CMDL aerosol data flow
(EJA, 6/18/2002)

Data acquisition at stations

CP program gets data from instruments onto field station computer.

Getting data from stations to CMDL

Program	Location, type	Programs called	Frequency	Comments	Input >> Output
crontab.aerosol_vortex	*/aer/prg/crontab*	get{stn}	daily (at least)	Starts data transfer every night at specific time for each station.	
get{stn}	*aer/{stn}/new* c-shell script	stnnew	daily (at least)	Station specific Moves data via z-modem (BND & WSA) or ftp (NSA & SGP) to lab pc and then to vortex. MLN, THD, IAP, LAB are other stations which ftp? the data?	field: *cp\archive\tYYMM*** >> CMDL: *aer/archive/{stn}/raw/day/tYYMM*** *aer/{stn}/new/[AHM]*.TXT*
stnnew	*aer/prg/csh* c-shell script	cnvtXXX gaps www.png.update (xshow in text mode)	daily (at least)	-converts to standard CMDL format -appends to cum files -updates web QC page plots -mails email notices -puts raw data in archives	*aer/{stn}/new/[AHM]*.TXT* >> ***_cum.{stn}* ***_X.{stn}*
cnvtXXX	*/aer/prg/perl*	--	daily (at least)	These are the scripts called by stnnew which actually do the conversion of the [AHM]*.TXT to standard CMDL format. The specific cnvtXXX scripts called for each station are defined in: */aer/etc/stncfg/stnnew.ini*	

SGP is somewhat different than the rest of our stations. We get the raw aos files each day and convert them to our format using cnvt.sgp instead of stnnew. We then call sgp.new which does the rest of the stuff that stnnew does.

For THD and SGP the standard corrections (STP, truncation, losses, PSAP spot size) are applied to the raw data for the purpose of showing corrected but unedited data on the webpages.

The data flow is similar for the stations recently upgraded to the linux-based system (IAP and SPO)

Standard data processing

Program, Frequency	**Location, Type**	**Programs called**	**Frequency**	**Comments**	**Input >> Output**
editWeek	*aer/prg/csh* c-shell script	a_edit (xt)	weekly	-extracts raw data -applies corr_*stn* corrections -applies edit corrections (if any) -places data in *aer/{stn}/new/qc*	*aer/{stn}/new/**_cum.{stn}* >> *aer/{stn}/new/qc/a_eYYw*** *aer/{stn}/new/**_X.{stn}*
xshow	*aer/prg/idl/xshow_linux* idl	Xshow has ability to call many csh scripts, e.g., editWeek, pass etc.	weekly	Used to view extracted aerosol data so necessary edits can be identified and applied edits can be checked	Displays data in **_X.{stn} files in graphical plots
pass	*aer/prg/csh* c-shell script	--	weekly	Used once data edits are done to move edited data from *aer/{stn}/new/qc* to *aer/net/{stn}/phys*	*aer/{stn}/new/qc/a_eYYw*** >> *aer/net/{stn}/phys/a_eYYw***
archiveClean	*aer/prg/perl* Perl	avg –a –h avg –A –d [avg is C code]	quarterly	makes hourly and daily average files from edited data and puts in ftp directory: *aer/pub/{stn}/archive*	*aer/net/{stn}/phys/a_eYYw*** >> *aer/net/{stn}/phys/a_YYQx.stn.zip* *aer/pub/{stn}/archive/a_[HD]YYQ***
consolidateQtr	*aer/prg/csh* c-shell script	avg –A –m	quarterly	-zips edited weekly data into quarterly data files in *aer/net/{stn}/phys* -makes monthly averages	*aer/pub/{stn}/archive/a_[HD]YYQ*** >> *aer/pub/{stn}/archive/a_[HDM]YY***
splitQtr	*aer/prg/csh* c-shell script	Extract	quarterly	After quarter has been processed moves that quarter's raw data from the cum file to *aer/archive/{stn}/raw/qtr*	*aer/{stn}/new/**_cum.{stn}* >> *aer/archive/{stn}/raw/qtr/rYYQ***

updateWeb	*aer/prg/csh* c-shell script	archiveClean consolidateQtr xt checkhourlydata xshow aveStats createComments	quarterly	Summarizes yearly edited data for station web page. Can also be called from xshow's update web window.	*aer/pub/{stn}/archive/a_[HDM]YY*** >> *aer/www/net/{stn}/*various plots and text files

Viewing data (and reprocessing after the fact)

Program	**Location, type**	**Programs called**	**Comments**
a_edit	*aer/prg/csh* c-shell script	xt corr_{stn} edx (edx replaces: a_editEDX h_editEDX)	-extracts data (using xt) -applies edit log corrections -applies wind sector flags -applies station specific stp, psap and neph corrections -creates file with edits but no corrections a_uX.{stn}
xt	*aer/prg/perl* perl	Extract avg	-extracts data from appropriate file, depending on command line prompts -averages data if necessary, depending on command line prompts
xshow	*aer/prg/idl/xshow_linux* idl		Used to view extracted data so necessary corrections can be identified and applied corrections can be checked
aveStats	*aer/prg/csh* c-shell script	stats.idl	Creates statistical plots
makeF	*/aer/prg/csh* c-shell script	makeF.idl	Creates fitted f(RH) files: e.g., fgHX.{stn}

Help with data processing programs

To get help with command line syntax for the following programs.

1. Type the name of the program:
   editWeek, pass, archiveClean, consolidateQtr, splitQtr, updateWeb

2. Type the name of the program and help (e.g., xshow help):
   xshow, aveStats
   (DJD has also written a help program within xshow's graphical interface.)

Other useful codes for working with data

Program	Location	Example of usage (not complete!!)	Comments
head	*/usr/bin*	head infile head -n infile	Prints first 10 lines of infile to screen Prints first n lines of infile to screen
tail	*/usr/bin*	tail infile tail –n infile	Prints last 10 lines of infile to screen Prints last n lines of infile to screen
ends	*/aer/prg/csh*	end infile end –n infile	Prints first and last 10 lines of infile to screen Prints first and last n lines of infile to screen
xt	*/aer/prg/csh*	xt –flag sYear sDOY eY eDOY e.g., xt –a 2002 168.5 2002 365	Extracts data from cum data files or archived data files, needs to be in station directory or told which station. Type *xt* for help.
pick	*/aer/prg/perl*	pick fields=0,1,2 ,4,5,..,n test='($F[1]>2000)&&($F[2]<365.99))' infile > outfile	Allows you to pick certain fields and data which meet certain criteria. Type *pick* for help.
mergefield.pipe	*/aer/prg/perl*	mergefield.pipe field=8,9,10 file=mergefile target=11,12,13 tolerance=0.04 infile > outfile	Allows you to merge data files within a certain time period tolerance. Type *mergefield.pipe* for help.
append	*/aer/prg/perl*	append text='blah, blugh' infile > outfile	Allows you to add stuff to end of each row in data file
prepend	*/aer/prg/perl*	prepend text='blah, blugh' infile > outfile	Allows you to add stuff to beginning of each row in data file; useful for putting files into "CMDL standard format"
a2h, h2a	*/aer/prg/perl*	a2h a__X.bnd > h__X.bnd	Converts an 'a__ file' to an 'h__file' and vice versa
ave.pl	*/aer/prg/perl*	ave.pl sec=nnnnn infile > outfile	Averages a data file over some number of seconds. Type *ave.pl* for help.
corr_scale	*/aer/prg/perl*	corr_scale fields=5,6,7 slope=12 offset=13 infile >outfile	Allows you to do a linear correction to a field in a data file. Type *corr_scale* for help.
doy.c	*/aer/prg/source.c*	doy	Gives the information about the current day of year
avg.c	*/aer/prg/source.c*	avg –d –A <infile> outfile	Allows to average into 'standard cmdl' average format. Type avg for help.
ave_seg	/aer/prg/perl	ave_seg file=segtimefile infile > outfile	Allows to average over user defined segments. Type *ave_seg* for help.
strip.pl	/aer/prg/perl	strip.pl infile > outfile	Strips trailing whitespace so other programs don't get confused