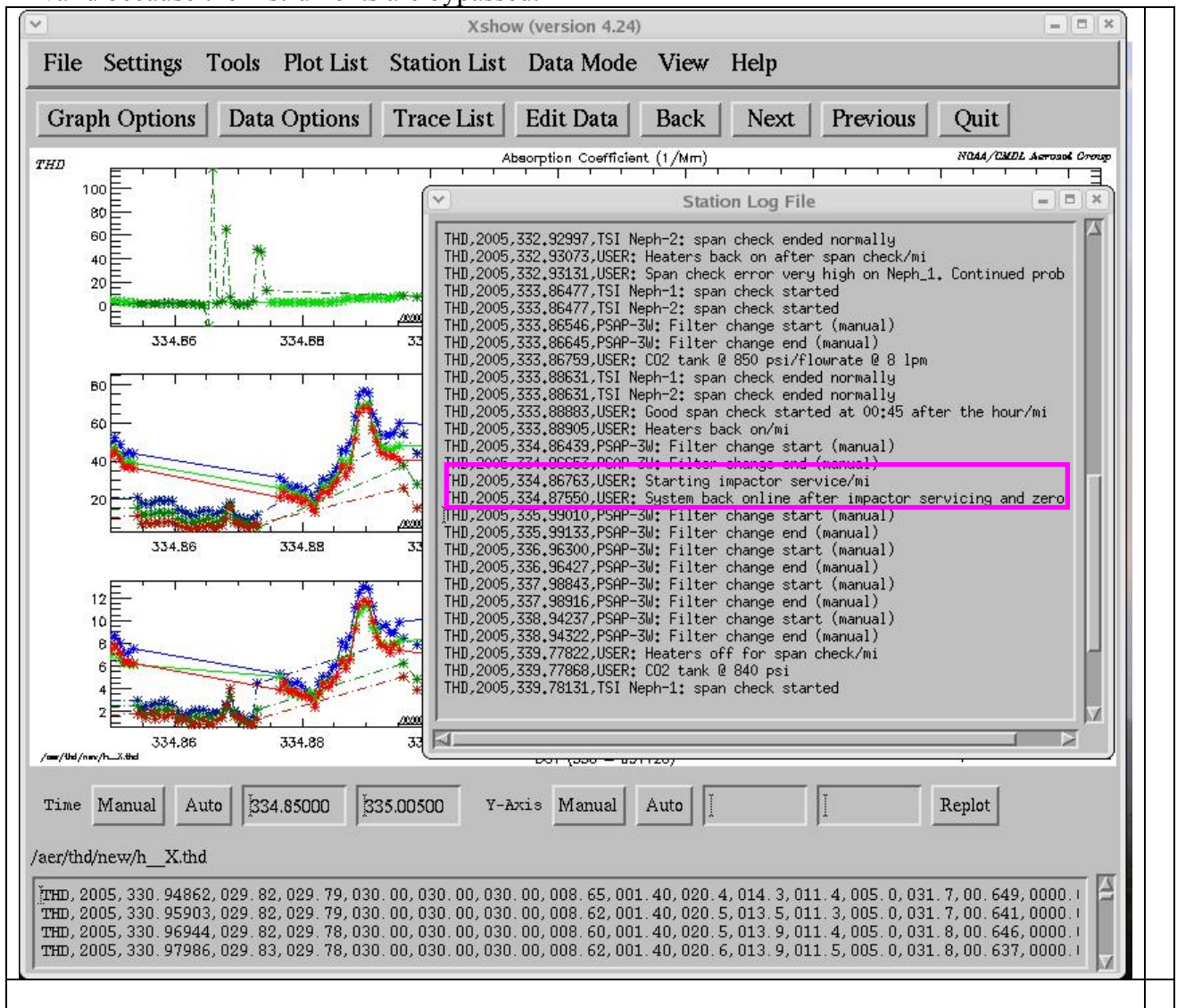
The CPD software at the station automatically marks as invalid the nephelometer data acquired during a span check. Because the PSAP instrument requires a nephelometer scattering measurement for the PSAP scattering correction, the PSAP measurements will also be automatically invalidated in the edited file (but they will show up in the raw file). So while you don't necessarily have to invalidate either of these data streams, it's a good idea to look closely at the measurements around the span check to make sure there aren't any related spikes or other strange looking data.



The nephelometer scattering data is automatically removed during a span check but you still see the absorption data in the raw data plots

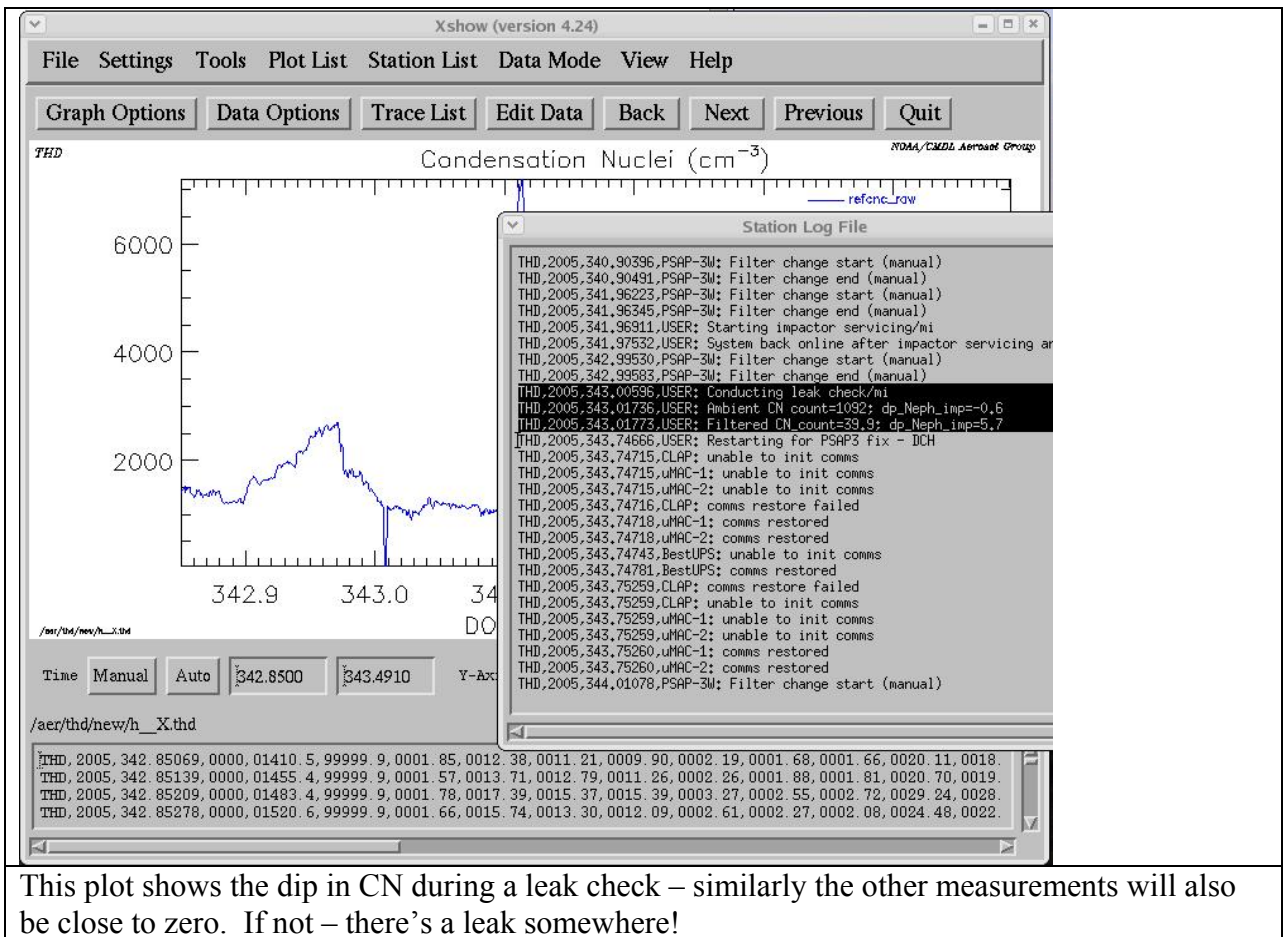
Impactor Servicing

Nephelometer and PSAP measurements taken during the impactor servicing should be marked as invalid because the instruments are bypassed.



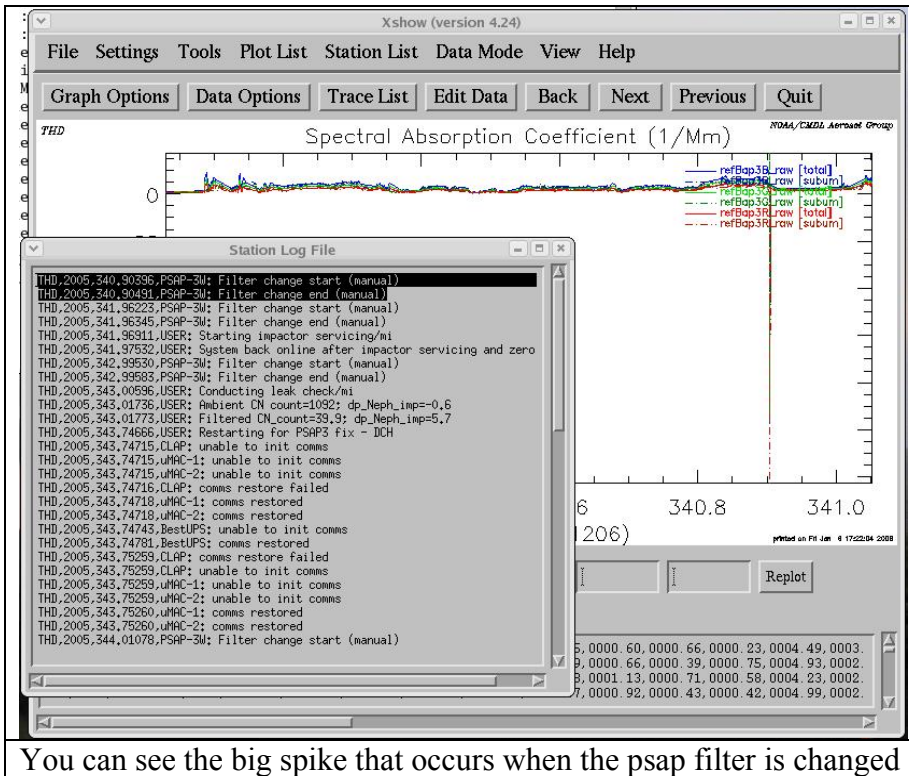
Leak check

All measurements taken during a leak check should be marked as invalid because there is a filter on the aerosol inlet and the CN counter is measuring whatever might sneak into the system between the splitter and the nephelometer exhaust.



PSAP filter change

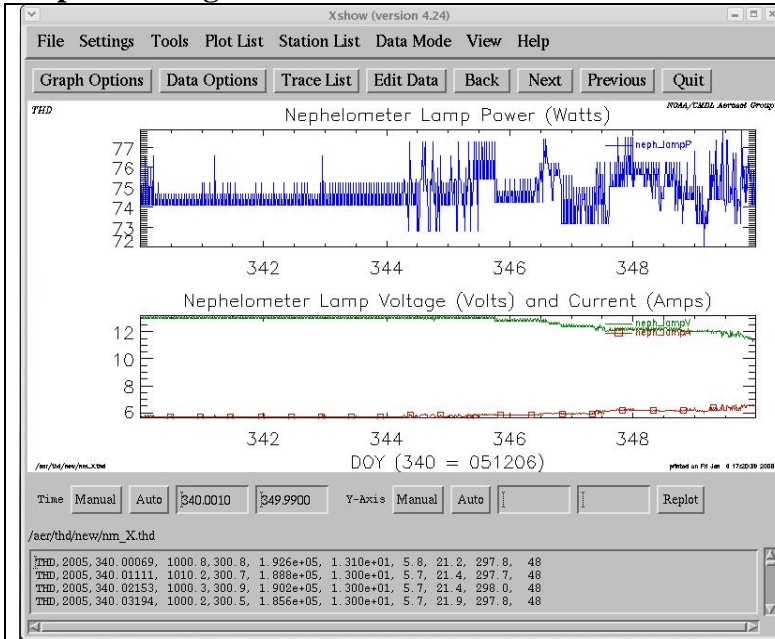
There are often very large spikes that occur when a PSAP filter is changed. Whether these are due to light getting into the instrument or the new filter settling into place or the flow adjusting back to its sampling value is unclear. Regardless of the cause these spikes should be invalidated. If you are editing a station that has a 3-wavelength PSAP you will need to choose both the ‘BapG’ and the ‘Bap3_all’ to be sure to get rid of the spike in all three wavelengths. (We put the absorption measurement at 550 nm in to two columns in our data file to be consistent with our file format before we had 3-wavelength PSAPs.)



You can see the big spike that occurs when the psap filter is changed

Things to look out for to be sure the system is running properly

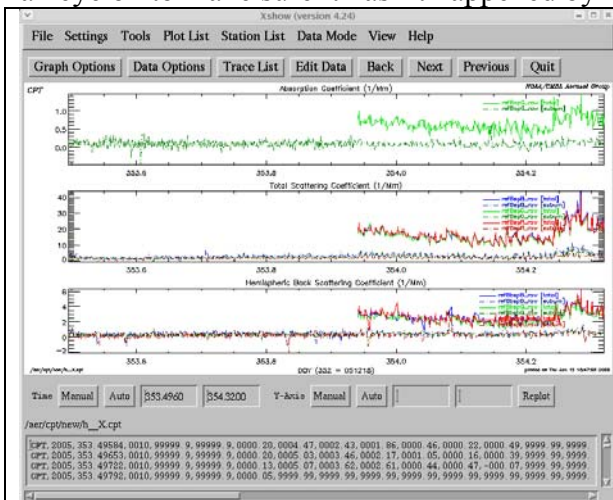
Neph bulb degradation



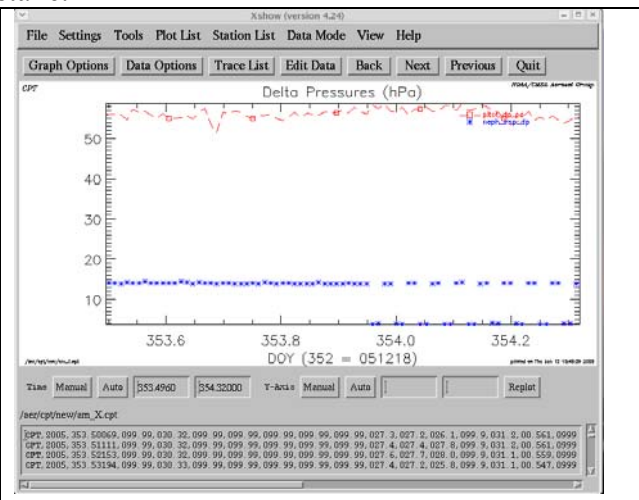
As the neph lamp degrades, in order to maintain the lamp power setting the current increases and the voltage decreases. When you see this, it's time to change the lamp. If such a situation goes on for too long, damage to the nephelometer can occur.

Impactor switching disabled

Sometimes, through a wrong key stroke in cpdClient, the impactor switching can be disabled. At other times, the station operator may choose to turn off impactor switching (for example, if the impactor switching valve fails). Either occurrence is not necessarily a reason for removing data, but since it is easily seen in the plots that show up on the web each day – it's something to keep an eye on to make sure it hasn't happened by mistake.

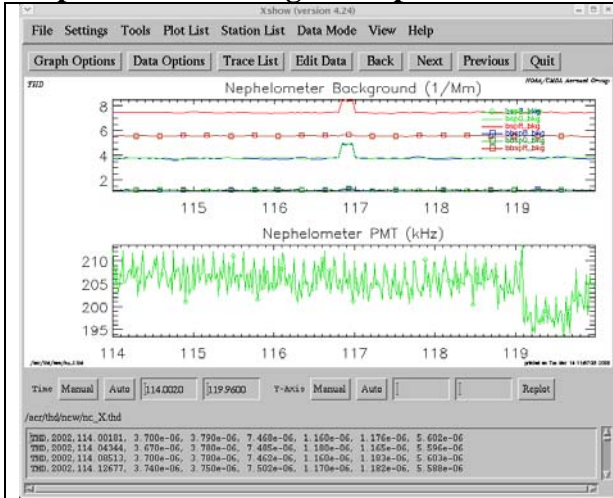


Here the impactor switching was disabled so that only 1 um data were sampled.

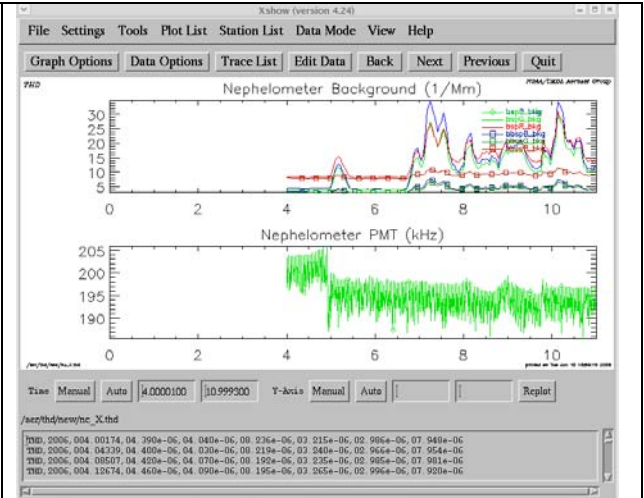


Here you can see that the impactor dP is at the higher value (indicating the sub-um impactor is in-line) until shortly before DOY 354 when switching was turned on again.

Nephelometer background problems



Occasionally the neph background values – the scattering value the neph measures when a filter is switched in line automatically every hour – will show a slight blip. Usually this is nothing to worry about – in this particular case the pumpbox was being worked on.



But if the neph background values look like this – this is a problem. On this occasion the automatic valve on the neph which switches the zero filter in-line had failed. (note the difference in the y-axis scale between these two cases. Typically all the background values should be less than 10 and the back-scattering background values should be less than 5 (red wavelength values tend to be a little higher).

Appendix A – CPX2 short cuts

There are additional short cuts in CPX beyond those described in Table 4..

There are a few shortcuts which work regardless of where you are in the software.

<Control><e> open mentor edits window
<Control><s> opens data segmentation window
<Control><f> changes CPX2 to full screen
<Control><q> quits CPX2

There are also short cuts based on using <alt><letter> to allow you to move through the different pull down menus.

Top level 1 – <alt> short cuts

<alt><x> - opens CPX2 pull down menu
<alt><d> - opens display pull down menu
<alt><c> - configuration pull down menu
<alt><h> - help menu
<alt><r> - plot real time data
<alt><p> - replot data to selected time range

Once you are in a menu using the <alt> <letter> shortcut you can continue to choose using <alt> <letter>

Shortcuts for CPX2 pull down menu

<alt><e> - open mentor edits window
<alt><s> - opens data segmentation window
<alt><f> - changes CPX2 to full screen
<alt><d> - view and select variables to plot
<alt><l> - view station message log
<alt><c> - view comments **what comments are these?**
<alt><e> - export data in various forms (graph, data file...)
<alt><q> - quits CPX2

So for example if you wanted to use shortcuts to see the station message log:

<Alt><x> then <alt><l>

Shortcuts for Display pull down menu

Use the up/down arrow keys and space bar to chose a display mode

Shortcuts for Config pull down menu

<alt><s> - allows you to configure how you want data for the station displayed in CPX2
<alt><u> - allows you to chose the time format (e.g. Year DOY, or yy-mm-dd, etc)

Appendix B – Getting help

A brief summary of the syntax and command-line options for starting cpx2 is available by typing "cpx2 --help" from the command prompt. The resulting output (as of 5 May 2010 is shown in Table 1.

Table 1: Output from running "cpx2 --help"

<p>Usage: cpx2 [--switch[=value]] [station] [start [end]]</p> <ul style="list-style-type: none"> • If not specified CPX2 will attempt to infer the station from the current working directory or the \$MYSTN environment variable. • If neither the start nor end time is given the prior seven days (starting at the most recent midnight) will be displayed. • If the start time is given as the word "realtime" then CPX2 will start in realtime station mode, with the default window being 1 day. Otherwise if only a start is given, then the end defaults to seven days from it. • If both a start and end are given and the start was "realtime" then the end is interpreted as being the time window in fractional days. Otherwise if both are given then CPX2 starts up with that time range. • Absolute times may be given in multiple epoch convertible formats, see the Perl library AER_TimeDate::ToEpoch. As long as at least one time is absolute the other may be relative. A relative time consists of a digit and a type, for example "1w" for one week from the other time bound. The string "now" is also accepted to mean the current time. 	
Command line switches	Comment(s)
--graph-png=FileName:GraphName:Width:Height	Generate a PNG of the specified graph. Width and Height are in pixels. If any exports are requested CPX2 will not start in GUI mode and will exit when all generation is complete.
--graph-eps=FileName:GraphName:Width:Height:DPI	Generate an EPS file of the specified graph. Width and Height are in inches. If any exports are requested CPX2 will not start in GUI mode and will exit when all generation is complete.
--tab-png=FileName:TabName:Width:Height	Generate a PNG of the specified tab. Width and Height are in pixels. If any exports are requested CPX2 will not start in GUI mode and will exit when all generation is complete.
--tab-eps=FileName:TabName:Width:Height:DPI	Generate an EPS file of the specified tab. Width and Height are in inches. If any exports are requested CPX2 will not start in GUI mode and will exit when all generation is complete.
--config=FileName	Use the specified file for station configuration instead of the default [SCPX2/etc/cpx2.\$STATION.xml].
--mode=<raw edit editintensive clean avgh avgd avgm>	Set the data mode to start up in. This implies a default data source.
--source=<Source>	Override the initial default data source set by the mode.
--dbavg=<AverageTime>	Use data.avg with the given time instead of data.get. The time argument is passed directly to data.avg's --interval switch, so the format defined there must be followed. Additionally the time may end in an "f" which causes the --fill switch to be used with data.avg (the trailing "f" is not passed).
--help	Display this help

Appendix C – Configuring CPX2 plots

The CPX2 program is very flexible and allows you to change how the plots look both temporarily and more permanently. Temporary changes to plots are done using the menu that appears when you right-click on your mouse in a plot pane (See Table X in main document). Permanent changes to the plot configurations can be made using the ‘Config’ → ‘station config’ pull down menu. This will bring up one pane with a set of tabs for plot ‘tabs’, plot ‘graphs’ and plot ‘variables’ on the left and a second pane on the right with a clickable interface to change parameters for the tabs, graphs and variables.

There are a lot of options and they aren’t all documented yet but the basic procedure for modifying an existing graph would be something like:

- On the ‘Config’ pull down menu choose ‘station config’.
- Click on the ‘Graphs’ tab
- Select the plot you want to modify
- Click on the tab related to what you want to modify. For example, if you want to change the color of the axis label from black to the same color as the plotted variable – you would click on the axes tab.
- If the label is on the right y-axis you would choose ‘right’ from the top menu. This will change the text in the ‘title’ box to the axis label for the right axis
- Click on the black square to the right of the axis selection box. This will bring up a palette of color option to choose from. Choose the color you want and click ‘ok’.
- Click apply at the bottom right of the window. This will apply the change to the plot so you can see if you like it and if it’s what you want to do.
- If you are happy with your change and want it to be permanent (i.e., show up everytime you start a CPX2 session for that station) then go back to the ‘config’ pull down menu and choose the option ‘save station config’

There are obviously lots of other things you can change. Feel free to play around with configuration options if there are things you want to adjust on the plots. Ask questions and let us know when you have problems. So long as you don’t save the changes permanently (i.e., the last step above) you can always get back to the way things were.